THE IMPLICATIONS OF ESP EXPERIMENTS FOR ANTHROPOLOGICAL ESP RESEARCH

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Even if the remark by Lévi-Strauss: "... ethnology is first of all psychology ...",[1] may represent too radical a statement, many psychologists and anthropologists would readily agree that the scientific elucidation of human experience and behavior benefits from a collaboration between these two disciplines. From the numerous examples demonstrating mutual inspiration and guidance it suffices to mention only Heinz Werner's ingenious attempt to exploit anthropological findings for the sake of developmental psychology or Margaret Mead's and Ruth Benedict's success in using psychoanalytic concepts as guidelines for anthropological observations. There are also many examples of actual teamwork between psychologists and anthropologists. Nonetheless, a certain type of cooperation, frequent in other sciences, is still too rare in the psycho-anthropological domain of research. Mathematicians who know of a problem in physics readily offer the physicist a mathematical model which may help him in solving the problem. Chomsky directly challenged psychologists to exploit his model of transformational grammar for their studies in cognition. Biochemists and microbiologists frequently delineate the most promising area for clinical observations in regard to a specific disease, while the medical clinician presents his observations as challenging questions for chemical or bacteriological laboratory research.

The advantages of this direct-approach method are obvious. The increasing intensification of scientific research, the abundance of findings, and the tendency of models to generate more models make it difficult enough for every scientist to be a somehow well-informed expert in his own field of specialization. Yet, in addition, they constitute a growing barrier between different disciplines. An anthropologist who wants to know what psychologists found out about, for example, remembering, has either to study two or three years or may run the risk of overlooking precisely those findings most relevant for his own work. The same goes for the psychologist who believes that his studies of memory would benefit from more information about

memorization techniques used in other cultures. Moreover, there is the ever-growing gap created by professional terminology. One has to be well-versed in the language of statistics in order to find out which ESP findings are reliable enough to deserve serious consideration. Hence, the direct approach, being less demanding than interdisciplinary teamwork, may frequently prove to be the most convenient bridge for scientists who have to cross over into the jungle of another discipline.

In the present lecture we attempt such a direct approach by offering findings and interpretations of our psychological ESP research as possible guidelines for anthropological studies of ESP phenomena.

One of the major problems of ESP research is due to the difficulty of locating ESP phenomena, especially under conditions which make scientific observation possible. This difficulty is not unique. It took physicists more than two thousand years to attain some direct evidence for the atom as postulated by Demokritos. Again, almost three hundred years passed until Freud managed to find some indirect evidence for the impact of unconscious processes as postulated by Leibniz. And even then the psychological as well as the anthropological study of unconscious processes could start only after Freud's initial observations yielded some hypotheses about where and how the operation of these processes could be observed.

Hence, the main question facing the anthropologist embarking upon ESP research is: Where and how to look for ESP phenomena? Or, more systematically worded: (a) Is it at all likely that other cultures than the Western civilization give clearer evidence for the existence of ESP? (b) Which cultures are the most promising ones in this respect? (c) What are the optimal conditions for scientific ESP studies in the target cultures?

The famous "sheep and goats" hypothesis seems to present an indirect answer to these questions by designating believers in the existence of extrasensory or paranormal phenomena as the most promising subjects for ESP studies. However, although it is psychologically convincing that those who actually experience ESP should believe in its existence, it is psychologically unfounded to conclude that all or even many believers are capable of perceiving or emitting ESP messages. In the absence of any scientific theory supporting the "sheep and goats" hypothesis, we have to fall back on the existing data pertaining to this phenomena. These data, however, are contradictory and at best merely indicate that ESP phenomena may be somewhat more frequent in those cultures with a cognitive orientation which does not contain elements over-antagonistic to the supernatural or to the hitherto unexplained.[2]

Many cultures could in principle correspond to this vague criterion, and in each of them there probably exist some conditions which promote ESP

phenomena and other conditions which inhibit them. Therefore it would be welcome to furnish some more unequivocal criteria for guidance of anthropological ESP research. It is our intention in this lecture to offer a few criteria specifying conditions propitious for the occurrence of ESP phenomena.

Several years ago, we carried out a series of experiments, initiated and supported by the late Mrs. Eileen Garrett.[3] These experiments were designed to answer the question as to whether ESP is likely to affect the outcome of the usual type of psychological routine experimentation, and, if so, what level of statistical significance would suffice to safeguard against such ESP interferences. The subjects participating in these experiments were naive in regard to the purpose of the studies. Moreover, in contrast to many ESP experiments, the subjects were not selected by virtue of any actually manifested or assumed ESP ability. They were undergraduates in the Faculty of Humanities at Tel-Aviv University, mostly students in the Department of Psychology, who volunteered without payment to serve as subjects in a psychological experiment whose purpose was unknown to them. The reason for this unusual procedure was our intention to run the experiments in a manner as similar as possible to the way routine psychological experimentation is carried out. Yet, by using this procedure of engaging subjects, we also wanted to test the assumption that ESP abilities, if they exist at all, are not the unique property of a chosen few but exist and can be noted in every single human being. The rationale underlying this assumption was the following: In spite of great individual differences in intensity or strength of perceptual abilities, every person possesses all the human perceptual capacities unless he is genetically or accidentally damaged. There are people capable of distinguishing between two tones differing only by a pythagorean comma and others who are able to distinguish two tones only if they differ by an interval not smaller than five half-tones. Yet all normal humans are known to be able to distinguish between a very high and a very low tone. Hence we ventured to hypothesize that ESP should exist, at least to a minimal extent, in every subject and may consequently be expected to contribute towards raising the average group level of ESP performance.

Since we have already published all the details of these experiments, which were highly elaborate from a technical point of view, it would suffice to describe them here only briefly. The physical arrangements were identical for all four experiments.[4,5] In one room the subject, who was unaware of the existence of a sender, performed his task, while in another room a second subject serving as the sender was instructed either to transmit a predetermined outcome or, in one specific case, to think about a particular outcome. Only in one of the experiments did we use a special control group, namely, subjects performing the task without a sender, while in the other three

experiments each subject served as his own control in the sense that he performed sometimes with and sometimes without the sender being active. To the best of our knowledge, the security arrangements were the most stringent ever employed in ESP experimentation. In Experiment 1, after determining each subject's threshold for visual perception of the letters of the Latin alphabet, each letter was projected subliminally to the subject, once with and once without the sender viewing this same letter and thinking about it. In Experiment 2, autokinetic movement was used, namely, the tendency of most humans to perceive a static point of light in a totally dark room as moving in one or more directions. In four runs the subjects were required to report the perceived movements of the light-point in any one or more of the eight specified compass directions, but they were unaware that in one of the runs a sender was instructed to think about one of these eight directions. In Experiment 3, the subjects had to tell stories about six TAT (Thematic Apperception Test) cards, while at the same time a sender was requested to think about a certain predetermined theme, more general or more specific. The control group performed the same task without a sender. Experiment 4 was the most complex one.[6] It dealt not only with the problems mentioned in regard to the former experiments, but was also designed to clarify two further questions which arose in the course of prior experimentation. We wanted to know whether ESP and subliminal perception strengthen each other and fuse, or whether they remain two distinct sources of information. Moreover, we were curious to learn whether a sender instructed to think about a particular outcome or event communicates this information better, equally well, or less effectively, than a sender instructed not only to think about the particular outcome but also to try to transmit this information to another unspecified person. As stimuli we used three well-known optical illusions of the type reproduced in Figure 1.

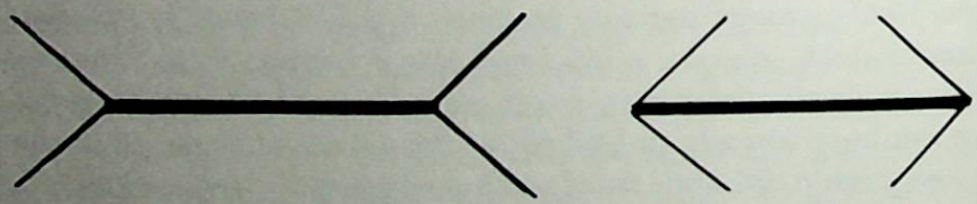

Fig. 1. The classical Müller-Lyer illusion. The heavy lines represent the supraliminally projected part of the figure, while the thin lines represent the subliminally projected part.

In the experiment proper, that is, after controlling for individual inclinations of the subject, the core part of the figure was projected supraliminally

and the illusion-producing part was projected subliminally. Concomitantly, the sender thought either in accordance with the subliminally projected illusion effect or in contrast to it. Moreover, in some of the runs the sender was instructed not merely to think about the respective outcome but to try to transmit it to an unknown person.

The results of all four studies were no less surprising than puzzling. In each of the experiments we obtained a highly significant effect in line with the ESP message. This effect, however, if judged by everyday-life standards, would not be called a very dramatic ESP manifestation. Rather, it would be evaluated as an essentially weak but very regular or reliable phenomenon, which could well escape observation if not especially looked for under its most favorable conditions and by the aid of statistical analysis. Nonetheless, psychologists carrying out their usual experiments must safeguard against ESP interference.

Yet, more important than the already trivial finding that ESP exists were three other results of our studies. First, the obtained ESP effect was not due to the excellent performance of one or a few subjects particularly gifted for ESP, while the other subjects performed at about the chance level. On the contrary, the effect resulted from the cumulative performance of most, if not all, of the subjects. Hence, our hypothesis that the ability of ESP exists in every person seems well supported. Therefore, these experiments can be replicated in every psychological laboratory. Moreover, the findings suggest that not only laboratory experimentation with ESP but also field studies of spontaneously occurring ESP phenomena must not necessarily be restricted to discovering a particularly ESP-gifted individual, say a "medium." However, optimal conditions for discovering ESP phenomena are indicated by the two following findings.

These two further findings of major importance are based on the observation that in all four experiments marked ESP influence was evidenced under similar conditions. In the first experiment (which dealt with the identification of subliminally projected letters), ESP was effective only in regard to those letters which without ESP had the lowest probability of being identified. In the second experiment (which dealt with autokinesis), ESP affected the apparent movements of the static light-point only in regard to those directions which without ESP were seldom, if ever, reported by the subject, while ESP failed in regard to those directions which without ESP were frequently perceived. Again, in the third experiment (which dealt with stories told about TAT cards), ESP had a marked influence only on themes which without ESP had a very low probability of being mentioned by the subject in the context of a story to a specific TAT card. Finally, in the fourth experiment, a significant ESP impact was observed only in the condition in

which the transmitted ESP message was contradictory to the subliminally generated optical illusion. Moreover, the results of this last experiment showed that a sender consciously trying to transmit is superior to a sender who is instructed only to think about a certain outcome. Accordingly, the two outstanding features which these four experiments have in common are: (a) ESP is a weak source of information in randomly chosen subjects; and (b) ESP increased significantly neither the frequency of reactions contingent upon physical stimulation from outside the organism, namely, subliminal information, nor the frequency of reactions elicited by pre-existing reaction tendencies, namely, physiological stimulation from within the organism. However, if ESP information was not in line with these sources of information, it proved to have a significant effect, particularly if the sender tried to transmit his message instead of merely thinking about it.

These results, interesting as they may be, seem at first glance to be of little relevance for anthropological ESP research. Only when analyzed in terms of characteristics of channels of communication as well as signal-noise relations and when considered against the more general background of interpersonal communication can they provide a lead for the anthropologist searching for evidence of ESP in other cultures.

From the viewpoint of communication, the meaning of the term "extrasensory perception" is negative in the sense that it excludes the transmission of information through one of the hitherto-known sense organs. However, the term allows for two psychological interpretations. It can be understood as indicating transmission either through a hitherto-unknown sense organ or through some channel of communication which should not at all be conceived of as a sense organ. The term "perception" highlights the first interpretation and was frequently understood in this vein. Accepting this interpretation would lead us to expect that the so-called "ESP channel" possesses at least some of the properties common to all the other already identified channels of perception. The second interpretation, based on the term "extrasensory," leaves us totally in the dark about any characteristics of the ESP channel. Our experiments support the second interpretation and thus reveal an important aspect of the relation between sensory and extrasensory perception.

In spite of Müller's classical law of specific sense energies it is well-known that messages mediated by different sense organs are likely to fuse if the conveyed informations supplement each other positively or negatively. For instance, visual perception of the verticality of a line is strongly influenced by auditory stimuli as well as by electrical stimulation applied to one side of the neck;[7] the perception of hunger may affect the identification of perceived objects;[8] correspondingly, a glance at one's watch may affect the

perception of hunger;[9] and most important of all, information that remains subliminal if picked up through one channel only turns supraliminal if supported by information from another channel, for example, whispered words which relate to visual stimuli.

All of our experiments, but especially the fourth one, which was designed to clarify precisely this aspect, clearly indicate that at least on the immediate level of perception there is no fusing of information delivered through sensory and extrasensory channels. As mentioned above, ESP messages neither fused with visual signals nor with those inner signals which induce a person to act in accordance with preexisting action tendencies.

Hence, the ESP channel seems to differ essentially from the known sense organs. Of course, this would not preclude the possibility that on the highest level of cognitive elaboration ESP messages are brought in line with information communicated through exteroceptive or proprioceptive channels, as will indeed be discussed below. Yet, on that level of input identification and elaboration which was induced by our experiments, these higher cognitive processes could hardly take place. Sensory perception and ESP remained distinct as far as the subject's reaction was concerned. Of course, the absence of fusing between sensory perception and ESP does not necessarily imply that their respective discernments are totally independent of each other. ESP has to compete with sensory perception for the conscious or preconscious attention of the subject. In this sense, ESP information and sensory information can be viewed as signal and noise, respectively. Since ESP is obviously a weak signal, it may be discerned only or mainly on the background of a low perceptual noise level. The required low noise level can be attained through reduction in situation-relevant inputs, both exteroceptive and proprioceptive ones, and/or through a difference in message content.

Both of these conditions were present in our experiments. This is particularly true of the second condition, viz., a sharp contrast between the content of the sensorily transmitted information and the extrasensorily transmitted information, which proved highly effective as far as the communication of the latter was concerned. In the popular ESP experiments with Zener cards, only one of the mentioned conditions is met, namely, the reduction of situation-relevant sense data through the experiment. This may be one of the reasons for the frequent failure of these card experiments. However, the analysis of differences between our experimental conditions and those of the typical Zener card experiment may provide another clue which could help to optimize ESP observation. The card experiments invite guessing while the makeup of our experiments clearly discourage it. Guessing is, at least in our culture, a highly frequent activity, and a well-established habit. The games we play with our children educate them to guess whenever adequate

information is missing. And our probabilistic interpretation of nature may further strengthen guessing tendencies. Experiments in probability learning, carried out by Kreitler, Kreitler, and Zigler (1973), indicate that children with strong inclinations for guessing also show marked guessing habits.[10] In the Zener card experiments guessing habits of this kind may constitute a strong background of noise against which the weak ESP signal hardly stands a chance to be discerned. We venture the hypothesis that guessing situations impair ESP and therefore we suggest searching for ESP under conditions which discourage guessing.

As mentioned in the above summary of our findings, although a transmitting sender is more effective than a sender merely thinking about a specified outcome, the thinking senders also proved effective to a certain extent. This finding suggests a problem which deserves consideration. In everyday life there are a great many situations in which one person knows the outcome and may think about it while the others concerned do not know it. Why then do we so seldom experience or observe telepathy? For those of us who obtained proof of the existence of ESP the most plausible explanation would be the claim that telepathy is not at all rare, but is rarely perceived as such. Most people believe that they understand their world and many of them tend to avoid cognitive dissonance. The intervention of an unexplained phenomenon like ESP would create a cognitive dissonance and hence would either be ignored or interpreted in line with accepted concepts like intuition, chance guessing, and subliminal perception. In the latter case the higher cognitive processes involved in dissonance resolution could even promote fusing between sensory information and ESP. Incidentally, it should be mentioned that women tend to succumb less than men to cognitive dissonance pressure and hence should show greater readiness to accept ESP phenomena consciously.[11]

The results of our experiments suggest a further explanation for the relative rarity with which ESP is noted in daily life. When the data of our experiments were analyzed globally, only the findings of one study were slightly significant, while the findings of the other three did not attain the level of significance. The highly significant results of ESP were obtained only when the data were analyzed separately for different experimental conditions, for different stimuli, or for subjects with different prior reaction tendencies. In other words, even in experiments designed for studying ESP the signal/noise relation between ESP and sensory background noise is so unfavorable for ESP that only sophisticated methods of analysis may help in unravelling the phenomenon. These methods cannot be applied in everyday life situations. Hence, it may be surmised that signals communicated through the ESP channel will not be picked up and used for guiding

reactions unless favorable conditions created by experiment, accidental situation or culture prevail.

Summing up our findings, favorable conditions for ESP seem to exist if:

1. a sender tries to transmit an information relevant for a potential perceiver, or if the sender at least concentrates on this information;
2. the potential perceiver is likely to attend to weak exteroceptive or proprioceptive inputs;
3. the ESP signal gains in discernibility by conveying information that differs from informations conveyed through sources within or without the organism and perceived at the same time;
4. the situation does not invite guessing and/or the potential perceiver does not tend to guess in accordance with previously developed guessing habits.

We believe that our culture, the culture of the Western world, is characterized by an atmosphere and qualities which do not promote the above-mentioned conditions propitious for ESP. The relative ease with which messages can be transmitted in our culture by telephone, cable, letter and other devices reduces the chances for the occurrence of situations in which a person may try to communicate an information by reliance on psychical abilities or even by the mere wish that another person may know it. It goes without saying that in this respect also the general disbelief in ESP acts as a negative inhibiting factor, although we assume that it is less influential than the habitual reliance on technical communication media. Moreover, neither education and dominant attitudes nor conditions in our social and physical surroundings promote attending to weak inner signals stemming from unidentified sources. However, if attending to this kind of inner signals is strengthened, as in the psychoanalytic treatment situation or in dreams, then ESP occurs more frequently.[12,13] Similarly, tasks which have to be dealt with without possible reliance on clearly discernible supraliminal stimulation from without or from within are habitually coped with by guessing or by probabilistic considerations. Finally, attainment and maintenance of cognitive consonance are held to be virtues in Western culture, while the acceptance of cognitive dissonance is seen as deviant and dangerous. Therefore, the striving towards cognitive consonance may impair the detection of those very weak ESP signals, which are discernible only because their informational content differs from the informational content of other stronger signals concomitantly present. Moreover, in cases where an ESP signal is picked up and/or reacted to, there would be a strong tendency either to explain it away in line with Western scientific thinking or to hide the incident. In short, the chances for a successful field study of ESP are not too favorable in Western culture.

But which culture does our criteria designate as more suitable for anthropological studies of ESP? Our experiments demonstrated that belief in parapsychological phenomena is not a necessary condition for the manifestation of ESP. Of course, the cited findings did not disprove the "sheep and goats" hypothesis. Still we doubt that the anthropologist would be well-advised to single out for his research those cultures which particularly emphasize belief in the supernatural. Our doubts stem both from personal observations as well as from general considerations. Those of our experimental subjects who were born in Arabic countries and educated by parents who still stick to the Middle-Eastern tradition, including the belief in charms and ghosts, performed no better in our experiments than their colleagues of Western descent. The argument that Middle-Eastern Jews in Israel are already westernized, even in regard to their attraction towards the supernatural, does not seem pertinent. Recently Dr. Arieh Kruglanski, a social psychologist in the psychology department at Tel-Aviv University, found that the percentage of students of Middle-Eastern descent who were willing to volunteer for ESP experiments and to study ESP was two and a half times as high as the percentage of Western students.

Yet, to our mind such incidental observations should carry much less weight than the following more general consideration. The same psychological and sociological factors which in a culture antagonistic to parapsychological phenomena promote the tendency to rationalize away ESP are also evident and active in a culture emphasizing the existence of psychical phenomena, but here they subserve the opposite end: phenomena of normal perception may be mistaken for paranormal and reported as manifestations of ESP. Therefore, we venture to suggest that one of the criteria for selecting a cultural site for anthropological observations of ESP should be the neutrality of the culture with regard to ESP. Neutrality would mean the willingness or readiness to accept ESP phenomena without trying to explain them away or to fit them into a tightly built system of supernatural beliefs. This kind of neutrality borders closely on a certain degree of equanimity insofar as events in the external world and the power of supernatural entities are concerned. However, this neutrality would and should not prevent people from actively trying to transmit a message mentally. Of course, the greater effectiveness of the active transmitter as compared with the mere thinker would be of greatest utility in a culture which does not yet possess or does not exploit technical media for rapid distant communication.

Another feature highlighted by our experiments as an important characteristic of a culture favorable to ESP manifestation would be greater tolerance for informational ambiguity and cognitive dissonance than is the case, say, in our own culture. Such an attitude towards ambiguity and

dissonance would increase the probability of reacting to ESP signals which differ from the strong background noise only by virtue of their informational content. Many tests are available for determining the degree of tolerance for ambiguity and intolerance for cognitive dissonance. Yet most of these tests are culture-bound and of small utility for the anthropologist set upon selecting an ESP-favorable culture. Therefore, we suggest the use of a more modest and easily applicable criterion, based on our theory of cognitive orientation, namely, absence of emphasis on the necessity for attaining, maintaining and manifesting cognitive consonance, or—expressed in positive terms—belief in the possibility and value of contradicting ideas.

After detecting such a culture, two strategies could be adopted. The one would consist in looking for situations in which an ESP message is likely to contrast sharply with actual stimulation from without and within. The second strategy would be to study individuals or groups that deviate from well-established patterns of behavior, by force of some sudden impulse. These sudden departures from well-established habits may be caused by an ESP signal which, due to its contrast with the inner stimulation eliciting the habitual behavior, is strong enough to evoke a response, even if the people concerned remain unaware of the fact that they acted because of ESP.

Apart from contrast in information content, the effectiveness and discernibility of ESP depend also on the ratio between the strength of ESP and the strength of other present signals. Attention naturally plays a role in determining this ratio. Assuming a more or less equal strength of ESP signals across individuals, the ratio of strength would be unfavorable for ESP in a culture which supplies a lot of stimulation and emphasizes the importance of dependence on stimuli. This statement may sound trivial, but it loses some of its triviality if we remember that not only stimuli from the surrounding environment but also stimuli from within the organism compete with ESP. Yoga, for instance, educates its disciples to pay special attention to physiologically elicited stimuli. Since even the relaxed body is permanently active and stimuli-generating, the especially heightened awareness towards these internal processes could produce a strength-ratio rather unfavorable for ESP. To the best of our knowledge, there exist relatively few reports concerning ESP experiences by persons engaged in yoga exercises. On the other hand, neither does the different kind of relaxation practiced in the Western world seem to promote ESP experiences, probably because of reduced attention. Therefore, we conclude that ESP experiences are best served by a culture promoting a state of mind of devoted attention without reinforcing the temptation or inclination towards guessing.

We are well aware of the fact that we managed to deduce from our experimental findings only very few hints for anthropological research of

ESP. Yet it should be kept in mind that we concentrated almost exclusively on our own experiments. There are a considerable number of other ESP experiments with positive results which, if analyzed in the same or a similar vein, could reveal further ESP characteristics useful for the anthropologist.

However, the use of such a rather cumbersome indirect method could be contested through a familiar argument. It could be claimed that manifestations of telepathy in the modern world are only the poor remnants of what had once been an important means of communication. Technological developments and the contingent change in attitude towards a metaphysical conception of the world have promoted reliance on other means of communication, thus causing a progressive degeneration of the less and less used ESP channel. Since this process has not advanced in more primitive cultures as much as in ours, it would suffice to use primitiveness in the development and use of technological means of communication as the only criterion for choosing a culture as target for anthropological ESP research. This research should be carried out without being biased through the results of modern ESP experiments which, due to the degeneration of ESP capacities in the modern world, may mislead the anthropologist.

To our mind this argument is, on the one hand, utterly unfounded but, on the other hand, offers the welcome opportunity for discussing the probable past and future of the ESP channel. We have mentioned earlier that ESP as we know it cannot compete with other media for long-range communication like shouts, words, drum or sign signals, etc., not to mention the telephone, radio, and television. However, there must have been a time in which these means, including the necessary social organization, were not yet developed well enough to secure long-range communication whenever it was imperative for individual and group survival. Given ESP capacities as a common property of primitive man, or what would amount to the same, as a property of some especially gifted individuals, natural selection would have promoted the ESP channel for retaining or attaining the extremely valuable ability to receive help whenever needed. Up to the twentieth century, well-developed ESP capacities would have been far superior to any hitherto available means for human communication. Why then was it neglected in favor of other—then inferior—means of communication? Moreover, if due to reasons unknown to us, it was neglected for ten thousand years, why does it still exist as a weak but clearly manifested capacity in the subjects of our experiments, not to mention those people who have been observed to exhibit impressively strong ESP talents?

We are not in a position to answer these questions by an argument or evidence which would support the hypothesis from which these questions arose. But we venture to hypothesize that what has hitherto been known as

ESP phenomena, in particular telepathy and clairvoyance, is only the secondary manifestation, a kind of by-product, of a force or mechanism which primarily fulfills some vital function within the living organism of humans and animals. Since ESP, the secondary function, is a cognitive process, we also assume that the primary function is related to cognition. In fact, the scientific endeavor to understand cognition is badly in need of a new paradigm. Neither the traditional physiopsychological approach nor models derived from the digital computer seem likely to cope adequately with the enormous complexities of memory scanning, information retrieval and productive thinking. They do hardly more than graze these problems. Physicists when faced with a similar deadlock in their field would not hesitate to embark on daring speculations about a new force which could solve their problem. Claiming the same privilege for psychology, we hypothesize that the same force or process responsible for the occurrence of a specific, precise thought or image, out of the millions of possible ones, in the minds of two individuals spatially distant from each other, is the most likely and promising means for explaining how, out of millions of items stored in a memory, precisely that item is retrieved which is needed for the productive solution of a new problem, and how in both cases this occurs as an instant flash of intuition.

However, our hypothesis that the ESP-underlying force is intimately involved in cognitive functioning does not in any way preclude the possibility of parapsychological manifestations in animals and even plants. Indeed, one does not have to assume higher cognitive processes in animals or plants in order to understand the often-mentioned observations of ESP on the subhuman level. These observations are rendered plausible by reference to two basic psychobiological principles. The first is that any psychological process or function of major importance on the human level has its roots in lower levels of organic existence and hence may be detected in some form—usually simpler, sometimes transformed or analogous—on the level of animals and even plants. This statement is valid for the functions of learning and thinking no less than for sensing and feeling. The second principle is that any psychological function which on the subhuman level may be carried out without the full involvement of higher cognitive processes, is on the human level fully dependent on cognition. For example, while there is no doubt that worms, animals devoid of a cortex, possibly even the paramecia and amoebas, may undergo conditioning successfully, there is even less doubt that in humans conditioning proceeds with the help of distinctly cognitive processes like linguistic coding, hypothesis-formation, hypothesis-testing, decision-making, etc. The same goes for abstraction, generalization, and emotional responding. Incidentally, even in

humans, when higher cognitive abilities are impaired temporarily or permanently, many basic psychological functions are nevertheless carried on a lower level without involvement of the impaired abilities.

In view of these two principles it is evident that on the human level ESP phenomena may be closely allied to cognitive functioning, while on the subhuman level the same phenomena may occur without involvement of cognition or with the involvement of what is on that low level the analogue of the higher cognitive processes.

Hence, it is not implausible to assume that the reason why the human ability to produce ESP phenomena did not degenerate is that the very force underlying ESP serves other highly important cognitive functions which are hardly understood at present. In contrast to Lévi-Strauss, psychologists like Freud, Piaget and many others, ourselves included, are convinced that all human cognitive abilities have developed in the course of millennia and are probably still developing, possibly even at an increased pace. If this inference is correct, the above-mentioned hypothesis that the ESP-underlying force fulfills major cognitive functions implies that ESP phenomena are not declining. On the contrary, all other factors being equal, they should become more abundant and pronounced in the future.

Psychology at present has no means to test the first hypothesis which claims a developmental decline of ESP, or the second (contradictory) hypothesis, which claims a progressive increase in ESP capacities. In contrast, anthropological research could shed some light on this question, provided that research is not guided by the oversimplification of automatically equating primitive cultures with lower cognitive activity and cognitive effort. Cognitive development results in widening of memory, in refinement of strategies for memory retrieval, in adopting more complex methods for problem-solving, in constructing and using more elaborate concepts, and—last but not least—in an increasing sensitivity for problems which require productive thinking. Richness of memory and strategies for retrieval and problem-solving are relatively difficult to investigate. But it is well within the scope of anthropological research to obtain, for example, some observational material pertaining to the question of whether ESP is more abundant in cultures which directly or indirectly promote cognitive activities than in cultures which do not. As long as neither of the two hypotheses claiming increase or decrease in ESP received any support, it is, to our mind, unfounded to regard cultures as particularly suited for ESP research merely because of their relative primitiveness.

From the viewpoint of anthropology, psychological ESP experimentation has the advantage of being able to produce ESP phenomena in the lab, to measure their frequency and strength, and to determine their charac-

teristics. From the viewpoint of psychology, anthropological research has the great advantage of being able to study ESP phenomena in different situational and cultural contexts, thus avoiding the dangers inherent in the sterile surroundings of the laboratory and in isolation and control of variables. These and other mutual advantages strongly urge the combining of resources. If, as we have tried to show in this lecture, the results of psychological ESP experiments could provide useful clues for anthropological investigations of ESP, the positive and negative results of these investigations will provide feedback to the psychologist by presenting him with a host of new hypotheses for further ESP experimentation.

REFERENCES

1. Lévi-Strauss, C., *The Savage Mind* (Chicago, Ill.: University of Chicago Press, 1966), p. 130.
2. Kreitler, H., and Kreitler, S., "The Model of Cognitive Orientation: Towards a Theory of Human Behavior," *British Journal of Psychology, 63* (1972), 9–30.
3. ——, "Does Extrasensory Perception Affect Psychological Experiments?" *Journal of Parapsychology, 36* (1972), 1–45.
4. ——, *British Journal of Psychology, loc. cit.*
5. ——, "Subliminal Perception and Extrasensory Perception," *Journal of Parapsychology, 37* (1973), 163-188.
6. *Ibid.*
7. Wapner, S., Werner, H., and Chandler, K. A., "Experiments on Sensory-Tonic Field Theory of Perception: I. Effect of Extraneous Stimulation on the Visual Perception of Verticality," *Journal of Experimental Psychology, 42* (1951), 341–345.
8. McClelland, D., and Atkinson, J., "The Projective Expression of Needs: I. The Effect of Different Intensities of the Hunger Drive on Perception," *Journal of Psychology, 25* (1948), 205–222.
9. Schachter, S., "Cognitive Effects on Bodily Functioning: Studies of Obesity and Eating." In D. C. Glass (Ed.), *Neurophysiology and emotion* (New York: Rockefeller University Press and Russell Sage Foundation, 1967), pp. 117–144.
10. Kreitler, S., Kreitler, H., and Zigler, E., "Probability Learning and Curiosity." Unpublished manuscript, 1973.
11. Glass, D. C., "Theories of Cognitive Consistency and the Study of Personality." In E. F. Borgatta and W. L. Lambert (Eds.), *Handbook of Personality Theory and Research* (Chicago, Ill.: Rand McNally, 1968).
12. Ehrenwald, J., *Psychotherapy: Myth and Method* (New York: Grune & Stratton, 1966).
13. Ullman, M., Krippner, S., and Feldstein, S., "Experimentally-Induced Telepathic Dreams: Two Studies Using EEG-REM Monitoring Technique," *International Journal of Neuropsychiatry, 2* (1966), 420–437.

DISCUSSION

SERVADIO: Thank you very much, Dr. Kreitler, for a very interesting and, to my mind, a very stimulating paper. Dr. Devereux?

DEVEREUX: I have been very much impressed by some information on these experiments which I was fortunate enough to get from Dr. Kreitler yesterday and I am very sorry that he didn't go into details today. I think that there is a very fruitful line of investigation there. Since most of you are better qualified to discuss that than I am, I will mention only some minor points. I have affection and admiration for Doctors Benedict and Mead, but I would hardly call them exponents of the psychoanalytic viewpoint. But that is a mere passing remark.

Dr. Kreitler made a very remarkable comment, which I think should be taken up in the discussion—that ESP capacities should not be thought of as a sense organ. I think that there may be something to be explored in that direction.

Dr. Kreitler also noted that *some* cultures emphasize the supernatural. Unfortunately, *all* of them do! I think that it may be possible—perhaps, from the viewpoint of the pure rationalist—not to deny that certain phenomena occur. But I cannot call these phenomena ESP because that would mean committing myself to a *theory* which has not yet been formulated. I also wonder if so-called ESP should be thought of as a *capacity,* as Dr. Kreitler seems to think, or whether it should be thought of as a *flaw:* as a major obstacle to the construction of a rational universe. In other words, if there had been reliable telepathy, it would have stood in the way of an early invention of the radio. I think this fact should be considered, because, as I once remarked, it is of no use to a phototropic insect to discover the laws of optics. Indeed, even if it did know all about optics and the properties of heat, it still couldn't stop itself from falling into fire.

KREITLER: First, a short remark about the Demokritos theme. Speculation, which was later confirmed, is science.

DEVEREUX: It was not!

KREITLER: I think here we differ in our definition of science.

DEVEREUX: May I give you a very brief definition of that? ESP theories resemble Demokritos' atom theory. The Greeks knew almost no phenomenon other than fire whose *first* explanation called for the notion of "atom." His atom theory was at best a geometrical, *not* a *physical* theory. As a *physical* theory it was a fantasy, picked out of the void. It became *necessary,* as a *physical* theory, approximately at the time when Lavoisier began his

experiments. I hold that we do not know at present *any* fact whose *first* explanation makes recourse to ESP-type theories mandatory.

KREITLER: I would challenge the statement, but I think it is besides the point. You mentioned a very important aspect of what I tried to make clear in the last paragraph: that ESP would have been an important tool for survival in prehistoric times. Now, on the other hand, if ESP which obviously did not serve communication, has not degenerated to such an extent that it totally vanished, if it is still existing in every human being (and we tested hundreds and hundreds), it must fulfill another function because otherwise it would probably have vanished; and it is one of the present tasks of psychological researchers to find out what could it serve. In my opinion, we have some indications which might be called speculation because they're not yet confirmed, that it serves some functions in memory retrieval and especially memory scanning which can't otherwise be explained. Here, at the moment, we use ESP as an explanatory hypothesis. I use the word ESP in the same vein as you do, with brackets, because I don't know what it is. It is *not*—and this is clear in our studies—it is *not* anything comparable to a sense organ, because information mediated through it, strangely enough, doesn't fuse with sensorily-mediated information.

BRIER: Let me follow this up, about ESP. It probably would have been useful at one time. If it had been useful then, it would have been passed on by natural selection. That's an argument that's been advanced by a lot of people. It does seem to be a logical argument. Aren't there properties that can't be passed on genetically? I mean, for example, if ESP would have been useful, say, to prehistoric man to help him know what's around the corner or something like that, that doesn't mean it can be passed on genetically, and it could die out. It hasn't been demonstrated that every property of man that is useful is passed on genetically, and ESP could be one of those properties that can't be passed on genetically. Right?

KREITLER: Nobody has proved that everything that was useful was inherited. Such proof would be impossible since we don't know what existed then, but what we do know is that traits useful for the struggle for existence were inherited, and we draw the general conclusion that that which was useful was selected. If we reject this, we reject the theory of natural selection.

BRIER: Well, let me make it clearer. This usually holds for physical properties, but ESP is kind of a unique thing which so far hasn't been tied to physical properties, and one of the things that's interesting about ESP is it seems to be independent of physical parameters. Time and space don't

seem to affect the performance of this ability. That's why I suggested this may very well be the kind of thing that can't be passed on genetically. Of course, this will hinge on whether one is viewing the organism as purely a physical entity or as a physical plus something else.

KREITLER: I could not accept this statement because, for instance, the ability to form sentences—not to pronounce phonetically but to build a sentence—the ability to grasp or pick up a language, etc.—this whole set of cognitive abilities, to the best of our knowledge, has hitherto not been shown to be a merely physiological phenomenon and all researchers who tried to prove this have failed.

BRIER: Agreed.

KREITLER: So I wouldn't judge ESP differently than I judge the capacity of human beings to learn a language or to think logically to a certain extent, which is genetically transmitted, as is also a greater part of intelligence.

LEWIS: Just a brief comment on the passage that we've just heard. Of course, the argument for the preservation of those adaptational selection traits which are advantageous really has a quality of sort of cosmic rationalization. It has some degree of plausibility; it is in the framework of the physical features of human evolution, but when one is discussing something like this, I think it becomes a little bit more difficult to pin down and to give any substantial reality to. However, I wanted to ask a question of Dr. Kreitler and I apologize if he dealt with this in the beginning of his paper which I unfortunately missed, but I wondered to what extent he had found or taken account of situational factors affecting different ethnic responses in his experiments. The point I have in mind is that I would anticipate that the situations in which the members of various ethnic communities in this room found themselves would have a very strong influence not only on their total system of perception, on their view of themselves and their view of the world, but I feel it would also influence any experiments relating to extrasensory perception. I wondered if Dr. Kreitler found this. It's not just the ethnicity and the culture that people have as part of what we lump together under the umbrella of the term ethnicity, but it is the situation in which they are placed. For instance, you mentioned Jews from North Africa who come to settle in Israel. Their situation is different from that of, say, Jews from Central Europe or even recent Russian immigrants. You have the ethnicity factor, but you also have different situational factors. Did you control for this?

KREITLER: We used as subjects in our experiments, as I mentioned,

students who came from different cultures. But experimentally, they were all in the same situation. They had to react in the usual experiment without knowing that it was an ESP study. Now, to our great amazement, we found no difference in the performance of the European group and the so-called Middle-Eastern, or, as we call them, Oriental group. But afterwards when checking for their private beliefs, we did find differences. That means the "sheep and goats" hypothesis was not confirmed. But I would not dare to make any general statement about ESP in these groups outside our lab. I have to restrict myself to what we observed and not to what I would or would not guess. Anyhow, belief in ESP obviously did not play any part in our experiments, and the subjects did not know that they were engaged in an ESP experiment.

LEWIS: Can I just briefly comment on that, very quickly? That's very interesting, of course, that although the experimental research situation may be held constant, it is nevertheless the case that people who come into the situation bring with them situational factors which are not parts of or partial to the context of the experiment. For instance, if you submit an illiterate beggar to the same experiment as a highly civilized urban sophisticate, although the situation of the experiment may be the same, the situation of the two tested people is entirely different.

KREITLER: I have one case in which this was true. I couldn't mention it in the lecture. When word got around that we were doing these experiments, two professional healers, ESP people from London, came to Tel Aviv to participate in our experiments. We couldn't, of course, include them in our sample because they knew our purpose. One acted as sender and the other as perceiver, and vice versa, and they did something astonishing. They worked exactly on chance level. The only people who really managed, I would say, three consecutive zeros on the chance level. Of course, we laughed and they laughed, and we asked them "What do you think about these results?" And they said, "You see, your set-up may have shied away our ESP capabilities." Of course, if you suddenly expose people who are not used to experimentation to an experimental situation, this could produce what we would call strong background noise which would make it difficult for the ESP signal to come through.

SERVADIO: Professor Smith?

SMITH: I found your paper extremely interesting and I would like to raise one point. You speak of ESP as a "weak signal." Perhaps it is a weak signal usually, but it seems to me that on occasion, it becomes an extremely strong signal and so I wonder if that should not be qualified. For example, I

usually have very little ESP, but once there were two fortune cookies in front of me and I suddenly knew that one particular one was extremely significant; this knowledge was very strong, so I question the term—the absoluteness of the term "weak."

KREITLER: I mentioned ESP as a weak signal in the average subject who does not know that he is involved in an ESP experiment. This does not exclude the extraordinary performance of subjects especially gifted for ESP. The main lesson we learned from our experiment was that even in randomly chosen subjects a weak ESP signal can become effective provided that experimental conditions make possible a reduction of external and internal noise.

SERVADIO: Professor Hardy.

HARDY: What I am saying now is really speculation, and not scientific. To go back to its possible biological significance, as I've often said before, if ESP is a reality, and I believe it is, I find it very difficult to imagine it being confined to just one species of animal, i.e., man. I should think it far more likely that it is something much more universal, which may be subconscious and may be something like a shared behavior pattern in a particular species. This is, as I've said, not essential to my discussion of the importance of behavior as an evolutionary selective force, but it might be an additional factor. It may be that only a limited number of human beings are really conscious of what is something much more fundamental. That's only speculation though.

KREITLER: In the original paper which was too long to be read here, I discussed this point. We believe that it is not a unique trait of human beings, but exists, as all cognitive processes do, on a lower level of performance, namely, animals. We wouldn't dare to say something about plants.

HARDY: Carington put forth this idea of shared behavior patterns before I did, I found.

DEVEREUX: I'm concerned about one thing, namely, about the assumption that the subjects did *not* know that they were engaged in ESP. In terms of ESP theory could they not have known, *by ESP,* that they were engaged in an experiment on ESP? I'm afraid this is a very serious problem, if you believe in ESP.

KREITLER: Subconsciously, they could have known. After two or three months, I would say that some subjects already knew that something strange was going on with these far-distant signal systems between the two

rooms. Some probably did suspect an ESP experiment. But we tried to disguise it not only by the control runs, but also by the fact that the same experiments were carried out by many other assistants without the involvement of any ESP. We can't exclude subconscious feelings on the part of subjects that what they are doing is ESP. This we couldn't do, of course. Anyway, we couldn't control for it. What we controlled were conversations in the cafeteria, etc., and there was no indication that the students knew anything about the purpose of our experiments.