

AN ANOMALOUS COGNITION PROTOCOL EMPLOYING FUZZY-SET THEORY TO ACCELERATE BREAKTHROUGHS IN DISEASE PROCESS RESEARCH

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ABSTRACT

The primary goal of this protocol is to use an Anomalous Cognition (AC) technology to accelerate research breakthroughs concerning the cause, treatment, and prevention of disease states. The goal of testing whether, and to what extent, AC occurred in the course of the protocol is a secondary objective. Quantitative analysis has shown that the magnitude of this form of subtle human performance meets, or exceeds, the magnitude of many phenomena known to experimental psychology. To understand the structure of this study the reader should conceptualize it as an exercise in creating a collective meta-mind. The Respondents and their AC derived information, are analogous to the intuitive component of the individual mind, while the researchers serve the function of the analytical component. The protocol is an attempt to create on a macro level the same breakthrough process reported by individuals historically acknowledged for their creative genius. It employs a consensual protocol design developed over the course of some 15 years, the premise of which is that successful application of AC is, in many respects, an engineering problem centering on a bad signal-to-noise ratio. Unlike a purely statistical laboratory experiment, where the analysis of the data is the study's end product, in an applied experiment of this kind the collection and analysis of the data is only a midpoint. Much as an MRI unit guides physicians in their choice of action, so the AC data seeks to help researchers to develop new approaches and hypotheses. The protocol and analysis method described in this paper was designed to sacrifice potential opportunities for statistical power as it pertained to the study's second objective, the testing of whether, and to what extent, AC occurred in the course of the project, in order to maximize the chance of catching information pertinent to the project's principal goal of using an AC technology to accelerate research breakthroughs concerning the cause, treatment, and prevention of a disease process is. Given these parameters we felt the best analysis design was to be found in fuzzy-set theory.

1. PROJECT PURPOSE

The primary goal of this protocol is to use an Anomalous Cognition (AC) technology to accelerate research breakthroughs concerning the cause, treatment, and prevention of disease states. The goal of testing whether, and to what extent, AC occurred in the course of the project is a secondary objective.

2. ANOMALOUS COGNITION

It is now known that humans may gain access to a various kinds of information which is otherwise denied to their known sensorial systems for reasons of shielding, distance, or time. For example, individuals are often able to accurately describe distant locations or photographs, which are identified to the individual only by an abstract designation, such as longitudinal/latitudinal coordinates. Collectively, these processes are called Remote Viewing or Anomalous Cognition (AC). Anomalous Cognition is the term used in this paper. Knowledge of the AC process has been accumulated over more than 20 years by research teams at Princeton, Edinburgh and, Cornell, as well as at a number of independent laboratories, including a laboratory funded by the U.S. government first at SRI International (formerly Stanford Research Institute) and then at Science Applications International Corporation (SAIC). Quantitative analysis has shown that the magnitude of this form of subtle human performance meets, or exceeds, the magnitude of many phenomena known to experimental psychology. Collectively, and individually, these studies suggest that some aspect of the human mind can obtain non-ratiocinated data even under conditions of extreme shielding^{1,2} or when target and viewer are separated by space^{3,4} or time.⁵

To understand the structure of this study the reader should conceptualize it as an exercise in creating a collective meta-mind. The Respondents and their AC derived information, are analogous to the intuitive component of the individual mind, while the researchers serve the function of the analytical component. The protocol itself is an attempt to create on a macro level the same breakthrough process reported by individuals historically acknowledged for their creative genius. It is a pattern that has been reported over many generations by men and women in every field of the arts and sciences^{6,7} but which historically has occurred only unpredictably and sporadically.

3. EXPERIMENTATION STANDARDS

3.1 Human subject protection. For reasons of both ethics, and engineering (recognizing that some form of AC connection appears to exist amongst all participants) the entire study, beginning with peer review of the protocol of the work *prior* to its execution, should be conducted with sensitivity for those target volunteers experiencing the disease process being studied. A Human Subject Protection Committee should approve the protocol before it is begun.

3.2 Peer Review. Prior to inauguration of the study the protocol should be circulated for peer review. The suggestions of these independent scientists, otherwise unconnected with the project, should be incorporated in the final design.

4. PERSONNEL

4.1 Personnel. The personnel for this experiment break down into six groups.

4.1.1 The Targets. Nine patients, five women, and four men whose role is to be the targets for the AC.. These individuals should be diagnosed patients with full histories in various stages of a commonly shared disease process.

4.1.2 The Controls. . Five women and four men make up this group. These should be healthy individuals, known to be free of the disease process being studied

4.1.3 The Biomedical Team. Research professional whose role is to select the Targets, assist in the development of the questions for the AC sessions, to evaluate the accuracy of the AC data and to act, as their judgment dictates, on the information developed in this study, for future research or clinical application.

4.1.4 The Parapsychological Team. Research professionals whose role is to structure and conduct the sessions, which produce the AC

data, to analyze its areas of accuracy, and to develop recommendations for, and in conjunction with, the Biomedical Team.

4.1.5 The Respondents. . Eighteen men and women, all experienced participants in anomalous cognition experiments, whose task it is to provide the AC data.

4.1.6 The Support Group. This group fulfills video taping, clerical, and accounting support functions. In this group also is the individual responsible for the randomization and “blinding” aspect of the study.

4.2 The Researcher/Respondent’s Profiles. In recognition of the interactive nature of the AC process, and in hopes of adding some insight to our understanding of this subtle process, the Parapsychological team, the Remote Viewers, and the evaluating Medical team, should complete a battery of psychological profiles, including Myers-Briggs, Schmeidler Time Cognition, and Schmeidler Sheep-Goat survey, all of which have been reported as having correlates to anomalous perception. Respondents should be polled asking: “What do you believe to be the purpose of this study?” and polled again prior to the session’s beginning, “What do you believe to be the purpose of this session?”

4.3 The Targets’ Profiles. There should be no contact amongst the AC Respondents, or between the Respondents and the Targets. Indeed, the latter should not even know the study is going on. Because of this “firewall” between the study personnel -- excepting the attending physicians -- and the Targets, it may not be possible to run psychological profiles on them, although such material may be part of their medical records. This does not mean, however, that the work does not require other information about the Targets. Further, to maximize its usefulness, the information about the Targets must be of a form, and structure consistent with other reportage of this illness, in order to facilitate links between this and other datasets.

5. PROTOCOL

5.1 The Consensual Methodology. A consensual protocol design first reported by Schwartz in 1977, has been developed over the course of some 15 years^{8,9,10,11} for use principally in archaeology, but adaptable to other areas of science. The premise of the design was that successful application of AC was, in many respects, an engineering problem centering on a bad signal-to-noise ratio. Three options were apparent: One could improve the signal, a daunting task since very little was known about the mechanism of the AC channel. One could improve the Respondent's perception of AC data. Over the years there has been some slight unraveling of that challenge. Hypnosis and various other kinds of altered states of consciousness (ASC) techniques have been shown to have some effect.¹² However, the research is preliminary. Thirdly, as with electronic signal averaging, one could have a number of people provide AC data for a target.

5.2 Blindness. All Interviewers should be aware that the purpose of the study is to explore a specific disease process. For design purposes, we have assumed that some, although not necessarily all, Respondents should somehow learn the focus of the project. The study is designed so that knowing this information produces no advantage. Neither the Interviewer nor the Respondent should have any contact with the individual who is the target for their session. The picture of the target individual should remain in a sealed opaque envelope throughout the course of the session, and neither the Interviewer nor the Respondent should know the person's name.

To organize the blinding of Interviewers and Respondents a person from The Support Group, should be designated as the Assigner. This individual who is otherwise unconnected to the experiment should be provided with four copies of photographs of the nine patients and nine controls. This person should make up eighteen packs, one for each respondent. In each pack should be four numbered sealed envelopes containing the target picture for that respondent's four trials. The numbers should be of the form Respondent #, Session #. Each Respondent's pack should contain two Targets and two controls. The Assigner should keep a list identifying

each envelope in the experiment with target & control identity and should also distribute respondent packs of four envelopes to the interviewers for each of the respondents they should be interviewing. The assignment of both Interviewer and Respondent to a given pack should be made randomly via computer.

5.3 Recording the Anomalous Cognition Data. The Anomalous Cognition (AC) process is an obscure human transaction; an interactive process in which both experimenter and viewer participate in some way. Data are exchanged via channels with both obvious mechanisms, such as speech and body language, as well as unknown ones such as AC. Because so little is known about the mechanism of the AC transaction it is important to document as many aspects of the transaction as possible, including variables having no immediate apparent purpose. For this reason, the data gathering sessions should be videotaped, and each participant should complete the battery of psychological profiles already mentioned.

5.4 AC Interview Session. Each interview room is equipped similarly:

5.4.1 Interview Room.

- 1.) An audio-tape recorder, and a video camera
- 2.) An opaque sealed brown envelope containing the picture of the target person for that session
- 3.) An outline of the human body printed on a piece of paper, face down

5.4.2 Interview Process. The initial instruction for the session is given, and the envelope is presented, with the following instruction: "This envelope contains the photograph of an adult human being. Go over this person's present circumstances and condition."

- 1.) A free-ranging interview discussion follows. The Interviewer follows the respondent's lead. The role of the Interviewer is to elicit, *without cueing*, further impressions.

2.) At a point that "feels comfortable" for the Respondent, the outline of the body is turned right side up, and locations are marked on it. The outline is signed and dated by the Respondent.

3.) Respondents are encouraged to make drawings. The drawings are signed and dated by the Respondent who created them. They are numbered sequentially beginning from #1

5.5 Transcription, Encoding, and Concept Breakdown. The individual session tapes are then transcribed verbatim. Without disturbing the sequential, orders of the statements, the transcripts are then broken down into unitary concepts, each concept to a single paragraph. Each paragraph is given a sequential alphanumeric designator, i.e., R1:1, R1:2 and so on. As an hypothetical example:

INT: Can you describe the form that you see? *(in reference to the Respondent proffering the observation that she saw something inside of the cell.)*

<8> R-1: Irregular...roundish but irregular

INT: Would you draw it, make a simple drawing of the image you see.

<9>R-1: They're like this, and this is the part you need to be concerned with.

INT: She is indicating a rod shape inside of the round shape. Could you mark that. The record should show that this is drawing no. 1.

<10> R-1: The irregular shape is a tip-off. That and this part which I've labeled 1a.

6. ANALYSIS

Unlike a purely statistical laboratory experiment, where the analysis of the data is the study's end product, in an applied experiment of this kind the collection and analysis of the data is only a midpoint. Much as an MRI unit guides physicians in their choice of action, so the AC data seeks to help researchers to develop new approaches and hypotheses. The protocol and analysis method described in this paper was designed to sacrifice potential opportunities for statistical power as it pertained to the

study's second objective, the testing of whether, and to what extent, AC occurred in the course of the project. This was done in order to maximize the chance of catching information pertinent to the project's principal goal of using an AC technology to accelerate research breakthroughs concerning the cause, treatment, and prevention of a disease process. Given these parameters we felt the best analysis design was to be found in fuzzy-set theory. May, who pioneered this approach, has reported success with it in a series of Shannon entropy experiments.¹³

6.1 Set of symptoms. A collation of the disease symptoms should be prepared by the Biomedical Team. Call this set S

$$S = \{s_i\} \quad (i = 1, \dots, N_s)$$

(1)

where s_i is the i 'th symptom and there are N_s such symptoms.

6.2 Set of treatments and research areas. The Biomedical team should prepare a second set of concepts covering, as encyclopedically as is relevant, treatments and current research efforts. Call this T.

$$T = \{t_i\} \quad (i = 1, \dots, N_t)$$

(2)

where t_i is the i 'th treatment/research direction and there are N_t such.

6.3 Target Evaluation. Each Target, P_i , should be assigned a fuzzy-set classification on S. That is, for each symptom in S a doctor with knowledge of P_i 's condition should assign a value from 0 to 1 so that 0 means that the symptom is entirely absent and 1 means the symptom is completely present. As symptoms are very variable, a symptom, which is only partially, or sometimes, present would be assigned a value greater than 0 but less than 1. Thus patient P_i 's description is given by the n-tuple,

$$P_i = \{p_{i1}, p_{i2}, p_{i3}, \dots, p_{Ns}\} \quad (0 \leq p_{ij} \leq 1)$$

(3)

where p_{ij} is the expert's assignment for the importance of the j 'th symptom for the i 'th Target.

6.4 Concept Breakdown. As described above in §5.5, each transcript should be broken down into a set of concepts.

Defining M_i as the respondent's concept set for the i 'th Target and C_i as the concept list for the i 'th control person:

$$M_i = \{m_{ij}\} \quad (j = 1, \dots, N_{M_i})$$

(4)

$$C_i = \{c_{ij}\} \quad (j = 1, \dots, N_{C_i})$$

(5)

6.5 Total USE Preparation. A total Universal Set of Elements (USE) for the analysis as the union of the expert's concepts and the respondent's concepts is next prepared:

$$USE = \text{uniq}(S \cup T \cup M \cup C)$$

(6)

where $\text{uniq}()$ is a function which returns the unique elements only (i.e. it eliminates duplicates), \cup denotes the union of sets, M is the union of the Target responses M_i and C is the union of the control responses C_i . Let the number of elements in this overall USE be denoted N .

6.6 Fuzzy Encoding. The responses on the USE should be Fuzzy encoded as defined below. Values should range from 1 to 0. The value 1 would be assigned for USE elements that are exactly described in the response, such as a symptom (Note that elements of the USE which were taken over from a particular response should automatically be assigned a 1). 0 values are assigned for no correspondence between the USE element and the response. Intermediate values encode partial correspondence. Thus the responses become n -tuples of numbers in $[0,1]$ with the same number of elements as the USE. Call these n -tuples:

$$M_i = \{m_{ij}\} \quad (j = 1, \dots, N)$$

(7)

for the Targets, and:

$$C_i = \{c_{ij}\} \quad (j = 1, \dots, N)$$

(8)

for the controls.

7. STUDY OUTPUTS

7.1 Fuzzy Consensus of Disease State Features.

7.1.1 Weighting. A weighting n-tuple from each Respondent's responses to the controls should be found. These weights assign a weight of unity to USE elements which were absent from control responses and a weight of zero the elements which were completely present in the control responses:

$$w_{ij} = 1 - (c_{ij} + c_{ij}') / 2$$

(9)

where w_{ij} is the i 'th respondent's weight on the j 'th USE element, and c_{ij} and c_{ij}' are that respondents fuzzy responses to the j 'th element in his two control sessions.

7.1.2 Compensation for Respondent Bias. We now calculate the weighted fuzzy intersection of all the respondents.

$$R_j = \min(\{w_{ij}, m_{ij}\}) \quad (j = 1, \dots, N)$$

(10)

where R_j is the j 'th element (out of a total of N) of the consensus response to the Targets weighted so as to compensate for the Respondent's individual biases to the controls.

The n-tuple R_j now describes the consensus across all respondents of what concepts are seen as differentiating Targets from controls. Note that concepts in this n-tuple are not limited to those pre-defined by medical

experts as relevant to the disease process since the USE use to derive R_j also includes all concepts mentioned by all respondents in their sessions.

7.1.3 Consensual elements known, and not known, to medial researchers. Recall that the USE is composed of symptoms, known treatments and research areas and novel concepts from the responses. The consensus n-tuple found in 7.1.2 therefore has weightings for all these classes of elements. Particular attention should be paid to the treatment / research topic subset and also to the consensus on medically unknown elements.

7.2 Evidence of AC functioning in individual respondents.

7.2.1 Accuracy and Reliability. Consider that subset of the USE composed of the symptom elements S . For each Target we have encodings of that person's condition on this subset (from § 6.3). For each respondent we can calculate the accuracy and reliability on his two Target sessions and thence the figure of merit (FOM) defined as the product of accuracy and reliability.

7.2.2 Degree of Performance. Assuming we can estimate the mean chance expectation of the FOM's we get a measure of the degree of AC in each respondent Target session. Then the consensual response found in § 7.1.2 can be weighted by Respondent performance.

7.3 Non consensual, medically unknown, elements from highest AC sessions.

7.3.1 Best Concepts Estimates. To assess which concepts are best, we shall take the subset of Target responses found in § 7.2.2 to have evidence of AC (i.e. extract the best responses) and pool the concept lists for these sessions. We should find those elements which are absent from the control sessions for those respondents and are absent from the sets of symptoms and treatments. The remaining concepts should constitute evidence of AC functioning covering elements currently unknown to medical research. These elements constitute the study's best estimate of areas for productive research which are currently unknown.

7.4 Hypothesis Development.

7.4.1 Concept Category Assemblage. The alpha-numerically designated various concepts should be broken into their naturally emerging categories. The following is a hypothetical example of this process:

The Nerve Sheath & the “Cones”:

R-1: ¶s 40-41, 45-6; R-3: ¶s 97, 103-105; R-7: ¶s 210, 234-237

INT. 1: What is that line you describe <40> R-1: Yeah. Well, yeah, it's like this is a wire, <41>its the nerve <45> ...there's something whitish that needs to be around the nerve. <46> That's the part that is missing. <97> R-3: There is something white like a sheath around the nerve. <103> The cells, the ones that are elongated. <104> The elongated ones that I drew are the problem (see drawing #4). <105> There are little things in the cell, on the edge really, that look like cones; those are the ones to pay attention to. <210> Its like the peel around a nerve is the problem. <234> There are cells that have little cone shaped parts. <235> That's where the problem is, the little cones. <236> They're part of the sheath. <237> It's like it (the sheath) has holes in it. Bad spots.

Rain Forest Botanical with Spade Shaped leaves:

R-4 ¶s 112-113, 175, 190-196. R-9: ¶s 298-301. R-11: ¶s 256-257

<112> R-4: There is something white... <113>that is missing. <175> There is a plant. INT: What image comes to your mind when you think of that plant? <190> It is found in the jungle. <191> I want to say Amazon, <192> but that may be analytical overlay. <193> This plant grows in the trees. <194> at some altitude. <195> Big leaves that are <196> spade shaped. <298> R-9: There is a plant that would help this condition. <299> It's something that grows in the rain forest, spade shaped leaves. I'll draw them. INT: R-9's drawing is being designated number 4. <300> Somewhere in South America <The name Brazil comes to me but that might be overlay. INT: Debrief of Brazil noted. <256> R-11: There's a South American plant that would help. <257> It lives in the rain forest and has spade shaped leaves.

This produces an assemblage of the consensual images, the list of which Respondents offered which comments, and the number and percentage of

the Respondents who have done so for each category of concepts. The concepts are further listed in descending order of perceived reliability.

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