# Scientific Evidence for the Existence of a True Noosphere: Foundation for a Noo-Constitution

Paper for the World Forum of Spiritual Culture
Section 5, The Noo-Constitution
Astana, Kazakhstan, October 18-20 2010

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**Abstract**

The Global Consciousness Project (GCP) uses experimental research to identify and study a still-very-young consciousness for the earth. This global consciousness is formed by interconnections and interactions of human beings all over the world, just as the mind is formed by the interaction of neurons in the brain. In the brain, cooperation is the rule, but in the world it is the exception. Global consciousness coalesces only when great events bring us together, make us focus and temporarily share understanding and emotion. The Noo-Constitution is a framework within which we can come together. Scientific evidence provided by GCP is part of the educational and political picture: humanity must recognize its unity and focus its creativity on a common future.

The GCP has accumulated strong scientific evidence for an interaction among human beings that has small but important effects in the physical world. The behavior of a network of devices which use quantum tunneling to generate random numbers changes during great events of importance to humans. Synchronized data collected at independent network nodes separated by thousands of kilometers become correlated. We find anomalous structure in what should be completely random data in statistical measures and in spatial and temporal parameters. This correlation shows that when the attention and emotions of large numbers of people are made coherent by great tragedies or great celebrations, a slight but detectable structure is imposed on our random data. The bottom line formal statistic shows a 6 sigma departure from expectation over the full database. This is evidence that human consciousness and emotion are part of the physical world, and it shows that we interact to produce a mass consciousness even though we are generally unaware that this is possible.

The Noo-Constitution defines an enormous challenge for today and the years to come. It is to change the understanding of the mass of humanity by re-framing where we are and what our alternatives are for the future. To survive and prosper, we need to give resources and intelligence to our maturation as fully human beings. For this we must interact in a way that is new: it is time to recognize that we are humanity, an organism with purpose, no longer a scattered collection of elemental individuals. Scientific evidence for a global consciousness shows our interconnection and interdependence, which are fundamental to the viability of the Noo-Constitution. Broad public recognition of the noosphere will support a concerted effort to relearn how individuals, groups, communities, and nations relate to each other. The goal is interactions based on the common interests of health, safety, and respect for all beings. When we accept that the noosphere is possible, desirable, and within our reach, we will be on the way to our evolutionary destiny as a sheath of intelligence for the earth.

**Introduction**

> *EUDEMONY: a measure of the more preferred state of affairs; the commodity that the control system tends to optimize. The eudemony concern is one of values, of stating what is worth optimizing; in short, eudemony is a category of outcomes that indicate we are enhancing the quality of life.*
>
> -- Stafford Beer, *Platforms for Change*

Is there a chance for growth toward broad collaboration of peoples from different lands, trained in different ways, believing in different religions? We know the answer is yes, and yet there is no certainty about prospects for integrated efforts to evolve deliberately toward a cooperative humanity, toward cultures focused on enhancing the quality of life for people everywhere on an earth that we understand is our shared mother and our only home. In this paper, I will describe the Global Consciousness Project (GCP). In the process I will give a scientific perspective on a kind of instinctive, unconscious interaction among human beings. I think we have evidence of a deep integration that presages a truly global consciousness of our condition and our potency as a collaborative organism. The data we will consider show that we do come together, though we are not conscious of this, in response to great events on the world stage. We act as one, driven by tragedies or celebrations to share emotions, and in coming together we change the world – as represented in scientific data. The effects I will speak about are tiny, but their implications are very important. Human beings can and sometimes do connect or commune, unconsciously but effectively, to produce changes they cannot see but which model the changes we must achieve as a species that dominates the earth. The evidence supports V. I. Vernadsky's and Teilhard de Chardin's vision of the noosphere – a sheath of intelligence they believed would coat and protect the earth when humans advanced to the next stage of evolution.

It is time for us to be active in determining how the human race proceeds into the future. We should be and can be conscious forces in evolution. One of the most potent routes for that is political work, where individuals influence decision makers to do the right thing. Knowing what is right is not a trivial matter, so we need to work toward an understanding of the world that will make for good decisions now, leading to a better future. For example, the American Friends Service Committee express their Quaker principles, especially compassion, in a movie called "Wage Peace." This is a poignant plea made a few years ago to stop the devastation and the ongoing and unnecessary loss of life in Iraq, but it is completely general in application. (AFSC, 2010) In pragmatic terms, of course, the wish for a better world needs structure and well-defined goals. The Noo-Constitution, as framed by Gordina and Limonad, (2006) provides a foundation and clear descriptions for a new, healthy and respectful relationship among peoples and the earth.

There are many examples of individuals and groups recognizing where we are and making efforts to shift the course away from the power struggles and resource competition that too often become war, toward a brighter future in which we recognize, as Buckminster Fuller (1971) did, that the earth can support all of us. It only requires creative understanding and the intention to cooperate to build rather than destroy. As Fuller might say, intelligent design is not a religious concept, but a prescription for humanity. We are capable of conscious evolution, and when we see this and begin the process, we will see again the "discovery of fire." (Teilhard, 1961)

To begin, we need to know that we do interact unconsciously, and that from this there is a creative result. Scientific analysis of a huge database that should be random shows signs of structure linked to our shared consciousness and emotions. The implication is that we become integrated into what we can regard as a global consciousness – even though we do not directly know this. We can draw an analogy to the interaction of neurons in a brain to make a mind. The neurons don't know about the interaction; they simply do their job as elements linking with each other to make something new, a conscious mind.

**Historical Background**

The Global Consciousness Project is an extension and extrapolation of research on mind-matter interactions conducted over several decades in laboratories around the world. At the Princeton Engineering Anomalies Research (PEAR) lab at Princeton University, our primary experiment used a custom designed Random Event Generator (REG or RNG) incorporating a well-developed commercial source of electronic white noise. This bench-top experiment provided control over parameters such as the speed and size of the samples drawn from the random sequence of bits. For example, it might be set to collect a 200 bit sample at a rate of 1000 bits per second, and to register a trial each second consisting of the sum of the 200 bits. The equipment displayed the current output trial value and a running mean as feedback to the participant. The experiment used a tri-polar protocol, with instructions to maintain an intention to achieve either a high or a low mean, or to let the machine generate baseline data. Over more than a decade, this basic experiment yielded an enormous database, with a bottom line indicating a small but highly significant effect of human intention on random data sequences. (Jahn, et al., 1997)

A system to record a continuously running random data stream was developed in the early 1990's, and when truly portable REG devices became available we were able to take equipment out of the laboratory to ask new kinds of questions. By recording data continuously at concerts, ceremonies, rituals, meetings – group gatherings – we could ask whether group consciousness would affect the REG. This new paradigm was called FieldREG because it is field research, but the name is a double entendre because the purpose of the experiment was to monitor something that might be regarded as a consciousness field. The FieldREG experiment (Nelson, et al., 1996) was not based on intentions, and indeed could be used to gather data in situations where people typically had no knowledge of the experiment. We looked for occasions that might produce a "group consciousness" because everyone would be engaged in a common focus, resulting in a kind of coherence or resonance of thoughts and emotions. For contrast, we identified other, mundane situations (shopping centers, busy street corners) which we predicted would not produce coherence resulting in changes in the data. A long series of FieldREG experiments (Nelson, et al., 1998) produced striking, statistically significant results. As in the laboratory, the effects in these field experiments are small, but they have implications of great importance for studies of human consciousness.

Other investigators, including Dean Radin (1996) and Dick Bierman, (1996) began doing similar field experiments looking at a broad array of situations, and we set up collaborations. Radin asked colleagues to collect RNG data during the O. J. Simpson trial, which was expected to garner attention from huge numbers of people. The combined data from five RNGs showed an impressive departure from expectation at the time the verdict was announced. Other tests looked

at data taken during the Oscars, with segregation of the data into periods of strong and weak interest. Again the difference was significant. (Radin, 1997)

In December 1996 I met by chance two people who were organizing a global "Gaiamind Meditation." This meeting coincided with the developing idea of attempting to register some indication of a global consciousness – making a kind of FieldREG-style group consciousness experiment on a large scale. The coincidental meeting led me to arrange a collaboration with colleagues who could record REG data that might show evidence of a “consciousness field” during the Gaiamind event. The composite of data from 14 independent RNG systems showed a significant effect. (Nelson, 1997)

This work was a prelude for an attempt to register effects of the world-wide expression of compassion at Princess Diana's funeral in September of 1997, which, coincidentally, was followed exactly a week later by the memorial ceremonies for Mother Teresa. (Nelson, et al., 1998) These were prototypical “global events” for the Global Consciousness Project, in that they were the focus of attention from literally millions of people around the world, and especially in the case of Princess Diana, also occasions for unusually widespread shared emotion.

In November 1997, at a meeting of professional researchers in parapsychology and psychophysiology, the various component ideas for what ultimately became the Global Consciousness Project coalesced into a practical form. The technology was becoming available to create an Internet-based array or network of continuously recording RNG devices placed around the world. This would metaphorically resemble the placement of electrodes on a human head for Electroencephalogram (EEG) recordings, though of course the data would not be fluctuating voltages, but randomly varying numbers. The resemblance suggested we might envision the network as an “ElectroGaiaGram," and we began to call it the EGG Project. We later adopted the formal name “Global Consciousness Project” but continue to use an efficient terminology based on the EGG acronym and associations.

**The GCP Instrument and Methods**

The world-spanning network may be thought of as an instrument designed to look for an effect of special shared states of human consciousness and emotion. The system uses random number generators developed for professional research in laboratory settings. These devices utilize a quantum level source of random fluctuations called electron tunneling. Diodes or field effect transistors are placed in a circuit arranged to force electrons against the barrier in a solid state junction. Some electrons penetrate the barrier and this results in a tiny, completely unpredictable fluctuating voltage which can be sampled. High and low samples are converted to become 1 and 0 bits. In the GCP, we take 200 samples each second and record the sum of the bits, which is normally distributed with mean 100 and variance 50, and typically ranges between 70 and 130.

The network has about 65 or 70 nodes distributed broadly around the world as shown in Figure 1, each hosting an RNG connected to a computer running custom software that collects data every second of every day, year after year, synchronized to the second. The software sends the data to a server in Princeton, NJ, where they are added to a continuously growing archive. The result is a database of parallel sequences of numbers – a history of random data – which we can compare with a history of events that are meaningful to humans. At this time, late 2010, the

project has been collecting data for more than 12 years, and we have examined more than 325 events meeting the criteria for our formal experiment.


Figure 1, Google map showing locations of all RNGs that have been in the network and contributed data. The distribution depends on Internet infrastructure.

Events are selected for analysis from several categories including natural disasters and accidents, terrorist attacks and acts of war, as well as positive events such as celebrations like New Years, religious holidays, and globally organized meditations. The experiment asks whether the network is affected when powerful events cause large numbers of people to pay attention to the same thing, and the question is defined in a general hypothesis that frames the experiment formally:

*Periods of collective attention or emotion in widely distributed populations will correlate with deviations from expectation in a global network of physical random number generators.*

This hypothesis is very broad, providing the flexibility required at the beginning of a unique experiment without precedents. It is tested using completely specified hypotheses in a formal series of replications. A registry for the specific hypotheses identifies *a priori* for each event a period of time and an analysis method to examine the data for changes in statistical measures. The events and their timing are specified uniquely case by case, and a statistical recipe is set, thus defining a simple but rigorous hypothesis test for each event in the formal series. This two-level approach – a broad general hypothesis evaluated via specific hypothesis tests – provides flexibility while also ensuring valid, interpretable statistics. The individual events results, when combined, yield a rigorously established confidence level for the composite of all formal trials. This "bottom line" constitutes a general test of the broadly defined formal hypothesis, and characterizes a well-understood database for further analysis.

We collect and archive data from the network continuously, in such a way that it can be used both for the event-based original experiment and for other analyses such as correlations with

independent measures (for example, geomagnetic or cosmic or sociological variables) as well as the development of control comparisons. The archival database at the heart of the research program is the raw trial data stored in a binary format with information to identify the source (RNG device and location) and the precise timing for every trial. In late 2010, the database is about 20 billion trials accumulated over 12 years, representing locations all over the world where one of our devices is generating a new random number each second.

An important aspect of the GCP design is complete public access to the data and software. The website includes a data extract form which will decode the archive and present the specified data for inspection or analysis in a readable format. For precise, sophisticated analyses, we filter and normalize the trial values for each RNG to produce a working database of standardized Z scores. Since these are hardware devices which can break or suffer from electrical instability, we must filter out an occasional “bad” trial. We use the empirical mean and variance of each device for normalization because each RNG is unique and may have real, albeit barely detectable variations from theoretical performance.

**Analysis and Results**

Most analyses are based on a measure we call "network variance." This is calculated as the squared Stouffer's Z (normalized average Z) for each second. The result is a Chisquare distributed quantity with one degree of freedom. This is summed across all the seconds in the time period specified for the event, and compared with the expected value or degrees of freedom, which is just the number of seconds. For a few events we specify a measure called “device variance,” which is the inter-RNG variance (the sum of $Z^2$).

The network variance is closely related to and may be expressed as the pairwise inter-RNG correlation. For analyses at the fundamental trial level, we use this version of the network variance measure, which can be expressed as $Z_i * Z_j$. Because the trial level data have more complete information, including the location and identity of the data source as well as the precise time of each data point, this correlation measure allows deeper analysis. In turn, this represents a step toward understanding the mechanisms by which the anomalous results may be generated. (Bancel and Nelson, 2008)

The trial statistics are combined across the total time of the event to yield the formal result, and for presentation we typically use a "cumulative deviation" graph tracing the history of the second-by-second deviations during the event, leading to the terminal value which is the test statistic. In the following figures, examples are given to show what a formal GCP event looks like when we plot the departures of network variance from expectation. The graphs show the accumulating sum of deviations, second-by-second, and if there is no anomalous effect the positive and negative deviations will tend to cancel, resulting in a trace that wanders randomly with no trend away from the null expectation. Such a result is shown in Figure 2, which presents the data generated during a period of time identified as the peak of concern about the possible swine flu pandemic that was much in the news in early 2009. Because the GCP effects are subtle we must interpret the data with care, but there is clearly no suggestion of an anomalous network response in this case.

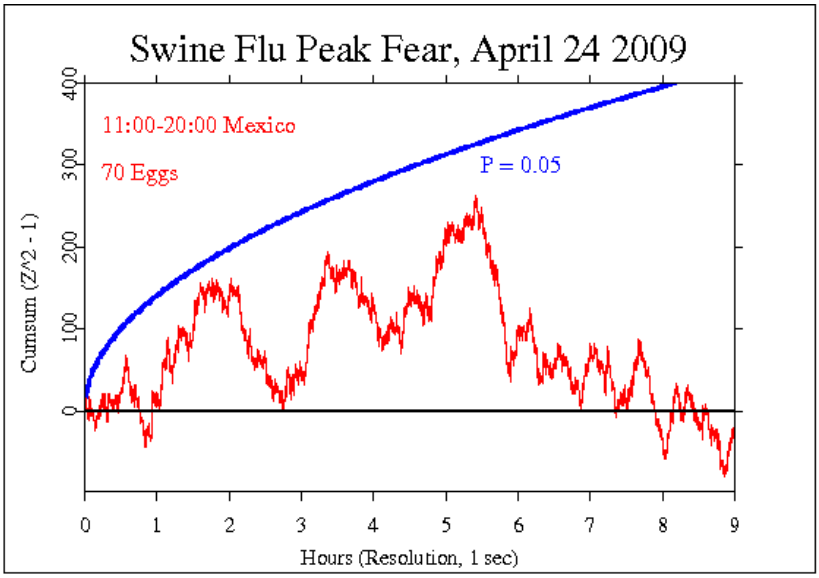


Figure 2. An example of a "null" result. Cumulative deviation during the media frenzy over the swine flu "epidemic."

In contrast, if there is a persistent excess in the network variance (or, equivalently, the inter-node correlation) the cumulative deviation will show a trend, which may culminate in a statistically significant departure from expectation. We see such a trend in Figure 3, which shows 6 hours beginning just before the Israeli navy dropped commandos from helicopters to stop the humanitarian flotilla heading for Gaza in May 2010. Several of the volunteers on the ship were killed in the action, leading to an international outcry and probable long-term consequences.

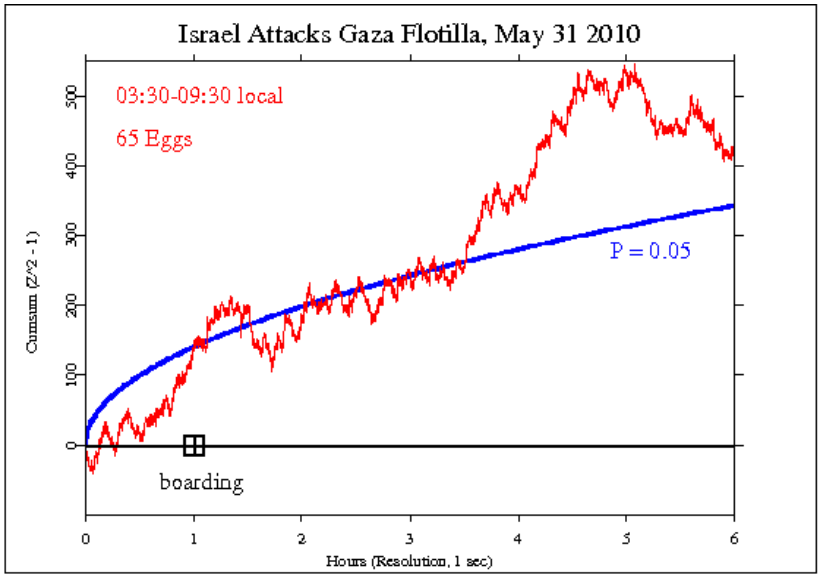


Figure 3. An example of a "positive" result. Cumulative deviation during a 6 hour period representing the Israeli attack on the Gaza flotilla, beginning 1 hour before the ill-fated boarding.

In either case, it is important to recognize that on average the effect size is too small for single events to be interpreted reliably. The signal to noise ratio is very low in these data, resulting in an average effect size of approximately 0.3 to 0.6 of a standard deviation depending on the event type.

**Controls**

It is possible to generate various kinds of controls, including matched analysis with a time offset in the actual database, or comparisons with a pseudorandom clone database. A somewhat more persuasive control background is created by simulation using random samples from the null hypothesis distribution, as illustrated in Figure 4. However, the most general and powerful control analysis is achieved by comparisons against the empirical distribution of the test statistic. The event data comprise less than 2% of the whole database, and the non-event data can be used for resampling to produce a distribution of "control" events with the same parameters as the formal events, but random start times. This provides a rigorous control background which confirms the analytical results for the formal series of hypothesis tests. Comparing the actual data against either simulation or resampling distributions, we conclude that the experimental data are definitely from a different population than the control data

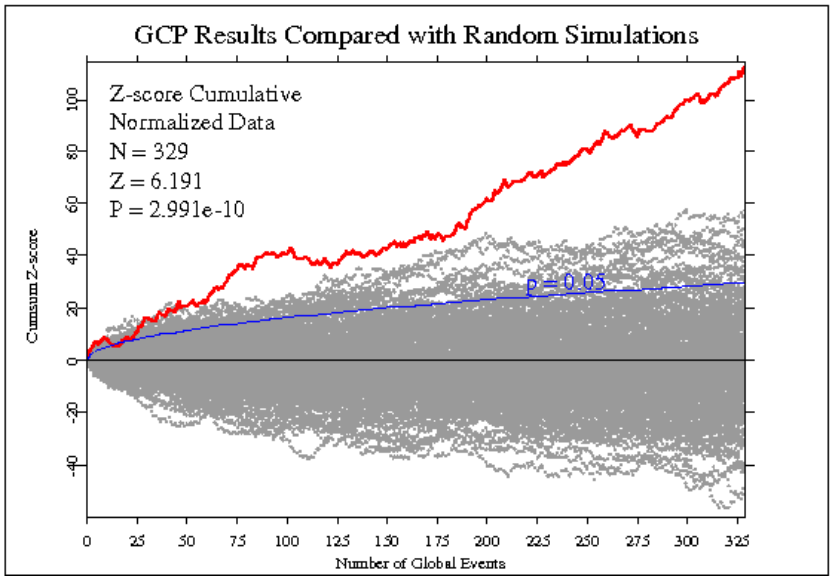


Figure 4: The bold line shows the cumulative deviation of results for formal trials, compared with 250 simulated datasets randomly drawn from the (0,1) normal distribution.

It is important to note, as can be seen in Figure 4, that differentiation requires many events, perhaps 50 on average. Even in categories that consistently show strong effects we need a dozen or more events for signal to rise out of the noise. This is a consequence of a small effect size, on average about 1/3 standard deviation. Only the patient accumulation of many tests of our general hypothesis can give us confidence that there is an anomalous effect. Based on our long series of formal replications, the hypothesis is well supported in comparisons of the cumulative deviation in the real data against appropriate control data which have no linkage with events in the world.

**Results for the Formal Experiment**

Over the 12 years since the inception of the project, hundreds of replications of the basic hypothesis test have been accumulated. The composite result is a statistically highly significant departure from expectation. This strongly supports the formal hypothesis, and it provides a sound basis for deeper analysis using refined methods to re-examine the original findings and extend them using other methods. (Nelson and Bancel, 2006; Nelson, 2008; Bancel and Nelson, 2008). Figure 4 shows the formal result, compared with a control background of simulations

The bottom line for the GCP formal experiment is based on a concatenation of all events specified in the hypothesis registry. Of course we include both the hits and the misses – every event that is identified and registered is analyzed and reported. About 70% are positive in the sense they show deviations in the predicted direction, and between 15 and 20% are statistically significant at the 5% level. We identify engaging events of various kinds about 2 or 3 times per month on average for inclusion in the database. The combined result of 329 formal events as of September 2010 departs from expectation by 6.2 sigma, which means the odds against chance are a billion ($10^{-9}$) to one.

**Other Structure**

The next step is a program of rigorous analyses to characterize the data fully and facilitate the identification of other non-random structure. This requires the use of trial level data, the finest scale available, which includes not only the fundamental trial outcomes, but complete spatial and temporal information. The goal is to increase both the depth and breadth of our assessments, and ultimately to develop models that can help distinguish classes of potential explanations.

It is important to look for other indicators of structure in the data, beyond the correlations found in the measure chosen for evaluation of the GCP hypothesis. That original measure represents a correlation of meanshifts, and a natural question is whether there may be other correlations or structure, for example in the variance or higher moments of the analytical distributions. The general hypothesis also contains implicit questions about spatial and temporal aspects of the anomalous effects. To the extent we find structure in these dimensions, we will make progress toward understanding the nature of what we are defining as global consciousness.

For practical and theoretical reasons, the question whether distance matters is useful. Most psi researchers consider the phenomena to be non-local, implying connection or entanglement over distance and possibly across time. The GCP database provides a rich opportunity to look for empirical support for a general non-local model. The distribution of the network nodes allows analysis of some measure of distance from the nominal location of the event, as well as effects of distance separating the individual RNGs. Posing the question first requires careful consideration of what distance we are asking about. It turns out that the “events” we examine frequently do not have well-defined locations, because our hypothesis actually addresses effects of an attentional and emotional response of people all around the planet. In addition, we recognize that in a sense, the most important distance metric may be psychological – the meaning of an event may be the operative source of its effect.

As for time, we want to know how well our guesses about the length of the event match the duration of detectable effects. More generally, we need to learn about the time course of any anomalous effects we find. For some events there is a sharply defined moment – an explosion, an earthquake, a speech – and we can ask how the effect relates to that moment. Is there any indication of a precursor response? Are there typical lags or durations of effects? What is the minimum time for an effect to develop, and what factors affect the rise time and the persistence of the anomalous correlations?

The original GCP hypothesis anticipates spatial and temporal structure by proposing an effect that is both geographically diffuse and dependent on the timing of events. Confirming these expectations can provide independent perspectives and convergent evidence for an effect of consciousness generally, and global consciousness in particular. Beyond the implications for our understanding of human capacities, the identification of spatial and temporal structure in the data has direct utility for modeling, and brings us a step closer to understanding how consciousness interacts with the environment.

**Categorization**

When we look at psychological and sociological variables, we find other indications of structure. By categorizing the events, we can identify modulating factors and determine their influence on the correlations in the data. For example, we find clear evidence that larger events, defined by the number of people engaged and by their "importance," produce larger effects, consonant with normal psychological expectation. On the other hand, most people would predict a difference for positive and negative events, but they show virtually equal effects. The general hypothesis suggests examining the effect of emotions, which we can do by rating the level or intensity. We find that the correlation of data deviations with events is indeed modulated by this factor. Figure 5 shows large differences depending on the level of emotion associated with events.

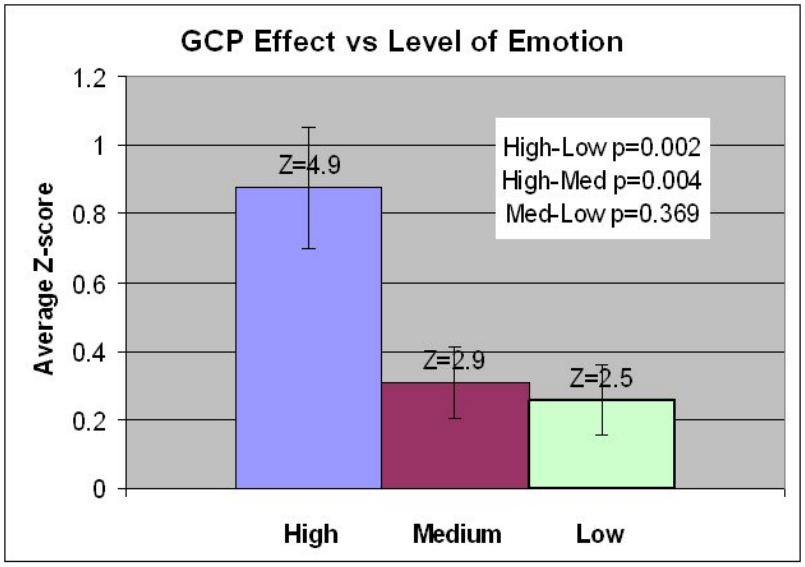


Figure 5. Level of emotion determined by categorizing the events significantly affects the network variance effect size.

Another result from the categorization work is perhaps more directly pertinent to the question of noosphere and what might underlie the demonstration that human consciousness can affect the physical world. If we ask raters to decide how much compassion is embodied or evoked by the events, we find a clear differentiation. Figure 6 shows that when an event is characterized by deep and widespread compassion, the GCP effects are stronger. This makes sense if we understand that compassion is a model for interconnection: compassion means that we feel and share the emotional states of others. It is by definition a condition that brings us together and makes us coherent – we invest a small part of our individual being to interconnect with others.

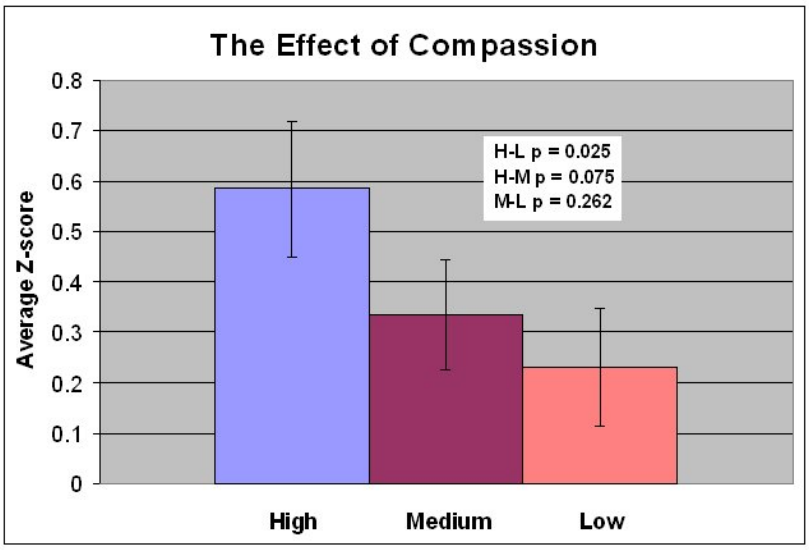


Figure 6. The degree of compassion evoked or embodied in an event significantly affects the network variance effect size.

**Models**

We have demonstrated the existence of unexpected correlations and structure in the event data, and these results can serve as input for theoretical models of the deviations. Successful models not only describe the empirical findings, but also refine our understanding of the structure and they lead to testable predictions and better models. Ultimately we seek a theory that provides a bridge from the empirical findings to a deeper understanding of the role mind or consciousness plays in the material world.

Three classes of models to consider are: 1) conventional physical and electromagnetic fields, or mundane methodological errors or biases, 2) unconventional fortuitous selection of events via experimenter intuition, or determination by retroactive information flowing from future results, and 3) consciousness or information fields sourced in individual human minds, or a non-linear field representing a dynamical interaction among minds.

We can show that the first class is excluded by the experimental design and by empirical tests. (Bancel and Nelson, 2008) Intuitive selection and retroactive information approaches are variants of a parapsychological theory which has been advanced to explain psi functioning. (May, et al., 1995; Shoup, 2002) The idea is that expectations about the experiment play a role, and that

deviations may result from a fortuitous choice of timing rather than an actual change in the data. The measured anomalies are attributed in such models to the selection of unlikely data excursions in a naturally varying sequence, mediated by the experimenter's intuition, or, more forcefully put, from precognition of the eventual results, which informs the choice of events, their timing, and the test procedures. An explicit version of this model has been tested against the GCP data and nominally rejected, with the rejection further supported by the model's failure to accommodate the second-order correlations and the spatial and temporal structure found in the data. (Nelson & Bancel, 2010)

The picture is more promising when we look at field-type models associated with human consciousness. A simple version is similar to ordinary physical models of fields generated by a distribution of sources. In this case the field sources are associated with individual conscious humans, while the field dynamics that might explain the RNG correlations derive from the coherence of human activity during events. This proposal can accommodate all the inter-node correlations and structure seen in the data, but it remains phenomenological since it does not explain how the field arises in terms of underlying principles.

Finally, a non-linear dynamic field model proposes that individual minds are mutually interactive, and that the interactions are responsible for an emergent field which depends on individual consciousness but is not reducible to it. The model implies that the dynamic and interactive qualities of consciousness also involve subtle interactions with the physical world and that these are responsible for certain anomalous phenomena such as are found in the GCP experiment. The proposal can be construed as embodying in a formal way the ideas of such thinkers as Teilhard de Chardin, describing a "noosphere" of intelligence for the earth, (1961) or Arthur Eddington, conceiving a "great mind." (1928)

**Discussion**

The GCP is a long-term experiment that asks fundamental questions about human consciousness. It provides evidence for effects of synchronized collective attention – operationally defined global consciousness – on a world-spanning network of physical devices. There are multiple indicators of anomalous data structure which are correlated specifically with moments of importance to humans. The findings suggest that some aspect of consciousness may directly create effects in the material world. This is a provocative notion, but it is the most viable of several alternative explanations. The convergence of several independent analytical findings provides strong evidence for the anomalies, and integrating these into scientific models will enrich our understanding of consciousness.

The GCP experiment is not explained by conventional or spurious sources, and we provisionally conclude that the effects are correlated with qualities or states of collective consciousness. Social and psychological variables are important, especially when they reflect mental and emotional coherence among the people engaged by the events. The evidence suggests an interdependence of consciousness and the environment, though we cannot yet describe the mechanisms in a formal way. The GCP findings do not fit into our current scientific models of the world, but facts at the edges of our understanding can be expected to direct us toward fundamental questions. As Richard Feynman remarked, "The thing that doesn't fit is the thing that is most interesting." (1981)

The GCP results inspire deeper questions about our relationship to the world and each other.

Might we find that the best explanation, after all, resembles a coherent, extended consciousness akin to Vernadsky's proposition that the biosphere will transition into a noosphere, or Teilhard de Chardin's aesthetic vision of noosphere as our evolutionary destiny? These possibilities are beyond the supply lines of our scientific position, but the experimental results are consistent with the idea that subtle linkages exist between widely separated people, and that consciousness is an essential and creative element in the physical world.

**Implications for the Noospheric Constitution**

> *At present most men still merely understand strength, the key and symbol of violence in its most primitive and savage form of war. But let the time come, as come it will, when the masses will realize that the true human successes are those which triumph over the mysteries of matter and of life. At that moment a decisive hour will sound for mankind, when the spirit of discovery absorbs all the momentum contained in the spirit of war.*
>
> -- Teilhard de Chardin, *Building the Earth*

What should we take away from this scientific evidence of interconnection? If we are persuaded that the subtle structuring of random data does indicate an effect of human attention and emotion in the physical world, it broadens our view of what consciousness means. One implication is that our attention matters in a way we have not imagined possible, such that cooperative intent can have real consequences. This is cause for reflection about our responsibilities in an increasingly connected world. Our future holds challenges of planetary scope that will demand cooperative intent. On this we should be of one mind.

Knowing there is a noosphere, even if it is subtle and still developing, can motivate us to be more conscious of the interconnections it implies. We are part of a great being, as Eddington called it, (1928) and this confers responsibility but also a level of confidence about the potentials we share. Some fear their individual freedoms might be affected if we join together, but this isn't the case. Just as the neurons in a brain work together while maintaining their individuality and identity, we can achieve a useful cooperation simply by working to manifest our potentials as individual human beings. As we have seen, it is not necessary for us to know about the GCP instrument, or to recognize that we are synchronized with others. The shared emotions evoked by events create a structured field of consciousness and information that plays a role in defining the future. As a coherent global presence, we make a difference.

Now, if it is so that we change the world through unconscious means without knowing we can, is it not reasonable to expect this power to be enhanced if we know about it and seek to use it? Should we teach ourselves how to tap this potential for the serious purposes of humanity? Yes, of course, but the next questions are perhaps more difficult. As my father-in-law wisely said, “Theoretisch sind wir ja alle. Aber praktisch nicht.” He is saying that having a theory is well and good, but we must be practical. We have to translate a pleasing theoretical fact into a pragmatic program of actions. This is the important role of the Noo-Constitution. (Gordina and Limonad, 2006) It is a description of what we need to do to ensure a positive, healthy future for the earth and all its peoples.

For all of us who understand how difficult the task is that lies before us, it is necessary to put aside feelings of frustration and to proceed with the best ideas we have, helping more people to take up the challenge. The richest possibilities lie in teaching and informing a core of helpers and a growing corps of proselytizers. The tasks before us include engaging centers of power and applying efforts at the highest, most effective leverage points. (Meadows, 1999) A conscious, organized approach, with major attention to the most potent fulcrums in the hierarchy, will define a paradigm that can successfully recruit political and social leaders as we must to make a difference. This will not be easy. As Michael Lerner (2009) suggests:

> *[Our] economic and political elites [are] even more reactive to a new ideological formulation than to any specific political program. Those elites understand ... that the current system depends on ideological obeisance at the altar of individualism, materialism, and competitiveness. The current system depends on the goal of "progress" understood as the accumulation of goods, rather than as the improvement of our quality of life or the development of our soul and our capacities to be loving and generous.*

In this work, knowledge alone is not enough – political action requires understanding of social communication. George Lakoff explains the importance of knowing your values and framing the debate. (2004) And Donella Meadows counsels us to understand leverage points and where it is useful to apply the pressures we can bring to bear. (1999) The problems we confront are enormous, and we must work to solve them in the most expeditious way possible. Otherwise, we condemn our children for all the seven generations to a bleak and inhumane future.

We are at a choice point, and it is arguably the most important ever faced. It is defined by technological sophistication that is not matched by commensurate social development. We see the devastation that has been brought by the application of science and engineering to conquer the natural world, and we recoil from the horrifying destructive power of modern weapons even though the gruesome truth of war is kept far from our eyes. It is absolutely necessary to inspire world leaders with powerful new social and cultural values – the central spiritual intent of this forum – and to teach these values to every human being. We must have the power of numbers to force a movement toward wisdom and humanity. Otherwise, we will continue to suffer what Dr. Norman Bethune (1939) saw all too clearly as a surgeon working in the deadly battlegrounds of Northern China. He speaks in his essay, “Wounds,” as if he has lost all hope of recourse:

> *“Is it possible that a few rich men – a small class of men – have persuaded a million poor men to attack and attempt to destroy another million men as poor as they, so that the rich may be richer still?*
> *“They told them that this brutal war was the destiny of the race. It was for the glory of the emperor; it was for the honour of the state; it was for their king and country. False – false as hell! They make war to capture markets by murder, raw materials by rape. They find it cheaper to steal than to exchange, easier to butcher than to buy. This is the secret of war. It is the secret of all wars: profit.*
> *“Business. Profit. Blood money.*

> *"Threaten a reduction on the profit of their money, and the beast in them awakens with a snarl. They become as ruthless as savages, brutal as madmen, remorseless as executioners."*

Some will read Bethune as a radical inveighing on a political theme, but what he says should give us pause as a description of what we must confront. In a more constructive tone, Jose A. Arguelles writes, "Yes, the root cause of the global crisis is a moral disconnect of the human psyche from the human soul. Where once the world was bound in a vision of sacred order, it now tumbles in an ever more profane chaos. Nonetheless, the heroic alternative of attempting to deal with the crisis above and beyond the political stalemate is imperative if we are to see our way to a planetary whole system design solution." (2010)

The noosphere is apparent as a glimmering of which we have a faint consciousness. But given that this is only an idea rather than direct apprehension, it is possible that there is already in existence a larger consciousness, beyond the human level. Whether or not that is so, we must act as if it is, and work to awaken potentials. The way forward toward a conscious development of noosphere will take advantage of the technosphere that has been growing in the last decades as the Internet and mobile communication networks have prospered. Robert Wright suggests the Internet is weaving the human race into a superorganism. (2010) Beyond this, the GCP data indicate that there is more than the Internet pulling in this direction, and we should work to enhance what Teilhard called the inevitable compacting and drawing together of humanity by the forces of complexity and connectivity over the continuous global domain of the earth.

The road is visible, but it is rocky, and there is a gravity of precedent that must be overcome. We can take heart from the views of many well-known political, business, and literary leaders. A short list provides examples of wisdom and inspiration: An interview with Robert Reich samples his ideas on practical political action in "Reason: Why Liberals Will Win the Battle for America". (2006) Lee Iacocca, the Chrysler Corporation CEO who led the company out of bankruptcy, speaks his mind on leaders gone missing in America. (2010) As Indian novelist Arundhati Roy says in her passionate closing address to the World Social Forum in Porto Alegre, Brazil: (2003)

> *Our strategy should be not only to confront empire but to lay siege to it. To deprive it of oxygen. To shame it. To mock it. With our art, our music, our literature, our stubbornness, our joy, our brilliance, our sheer relentlessness--and our ability to tell our own stories. Stories that are different from the ones we're being brainwashed to believe. The corporate revolution will collapse if we refuse to buy what they are selling--their ideas, their version of history, their wars, their weapons, their notion of inevitability.*

Politics and education, the arts and public discourse ... movies, news, advertising genius. These are the tools we can choose, any time, to use for movement in the direction we must go before we die. All these powerful tools can be applied toward a healthy and prosperous, sane world. It is within our power to re-design the societies that have been built on the primitive motivations that were important for survival in an earlier evolutionary stage. It is time for us to recognize and

adopt a Noospheric Ethical/Ecological Constitution and in so doing lay the groundwork for the transition from biosphere to noosphere envisioned by Vernadsky and predicted by Teilhard.

The GCP experiments show that it is possible for us to become a global consciousness, and our future depends on making that possibility real in some form. We are on the verge of conscious evolution, and as that succeeds, it will bring new models for living together on the earth in cooperative and collaborative union. Many men will resist this because they believe the present societal structures are to their advantage; most men will only weakly understand the need for change and will need sustained help to adopt new attitudes and responsibilities. But every moment in time for each conscious person is a moment in which he or she can choose evolution over regression – to engage in growth toward our highest potentials, or slide back to our gross animal roots. The destiny of human beings is to use our abstracting capability and our creative capacity for conscious evolution. I am convinced that we are on the cusp of that stage in our civilization, but we are paused at the threshold. Our fearful reactive unconscious retains its grip.

Yet we have power, and we can take heart from the natural flow of the world around us. There is unending wisdom and finesse in nature, and it is all-powerful in the end. If we do not succeed in our quest to become fully human, I think we will disappear, and with us will go the terrible effects of our unbalanced technologies. Then the earth will continue with her evolution, restoring natural balances and eventually producing another astonishing, creative consciousness. It will have a different form no doubt, but we can hope it will value quality instead of quantity, seek elegance rather than luxury, and love the spirit more than matter.

**Acknowledgments**

The Global Consciousness Project would not exist except for the contributions of Greg Nelson and John Walker, who created the architecture and the sophisticated software. Peter Bancel is the driving force behind the sophisticated analysis program. Paul Bethke ported the software to Windows, thus broadening the network. Dean Radin, Dick Bierman, and others in the planning group contributed ideas and experience. Rick Berger helped to create a comprehensive website to make the project available to the public. The Project also would not exist but for the commitment of time, resources, and good will from all the hosts of network nodes. Our financial support comes from individuals including Charles Overby, Tony Cohen, Reinhilde Nelson, Marjorie Bancel, Michael Heany, Alexander Imich, Richard and Connie Adams, Richard Wallace, Anna Capasso, Michael Breland, Joseph Giove, J. Z. Knight, Hans Wendt, Jim Warren, John Walker, Alex Tsakiris, and the Lifebridge Foundation. We also gratefully acknowledge online donations from many individuals. Finally, there are very many friends of the project whose good will, interest, and empathy open a necessary niche in consciousness space. The GCP is affiliated with the Institute of Noetic Sciences, which is our non-profit home.

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