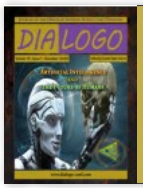


DIALOGO
Multidisciplinary Open Access JOURNAL
Available online at www.dialogo-conf.com/dialogo-journal/

Global Consciousness Project 2.0: *A First Look*

Nachum Plonka
HeartMath Institute
14700 West Park Avenue
Boulder Creek, California 95006
USA
nachum@heartmath.org

Rollin McCraty
HeartMath Institute
14700 West Park Avenue
Boulder Creek, California 95006
USA
rollin@heartmath.org

Louise van der Westhuyzen
Brain Dynamics, 55 Bergvliet Road,
Bergvliet, Cape Town
https://www.braindynamics.co.za
South Africa
louise.vdw@braindynamics.co.za

Stephen David Edwards
Psychology Department;
University of Zululand
Richards Bay
South Africa
profsdedwards@gmail.com

ARTICLE INFO

Article history:
Received 04 October 2023
Received in revised form 20 October
Accepted 25 October 2023
Available online 15 December 2023
doi: 10.51917/dialogo.2023.10.1.2

Keywords:

HeartMath; interconnectivity; consciousness; global consciousness; random number generators; greater good; coherence;

ABSTRACT

The Global Consciousness Project 2.0 (GCP 2.0) is an updated international empirical scientific collaboration of researchers across the planet to assess interconnectedness. The focus is on the interactions of human consciousness and matter using Random Number Generators (RNG's). This project builds on the findings of the original Global Consciousness Project (GCP or GCP 1). RNG's are electronic binary-bit devices with a random chance of indicating 0 or 1. The null hypothesis is of no deviation from random probability of the RNG network. The GCP general hypothesis is of greater coherence, structure and/or order in a global network of RNG data in relation to planetary events associated with mass emotion and attention. A fifteen-year period involving sampling of 500 formal events indicated deviations from randomness in the GCP 1's original global-spanning RNG network. Events having an emotional impact indicated greater deviations than events with relatively medium or low emotional impact. GCP 1 has been in existence since 1998 and its main experiment was completed in 2015 after 500 formal events had been analysed. The Stouffer's Z accumulated deviance statistic over these 500 events was greater than 7 sigma, using a network that reached a maximum of 70 RNG's. The HeartMath-based GCP 2.0 network is now active and includes hundreds of NextGen RNG's across the planet, with plans for 4000 RNG's (1000 devices, each with 4 independent RNG's). This should enable analyses with higher sensitivity and significance, location-based details, and broader community engagement. The newly designed RNG's also track fundamental electronic behaviour, with the hope of shedding light on the mechanism by which devices are impacted by human attention and emotion. This position paper reflects on the science behind GCP 2.0 with special references to issues related to methodology and findings. The present study is pragmatic in approach to provide support for citizen scientists around the world who are housing a GCP 2.0 device. In a planetary context of chaos, discord, and violence, the intention is to improve research, education on interconnectivity, and health promotion.

Citation: Plonka, Nachum, and Rollin McCraty, Louise van der Westhuyzen, Stephen David Edwards. "Global Consciousness Project 2.0: A First Look." *DIALOGO*, ISSN: 2393-1744, vol. 10, issue 1 (December 2023): pp. 37-49 DOI: 10.51917/dialogo.2023.10.1.2

Session 2. Earth Sciences, Ecology, Environment & Theology

eISSN: 2393-1744, cdISSN: 2392-9928
printISSN: 2457-9297, ISSN-L 2392-9928

I. INTRODUCTION

Etymologically, the English word "science" comes from the Latin term "sciens", which means to know. This implies a process and product of knowledge acquisition, which reflects various historical foundations, wisdom traditions, cultural context and group norms. Western traditions emphasize the questioning and dialogical logic approach of early Greek philosophers where opposing parties discussed a thesis through questions and answers. More recent interrogative approaches include such reflective questions as to who wants to know anything and why? What are the motivations, philosophy, culture, and other contexts behind anyone asking any question, and how such variables will influence the questions, the manner of asking, who is being asked etc. In other words, defining words, terms, contexts, approach, philosophy and culture of science in the global, north, south, east and west. For example, African cultural views on science might have more emphasis on Ubuntu relationship values, collective human dialogical, understandings and learnings. In Asia, especially India, meditation traditions may be reflected in greater emphasis on consciousness, or ways that can be termed conscious science.

This particular study is a sequel to an earlier introductory literary and heuristic phenomenological paper outlining the original Global Consciousness Project (GCP or GCP 1) [1]. The focus of the present contribution is to reflect on the science informing Global Consciousness Project 2.0 (GCP 2.0). The distinction between philosophy of science, research methodology and research technology is valuable in science. These concepts respectively inform the research design with regard to: the research paradigms, approaches and/or philosophical models of science which guides the research; the logic and/or rationale underlying the use of any research method; and the technology or techniques, e.g. quantitative statistics, qualitative interviewing, which logically follow. Roger Nelson and collaborators pioneered GCP [2]. It was inspired by Teilhard de Chardin's vision of a "noosphere" or sheath of intelligence, emerging from the geosphere and biosphere of planet earth [3]. The emphasis is on assessing if there is a type of global consciousness, that is detected by increased correlations or coherence in the network of RNG's by a wide range of events that focus the attention and emotions of a large number of peoples such as the Hindu Kumbh Mela pilgrimages in the Ganges to the September 11 terrorist attacks on the World Trade Center in New York [2].

Based on a positivistic scientific philosophy, GCP research methodology is empirical in approach, informed by a technology that responds to human intention and attention. This technology comes in the form of a device called a random number generator (RNG). The original GCP website [4] introduces the GCP. An electronic planetary map illustrated the correlated activity or interconnections of some 70 RNG sites. At Nelson's request, GCP 2.0 is now housed by the HeartMath Institute, which intends to expand research activities to include NextGen RNG's specifically designed for the GCP 2.0 network. Each of the devices has 4 independent RNG's and GCP 2.0 goal is to distribute 1000 of these RNG's around the planet. Half of the RNG's will be located in "clusters" with 20 devices in cities with a large population or areas of special significance and the other 500 RNG's will be randomly distributed around the planet. Two of the first clusters are located in Cape Town, South Africa and Seoul, South Korea. RNG's are designed to produce

completely unpredictable sequences of 0 and 1, but they exhibit coherent behaviour among each other when there is emotional coherence and interconnectivity across humanity.

The motivation behind GCP is explicated as follows: "In what was to become the Global Consciousness Project, we set out to capture subtle indications of a converging interconnection among humans across the planet" [2]. The process is explained by Nelson in more detail in videos such as [5]. GCP 2.0 aims to expand on these goals, by measuring the direct effects of humanity's shared emotion and attention reacting to global events, so humanity can better understand our interconnected universe. The project seeks to explore interconnectivity among humans and nature and to demystify the way in which large-scale or focused emotional experiences impact us and our environment. The hope is to spur positive social change when people realize the direct effect of their intentions on their surroundings.

The present contribution is best described as pragmatic. It reflects the authors' research and faith in the effectiveness of the HeartMath model of coherence and interconnectedness, which includes the theory and practice of personal, social and global health and education [6]. GCP 2.0 involves similar empirical science vision, mission, theory and practice, with similar potential for promoting global health and education [7].

This work has the humble intention of contributing reflections on the science behind the Global Consciousness Project. It requires a juggling act between three categories of consciousness; as essentially physical, as metaphysical, and as essence of everything. Proponents of the first category are faced with such issues as the so called "hard problem" of consciousness, i.e. how a physical entity such as the human brain processes consciousness and not unconsciousness. Proponents advocating metaphysical positions have to navigate dualistic philosophical positions. Proponents of the third view regard physical science as representing models or systems of reality based on imagination, culture, artifice etc. All views can be harmonized or distinguished depending upon context. We recognize the need for the scientific stance of viewing GCP as a hypothesis. Teilhard de Chardin has illuminated the evolution of reflexivity in humanity [3]. A phenomenological, reflexive approach to methodology requires the bracketing of bias as to planetary interconnectedness so as to allow the data yielded by empirical science to reveal themselves. In this context, empirical is a word that can include experiential, behavioural and/or physical phenomena, reflective of such variables as the assumptions, bias, interests, expectations and/or motivations of the author.

GCP 2.0 is informed by a vast body of literature. Many studies refer to consciousness-matter interactions. The present study is intended as a preliminary position paper, to support persons who are housing a GCP 2.0 device, and to pave the way for future research and global health promotion. Scientific methods typically require definitions of terms. As implied above, the term "consciousness" is loaded with meaning. In general terms, it presumes awareness, and/or sentience by sentient beings. It has been defined as the state or quality of awareness; of being aware of an external object or something within oneself; or having a sense of selfhood [8]. In GCP 2.0 context special focus is on emotion and attention. In psychometric context, global consciousness has been defined as a multi-dimensional concept that includes identification with all humanity [9]. A reflexive, integral, theoretical lens implies

humans have potential for first, second and third person, physical, mental and spiritual forms of consciousness [10]. In concrete terms, consciousness is immediate apparent reality for people, shared in our dialogues and our objective study of our awareness and the phenomenon of consciousness. If the hypothesis of a global consciousness or extended form of consciousness is supported, it would presumably assume coherent form, yielding empirical data that would provide evidence as to the validity of the project and its global health promotion potential.

II. METHOD

A. Empirical Science

Gold standard empirical research typically, and ideally, requires a rigorous experimental design, methods involving operational definitions, and careful measurement of independent, dependent, mediating, moderating and/or extraneous variables. Hypotheses can be falsified, validated and supported, but never proven true. At best various forms of truth claims can be made. A typical experiment involves careful isolation of independent variables and great care to ensure no other influences on dependent variables in order to postulate causal effects. In addition to operational definition and measurement of variables, replication is a rigorous requirement of empirical science [2]. This is the scientific method relied upon by GCP.

B. The Global Consciousness Project (GCP)

The Global Consciousness Project (GCP) may be defined as an experiment based on what sages from various wisdom traditions have intuited as the interconnectedness of everything. GCP is primarily the brain child of Roger Nelson, begun in 1976 when he organized collaboration to collect "consciousness field data" during an organized "Gaiamind" meditation at Esalen. The project, nurtured through collaboration with scientists such as Dean Radin, Dick Bierman and many others, continued at the Princeton Engineering Anomalies Research (PEAR) lab. This lab was created in 1979 by Dean Robert Jahn, for mind-machine interaction and precognitive remote perception. Such phenomena include the perception of unexpected information and measured deviations in physical systems [2]. Nelson's son Greg originally developed software for GCP 1, metaphorically called an EletroGaiaGram (EGG) before becoming publicly known as GCP [2].

The project involves data from RNG's, which are scientific devices that produce sequences of numbers at random. They are used in scientific research to study data in a controlled manner. RNG's are designed to produce completely unpredictable sequences of 0 and 1, but they exhibit coherent behaviour among each other when there is emotional coherence and interconnectivity across humanity. Specifically, they display Network Coherence (also known as Network Variance in GCP 1), a measure of excess correlations across devices. RNG's across the network are producing more 1's at the same time or more 0's at the same time [2, 11].

C. GCP Research Question and Hypothesis

The research question motivating GCP was whether human interconnectedness could be empirically demonstrated. More specifically the original website states: "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" [4] In other words the general hypothesis is that global events characterized by mass emotion and/or

attention of many people will affect the correlated behaviour in the output of a network of hardware-generated random numbers in a statistically significant way [2]. This general hypothesis provides the basis for a series of replications with specific hypotheses. Hypothesis can be compared against a null hypothesis of no deviations, or random deviations, as well as various research hypotheses. Theoretical extrapolations of resampled or chance data can be used for control purposes.

D. Operational Definitions as required by the GCP Hypothesis Register

The original GCP website [4] describes the project in depth, detail and great variety. It includes history, context, technology, and transparency. The website is a public access repository of information, including the entire archive of raw trial data, which is freely available for download. The GCP hypothesis register contains a description of events predicted to have an effect on the network of RNG's. Any person can enter an event in the registry, provided they follow the hypothesis criteria. Required details are a full description of an event that provides a focus of collective attention or emotion, which engages people across the planet. This openness allows for variability in event type, duration, intensity and emotional tone.

By 2015, 500 events had been registered in the following broad categories: terror attacks and war; natural disasters; celebration and sharing as on New Year's Day; compassion and empathy; cosmic and social abstraction; powerful interest and deliberate focus. Once a hypothetical event is accepted or identified, a test hypothesis is constructed by fixing the start and end times for the event and specifying the statistical analysis to be performed on the corresponding data. Table 1 provides three examples. For GCP 2.0, a new hypothesis registry is being recorded to track the effects of global coherence on this updated network.

Table 1. Example of GCP Hypothesis Register

Num	Description	Begin Date/Time (UTC)	End Date/Time (UTC)	Resolution	Recipe	Statistic
54	Olympic Opening Ceremony	2000-09-15 11:00:00	2000-09-15 11:59:59	15-min	Stouffer Z Meanshift	Chisquare
472	Mandela Dies	2013-12-05 18:00:00	2013-12-06 17:59:59	1-sec	Stouffer Z Meanshift	Chisquare
513	Climate Agreement, Day 1 World Peace	2015-12-12 00:00:00	2015-12-12 23:59:59	1-sec	Stouffer Z Meanshift	Chisquare

E. Instrumentation and Measurement

GCP 2.0 devices are state of the art NextGen RNG's based on quantum tunnelling. They were designed by experts in cryptography and computer science [12]. RNG device manufacture includes quantum tunnelling, which continually forces electrons against a barrier. A threshold 0 or 1 status to each device is derived, with the 1 status only occurring through sufficient activation. Data from a global network of RNG's are continuously captured into a closed archive. In GCP 1, data trials are the sum of 200 bits collected at the start of each second. Subsequent bits generated during the second are discarded. This provides assurance that consecutive trials are independent and reduces the data to a nominal binomial (200, 1/2) distribution. The process to record an event is as follows: a globally significant event is identified; a time period is determined and variance statistic defined; a formal event is entered into the hypothesis and prediction registry; data are unpacked from the archive; a test statistic is calculated; deviation of the test

statistic from expectation is converted to an equivalent normal z-score. The GCP experiment itself seeks to determine whether the composite of all event z scores i.e. Stouffer's z score, differs from the null expectation. Evidence consists of any deviations from expectation.

III. MAIN FINDINGS

A. GCP 1

During a single event, the Network Coherence produced by the RNG's typically exhibits a tiny statistical effect, and it is hard to distinguish signal from noise. However, by accumulating results over many events, the signal emerges with clear statistical significance [2].

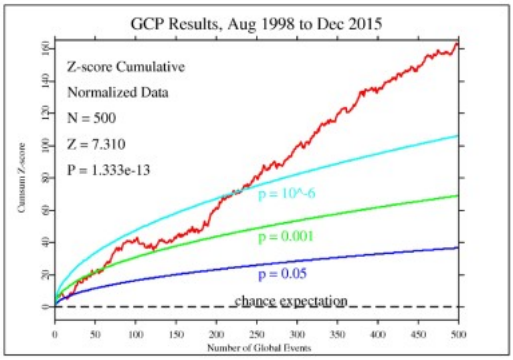
Across a formal experimental database of 500 individual events and activities covering a roughly 17-year timespan (from August 1998 up until the end of 2015), a highly significant overall effect amounting to a seven-sigma deviation from chance expectation (Z = 7.31, p = 1.33 × 10−13) was found, with an associated odds ratio of about a trillion to one (Table 2 and Figure 1).

Table 2. Summary of Results from August 1998 to December 2015

Category	Hypothesis	Number of Events	Stouffer Z	Probability
Rigorously defined events	Positive deviation	500	7.310	1.333e-13

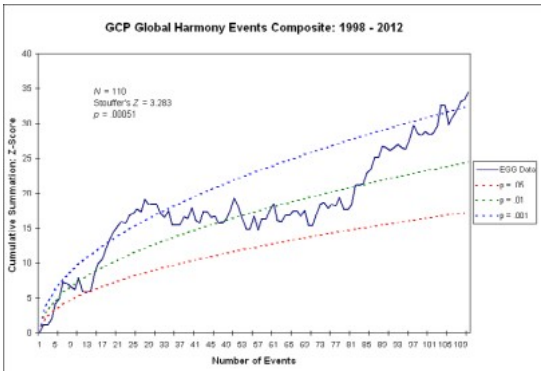
Adapted from the "Results" page of the GCP website: https://www.global-mind.org/results.html

Figure 1. Graphical Summary of the Experimental Results accumulated by the Global Consciousness Project with its worldwide network of RNG's over the course of 500 event database from August 1998 to December 2015.



The main hypothesis is general, but it was clear enough to predict events that cumulatively display Network Coherence. Additionally, more specific hypotheses have been checked. Various clusters of events do involve exact replication, such as New Year's Day. Other events can be clustered into broad categories, for example a global harmony study included 110 events over 1998 to 2012, which made reference to prayer, meditation, ceremony, ritual, healing, humanity, Earth/nature. In this global harmony study, all event descriptions had a positive message for the future of humanity, promoted peace or healing to the Earth/nature or some aspect of human society), and encouraged the shared participation of a large group of people. Figure 2, which follows, indicated that this analysis yielded a Stouffer's Z score of 3.283 with p = 0.00051.

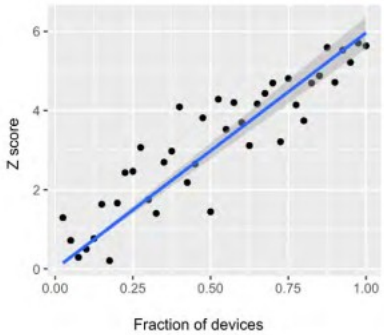
Figure 2. Global Harmony Composite Analysis



B. GCP 2.0

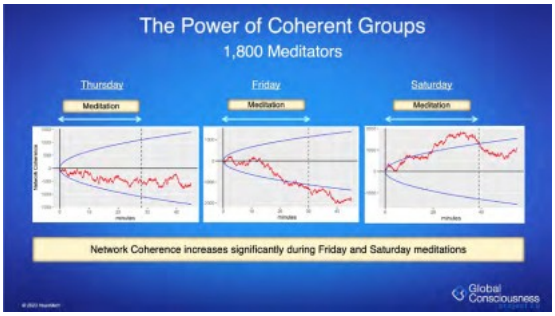
In GCP 2.0, the NextGen RNG's generate truly random numbers at a large scale. At the time of this writing, the network is already many times larger than the GCP 1 network at its peak, and HeartMath plans to build it up to 4000 RNG's across the planet (1000 devices, each with 4 independent RNG's). This is what allows researchers to accurately measure and analyze potential patterns that arise due to mass shifts in human consciousness. This is extrapolated from a scaling analysis of the highly significant Z score obtained from the hypothesis registry in GCP 1 (Table 2). By randomly sampling a subset of the devices in each event, a Z score for the entire registry is generated for different scales, as shown in Figure 3. It appears that the more devices there are in the network, the clearer the significance of the result. A larger network may be more sensitive in reflecting the patterns in human consciousness.

Figure 3. Scaling analysis: Stouffer's Z score for hypothesis registry vs. the fraction of online RNG devices included in the analysis. A linear fit line is superimposed.



Another motivation for a large network is to ask new research questions, such as whether the influence of human coherence on network coherence is affected by the distance between humans and/or devices. There has been some preliminary evidence in GCP 1 that it does, but the larger GCP 2.0 network may address this more clearly and give more specific details on the ways in which distance matters. There are 25 focus cities planned across the world, from Los Angeles to Cape Town, which will each host 20 devices, so that researchers can concentrate on local effects in those areas. Additionally, there is evidence that focused attention in smaller groups, such as meditators, can be as impactful as global events involving a less-focused populace. To study this, smaller groups of devices will be sent to concentrated events. This has been tried in the example of bringing a stack of 10 NextGen devices (total 40 RNG's) to a week-long meditation workshop led by Dr. Joe Dispenza in November 2022. Encouraging results are shown in Fig. 4. During two out of three Coherence Healing meditations, the network coherence moved away from the expected value of 0 to exceed the significance envelope.

Figure 4. Network Coherence (red) during Coherence Meditations over the course of a workshop, compared to blue chi squared significance envelopes (p = 0.05)



Another research area that GCP 2.0 is more suited to address is the fundamental mechanism of the GCP effect. In typical RNG experiments that analyse consciousness-matter interactions, such as GCP 1, only the final output of the RNG's has been recorded. However, in the NextGen RNG's, outputs are recorded at several points from the generation of raw data via quantum tunnelling through the various stages of whitening to randomize the data until the final random output. This way, once an effect has been identified, there is also hope of tracing it back to its roots in the quantum electronic behaviour of the device.

While GCP 1 was primarily an academic enterprise, GCP 2.0 is positioned as a citizen science project. The project takes an "open source" approach, aiming to engage as many people as possible at any level, from hosting RNG's to exploring or analysing the results. With a much larger base of participants, it is natural that the network would be larger as well.

IV. DISCUSSION

In scientific context, empirical usually means observable and measurable. As understood from the empirical, physical science perspective, the planet is noisy and signal to noise ratio is very small. Z scores enable standardization of the statistical measurement so as to distinguish relative strength of the signal from the noise. Similarly, and analogously, from HeartMath, as well as phenomenological perspectives, meditation cuts out noise to enable perception of foreground signal from background of noise. The HeartMath (and effective meditation generally) approach provides an ongoing antidote to the chaos of "normal' internal and planetary noise as reflected in more coherent heart rhythm patterns , which can be observed on a heart rhythm monitor while the experience of negative emotions, for example, feelings of stress, anger or anxiety create incoherent heart rhythm patterns.

Empirical, physical science requires unambiguous measurement and careful control of variables and, conventionally, careful guarding against experimenter effects. An independent variable is specified as such so as to let the data of the dependent variables speak for themselves. Such control is logically impossible at quantum level as quanta by definition are potentials that exist in a certain place relative to the observer and measuring instrument. These conventional rules of empirical science in themselves thus seem to establish an artificial laboratory in quantum context. From a qualitative phenomenological perspective, they are already imposing artificial scientific constraints on the noisy reality of a chaotic world. Alternatively HeartMath heart-focused meditation generates renewing and positive feelings, such as appreciation, peace or love, may serve to harmonize feelings, thoughts, and a general worldview, in which everything is experienced as originally, seamlessly interconnected.

Empirical scientific, interconnectivity

research may seem metaphorically equivalent to looking for a needle in a haystack. In the case of GCP many issues are involved, for example, as to the meaning of such variables as entanglement, coherence, subtle energy, and consciousness itself, which may seem self-evident as immediately apparent reality to the meditator and phenomenologist, but becomes a philosophical, conceptual and empirical minefield when viewed with through a materialistic lens, measured, and analysed in depth and detail.

The scientific integrity of GCP is generally accepted. However, the extent of potential experimenter effect in the interpretation of experimental results has been debated. Bancel's [11] replication study pointed in this direction, i.e. his study favoured a goal directed or experimenter effect model. This may involve decision augmentation theory (DAT) or it can take several forms, such as the experimenter choosing event details based on unconscious precognition or having retro-causal influence on the RNG data. However, Nelson [2] and others support the interpretation that the Network Coherence reflects a consciousness-related shift away from expected randomness occurring across the RNG network nodes in conjunction with the mass attention and emotion being focused on certain events and activities in the world. Other analyses exhibit this effect without an experimenter's involvement to generate hypotheses. Long term correlation have been found between the RNG network output and measures of societal sentiment such as Google Trends [13], stock market indices [14] and presidential approval ratings. In addition, the network shows remarkable correlations to geophysical phenomena like F10.7 solar flux, which the authors successfully re-tested on another seven years of data. This could be a correlation between the RNG's and natural forces or perhaps mediated by humanity's sentiment, as it has already been shown that humans are physically and emotionally affected by solar forces [2]. It seems unlikely under the experimenter effect approach that such long-term correlations would arise.

Many scientists tend to outright reject both the possibility and existence of an extended from of consciousness and non-local interconnectivity between people or people and the physical world. The possibility that changes in random numbers, as produced by the GCP results are real, is typically rejected by physical scientists and evidence for non-local interconnectivity is often rejected without examination of any data. Ideally researchers should draw conclusions based on evidence. Rigorous research requires 100 percent scepticism and 100 percent open mindedness by both researchers and evaluators [2].

As extended consciousness and non-local interconnectivity has great potential influence on information fields, participants and experimenters, great care is needed so as to avoid questionable research practices amongst all research stakeholders [2, 11]. GCP hypothesis suggest some form of remote consciousness-matter interactions, which are not easily accepted by traditional materialistic based natural sciences. Holmberg [13] hypothesized that events inflicting a strong emotional response should also trigger the need for information and that internet search trends should correlate with the GCP data, allowing for the hypothesis to be objectively tested. He used Google Trends search data to construct several search indexes that were correlated with GCP data aggregates using time series statistics. He found significant correlations between GCP data and indexes, which can be used to improve the statistical model's in-sample fit. Furthermore, he found that out-of-sample forecasts could be made

more accurate if the GCP data is used. Holmberg's study provides support for the validity of the GCP data hypothesis and its practical usefulness.

Rabeyron [15] raises a challenge with consciousness research and possibly psychology and medical research in general. These disciplines reflect a potential entanglement between the observer and what is observed. Yet, one of the assumed tenets of scientific experimentation is that the observed is unaffected by the observer, allowing multiple researchers to replicate the same effect. He opines that if the possibility that interconnectivity exists is entertained in a neutral and respectful way, this might open heuristic debates within the wider field of psychology concerning the replicability crisis. Kekecs Z et al. [16] advocate a similar view with regard to non-local phenomena and recommend the following quality control procedures: consensus design, direct data deposition, born-open data, real-time research report, laboratory logs, manual and checklist for experimenters, training verified by video recording, external research audit, preregistration, open materials, and tamper-evident software.

Williams [17] provides a thorough review of some of the nota¬ble proof- and process-oriented findings that have been obtained to date in experimental research using RNG's. The review gener¬ally indicates that much proof-oriented data for consciousness effects has accumulated over the years. However the limited amount of process-oriented data provides open questions regarding the underlying factors involved. There is much opportunity for cross-disciplinary researchers to make valu¬able research contributions in the future. He notes "It should also be pointed out that valuable insight can potentially come not only from further collection and analysis of quantitative data relating to the purely physical side of RNG output and numeric-scale instrumental readings, but also from collecting and analysing more qualitative data relating to its subjective side as well," (p. 32).

Conclusion

This paper is in general support for GCP 1 and GCP 2.0, in its potential for global health and wellness promotion. GCP 2.0 constitutes one example of an interconnectivity study, and considerable empirical evidence has accrued as to its value. At most 70 RNG's were in use up to 2015 in GCP 1. GCP 2.0 is an updated HeartMath version that plans some 4000 state of the art RNG's that are intended to address a number of new research questions. The planet is filled with violence, discord, prejudice and war. Along with many issues being addressed, some of which are pointed out in this paper, the value of improving the science behind GCP 2.0 is its vast applied potential to promote health and education in transforming the planet and all sentient beings. From a research perspective, increasing the number and strategic placement of RNG's should enable more definite findings. GCP 2.0 promises to be a unique undertaking that opens new areas of consciousness research and promotes global wellbeing.

References

[1] Edwards, Stephen D. 920230. "Global consciousness and cosmic significance of lines from Wordsworth's poem Tintern Abbey." *DIALOGO*, ISSN: 2393-1744, vol. 9, issue 2; pp. 122-129. DOI: 10.51917/dialogo.2023.9.2.10.

[2] Nelson, Roger D. (2019). *Connected: The Emergence of Global Consciousness.* Princeton, NJ: ICRL Press.

[3] De Chardin, Pierre Teilhard. (1959). *The Phenomenon of Man*. London, England:

Collins. BD512T413.
[4] *The Global Consciousness Project* – Princeton University, accessed October 19, 2023, https://noosphere.princeton.edu/.
[5] Video: Prof. Roger Nelson, accessed October 19, 2023, https://www.youtube.com/ watch?v=R3iMbqbBzcU&list =FLp8ZrHJ2Dx10y2iTyF 6U_4w&index=19
[6] Edwards, Stephen. D., Edwards, David. J., & Honeycutt, Richard, (2022). "HeartMath as an Integrative, Personal, Social, and Global Healthcare System." *Healthcare* 10, x, https://doi.org/10.3390/xxxxx.
[7] *HeartMath Institute*, accessed October 19, 2023, https://www.heartmath.org.
[8] Wahbeh, Helen. 2021. "Collective Consciousness and Our Sense of Interconnectedness." *Cardiology & Vascular Research*; 5(1): 1-7.
[9] Zhang, Robert, J et al. (2023). "Continuities and discontinuities in the cultural evolution of global consciousness." *Phil.Trans. R. Soc. B* 378: 20220263. https://doi.org/10.1098/rstb.2022.0263 *(21) (PDF) Continuities and discontinuities in the cultural evolution of global consciousness*. Available from:https://www.researchgate.net/publication/373114742_Continuities_and_discontinuities_in_the_cultural_evolution_of_global_consciousness [accessed Aug 15, 2023].
[10] Edwards, Stephen. (2019)**.** **"**Empirical and heuristic phenomenological case study of the HeartMath Global Coherence Initiative," *International Journal of Environmental Research and Public Health*, 16, 1245; doi:10.3390/ijerph16071245.
[11] Bancel, Peter, (2020). "A Reassessment of Some Micro-PK Results." *Conference Paper* at https://www.researchgate.net/publication/338921402. [accessed Aug 15, 2023].
[12] GCP 2.0, accessed October 19, 2023, https://gcp2.net/.
[13] Holmberg, Ulf (2022). "Validating the GCP data hypothesis using internet search data." *Explore*, Volume 19, Issue 2, March–April 2023, Pages 228-237. https://doi.org/10.1016/j.explore.2022.07.007 [accessed Aug 15, 2023].
[14] Holmbergy, Ulf (2020). "Stock Returns and the Mind." *Journal of Consciousness Studies*, Volume 27, Issue 7–8, Pages 31–49.
[15] Rabeyron T (2020) "Why Most Research Findings About Psi Are False: The Replicability Crisis, the Psi Paradox and the Myth of Sisyphus." *Front. Psychol.* 11:562992. doi: 10.3389/fpsyg.2020.562992.
[16] Kekecs, Zoltan et al. (2023). "Raising the value of research studies in psychological science by increasing the credibility of research reports: the transparent Psi project." *R. Soc. Open Sci.* 10: 191375. https://doi.org/10.1098/rsos.191375.
[17] Williams, Bryan. J 2021. "Minding the Matter of Psychokinesis: A Review of Proof- and Process-Oriented Experimental Findings Related to Mental Influence on Random Number Generators." *Journal of Scientific Exploration*, Vol. 35, No. 4, pp. 829–932, 2021.

Acknowledgement

Prof Krynauw M du Toit for enduring friendship and scientific scepticism.

Biographies

Nachum Plonka, Ph.D., is the Principal Data Scientist at the HeartMath Institute. He is the primary analyst for HeartMath's wealth of data, from heart rate metrics to highly sensitive geomagnetic measurements. The motivation for his research is fostering more care and connection in society. He is the lead researcher for the Global Consciousness Project 2.0. This is a global network of Random Number Generators designed to measure the direct effects of humanity's shared emotion and attention reacting to global events, so humanity can thrive. He received his Ph.D. in Computational Physics from Stanford University studying quantum materials and publishing in high-profile journals. He then worked as a Senior Data Scientist at Quantifind Inc. before joining HeartMath. His passion for science, coupled with daily meditation and consciousness practices, informs his empathetic approach to research and data analysis.

Rollin McCraty, Ph.D. of Boulder Creek, California, is one of the primary creators of the Global Coherence Initiative (GCI) and director of research for GCI and HeartMath Institute. He is project coordinator and the principle designer of GCI's scientific component, the Global Coherence Monitoring System and its international network of magnetic field sensor sites. A professor at Florida Atlantic University, McCraty heads up HMI and GCI researchers investigating the relationship between human and geomagnetic field environments and the interconnectedness of and communication among all living things. They are studying how these fields act as central synchronizing signals within the body, carry emotional information and serve as key mediators of energetic interactions between people and living systems. McCraty holds numerous memberships, including with the American Autonomic Society, Pavlovian Society, National Association for Psychological Science, Association for Applied Psychophysiology and Biofeedback and Society for Scientific Exploration. He has written scientific articles for many professional journals, given interviews for feature articles and television segments and appeared in numerous documentary films.

Louise van der Westhuyzen is an Occupational Therapist and Board Member of the Biofeedback Association of South Africa. She qualified as an Occupational Therapist at the University of Stellenbosch in 1988 and worked in the Mental Health Field for more than 34 years. In 2003 she obtained International training in Biofeedback and Heartrate Variability and in 2012 obtained her International Certification. She is the Past-President and a founding member of the Biofeedback Association of South Africa that has established international training and certification in Bio and Neurofeedback for Health Professionals in South African and Southern African countries. Her passion is to assist clients that need to establish more

effective self-regulation and an optimised state in daily functioning. She assists in training colleagues in the use of Applied Psychophysiological modalities. She believes Heartrate Variability training is a cornerstone skill in establishing autonomic nervous system regulation and the learnt pathway to effectively connect with self and the other.

Steve Edwards is currently an Emeritus Professor and Research Fellow at the University of Zululand. Qualifications include doctoral degrees in Psychology and Education and registrations in South Africa and the United Kingdom as Clinical, Educational, Sport and Exercise Psychologist. Steve's research, teaching and professional activities are mainly concerned with health promotion. He has supervised many doctoral students, published much research, presented papers at many international conferences and served on boards of various national and international organizations. Academic and professional awards include USA Fulbright Scholarship, South African National Research Foundation ratings and Psychological Society of South Africa Mentoring and Development award. He is happily married with two children, and four grandchildren. His research record is available on internet at: https://www.researchgate.net/profile/Stephen-Edwards-10