Testing New Claims of Dermo-Optical Perception

Can blindfolded people really see through their skin? Two very reputable laboratories in Paris think they have obtained hard evidence to prove some subjects can. A team of scientists in Grenoble performs a critical experiment to ascertain the validity of this claim.

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Introduction

Dermo-optical perception (DOP) can be described as the ability to "see" without using the eyes. Under the DOP assumption, it is claimed that parts of the skin, mainly but not exclusively in the forehead, are used as visual sensors through a yet-undiscovered mechanism. This aptitude has been a classical feature in many human mythologies, assigning magical powers to blind individuals who could somehow perceive images despite their handicap.

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Dr. Claudio Benski (left) and CRSSA scientists prepare subject Denis S. for the test.

Thus, Tiresias was a blind seer in Greek mythology, and the Jewish commentator Isaac ben Abraham, known as Isaac the Blind, was claimed to have had supernatural visions, achieved through deep concentration, in early thirteenth-century France. More recently, some mediums in the nineteenth century performed their acts while blindfolded. This was also true of some famous magicians: Jean Eugène Robert Houdin, the famous French magician of the 1800s, had a blindfold act with his son Emile. It was only natural that conjurers would come to expose many mediums as flimflam artists who were deceiving gullible audiences. Milbourne Christopher, a well-known magician, gives a nice and colorful account of some of these deceptions (Christopher 1975).

In 1963 and 1964, some Russian women were reported by the popular media as being able to see objects and images while wearing various contraptions over their eyes, presumably to prevent them from using their normal eyesight. A very illuminating discussion of these tests and the credulous reactions of the mainstream press was published by Martin Gardner in 1966 (Gardner 1966). Many of these women had been caught "peeking," and it would have been reasonable to expect that after more than thirty years these paranormal claims would fade away without ever resurfacing again. Wrong! Not only is DOP back, but, whereas previously DOP was claimed to be an innate ability, allegations are made now that DOP can be taught to anyone who pays the requested fees. A Russian company is offering to train people to give sight back to severely vision impaired individuals and even to restore vision to the blind, all through DOP techniques. The implication has excited the interest of several French ophthalmologists and neurologists who have tested two Russian subjects presented by this company and were amazed by their ability to see images apparently without using their eyes, since both subjects were blindfolded. These tests were conducted in Paris in 1996 without the involvement of any conjurer.

This article is a report on a new series of tests on these Russian subjects. Scientists from Grenoble, France, conducted further experimental work on the subjects. However, contrary to the tests in Paris, this time the tests were carried out under the supervision of a magician. The first author of this article, in addition to having a Ph.D. in physics (practically useless for this job) also happens to be a conjurer.

Background

Early in 1996, the Public Health and Epidemiological Intervention Group (GISPE, in French), a private nonprofit organization in Paris, arranged for a series of experiments with "experts" in DOP from a Russian company called the "BUKVA-A Research and Experimentation Center." This company claimed, among many other unusual talents, to be able to train subjects to see while wearing a blindfold. Their own literature explains how they can train instructors to develop DOP in just one week. These instructors would in turn be able to restitute visual abilities to blind people.

The experiments were carried out in Paris by an ophthalmologist, a neurologist, and a radiologist from two leading state research laboratories, one of them at a major hospital. Although they have kindly made available their final report, these scientists have requested that we do not reveal their identity, and we have decided to accept their request for anonymity. They tested two expert subjects from BUKVA-A in March 1996. The tests included nuclear magnetic resonance imagery and EEG with and without a blindfold. Typical ophthalmologic tests were also included. During the tests, brain activity in visual areas was detected but, because the subjects were blindfolded, the report states that this activity was obtained "without recourse to the usual visual pathways." Finally, the report concludes: *"In the absence of any usual visual means, the two subjects were shown to exhibit real visual perception as proven by the reading and visual acuity tests."* This ability is called "outstanding" (*"hors normes,"* in French), and the researchers use the words *fundamental discovery* to describe their accomplishments. This time, DOP seemed to have been found.

Obviously, independent confirmatory experiments were needed. This is how scientists from the Defense Medical Research Center of the French Ministry of Defense in Grenoble (CRSSA, in French) received and accepted a request from GISPE to perform further tests on these subjects in early 1997.

For the confirmatory experiments, a group consisting of the two subjects and a BUKVA-A company representative, Ms. Irina Savkina, arrived in Grenoble in May 1997. Another individual, introduced as a Franco-Russian translator and M.D., completed the group. They claimed they could show their DOP talents to any interested scientist. Thus, a team of scientists from CRSSA and a physicist, who served as a consultant conjurer, was assembled. Although this Grenoble team was asked to investigate the basic DOP claim, the fact is the BUKVA-A literature makes even more amazing claims than "simple" DOP. For example, their blindfolded "expert" would be able "to describe in a precise way the surrounding environment, read texts and even perceive details, which could not be differentiated otherwise through normal vision." This fabulous ability is called in the BUKVA-A literature "four-dimensional

vision." Were it not for the fact that these subjects were certified to have these astonishing faculties by two extremely well known Parisian laboratories, we would have dismissed these claims as hot air.

An often-heard statement appears in their brochure with a new twist: "Specialists confirm that human possibilities in this domain are huge. Each one of us uses only 5 percent of his capacities." (This percentage used to be 10 percent, but we are not aware of any evidence supporting either percentage.) The promised results were truly amazing, although no clue was given as to who these specialists might be or where their findings have been published. Instead, publications with titles like "The Maximum Entropy Formalism" or "Turbulent Movement and Chaos Structure" were quoted to lend scientific credibility to their literature. "Techno-babble" has been used in the past to justify miraculous claims and is always a clear indicator that fake science is being disguised to pass as honest research. However, none of the above constituted bulletproof evidence that the BUKVA-A skills were faked.

The Protocol

Following in the footsteps of Gardner (1966) and Randi[1] (1991), we prepared a protocol that was presented to Ms. Savkina on May 5, 1997. Her acceptance of this protocol was considered a necessary condition, without which we would not agree to conduct the experiments. On the other hand, if it was accepted, we were morally obliged to conduct the tests and certify the results, whatever the outcome. Therefore, it was essential that any possibility of cheating be excluded from the tests by a carefully constructed protocol. We elaborated ten critical points for this protocol. Each one of these points corresponded to a particular safeguard. We reproduce these ten points below:

1. The evaluation of the perceptive abilities of the tested subjects shall be judged by their ability to recognize a dozen unambiguous and easy-to-describe images presented on a video screen and/or paper, as chosen by the experimenters.
2. The subjects shall give the correct identification of *each* displayed image within fifteen seconds after their appearance and using a single unambiguous word.
3. If, during the above fifteen seconds, the subject remains silent or uses speech that does not include the word that designates the object, the answer will be considered as null and the experiment declared a failure.
4. The recognition tests will be conducted only in the presence of the experimenters and the subject. No other individual, in particular no one from the BUKVA-A company, will be admitted in the room during the tests.
5. During the tests, the scientists will have the right to:
   a. select their own Russian translator to interact with the subjects,
   b. select the venue of the tests,
   c. use whatever means they judge appropriate to blindfold the subjects.
6. The whole procedure shall be recorded with a video camera so as to keep a record of the experiment.
7. The subjects shall respect the rules of this experiment; in particular, they will not use their hands during the test or touch their faces.
8. Any failure to abide by these rules shall signify the immediate cessation of the experiment.
9. The scientists and the BUKVA-A company represented by Ms. Irina Savkina agree to sign the final report of these experiments, in particular, successes and failures.
10. Each side authorizes the other to freely publish the outcome of this experiment using only the results detailed and signed by both parties in the final report.

We think that the above protocol contains sufficient safeguards for this type of test. Because some of these safeguards may be new to some readers, we offer the following comments for consideration.

Points 1 and 2 are intended to exclude vague words that might be counted as a success when, in fact, nothing is seen. Consider the images of the Eiffel Tower, a nose, a wire hanger, or a pizza slice. All of these very different objects could be described by the single word *triangle*. If unambiguous words were not excluded, anyone might produce amazing hits without possessing any special skills. That would be an underestimation of the probability of success by chance alone. In this experiment, it was impossible to numerically evaluate this probability, but we wanted to keep it as small as possible. It is indeed impossible to compute the probability that an individual will say a word like *cigar* by sheer chance. But all the images were selected so that any individual authentically seeing an image by whatever means would utter a simple, descriptive noun to describe it and not a complex sentence or a vague and general word. Two typical images of this kind are shown in Figure 1:

Figure 1. Two unambiguous images

Nobody actually *seeing* the images of Figure 1 would need to use convoluted sentences or vague and general words to describe them under the conditions of this test. They should normally elicit the words *scissors* and *hanger*.

Points 2 and 3 are intended to exclude misdirection, possible when very long identification times allow for distractions. The experimenters defended this position arguing that if DOP was equivalent to normal eyesight, as claimed, fifteen seconds

was more than enough to produce a correct identification. For each subject, the test would thus last three minutes (12 images x 15 seconds) at most. Notice that only when each and all of the images have been correctly identified can the test's outcome be called a success.

Points 4 and 5 were added to exclude confederates from *helping the subjects through hidden transmitters or codes.* Furthermore, peeking through a blindfold was prevented by reserving the blindfolding for the experimenters, as allowed by point 5c. About an inch of stacked cotton disks (Demak'up brand) were used to cover each eye orbit with the eyelids closed. Over this stack, an appropriate square of aluminum foil was taped around the orbits with surgical tape (3M Micropore). This tape has several advantages: it is hypoallergenic, and its sticking characteristics make it hard to shift without being caught. In addition, contrary to ordinary tape, its white color makes it clearly visible, should it ever be displaced. This assured an airtight blindfold that left the entire forehead free, an advantage if the subjects were truly using DOP as claimed. In addition, this is a particularly light and comfortable kind of blindfold. However, no description of this blindfolding technique was given during the signing of the protocol. The experimenters felt it was better to withhold this information until the last minute, since it was irrelevant to true DOP subjects but could be used by dishonest ones.

Point 6 was essential since the videotape constitutes the hard evidence of either success or failure at the end of the experiments.

Although we were confident of the efficiency of our blindfolding technique, points 7 and 8 were designed to prevent the subjects from partially removing a small part of the sealing tape during the experiment. Some subjects, under the pretense of discomfort, scratching, etc., have used this subterfuge in the past.

Points 9 and 10 insured that, whatever the outcome, the BUKVA-A company as well as the experimenters would be morally obligated to accept its consequences.

What was not mentioned in the protocol, but was nevertheless implemented during the actual tests, was a question asked to each subject before and after their blindfold was securely in place. The question was: "Are you totally comfortable and optimally able to succeed in identifying the images that we are going to display now?" This question was asked *twice* to each subject to make sure that no excuses of any sort could be given *after* the experiment in case of failure. Had a subject answered negatively, we would not have started the test. We knew that a success would be counted as such, but a failure could always be blamed on whatever problem was mentioned before the test. We will see how critical this point is in the discussion of the results. The decision to ask this question was made by the experimenters during the discussions leading to the elaboration of the protocol.

The Experiment

On the day after the signing of the protocol, the BUKVA-A team, consisting of Ms. Savkina, the translator, and the two subjects, was led to the house of one of the researchers. They were all put in one room. The experimenters were waiting in another room with the video camera in place and the blindfolding material ready but concealed. In addition, a portable computer was lying on a table on top of a thick stack of books so that its screen would be at eye level for a subject sitting in front of it. A psychologist, who needed only to click the mouse to have the images retrieved one by one, would operate it. The images chosen for the experiment are shown in Tables 1 and 2. They were shown in full-screen and high resolution mode.

Displayed Image	Expected word	Word used by subject 1
	Watering-can	House
	*Banana*	Sun
	Rooster	Pathway
	Mouse	Subject declared she could not see
	Table	Car
	Egg	Paper
	Trumpet	Tree
	Pants	Circle
	Monkey	Pencil
	Tent	Subject declared *she could not see*
	Eyeglasses	Court
	Pincers	Rectangle

Table 1. Responses of Helena B.

The experimenters had previously obtained the help of an independent native Russian translator to interact with the subjects. For reasons that will become clear later, we placed some flimsy tissue blindfolds clearly visible on top of the table, although we obviously never intended to use them.

The first subject presented by BUKVA-A was Helena B., a twenty-two-year-old woman. Once she clearly stated that she was willing and able to begin the experiment, the cotton stacks were placed on her eye orbits. Then, a doctor member of our team taped the pieces of aluminum foil over the eyes of Helena B. Again she was asked whether she was comfortable and

Displayed Image	Expected word	Word used by subject 2
	Wheelbarrow	Dog
	Car	House
	Rose	Fence
	Airplane	Man
	Bicycle	Animal
	Guitar	Sun
	Butterfly	Cube
	Cigar	Bottle
	Chair	Mountain
	Scissors	Subject declared he could not see
	Cake	Triangle
	Step-ladder	Candle

Table 2. Responses of Denis S.

whether she believed that she could fully succeed in the test. The answer was yes again. We explained to her that we would say "Image" each time a new image appeared on the computer screen, filling it completely. The Russian translator would then translate "Image" into Russian and, from that point on, she had fifteen seconds to utter the word best describing the displayed image. Once she said the word, the translator would translate that word into French, the portable computer would be turned around to expose its screen to the recording video camera, and the next image would be retrieved. In addition to the video camera, two researchers took written notes of the displayed images and noted the corresponding subject words. The results for the first subject are shown in Table 1.

Clearly, there was total discordance between the images and their identification. Notice that, contrary to the protocol, this subject used general words like *circle*, *rectangle*, or *paper*. Had we shown a book with a sun on its cover, any one of these three words could have been used to describe this image. That the subject was merely guessing was clearly revealed by the fact that, after pronouncing the word for the second image, while the computer disk drive was still spinning in search of the third image, the subject described the blank screen as a "triangle" without waiting for the "Image" command. Not only was she unable to identify any of the presented images, but she also thought she was able to "see" even though there was nothing to be seen! This event was not recorded in Table 1, where only the displayed images are listed, but it is worth mentioning. Notice also that none of the words pronounced by Helena B. fit any of the images displayed.

After Helena B. finished with the last image, she was thanked, her blindfold removed, and she was escorted to another room without any clue as to the results of her test. She remained there, accompanied by one of the researchers, while the second subject was being tested. This precaution was meant to prevent the second subject from refusing to be tested upon knowing of the first subject's failure.

The second subject, Denis S., a fifteen-year-old boy, was led into the experiment room only when the first subject had already been escorted out. Otherwise, the experimental sequence was similar to the first one with one exception: Denis S. was given the choice of whether he preferred the images to be shown on the computer screen or on paper. He clearly stated that he preferred the computer screen. We should point out that this subject was quoted by the BUKVA-A literature as an "expert" who could read or see a TV screen while blindfolded. Thus, he was expected to be better at DOP than ordinary BUKVA-A trainees.

When asked whether he was completely comfortable with our blindfold, he declared that some of the tapes on his face gave him some discomfort. These tapes were promptly replaced and only when he stated that nothing was interfering with his abilities did the test start. The video-recording camera was set and the test ran as before. Its pace was comparable to the first one, and the run was over in somewhat less than the three allotted minutes. The results of the test with Denis S. are shown in Table 2.

Notice that the second subject also used general words, sometimes the same ones as the first one. But again, there was total discordance between the displayed images and the words used to describe them. Even allowing for reordering of the words, none of the elicited responses corresponded to *any* of the images displayed if the general words are excluded.

As before, the subject was thanked and the blindfold removed without any further comments. At that point, the experimenters called in Ms. Irina Savkina, her translator, and the two subjects. They were shown the images used during the tests and read the exact contents of the last columns of Tables 1 and 2. They were told that both tests had been recorded on tape for them to see if they so wished. They declined the offer. The final report was typed immediately after that, and Ms. Savkina was asked if she was willing to accept that "both subjects had completely failed the tests when properly blindfolded." She agreed but claimed that it was the first time in four years that her subjects had failed a test. She offered as a possible explanation the fact that we had used aluminum foil. We answered that neither of her two subjects objected to the aluminum foil before or during the tests. She then suggested

Blindfolded test subject Helena B.


Blindfolded test subject Denis S.

that the fact that we used a computer screen might have been the cause of failure. Because of the protocol's Point 1, we could answer that, on the eve of the experiment, she had accepted the computer screen as a valid medium. Furthermore, Denis S. had voluntarily selected the computer screen as opposed to a sheet of paper.

All of Ms. Savkina's excuses could be answered because both subjects were asked *before* the test whether they were under optimal conditions to succeed as explained before. She then made a last ditch effort. She requested a repetition of the test using one of the blindfolds lying on the table. We knew those blindfolds to be *very unreliable*, and probably the BUKVA-A people knew that too. We had left these blindfolds lying on the table because we thought that an honest but self-deluded individual would not request or accept to wear these unreliable blindfolds for this kind of experiment. We believe that, whenever possible, the honesty of a paranormal claimant should be tested by intentionally allowing the possibility of cheating in a controlled instance and seeing whether the subject takes advantage of this opportunity. Faced with this request, we answered that no repetition was mentioned in the signed protocol and that, in any event, a new one would have to be prepared if that were to happen. Also, we pointed out that it was the GISPE who requested the expertise, and it would be up to them to request a new test. As far as the researchers were concerned, the whole experiment was finished. The consequence was unavoidable: the signing of the final report recognizing that no evidence of DOP had been found.

Conclusions

We feel that the ten-point protocol constructed for this experiment contains guidelines that may help other researchers involved in testing similar claims. Also, the expert help of a conjuring artist is, in this case, more useful than the most sophisticated hi-tech gear to measure brain waves. According to our final report, signed by all parties, out of a total of twenty-four images, none were identified by the blindfolded subjects. This is a clear indication that, when suitably blindfolded, the BUKVA-A experts lose all the amazing abilities that so impressed the medical experts in Paris.

The visual system is indeed a very complex one. In a wonderful book, J. P. Frisby (1980) describes the intricacies of the eyesight system at a very accessible level. One cannot help but read in sheer awe about the sophisticated mechanisms of the natural vision system. We are also aware of several honest research projects aimed at implanting an artificial electronic retina in the eye to help restore vision to the blind.[2] Compared to natural vision or the possibility of electronically aided vision, DOP is just a claim masquerading as science by abusing scientific language, like so many other claims discussed and debunked in this publication.

It is very difficult, often impossible, to prove a negative assertion such as "DOP does not exist." However, under rigorous scientific tests, including this one, no evidence has ever been presented for DOP that could withstand careful scrutiny. Until that evidence is shown, we believe that giving financial support to individuals or companies claiming success in training for DOP is a total waste of money and resources.

Acknowledgments

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Notes

1. A general protocol for testing paranormal claims is given in James Randi's Psychic Challenge. Its description can be found on Randi's Web site: http://www.randi.org/jr/chall.html.

2. See, for example, the Web site http://www.coe.ncsu.edu/news.releases/liu.retina.htm, where a description of ongoing work on an artificial retina component chip (ARCC) is given.

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