
AFTERNOON GENERAL DISCUSSION

Day One

SCHECHTER: I want to connect the questions Chuck Honorton has been asking with the question Sue Blackmore asked. Harris, you said that your calculation of 10^8 bits of information in the normal conscious stream was based on some assumptions about the number of molecules per vesicle and the number of neurons available for the visual process. Sue asked you how you relate your calculations to the existing data in sensory psychology. I would like to take it still another step and ask you what assumptions you have made about the neural interconnections involved in sensory processing, in order to get your figures.

WALKER: That is all published. There is a '77 paper on synaptic functioning in the *International Journal of Quantum Chemistry*—part of the proceedings of a conference—that deals with that. There is also an article in *Psychoenergetics*. At the end of that article, there is a response to a criticism that goes into the details of how that is calculated.

Now, there are two parts to this. There is a theory of consciousness in which we calculate a data capacity. In addition, there is the direct determination of these quantities. This requires an appeal to one's conscious experience. Simply considering the data capacity that is required to just satisfy your sensory input capacity, as for example, using audio-visual displays, provides a means of measuring the amount of information going into the brain. The calculated theoretical value is in agreement with the value one obtains using the above procedure.

BRAUD: Are you suggesting that the subjective experience of the psi image, the image carrying psychic information, is degraded as you showed in the slides? That is, is the subjective experience one of a blurry image?

WALKER: If the question to the subject is a visual question and he sees a visual display and you know that it is not enhanced by an appeal to memory, the answer is "Yes." If you go into enough detail to show that the person did not get a seed idea of a locomotive, for

instance, and then he filled in details, such as it's a Pacific Northwest train that is painted green—and you check that out and none of that is true, but it is a train, then you can say that the image originally was a degraded freight train which he has embellished. But basically, I am saying if the channel is not embellished in that fashion, it doesn't come in clear and then get degraded. Instead the channel capacity is such that it cannot come in any better.

BRAUD: Then in the case of embellishment, there would be a moment in which it would be unclear and then it would become progressively clearer. My own subjective experience is that that is not the case.

WALKER: Let me give you a particular example. First of all, we do an experiment of remote viewing in which we ask a question about a room in which there are some papers on a desk and the subject can remote view. You go through all the work needed to verify the level of accuracy of his report. The subject can see a paper on the desk and he can report, "I can see that there is writing on it, but I cannot read it." You can get this from Dr. Harold Puthoff, for example, in many cases where that has been done. Then you ask, "What does the paper say?" The subject can then say it is an article about fishing. The subject has switched to another mode of bringing in information. I am talking strictly about the visual imagery. The channel is there for the other types, but I limit the discussion to just the visual in the experiment and the experiment is limited to the visual as well. If the question is asked about a sub feature in the excellent cases, the subject will have another image and that image can tell you something about the individual feature, but when you ask the question the image does not now become like an image in a lucid dream, at least this would be the position that I would take.

STANFORD: It seems to me that you are talking about some kind of a bit rate for consciousness which you displayed up there and that was predicated in some respects upon the molecular events.

WALKER: Not exactly.

STANFORD: You don't? Then how do you set the rate?

WALKER: We have a data rate for conscious events and we also have a data rate for the channel carrying psi information. However, the brain has the capacity to form an image from the data input over a characteristic time. That characteristic time is just the minimal time interval for which the brain can discriminate individual events. I could display pictures containing 10^7 bits at a rate of one each second, and you would be able to discriminate these images, taking

in 10^7 bits per second. If I raise the rate you will reach the limits of your optical system, brain and even conscious experience at about ten pictures per second, a data rate of about 10^8 bits per second. If instead we used pictures with 10^6 bits each, however, you would not be able to experience these at a rate of 100 per second. The limit simply lies at about 1/10 second for visual imagery. This has been assumed to hold for psi imagery as well as for ordinary visual perception in the present experiment.

STANFORD: Nonetheless, with these different methods of calculating the rate you would come up with some quite different figures. We could spend a good bit of time discussing the best approach to doing this, but a more fundamental question that concerns me is the linkage between whatever method you are using to calculate this bit rate and what you are calling consciousness. What kind of scientific evidence do we have that this bit rate is really related to consciousness? It is the linkage between these two that has always troubled me.

WALKER: I think that would just take us too long a time to go into. Obviously you are raising a philosophical question and the original question that I asked was whether or not there was a legitimate phenomenon to examine. The answer to this was "Yes," because physics, which is the undergirding structure for most of science, does not acknowledge the presence of a lot of things which in other fields are lumped together—mind and brain and matter and so forth—and in those fields the edges are hard to resolve. In physics no aspect of the idea of consciousness is a part of the basic elements of reality that are postulated. That is, spatial extent is not a consciously perceived spatial extent in physics. It is totally separate from that. Mass is totally separate; it has no aspect of consciousness. Yet we have an experience which is not resolved on the basis of physical equations, therefore there exists a problem. You can go one step further and then show the reasons why this phenomenon is not accessible to physical measurement—this is an exceedingly important point—that physics only measures in certain fashions. In psychology you have lots of psychophysical types of things that go over this boundary. But in physics you have only a particular type. From the standpoint of physics there is absolutely no measurement that you can make to establish whether or not the ice cube in that glass of water feels pain as it melts. That is totally impossible from the standpoint of physics or for that matter any individual in here. There is not a measurement that you could do to establish it any more than you could do it for the ice cube melting. So you have a problem of

knowing whether something exists that you can make statements about. You can make quantitative statements about the conscious experience and yet you can not verify that through the kind of strict physical measurements that physics does. So you can get information and yet you can also say, strictly speaking, it is not a physical phenomenon. Then you open a door to a lot of problems. The purpose of the work that I did was to say that at least there is one way that we might formulate and test a theory—whether the theory is right or not is another issue. But it is a procedure that is quantitative and scientific.

SCHLITZ: I want to see if I can help clarify a little bit what we did in this experiment. I am not going to touch the mathematical basis of the prediction; that is Harris's area.

We wanted to see if it is possible to measure the information rate in ESP impressions. Can we compare psi with visual perception, for instance? Is there any way of relating the amount of information that comes through in an ESP experiment with visual impressions that we can measure? Now, personally, I think the evidence indicates that information is processed in the brain more holistically than as bits. Harris doesn't disagree with that, because we have talked about it before and I just don't think that that is coming across really clearly. One of the reasons I wanted to do this experiment was because I was hoping that in doing so Harris would articulate concisely what it is he is hoping to do.

What we did was to take target pictures that we had used in an ESP experiment and degrade them systematically in terms of the amount of information that was available. To do this, we blurred the pictures systematically so that the ratio of signal to noise was less and less as we went along. You look at one picture and you are seeing a clear image of the picture and you look at another version of the picture and all you could see was a blur. If you have a range of pictures that range from an absolutely accurate level of information to totally blurry with little or no information—can you find a level at which psi impressions fit in? For instance, in a remote viewing experiment, what we often find are drawings in which people get some kind of image of shape and form. They don't often get real specifics about what the object is exactly—and we don't actually encourage that—we encourage them to report raw impressions, not to try and analyze. If you compare the quality of the impressions that come through in an ESP experiment with the quality of the impressions that come through when somebody looks at one of these

pictures at a degraded rate of information and describes what he sees, you find very similar flows of imagery and impression.

WALKER: We have a picture containing 1000 bits of a monkey smoking a hookah. In the original remote viewing work that was done by Schlitz the description contained a statement that there were two faces in the target image. Using the procedure described above, all three judges also said they saw two faces in the degraded images shown to them. The similarity between the descriptions remote viewing subjects give and that we obtain using these degraded pictures is in some cases striking.

SCHLITZ: I bring this up because of William's question about what is the quality of the impressions and what it is that we are comparing. And what we are comparing is, in my mind, more the quality of the impressions and how much information is coming through and can we compare this type of ESP experience with systematically degraded pictures.

Now, the experiment that we did is weak in very many ways. We used it strictly as a preliminary effort. We were aiming to see if in fact this holds up. Can we do this kind of thing? Well, it was difficult to say because the kinds of pictures differed, the lighting of the pictures differed. If we wanted to do this in a formal way we would need a computer where we could actually have some type of control over the content of the pictures, the quality of the lighting, the structures, the figures in the pictures. Then I think we would have a better chance of trying to back up what Harris is saying.

WALKER: Plus the transcript editing, limiting the time the individual sees the image to correspond more nearly to what other individuals report as the duration of these images. One might also employ successive images of the same target and images from different vantage points that could be displayed to simulate the real experience. There are all kinds of things that can be done to improve what we have done here. This is a very tough thing to do. We started out with the simplest thing you can do and got some interesting results.

SCHLITZ: A good comparison with what we did was to look at the subliminal perception experiments that people have done, where they flash pictures at different lengths of time so that there are different amounts of information coming through. What we did was to show a picture for a specified period of time and the subjects could do whatever kinds of association they would do. And we use the same period of time as we had used in the experimental situation to get the data. Rather than manipulating the amount of time that a

slide was projected, we manipulated the degree of information in each slide.

BLACKMORE: What Marilyn said made a lot of these questions much clearer to me. It seems to me that the attempt to compare information getting through by ESP and information coming from degradation of pictures could be fascinating and lead us to a lot of insights. I think that what will be interesting is what kinds of degradation we will need to do in order to get something that is comparable to psi—not making quantitative measures which may be of a type of degradation that isn't relevant.