PSI FUNCTIONING AND ALTERED STATES OF CONSCIOUSNESS: A PERSPECTIVE

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A major problem hindering research into the nature of psi is its typically low level of manifestation (poor signal to noise ratio) and unreliability of operation. Psi has usually been studied with either the percipient, the agent, or both in their ordinary state of consciousness. Because of both anecdotal evidence and a little experimental evidence suggesting that some altered states of consciousness, such as hypnosis or dreaming, might be more favorable to the operation of psi than our ordinary states, considerable interest has recently become focused on the possibilities of using altered states for enhancing psi functioning.

Honorton (in press) has recently reviewed 87 experimental studies, most of them fairly recent, and has shown that experimental *procedures* which are often associated with the induction of altered states of consciousness are generally conducive to stronger psi manifestation. The procedures investigated have included meditation practices, hypnotic induction procedures, relaxation techniques, and ganzfeld stimulation.

I stress that Honorton's conclusions are about experimental *procedures*, procedures which have frequently been associated with the induction of altered states. As I have frequently pointed out (Tart, 1971; 1972a; 1972b; 1973; 1974; 1975a; in press (a); in press (b)), there are enormous individual differences in how people respond to various induction procedures, including the fact that often no altered state results. Thus, the fact that an experimenter administers a traditional or special induction procedure to a participant in a psi (or any) experiment is not equivalent to saying that the experimental participant is *in* some particular altered state. Although it was probably the case that many of the participants in the studies reviewed by Honorton were in an altered state, this is an important methodological distinction: if we do not make it, we add an enormous amount of error variance to our data.

Using altered states to facilitate psi functioning is not a straightforward or easy task. Our scientific knowledge of altered states is in its infancy, as is our knowledge of psi, so in many ways we are using one unknown to potentiate another unknown, and much of our effort is based on hope, rather than knowledge.

I have spent two decades investigating the nature of both our ordinary state and various altered states of consciousness. One result has been the evolution of a *systems approach*, which attempts to provide an overall conceptual and methodological framework for working with the scattered scientific data about altered states. More precisely, it is about the nature of *discrete altered states of consciousness* (d-ASCs), a more precise term than altered states, which has often come to be used for almost any and every variation in consciousness possible, no matter how small. In this paper I shall present a brief overview of this systems approach to d-ASCs and speculate about some specific ways this approach suggests fruitful use of d-ASCs to facilitate psi functioning. The interested reader should see my recent *States of Consciousness* book (Tart, 1975a) and other writings (Lee et al., 1976; Tart, 1972a, 1972b; 1972c; 1972d; 1974; 1975b; 1976a; in press (a); in press (b); 1977) for a full exposition of this approach. This paper is a more technical discussion of the consideration of altered states and psi appearing in my *Psi: Scientific Studies of the Psychic Realm* book (Tart, 1977a).

In terms of the distinction made above between the *existence* of a d-ASC and the *procedures* which might or might not produce it, this paper is about the experientially developed d-ASC and its possibilities, not about induction procedures. The actual existence of a d-ASC must be assessed by experiential and/or behavioral and/or physiological mapping for an individual experimental participant at a given time, a methodological point discussed fully elsewhere (Tart, 1974; 1975a).

Components of Consciousness

Although consciousness is usually experienced by us as a complex but unitary system, as a whole, it is useful for analytic purposes to break it down into major subsystems. As long as we keep in mind that such subsystems actually work together to form an integrated *system*, with emergent properties arising by virtue of its being a system which are not clearly predictive from knowledge of the parts only, this will not lead us astray.

In looking at how people in various d-ASCs behave and what

they report about their experiences, I have broken consciousness down into ten major processes or subsystems, functioning in ordinary consciousness and often showing radical changes in d-ASCs. The ten subsystems are sketched in Figure 1. The connections, the arrows, represent major routes of information flow. Note that there is nothing ultimate about these subsystems, as sketched in Figure 1: they are simply convenient classifications or groupings of mental processes based on current knowledge.

Basic *awareness*, that undefinable but immediately observable quality that lies behind the particular, more articulated contents of consciousness is also shown in Figure 1. However, it is not a subsystem but rather a "quality" behind subsystems, a basic "something" which interacts with various subsystems. The resultant of basic awareness interacting with various subsystems is what I call *consciousness*. Also shown are latent functions, usually unconnected to the structure of ordinary consciousness, but which may be activated in a particular d-ASC. For most of us, most of the time, psi functioning is such a latent function.

The system of ordinary consciousness, which we shall now consider generally, does not exist in isolation. A person interacts with a world around him. Thus in the systems diagram of Figure 1, I have shown major inputs from the external world, and major sensations from the person's own body, as well as motor output affecting the external world. I shall briefly describe the main characteristics of the various subsystems by looking at how we deal with information input from the external world.

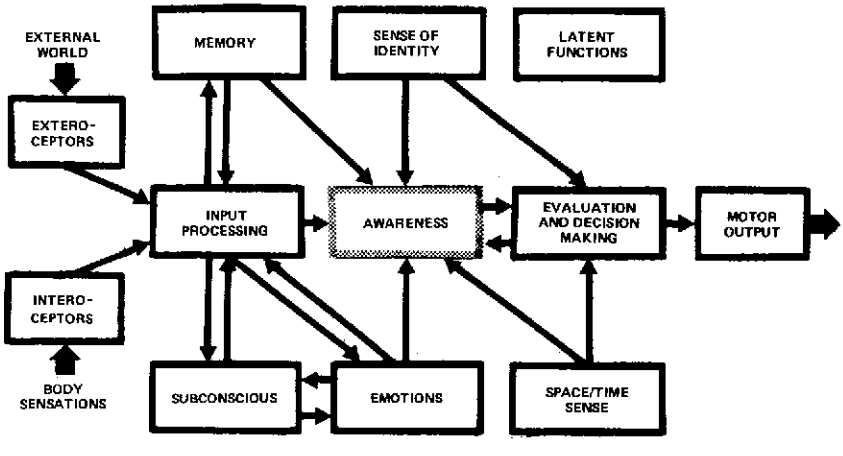

Figure 1

Information about the external world is taken in through the classical sensory receptors (eye, ear, touch, taste, smell): for convenience I have grouped these together as our *Exteroceptor* subsystem in Figure 1. The network of specialized receptors and nerve endings throughout our body that tells us whether we are comfortable or uncomfortable, what position we are in, what kind of movements we are making with what intensity, etc., I have classified together as our *Interoceptor* subsystem.

As I understand it, we very seldom or perhaps never have any "direct" contact with sensations from either our exteroceptors or our interoceptors, the external world, or our bodies. Rather, these sensations pass through a very important set of processes that I have classified as *Input Processing*. This subsystem represents a set of usually completely automatic and largely non-conscious, implicit learned processes which, in terms of human time, well-nigh instantly scan the pattern of incoming sensations, separate out those aspects of the sensation pattern that we have been taught to believe are "important" aspects, discard the vast majority of incoming sensations as unimportant, and pass on to awareness a *construction* that represents what is important to perceive. That is, what we experience as our "direct" perception of the external world or our body is usually a high-order abstraction, with a good deal of arbitrariness going into the abstraction process. It is analogous to the hierarchical management network in a large corporation. While untold thousands of processes go on in the operation of this company every day which generate data, these are combined and abstracted so the operating officer of the company is liable to see a one-page report on his desk in the morning which summarizes all that is "important" about the previous day's operations.

The non-conscious construction and abstraction rules of the Input Processing subsystem obviously depend on stored criteria, memory. In order to abstract out what is important, there must be stored criteria of what is important. I have shown a major two-way information flow with those groups of data storage processes here classified together as the Memory subsystem. Most of this interaction is non-conscious: our experience is that we recognize things around us immediately in almost all cases and only rarely have to deliberately try to consciously figure out what something is.

This abstraction of what is going on in the external and bodily worlds passes on from the Input Processing subsystem to *awareness*. Awareness can be aptly described as "the ghost in the machine," the part of our mind that is not an obvious persistent structure like

the other subsystems, but is much harder to define and pinpoint. Awareness cannot be given any verbal definition, for a verbal definition involves the use of learned language structures, subsystems, but awareness is more basic than any learned language structure. If you rub your cheek, the experience that *something* is going on is basic awareness, but as soon as this is further articulated (either as percept or cognition) into "I am rubbing my cheek," we are dealing with *consciousness*, the interaction of basic awareness with various subsystems and structures.

The distinction between basic awareness and consciousness is an important one. Ordinarily we seldom experience simple or basic awareness, although it can happen as a result of meditative practices or in some d-ASCs. What we ordinarily call our consciousness is a sort of marriage, an emergent gestalt of awareness and activated structures, activated subsystems. In Figure 1 I have put a less substantial border around awareness to represent this difficulty of localizing it, and the difference in its nature from subsystems. Awareness, in a sense, moves into subsystems to various degrees to produce our consciousness of their operation. Whether awareness is ultimately a neurological process of the same nature as other subsystems, what I have called the orthodox scientific view of consciousness, or whether it may be something of a quite different basic nature than neurological functioning, a view implied by much parapsychological data, which I have called the radical view of consciousness, is discussed at length elsewhere (Tart, 1974; 1975a; 1975b).

Much of our consciousness is occupied by these abstract representations of external events and bodily sensations, the output of the Input Processing subsystem. Ordinarily we then go on to evaluate a situation. We may deliberately call up information from the Memory subsystem in a conscious fashion to try to expand our understanding of our perceptions and we may deliberately evaluate the nature of the situation and make some kind of decision about it. The *Evaluation and Decision Making* subsystem is a classification for those relatively conscious reasoning and decision making processes that we experience ourselves going through. When we decide on what to do, we use our *Motor Output* subsystem, the classification of our various effector mechanisms, to actually do something with our muscles or vocal chords which affects the external world or our own bodies.

We may have various emotions activated by the representations of stimulus patterns we receive through the Input Processing subsystem or by internal processes, and these various emotions are classified together as the *Emotion* subsystem. These emotions may have

direct bodily effects on us, and may affect our Evaluation and Decision Making subsystem. When emotions are operating, much of our reasoning too frequently becomes rationalization.

There are several other subsystems that are not quite so obvious in a commonsense analysis of mental functionings as the ones discussed above, but which have important effects on our experiencing and action. One of these is what I have called the *Sense of Identity* subsystem, which represents the values we have as to what kind of person we are, how we like to present ourselves to other people, what we stand for, what we are opposed to, etc. In many situations, then, we evaluate and act not simply in terms of how to attain obvious ends, given the situation, but how *I* can not only attain some particular end (because *I* value it), but also present the proper image of *my*self to others, etc. This is the quality popularly called "ego" in experience, the quality that gives certain kinds of data within the overall system a very special relevance and power, often conjuring up strong emotions, because this is *me*, rather than just neutral information.

The *Space/Time Sense* subsystem is quite implicit in most of our psychological functioning, but very important. It is a kind of constant mental map organizing our experience which says I am located in such and such a location at such and such a time. It *constructs* an explicit or implicit spatial and temporal background to our experience, and generates expectations about how things are liable to change from this spatial and temporal reference point. We ordinarily do not recognize the constructed nature of these kinds of mental processes because we implicitly believe that we are simply responding to *real* time and *real* space. In various d-ASCs, however, time and space can be constructed quite differently as the subsystem changes its operations, an important property that we shall consider later when we talk about using d-ASCs to facilitate psi processes.

Another very important subsystem is the one labeled *Subconscious*, a collection of those various processes that we infer from observations of another's behavior and reports of his mental processes but which, ordinarily, the person himself is not directly aware of. In some ways it is the catchall category in the systems approach, as it covers such a wide range of phenomena. Some of these phenomena, such as those studied in psychoanalysis, are fairly well understood, while we have very little information about some others, such as creative processes.

The subconscious subsystem may get information directly from the Input Processing subsystem even if that information does not enter awareness, the phenomenon of subception. The Subconscious subsystem may in turn affect Input Processing to control what is passed

on to awareness, resulting in such processes as perceptual defense as an extreme, but, in a more general sense, resulting in the process of selectivity of perception. The Subconscious subsystem may trigger off particular emotions and particular emotions may themselves activate various parts of the Subconscious. Emotions *per se*, of course, can affect Input Processing: if you are feeling angry when you are walking down the street, you can much more readily see instances of social injustice than if you are feeling elated. Indeed, Subconscious effects can be seen on every other subsystem, although I have not drawn in every possible information flow route in Figure 1.

The subsystem labeled *Latent Functions*, shown in the upper right-hand corner of Figure 1, is a classification for all human potentials which are potentially available in some d-ASC, but are not ordinarily available in our ordinary state of consciousness.[1] This subsystem (more precisely, these many potential subsystems) represents many psychological potentials which we did not develop in the course of growing up in our particular culture, even though we had them by virtue of being born human beings. Indeed, some of these may have been strongly inhibited by our culture, but at least some of them are still potentially available. For at least some of us, this includes the potential to use psi.

The Busyness and Compellingness of Our Ordinary State of Consciousness

The various subsystems discussed above are analytical divisions of a complex, interacting *system*. The subsystems stabilize each other's functioning, for instance, and so lead to the stability of a particular discrete state of consciousness (d-SoC). For our ordinary state, there is an incredible busyness to our experience. Our minds are not quiet until we receive some external stimulus, but rather we are constantly generating internal thoughts, fantasies, plans, and emotions, as well as putting ourselves in stimulus situations which usually result in a steady flow of complex input.

Further, our ordinary state, rather than being called "normal" consciousness, might be more appropriately called consensus consciousness, for its very busy pattern of activity is focused around the consensus reality we have been taught by virtue of becoming fully functioning members of our particular culture; it is focused on those select aspects of perception/experience that have been defined as important by our culture. Because of the force of the conditioning that went into the enculturation process, much of this busyness of our

ordinary state of consciousness is also beyond conscious control, i.e., our ability to deliberately direct our attention, deliberately use our awareness to activate various types of experiences, is limited. The feeling that some people report in various d-ASCs of having more control over their attention is one theoretical reason for thinking that it might be easier to activate latent psi functions in them. Be that as it may, when we ask a percipient or agent who is in his ordinary d-SoC to try to use psi, we are asking him to try to do a very poorly understood and difficult task against an incredibly high noise level of compelling consensus consciousness, the constant ongoing activity of their ordinary state. In addition to any *specific* resistances our percipient or agent may have against using psi, this noise level is a real problem.

As an analogy, when we ask a percipient or agent to use psi, it's as if we want someone who is in the middle of a lively party in a popular tavern to try to hear a whispered conversion that is going on outside in the street. The stereo is playing loudly, dozens of people are dancing and shouting, others are conversing loudly on all sorts of topics that seem important or fashionable, others are telling interesting stories and jokes. Everyone, including our would-be percipient (and probably our experimenter) is drunk: drunk not only with the freely available liquor, but with the social/emotional/intellectual stimulation provided by the party. Further, this condition is not something that just happened to our percipient: he chose (or was conditioned to choose by virtue of his upbringing) to come to the party, he is enjoying it (or has been conditioned to believe he is enjoying it), and doesn't want to leave.

We make our way through the crowd, finally get alongside our percipient, and try to persuade him that it really is important for him to try to hear this whispered conversation that is going on outside in the street. If we are lucky, we can get him to stagger over toward the door, closer to where the outside conversation is taking place. We will probably be continually stopped by his friends who come up and engage him in conversation, offer him more drinks, or want to whisk him away to dance. The task of actually getting him to leave this warm, friendly, intoxicating party in the tavern for (what seems) the cold, dark street outside, and then pay prolonged attention to this hard-to-hear conversation is a prodigious one indeed.

This analogy may seem extreme, but my studies of the psychology of consciousness have convinced me that this is a quite useful analogy for our ordinary state of consciousness and what we are asking some-

one to do when we try to get him to listen to the "still small voice" of psi. Indeed, the analogy should be extended to include various (culturally shared) insanities and specific resistances to psi. Our percipient has probably heard a lot of awful stories about the things that can happen to people who go out into dark streets and get involved with people they don't know. His friends in the tavern (who represent both other people, who constantly reinforce our consensus consciousness, and the internal structures of our minds that embody consensus reality) have similarly been warned about such encounters, and would want to try to keep our percipient in the tavern where they believe they are all safe. Or our percipient may have fantastic ideas about wise men from the East waiting in the street, who are going to shower him with fantastic psychic gifts, so he wants to run out into the street shouting "Here I am, you found me, I'm wonderful, give it all to me *now*!" but this is not very adaptive behavior for actually hearing a whispered conversation either.

This three-ring circus of ordinary consensus consciousness is the background we must keep in mind when we consider the possibilities of using d-ASCs to facilitate psi.

Routes of Psi Information Flow

We shall now consider four theoretical routes of psi information flow. Each of these routes may sometimes operate within our ordinary state, as well as within d-ASCs. Later we shall consider how d-ASCs may specifically facilitate psi information flow along the various routes.

Figure 2 is a modification of the systems diagram of Figure 1 to show these four possible routes of psi information flow. I have drawn the input arrow from the external world to the Exteroceptor subsystem in a blocked-out form to remind us that in a parapsychological experiment we deliberately eliminate any information flow relevant to the target that might come over known sensory receptors. Except in the case of the percipient being in a sensory isolation situation, he is still getting some sensory information from his immediate environment but, since this is irrelevant to the target, this constitutes either random or systematic noise. Insofar as he pays attention to this sensory input, he is distracting himself from possible internal experiences that might carry the psi message. Research on ganzfeld techniques, for example, has shown some success in facilitating psi by reducing this noise input (Terry and Honorton, 1970).

I have added the psi target and the psi channel in the upper right-hand corner of Figure 2, showing them feeding into a largely

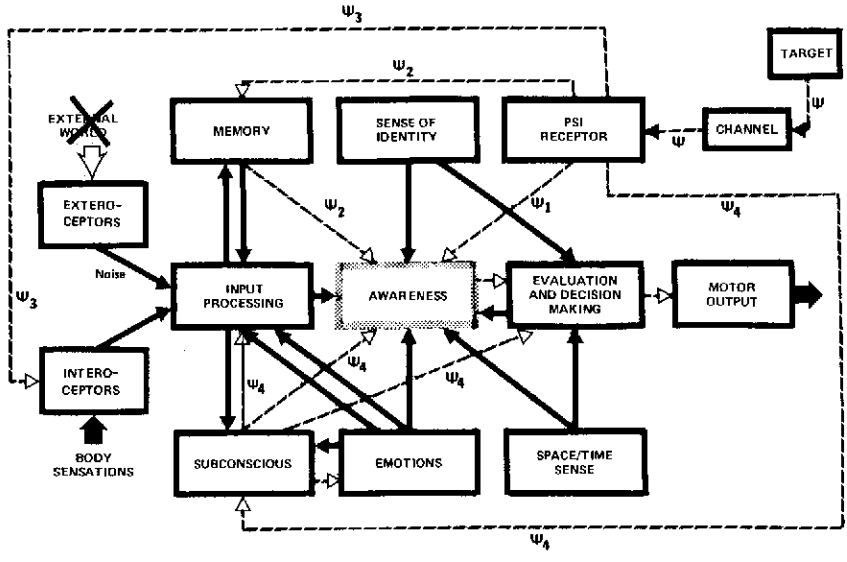

Figure 2

latent function or subsystem called the *Psi Receptor*, whatever process or processes transforms the psi information (arriving over some channel connecting the distant target to the percipient) into a form useful for processing in the mind or brain. Once this latent Psi Receptor is activated, four routes of information flow are possible.

Direct Psi

The first possible psi information flow route, marked as ψ_1, is represented by an arrow directly from the Psi Receptor to awareness in Figure 2. This route corresponds to the occasional type of psi experience where a percipient finds himself getting extremely good representation of the target. There seems to be little or no distortion, and the information has a quality of intruding and temporarily displacing whatever prior mental processes were going on. Direct psi thus seems to be relatively independent of the structure of the percipient's state of consciousness at the time, whether it is his ordinary state or a d-ASC.

Such experiences seem relatively rare compared with the more indirect psi information flow routes, described below, but when they happen they are often quite striking. To illustrate, when I was working as a laboratory assistant at the Round Table Foundation in the summer

of 1957, the well-known Dutch psychic, Peter Hurkos, was in residence, and we were trying to find a person with whom he would be a good telepathic team. I had tried several informal runs with Hurkos as both agent and percipient without making any really significant scores. The test, called the Matching Abacus Test (Puharich, 1962), consisted of arranging two rows of transparent boxes. Ten different target pictures can be seen through the boxes in one row, with a matching set of pictures in the boxes of the other adjacent row. The boxes were in random order within each row, and a shield covered the whole apparatus so the percipient could not see the boxes, although the sender could. As percipient, I would pick up a box from the row near me, hold it so that Hurkos, as agent, could see it, and then move it along my row, hopeful of getting a telepathic impression which would tell me where to put it down so it would be directly across from his matching box.

During one of the later tests, when I was acting as percipient, I was immersed in my own familiar mental processes, guessing, when suddenly a quite vivid and fully colored image of one of the target pictures, a sailboat, sprang full-blown into my mind and stayed there for a couple of seconds before fading, clearly displacing my own mental processes. The sudden, vivid intrusion was obviously alien, it did not seem to be a production of my own mind. I immediately asked Hurkos if the box I had in my hand at that moment was the one containing the sailboat, and it was. The information flow route seems to have been from the Psi Receptor directly into awareness for a couple of seconds.[2]

Memory-Mediated Psi

A second psi information flow route is shown by the arrow labeled ψ_2 in Figure 2. Here the information goes from the Psi Receptor to the Memory subsystem, where it activates a memory image or images (in any sensory modality or combination of modalities) which corresponds, to various degrees, to the target. This memory image, rather than the actual psi information, flows on into awareness. It is rather similar to what happens in ordinary Input Processing subsystem construction of sensory information, where frequently a memory image that has some reasonable degree of match to the actual presenting stimulus is what gets passed on to awareness, rather than the actual stimulus itself. "Reasonable degree of match," of course, means an incomplete transmission of information and, in some cases, fairly high distortion.

Roll (1966) proposed this as an information flow route for psi some years ago, and this theory has the virtue of being able to account for some of the distortions and transformations frequently seen in the psi reception process. It would seem to have some experimentally testable consequences also. For example, if the psi target is something we have never experienced in our past, we might not be able to receive it, or at best, we might only get a composite image built up of already existing memory images. Characteristics of the composition process might be able to identify when this route is operating.

This route of memory-mediated psi also illustrates the difficulty, given the present state of our knowledge, of drawing an exact dividing line between the Input Processing subsystem and the Memory subsystem, since the former draws so heavily on the latter.

Somatic Psi

A third possible route of psi information flow, shown by the ψ_3 arrow in Figure 2, is from the Psi Receptor to various parts of the body and thence to our interoceptors, through the Input Processing subsystem, and finally to awareness. The psi information is thus expressed as one or another kind of sensation in the percipient's body, hence the name somatic psi. Since body sensations ordinarily go through various degrees (sometimes extreme) of processing (abstraction and construction) in the Input Processing subsystem, the resultant percepts must be recognized as relevant before they can be used as indicators of psi. Such bodily sensation patterns may or may not have emotional feelings associated with them.

Carlos Castaneda has told me (personal communication, 1975) that this kind of possible information flow route is very important in the techniques of sorcery he learned from his teacher, don Juan. A sorcerer believes that he gets a great many cues as to things happening in his *environment* by noticing sensations in his own body. Similarly, I and other experimenters who have worked with me on my studies of feedback training of GESP ability on the Ten-Choice Trainer (Tart, 1975c; 1976b), where the experimenter/agent can see the percipient's hand movements over the circular arrangement of targets, have been quite convinced, on many trials, that the percipient's "body," some non-conscious aspect of his mind, as evidenced by hand motions, obviously knows what the correct target is on a particular trial. It is very frustrating for the experimenter/agent when the percipient then goes on to make the wrong response! I hope to objectively validate

this observation in future research. We know very little about this somatic psi information flow route, but I think it can be quite important.

Methodologically, it will be difficult to study the operation of this route, or even to make it operate, because of strong biases in our culture that devalue the body and either incline us not to pay much attention to our bodies, or to have highly distorted, hypochondriacal kinds of concerns with them. I notice many of my academic colleagues, particularly, tend to implicitly regard their bodies as machines designed to transport their marvellous intellects from one location to the other, or as a source of pleasure or pain, but not as a source of useful information. Workers in humanistic and transpersonal psychology are just beginning to discover that the body has a wisdom of its own, a "brain" of its own, as it were, that can provide us with and process information about both our own state and the state of the external reality around us.

I shall describe a recurring personal experience to illustrate how this information flow route might work. Through much of my adult life I have occasionally found that during social gatherings I will become anxious and upset, being, to put it in rather literal body language, "uptight." Because of my preoccupation with psychological matters, and my Western conditioning that my emotional and bodily state were (or should be) subordinate to my mind, my typical reaction was to try to figure out what was wrong with *me*, what psychological processes of *mine* were making me upset. Sometimes I could find an answer, but often I could not come up with any plausible psychological reason for my feelings.

A few years ago, I began to try to practice simply paying attention to things as they were, rather than as I thought they ought to be, and to accept feelings without getting caught up in my reactions to them, to adopt a less attached attitude to my own feelings and ideas. As part of this I began to pay closer attention to these uptight feelings at social gatherings, and also more direct attention to the other people in the room, sometimes asking them how they felt. To my surprise, I often found that the uptight feelings in *my* body, that made no sense to me, were reflecting the fact that someone else in the room was feeling anxious or nervous. Thus some of my body feelings became a source of information about my *environment* when I learned to regard them more clearly and actively check them against others' states.

I am not presenting these kinds of experiences as unquestionable examples of somatic psi, for they took place in situations where many other types of sensory information were available that I might have

been unknowingly reacting to. The point they illustrate is that by prematurely conceptualizing my own bodily feelings as unimportant, or as only reflecting my own psychological processes, I was discarding a valuable source of information that could carry psi messages.

Subconscious Psi

This fourth possible psi information route, shown by the ψ_4 arrows in Figure 2, shows psi going from the Psi Receptor to the Subconscious subsystem, from whence it may have a variety of indirect effects on us. The initial reaction at a subconscious level to the particular content of the psi information could result in selective psi perception or some distortion of the information then and there. There would be enormous individual variation here, depending on both general enculturation processes and the particular personal developmental history that affected what we would ordinarily refer to as unconscious personality dynamics. Once this had occurred, there are a variety of possible ways the output of the Subconscious subsystem could be expressed.

As a first possibility, the subconsciously transformed psi information might manifest by affecting the processing of ordinary sensory information passing through the Input Processing subsystem, modulating it so as to express parts of the psi information. This is one thing that can happen when psi information is obtained in the course of using external props, such as Tarot cards or a person's palms in a psychic reading. A large quantity of sensory information of little or only very general relevance is passing through Input Processing, and the Subconscious subsystem could subtly modify Input Processing so that certain aspects of this sensory information, such as a particular detail of a Tarot card, would stand out more.

As a second possibility, the Subconscious subsystem might send some kind of image or experience directly into awareness. An excellent example of this would be a dream that conveys psi information. Many psychic dreams contain *symbolic* expressions of the target material. Since we normally think of the dream production process as located in the Subconscious subsystem, the psi message obviously modifies whatever normal mechanisms affect dream production. Eisenbud's (1970) and Ehrenwald's (1968; 1971) work is very relevant here, as is the Maimonides work (Ullman, Krippner, and Vaughan, 1973).

A possible exception should be noted here: there are occasional psychic dreams where an ordinary dream process seems to be sud-

denly pushed aside and the psi target dominates dream imagery for a short period, an apparent manifestation of the direct psi route (ψ_1) discussed earlier. I have discussed this further in two case studies (Tart, 1963; Tart and Fadiman, 1974).

A third possible way the Subconscious subsystem might affect other subsystems so as to indirectly transmit a psi message would be to affect the Evaluation and Decision Making subsystem processes, to subtly alter them to lead to a decision that might not normally be reached, but which is relevant. Dean's work (Dean and Mihalasky, 1974), showing that more successful executives do better on precognition tests could be interpreted in this fashion. Assume this psi ability generalizes to their ordinary work. These executives, in their ordinary line of business, believing they are making only "rational" decisions based on known facts, could have their evaluation processes subtly altered to emphasize aspects of the situation relevant to information they picked up by psi, and so arrive at better decisions. This route also models Stanford's (1974a; 1974b) psi-mediated instrumental response (PMIR) theory, an adaptive effect on thinking or behavior caused by unknown psi operation, even though the person does not know he is using psi. Subconscious effects on the Input Processing subsystem also model the PMIR theory.

The Subconscious subsystem could also, of course, activate particular emotions because of its intimate connections with the Emotion subsystem, and these emotions could serve to modify Input Processing, the Sense of Identity subsystem, or the Evaluation and Decision Making subsystem in ways that would express psi. Similarly, the Subconscious subsystem might create bodily feelings that were like the somatic psi route.

Ordinary Consciousness is not very Conducive to Psi

Given the above discussion of possible routes to psi information flow, it becomes clearer why psi seldom functions very well in our ordinary state, in consensus consciousness. In consensus consciousness our orientation is usually to deal with things of the *external* world, particularly the things we have been conditioned or persuaded to believe are important. This means that the limited quantity of awareness (which also acts as an activating energy) we have available is concentrated on information coming in through the exteroceptors, and to a small extent, from the interoceptors. Insofar as total awareness is ordinarily limited (an assumption of the systems approach), this means the ability to be aware of other subsystem

activity which might convey psi information, or to activate other subsystems by putting awareness into them, is limited or impossible. Further, this usual orientation heavily loads and patterns our consciousness with information dealing with the external world, so that even if psi information came in by one of the four routes described above, it would be unlikely to be noticed among the preponderant experiences/plans connected with dealing with the external world. In engineering terms, the signal to noise ratio would be very poor, so the signal would generally be undetectable.

More specifically, in our ordinary state, the Memory subsystem is largely at the disposal of the Input Processing and the Evaluation and Decision Making subsystems in order to deal with the external world and make appropriate decisions, thus little attention is left there for the memory-mediated (ψ_2) route to be activated. Similarly, the ψ_1 route, directly to awareness, is quite inhibited because awareness is almost totally wrapped up in the ongoing process of dealing with and reacting to the external world. It's hard to push aside all that activity. The somatic psi route, ψ_3, is also generally blocked because we are either ignoring our bodily sensations or, if we are actively involved in dealing with the external world, we are creating large amplitude bodily sensations by virtue of that interaction, and these sensations are likely to mask any more subtle feelings that come from psi being expressed as bodily sensations. This preoccupation with the external world will also strongly inhibit the subconscious psi route, (ψ_4), in that the subtle distortions of conscious processes caused by the Subconscious subsystem expressing psi are likely to be of low intensity compared to the intense sensory/evaluative/emotional experiences resulting from dealing with the external world and our emotional reactions to these external world situations. Indeed, if your thinking goes in a "funny" direction that doesn't feel logical, or if you feel odd, chances are you will deliberately force yourself to return to "normal" immediately so you can continue dealing effectively with the external world.

Another hindrance to psi functioning in consensus consciousness is that the Space/Time subsystem is active as an implicit background to all our perceptions, thoughts, and actions, telling us that we are here, in *this* particular place at *this* particular time. This automatically implies that what is not in *this* particular place at *this* particular time cannot be affecting us and has no relevance. Thus the high degree of structuring of consensus consciousness in terms of our ordinary space and time framework, which implicitly (and explicitly) excludes psi, acts to indeed exclude psi.

The Sense of Identity subsystem, insofar as it is likely to make you emotionally identified with being an active, practical, capable person, further discourages you from attending to "weird" or illogical feelings and ideas. This ego identification uses up a great deal of awareness and energy that could otherwise potentially activate psi processes, and it gives special energy to ego-relevant processes that are usually involved in dealing with the ordinary external world.

Nature of Altered States of Consciousness

The flow of awareness and energy through the ten subsystems described above work together in our ordinary (or in any altered) state to form a *system*, so there is not only a specific range of functioning within each subsystem (analyzed in isolation) but an overall interactive, discrete pattern of functioning of the integrated system, a discrete state of consciousness (d-SoC). It is the quality or "feel" of this system pattern, as well as the specific functioning of the subsystems, that identifies and characterizes a *state* of consciousness.

For example, if you had to decide right this moment whether you were drunk or in your ordinary state of consciousness, you could do it in either of two ways. In one way you could recall that if you were drunk, you would be experiencing certain particular experiences, such as instability in walking, a Motor Output subsystem effect. If you are not experiencing instability, you are probably not drunk. That is, you could look for specific *criterion experiences* which we can take as information about the functioning of particular subsystems. Alternatively, you could simply judge the overall pattern of your consciousness. I'm sure most readers did not really have to look for specific symptoms, but knew immediately from an introspective glance at the overall pattern of their consciousness that they were not drunk. The differences between the overall patterns of our ordinary state and being thoroughly drunk, or of our ordinary state versus dreaming, or of our ordinary state versus some meditative states are *discretely* different. It is not just a matter of more or less of particular psychological components, the arrangement, the emergent system is different. This is the importance of the adjective *discrete* as part of the definition of a d-ASC; it emphasizes these qualitative, pattern differences.

The various subsystems that comprise our ordinary state interact with each other, even though we isolate them for analysis purposes, and this interaction, plus our interaction with consensus reality, stabilizes our overall pattern of functioning, so the d-SoC is stable. We usually do not suddenly have a mystical experience if we see a bright

light flash, or fall into some kind of "trance state" at a sudden, loud noise. Various induction techniques, considered at length elsewhere (Tart, 1975a), can sometimes break down the stability of our ordinary state and, following a transitional period which may be long or so short as to be almost unnoticeable, lead us into various d-ASCs. In various d-ASCs there may be changes in the style and level of functioning of particular subsystems and/or in the overall patterning of functioning, changes which usually seem quite radical to the experiencer. These changes offer interesting possibilities for effecting the manifestation of psi, and the remainder of this paper will be devoted to considering them.

Potential Effects of d-ASCs on Psi Functioning

In looking at the range of phenomena associated with d-ASCs, there are several classes of possibilities which have the potential of changing subsystem functioning or overall system (state of consciousness) functioning that might favor the manifestation of psi. First, latent psi functions could become (more) activated, through being able to be brought closer to or into conscious awareness, or otherwise gaining more energy, and/or through giving a more coherent, stronger output signal about the content of the psi target. Second, some subsystems whose normal operation would ordinarily inhibit psi might be themselves inhibited, and so, by contrast, allow psi information more ready access to consciousness. Third, the overall change in the *pattern* of subsystem functioning that constitutes various d-ASCs might also allow for a more ready expression of psi, in addition to specific subsystem changes. I shall not deal with specific d-ASCs in this paper except for illustrative purposes, but consider general patterns of subsystem and system change over the currently known range of d-ASCs that might be favorable to psi.

Direct Psi: Consider the ψ_1 route, where psi information seems to temporarily directly intrude into awareness, displacing other contents. An important aspect of our ordinary d-SoC is that we have very limited voluntary control over our attention/awareness. Yet many people, in various d-ASCs, report feelings that their awareness is somehow freer, either by virtue of not seeming so compulsively attracted by particular contents or subsystems that ordinarily capture awareness, or by virtue of experiencing a marked increase in ability to focus and hold awareness at will. Thus there is more opportunity to welcome psi impressions deliberately, or at least less resistance to their moving into awareness.

This *experience* of freeing up of awareness can be interpreted in

two ways. In the orthodox view of consciousness, the psychoneural identity hypothesis, where awareness is considered nothing more than a byproduct of brain functioning, for psi to manifest by the ψ_1 route means that brain functioning is somehow "loosened up," possibly by the imposition of random noise, by chemical facilitation of synaptic processes, by the inhibition of ordinary patterning forces, etc., so that neural circuits that were ordinarily not functional or were unable to interact with the bulk of the functioning system can somehow connect. This constitutes the activation and operation of whatever part of the brain the Psi Receptor is. For the orthodox view, distinguishing basic awareness from various subsystems is only an analytical convenience, nothing more. In the radical view of consciousness, which sees basic awareness as being of a *qualitatively* different nature from brain and nervous system functioning, the direct psi route could be interpreted as meaning that basic awareness is literally less involved in interacting with the structure of the brain and manifesting more in its own right. Insofar as basic awareness is, in its own nature, "non-physical" (in terms of currently understood physics), and insofar as psi might be an aspect of the nature of basic awareness, then any feelings of awareness being less controlled by ordinary consciousness (brain) processes might be strongly correlated with enhanced psi functioning. Awareness could literally be less controlled by or imprisoned with the brain.

Regardless of how we *interpret* such d-ASC experiences of increased ability to direct awareness, the experience of such increased freedom[3] seems to give the percipient the ability to focus on unusual aspects of consciousness, which could very well increase attentiveness to the psi message, regardless of which information flow route, of the four discussed above, it comes in over.

Memory-Mediated Psi: Variations in the experienced functioning of various aspects of the Memory subsystem are quite prominent over the range of known d-ASCs. Thus, insofar as the memory-mediated ψ_2 route of information flow is operative, many possibilities of psi facilitation are offered. One of the most interesting memory effects is the phenomenon of *state-specific memory*, where something experienced or learned in a particular d-ASC can be well recalled again in a subsequent episode of that same d-ASC, but the information does not transfer very well to our ordinary state, or to other d-ASCs. State-specific memory is illustrated in the old folk advice that if you lose something while you're very drunk and can't find it the next day, one way to increase your chances of finding it is to get very drunk again. Recent laboratory research is now confirming the existence of

such state-specific memory for alcohol intoxication (Goodwin and Powell, 1969), and experiential reports suggest it exists for many other d-ASCs.

If the ψ_2 information flow route involves a specific discriminable quality to memory, and such a quality is more readily discriminable or accessible in some particular d-ASC, then psi functioning should be more readily enhanced in that d-ASC. Vivid visual imagery, as both a read-out and control strategy, might be such a quality. This may be the reason for some psychics' need to enter a d-ASC to make their psi abilities function effectively. Also, if psi information is conveyed by memory images, and memory images are usually not very vivid compared to the ongoing pattern of sensory stimulation (via the Input Processing subsystem) and the operation of the Evaluation and Decision Making subsystem for dealing with the external world in our ordinary state, then switching to a d-ASC where memory images became more vivid and dominant might automatically result in increased detectability of psi signals that are memory-mediated.

Somatic Psi: The ψ_3 route, psi information expressed as body sensations or patterns of sensations, is particularly intriguing, as people often report greatly enhanced and/or altered experiences of their bodies in various d-ASCs. Ordinary sensations may be experienced much more vividly at times, and often people report experiencing entirely new qualities of sensations that are totally unknown in their ordinary state. Enhanced contact *per se* with bodily sensations might enhance psi functioning, particularly if percipients were then trained by feedback training as to what particular qualities of these enhanced body sensations actually express psi, and which are irrelevant. As mentioned earlier, this is probably not an easy line of research, given our frequently contradictory and often neurotic Western attitudes toward our bodies, but the possibilities here are exciting.

Subconscious Psi: The ψ_4 route, from the Subconscious subsystem to indirect effects on the rest of consciousness, may also be greatly affected by various d-ASCs. One way of understanding some of the phenomena of d-ASCs is by conceptualizing the boundary between conscious and subconscious changing, so what was *sub*conscious in an ordinary state could become conscious in a d-ASC.[4] That is, people may sometimes directly *experience* certain aspects of their minds which they or outside observers only *infer* exist in their ordinary state. Thus some psi information that reaches the Subconscious subsystem might then be directly experienced, and perhaps the experience would be in a less distorted form: some of the distortion that takes place in this ψ_4 route

may be due to the nature of the subconscious itself, but some may be due to the further information flow step of the Subconscious affecting other subsystems. Directly contacting the Subconscious subsystem eliminates this extra chance for distortion.

An important consideration as to how much practical use can be made of this route is the degree to which an individual percipient is psychologically mature and tolerant of his personal subconscious material. If his subconscious processes have a strong component of repressed and emotionally unacceptable qualities, as in ordinary kinds of psychopathology, then increased contact with the subconscious aspects of the mind in d-ASCs may induce anxiety, possibly to the point of being catastrophic, rather than aiding psi. Thus, simply putting percipients in more direct contact with their subconscious by inducing (and appropriately focusing) a d-ASC is not sufficient. We need to decide who this method is suitable for, and/or what kinds of individual psychotherapeutic or growth work can be done with a given, promising percipient to make this d-ASC contact with the Subconscious subsystem positive, instead of possibly negative.

Indirect d-ASC Effects on Psi Functioning

We have been discussing the kinds of changes that can occur in d-ASCs in terms of changes in particular subsystems, and have discussed these changes in relative isolation, but recall that in the systems approach any *state* of consciousness is a system, the parts interact with each other in a dynamic fashion to form a stable, unique pattern. Thus, changes in subsystems which might not be *directly* involved in one of the four psi transmission routes may still have important effects on psi information flow.

Consider the functioning of the Sense of Identity subsystem. We all have a number of identities or roles, which are called forth by various situations and emotional states. When a particular identity is functioning, it tends to organize the rest of our mental functioning into a consistent pattern and, to various degrees, we identify with this identity. Our mental processes *constellate* around an identity (Tart, in press (a)). When I am lecturing in a class in my identity of "Professor," if my muscles feel cramped, I do not stop lecturing in order to lie down on the floor and stretch! That is too inconsistent with the Professor role, even though it might be perfectly consistent with a role of friend in the company of close friends socializing in a relaxed atmosphere.

It is often difficult to realize just how strong our identification with

these various roles or identities can be. It is often practically total. The identification also tends to be *implicit*, that is, we just tend to assume that the role we're in is really our true self while that role is active and not realize at the time that this is one role out of many potential roles. This can inhibit psi in the following way. Suppose, in your ordinary state, your Sense of Identity subsystem functioning constellates your mental functioning around an identity in which you are a "rational, hard-headed person who is very practical and accepts no nonsense." If a psi impression arises via any of the various routes, it is quite at variance with this identity and, perhaps consciously, but even more likely, automatically and unconsciously, you're likely to shift your attention away from that information or actively suppress it, because it is inconsistent with your identity. Thus psi cannot usefully reach awareness, except perhaps in an indirect, unconscious fashion, and even indirect effects may be inhibited for lack of energy because of the binding up of awareness and energy in functional patterns consistent with and maintaining the current identification.

Many psychics have a socially acceptable identity (especially within certain subcultures) of being a "psychic." Regardless of whether they deliberately enter a recognized d-ASC, in the appropriate circumstances they slip into this role/identity of psychic, and the Sense of Identity subsystem now operates in such a way as to constellate many functions of consciousness about this identity and, perhaps, thus enhance psi functioning. We can, in a sense, be "possessed" by an identity which can help our psi functioning, or we can be "possessed" by an identity which can hinder it. The ability to deliberately alter our identity state might be very valuable here, but very little research has been done on this kind of functioning to date. Pearce's (1973; 1974) comments on the suppression of reversibility thinking in most normal adults are quite relevant here, and the success of some laboratories in eliciting psi from their percipients could profitably be analyzed from the view that they take time to set up and involve their percipients in a temporary subculture and identity in which psi functioning is appropriate and normal.

The action of going into any d-ASC may make it easier for us to drop our ordinary identity, which may be inhibitory of psi, and take on the identity with psi abilities. Since we are obviously not "ourselves" any longer, much is permitted that might be threatening, silly, irrelevant, or forbidden to our ordinary self. Thus, quite aside from whatever *specific* changes occur as a result of the specific qualities of a particular d-ASC, the very act of entering a d-ASC may facilitate psi

because of this symbolic effect of loosening normal identity. This is an important point to investigate further, as it implies there will be a general "placebo" effect of almost any d-ASC induction procedure on psi functioning. While this is useful in practical terms, it adds a certain amount of confusion when we try to analyze what specific qualities of particular d-ASCs can enhance psi functioning.

Consider also the effects of the Emotion subsystem. Many outstanding spontaneous cases of psi and occasional laboratory observations suggest that when very strong emotions are aroused, they may facilitate psi, probably in a motivational sense. In some d-ASCs it is easy to arouse quite strong emotions and direct them, often easier than in our ordinary state. Hypnosis is an excellent example. Such d-ASCs may facilitate psi in an indirect fashion because we can feel strong emotional motivation to succeed.

Additionally, strong emotions can destabilize whatever ongoing d-SoC they occur in and induce a new d-ASC constellated around the emotional state itself. I have discussed this in detail elsewhere for sexual arousal and marijuana intoxication (Tart, in press (a)). If the emotion induced is consonant with psi functioning, interesting possibilities exist here. In many cases of spontaneous psi, then, the strong emotional need to use psi may have induced a d-ASC, as well as acting as a motivator.

Finally, consider the operation of the Space/Time subsystem. This subsystem is usually quite implicit in its operation in our ordinary state: even though our perception of space and time is really a built-up construct, we believe we simply perceive "real" space and "real" time. Given this construction of a physical world model, operating implicitly, and *defining* psi targets as somewhere else and thus difficult or impossible to contact, the ordinary operation of the Space/Time subsystem inhibits psi functioning. In many d-ASCs, the experience of space and/or time drastically changes as this subsystem alters its functioning. For example, space and time can sometimes be experienced as unreal, or ordinary space and time are seen as relatively arbitrary constructions, but nothing final. With such a change, the implicit inhibitions against using psi may disappear. To use psi in your ordinary state, you are essentially being asked to do something which is extremely difficult or miraculous, to somehow violate the "barriers" of "real" space and "real" time. If space and time are not real, if the target is not separated from you in any real way, then it is neither difficult, impossible, or unlawful to pick up information about it. LeShan's (1974) ideas are relevant here.

Using Hypnosis to Facilitate Psi

Because of space limitations I have been very general and abstract in discussing an overview of the way d-ASCs may affect psi functioning, so let me end this paper by giving a more specific example. Remember, though, that most of the research to date on the effects of d-ASCs on psi functioning is methodologically unsophisticated. The implicit paradigm of many studies seems to have been that psi was very strange and wonderful, some particular d-ASC was very strange and wonderful, so putting them together ought to produce great psi results! While the *procedures* used for producing d-ASCs have often been quite helpful in facilitating psi (Honorton, 1977), we are far from sophisticated investigation.

One of the best examples of a relatively sophisticated use of a d-ASC to enhance psi is Rýzl's (1962) description of training the psi function in an hypnotic state. My understanding of the procedure is as follows. Rather than simply assuming that psi functioning would be automatically available in hypnosis, Rýzl seemed to realize that the hypnotic state might be favorable to psi manifestations, but you still had to develop the specific psi potential within the hypnotic state. He effectively used three specific properties of the hypnotic state and also applied basic learning theory in a way I have described elsewhere (Tart, 1975c; 1976b), and achieved very significant results.

First, Rýzl used the observation that hypnosis generally produces a very quiet state of mind in the hypnotized person. It is typical that if a deeply hypnotized person, who has not been given some specific suggestion, is asked what he is thinking about, he answers "Nothing" (Tart, 1966). This quiet state is in marked contrast to our ordinary state of consensus consciousness. A further aspect of the quietness of the hypnotic state is that the hypnotized person can readily ignore distractions from the environment, his thoughts are not automatically activated by incoming stimuli. In any well-conducted psi experiment these distractions are irrelevant, they are noise, and ignoring them is adaptive. Second, Rýzl utilized the fact that it is easy to suggest high degrees of motivation in the hypnotic state, so he would readily make his percipients want to develop psi and keep this motivation high. Third, he utilized the fact that deeply hypnotized persons can usually visualize quite intensely with their eyes closed. Rýzl trained his percipients by placing a tray in front of them with their eyes closed, with target objects present on the tray. He asked them to try to visualize what objects were on the tray, and to report when a

visual image was present. Once a percipient achieved and described a visual image of what he thought was on the tray, he could then open his eyes and compare his image with the target.[5]

Although Rýzl emphasized the importance of the hypnotic state as responsible for his success in eliciting psi, I believe this immediate feedback training was also very important for training psi. Further, I suspect that immediate feedback training would be more successful in an hypnotic state than in an ordinary state because of the inhibition of distractions and lowering of the internal mental noise level. An expanded theoretical description of how immediate feedback training should work, which will be published soon (Tart, 1977b), is very relevant here. Rýzl's percipients could learn to discriminate what qualities of imagery actually conveyed psi information and which did not.

Rýzl claims to have developed strong psi abilities in a number of people using this kind of training as well as teaching them to transfer the ability to their ordinary state. One of his percipients, Pavel Stepanek, has demonstrated significant psi abilities to other investigators for a number of years. I find this demonstration particularly impressive, because guessing whether the green or white side of a card was up for many thousands of trials is undoubtedly one of the world's most boring ESP tests. Unfortunately, these has never been any adequate attempt at replication of Rýzl's results. The few published attempts (Beloff and Mandleberg, 1966; Haddox, 1966; Stephenson, 1965) did not adequately duplicate Rýzl's main conditions.

Future Directions for Research

From the point of view of the systems approach to states of consciousness, d-ASCs clearly offer many theoretical possibilities for enhancing psi functioning. Another possibility, for example, which space has precluded discussing in this paper, but which may be as or more important in the long run, is the possibilities of state-specific understandings of psi that may be possible through the development of *state-specific sciences* (Tart, 1972c).

There is an important gap, of course, between theoretical possibilities and real, practically useful, accomplishments. We have excellent preliminary laboratory evidence (Honorton, 1977) that *procedures* associated with the induction of various d-ASCs have frequently enhanced psi functioning. Since such procedures undoubtedly led to the actual development of various d-ASCs at times, this evidence strongly

supports the proposition that at least some d-ASCs can be used to enhance psi.

I shall suggest two main lines of research for the immediate future to capitalize on the potential of d-ASCs for enhancing psi functioning. Both lines will become more fruitful as our general scientific knowledge of d-ASCs advances, but we have enough knowledge now to profitably continue research.

The first research line will consist of replicating some of the existent, successful research on using various d-ASCs to enhance psi, but adding the kinds of experiential mapping operations, discussed elsewhere (Tart, 1975a; in press (b)), that indicate which percipients actually transit into a particular d-ASC and which are not affected in that way by the induction procedure. The use of self-report depth scales will be particularly useful here (Honorton, Drucker, and Hermon, 1973; Tart, 1972b; 1975a). In the systems approach, the presence or absence of a given d-ASC must be ascertained by mapping a person's experience, not by simply assuming it because an induction procedure has been gone through. This will clarify what kinds of changes in psi functioning are attributable to more general psychological effects (such as role loosening) of the induction *procedure*. This clarification will have many useful consequences. If, as I suspect, we find that there is for, say, hypnosis, a small or no increase in psi functioning for percipients who do not actually become hypnotized to any significant degree, but a large increase for those who actually transit into the hypnotic state, then future research can save much time by preselection procedures that eliminate those who are not susceptible to hypnosis.

The second line of research, which will be contemporaneous with the first in some ways, is to get beyond the naive assumptions that psi will somehow automatically manifest more favorably in any d-ASC, or will do so if we simply tell the percipient in the d-ASC to use psi, and start investigating which specific attributes of particular d-ASCs can be used to *train* a percipient to use psi more effectively. We should not assume that psi is a gift that automatically comes with a d-ASC: it is an *opportunity* which we must learn to make use of. The example of Rýzl's approach with hypnosis, given above, illustrates the direction of this second line of research.

There are many other methodological considerations and special problems to be solved, of course, some of which I have discussed elsewhere (Tart, 1974; 1975a), but I believe we can make important advances in facilitating psi functioning in the next decade by the systematic and sophisticated use of d-ASCs.

FOOTNOTES

1. It is conceivable that some of these potentials might become available in the ordinary state of consciousness through long training that, in various ways, changes the nature of the ordinary state to allow these latent potentials to fit in, but I shall not explore that question in this paper.

2. This informal testing situation was not, of course, adequately controlled for possible sensory cues from the agent to the percipient. Positive results in it would have been used only as an indication to go on to more rigorous testing conditions with a particular agent-percipient team. It is conceivable that Hurkos knowingly or unknowingly whispered the name of the target and so cued me in this particular instance, although I personally doubt it. The sensory leakage possibility is not what is important here, however: the incident is presented to illustrate the sudden and alien quality of mental content that can occur in the direct psi route.

3. There are probably cases where the feeling of increased freedom is illusory, however.

4. This distinction could be further elaborated to show some boundaries between conscious, pre-conscious, and subconscious, but this elaboration is unnecessary here.

5. This procedure is, of course, not acceptable for demonstrating psi, but is perfectly fine for training psi.

BIBLIOGRAPHY

Beloff, J. and Mandleberg, I., "An attempted validation of the 'Rýzl technique' for training ESP subjects," *Journal of the Society for Psychical Research*, 1966, 43, 229–249.

Dean, E. D. and Mihalasky, J., *Executive ESP*, Englewood Cliffs. N.J., Prentice-Hall, 1974.

Ehrenwald, J., "Human personality and the nature of psi phenomena," *Journal of the American Society for Psychical Research*, 1968, 62, 366–380.

Ehrenwald, J., "Psi phenomena and the existential shift," *Journal of American Society for Psychical Research*, 1971, 65, 162–172.

Eisenbud, J., *Psi and Psychoanalysis*, New York, Grune & Stratton, 1970.

Goodwin, B. and Powell, W., "Alcohol and recall: state-dependent effects in man," *Science*, 1969, 163, 1358–1360.

Haddox, V., "A pilot study of a hypnotic method for training subjects in ESP," *Journal of Parapsychology*, 1966, 30, 277–278.

Honorton, C., "Psi and internal attention states," in B. Wolman (Ed.), *The Handbook of Parapsychology*, New York, Van Nostrand-Reinhold, 1977, 435–472.

Honorton, C., Drucker, S. and Hermon, H., "Shifts in subjective state and ESP under conditions of partial sensory deprivation: a preliminary study," *Journal of the American Society for Psychical Research*, 1973, 67, 191–196.

Lee, P., Ornstein, R., Galin, D., Deikman, A. and Tart, C., *Symposium on Consciousness*, New York, Viking, 1975.

LeShan, L., *The Medium, the Mystic, and the Physicist*, New York, Viking, 1974.

Pearce, J., *The Crack in the Cosmic Egg*, New York, Simon & Schuster, 1973.

Pearce, J., *Exploring the Crack in the Cosmic Egg*, New York, Julian Press, 1974.

Puharich, A., *Beyond Telepathy*, New York, Doubleday, 1962.

Roll, W., "ESP and memory," *International Journal of Neuropsychiatry*, 1966, 2, 505–521.

Rýzl, M., "Training the psi faculty by hypnosis," *Journal of the Society for Psychical Research*, 1962, 41, 234–252.

Stanford, R., "An experimentally testable model for spontaneous psi events. I. Extrasensory events," *Journal of the American Society for Psychical Research*, 1974, 68, 34–57.

Stanford, R., "An experimentally testable model for spontaneous psi events. II. Psychokinetic events," *Journal of the American Society for Psychical Research*, 1974, 68, 321–356.

Stephenson, C., "Cambridge ESP-hypnosis experiments (1958–64)," *Journal of the Society for Psychical Research*, 1965, 43, 77–91.

Tart, C., "A possible 'psychic' dream," *Journal of the Society for Psychical Research*, 1963, 42, 283–298.

Tart, C., "Spontaneous thought and imagery in the hypnotic state: psychophysiological correlates," Paper, American Psychological Association, New York City, 1966.

Tart, C., *On Being Stoned: A Psychological Study of Marijuana Intoxication*, Palo Alto, California, Science and Behavior Books, 1971.

Tart, C., "Scientific foundations for the study of altered states of consciousness," *Journal of Transpersonal Psychology*, 1972, 3, 93–124. (a)

Tart, C., "Measuring the depth of an altered state of consciousness, with particular reference to self-report scales of hypnotic depth," in E. Fromm and R. Shor (Eds.), *Hypnosis: Research Developments and Perspectives*, Chicago, Aldine/Atherton, 1972, 445–447. (b)

Tart, C., "States of consciousness and state-specific sciences," *Science*, 1972, 176, 1203–1210. (c)

Tart, C., "The changing scientific attitude in psychology," in C. Muses and A. Young (Eds), *Consciousness and Reality: The Human Pivot Point*, New York, Outerbridge and Lazarus, 1972, 73–88.

Tart, C., "On the nature of altered states of consciousness, with special reference to parapsychological phenomena," in W. Roll, R. Morris, and J. Morris (Eds.), *Research in Parapsychology, 1973*, Metuchen, New Jersey, Scarecrow Press, 1974, 163–218.

Tart, C., *States of Consciousness*, New York, Dutton, 1975. (a)

Tart, C., (Ed.), *Transpersonal Psychologies*, New York, Harper & Row, 1975. (b)

Tart, C., *The Application of Learning Theory to ESP Performance*. New York, Parapsychology Foundation, 1975. (c)

Tart, C., "The basic nature of altered states of consciousness: a systems approach," *Journal of Transpersonal Psychology*., 1976, 8, No. 1, 45–64. (a)

Tart, C., *Learning to Use Extrasensory Perception*, Chicago, University of Chicago Press, 1976. (b)

Tart, C., *Psi: Scientific Studies of the Psychic Realm*, New York Dutton, 1977 (a)

Tart, C., "Toward conscious control of psi through immediate feedback training: some considerations of internal process," *Journal of the American Society for Psychical Research*, 1977, 71, 375–408.

Tart, C., "Sex and drugs," in K. Blum (Ed.), *Social Meaning of Drugs: Principles of Social Pharmacology, New York*, Harper & Row, in press. (a)

Tart, C., "A systems approach to altered states of consciousness," in J. Davidson, R. Davidson and G. Schwartz (Eds.), *Human Consciousness and its Transformations: A Psychobiological Perspective*. New York: Plenum, in press. (b)

Tart, C., "Drug-induced states of consciousness," in B. Wolman (Ed.), *The Handbook of Parapsychology*, New York, Van Nostrand-Reinhold, 1977, 500–525.

Tart, C. and Fadiman, J., "The case of the yellow wheat field: a dream-state explanation of a broadcast telepathic dream," *Psychoanalytic Review*, 1974–75, 61, 607–618.

Tart, C. and Kvetensky, E., "Marijuana intoxication: feasibility of experiential scaling of depth," *Journal of Altered States of Consciousness*, 1973, 1, 15–21.

Terry, J. and Honorton, C., "Psi information retrieval in the ganzfeld: two confirmatory studies," *Journal of the American Society for Psychical Research*, 1976, 70, 207–218.

Ullman, M., Krippner, S. and Vaughan, A., *Dream Telepathy*, New York, Macmillan, 1973.

DISCUSSION

SARGENT: If we can turn to the first diagram, there are a couple of static elements which seem to me to be missing a few arrows. The sense of identity is clearly very importantly related to memory. There really should be an arrow there. If I were to fall down tomorrow and bang my head and was totally amnesic, my sense of identity would be lost completely. I think that emotions and space/time sense are not independent. When you're in love, four hours can seem like a minute or vice versa, and I'd like to see that changed. I'm going to be really hard, because what this diagram reminds me of is the phrenologist's diagram of bumps on the head, except that because these are all dynamically interrelated, all the bumps are moving. My other objection is that I still don't know what an altered state of consciousness is! I gave a skeptical paper on the entire concept at a conference last year and mine was the last paper of the day. I was tired, it was hot and I had a migraine, and I got up and I said "Look, I have a migraine. Am I in an altered state of consciousness?" And nobody could tell me whether I was or not. I didn't know. I still am no nearer to understanding what that term actually means. If you're talking about it being discrete, discrete altered states, I'd love some illumination on that.

TART: I've left out most of the arrows on these diagrams. These are just some of the major ones that we know undergo major changes in altered states. If I put in all the arrows, it frightens everybody. We want things to be simple. As to illuminating the concept of discrete states, time is too short for that now, but let me recommend my *States of Consciousness* book.

STRAUCH: I find your different routes of psi traveling very interesting. If I accept these hypotheses, would you agree that the one difference between the "normal state of consciousness" and "altered state of consciousness," with regard to psi recognition would be that the last step—*awareness*—is inhibited in normal consciousness? From what you said, I gather that altered states of consciousness simply allow access to awareness. One could suppose that potential psi experiences travel along these routes all the time, but they are prevented from entering consciousness under ordinary conditions.

TART: Yes. The psi receptor may be picking up information, psi information, far more frequently than we know, but

the system is too busy to be able to take in any of that information. But I should make it clear that not all altered states necessarily free awareness to go into this. I'm having to be very general for lack of time considerations, but there are some altered states where awareness is, in a sense, even more bound to particular contents and less amenable to conscious control than in our ordinary states.

LeSHAN: Before I start, I think it's a very interesting term that Carl started to use when he said that he didn't understand the altered states of consciousness and he wanted "illumination." The term, of course, has been used before. I was fascinated by your description of the four routes. I think it is important to emphasize the differences between them and that they lead to completely different kinds of experiences. I think, also, there is a very real need to integrate them with the even more basic difference between kinds of psi that Dr. Ehrenwald was speaking about. I think an integration view would be very important, but it's critical, on the level that you spoke, that wherever you go, how you got there, determines what happens when you are there. There's a brief story that Allan McGlashan tells about the two ways of climbing a mountain. One—you climb up on your hands and knees and you get torn and tired and weary and you get to the top. The other, you take a cog railroad. In both cases you get to the top. In both cases the view is exactly the same, except that it is not.

TART: Yes, there are different characteristics. For instance, in a crisis case you may very well have so much force behind it that it somehow activates the direct psi route and you have an almost undistorted transmission of information, displacing other mental processes. That will be very different than if it goes through half a dozen transformation processes to fit in with the needs of the person, and you may end up getting psi-stimulated experience that's quite misleading, actually, at that point.

PARKER: I like your descriptive system. The problem with the systems approach, though, is that it rarely leads to any new specific predictions. It's just another descriptive system in the end. Perhaps it is in the written form of the paper, but do you have any specific predictions?

TART: The predictions will be generated out of this approach, but at the present time the blanks are too little filled in in most of these

cases. The basic process for making predictions here is that we study each subsystem and learn its parts and interactions. Then we eventually sharpen up to the point where we say or predict that certain states of consciousness can't happen, or certain kinds of interactions can't happen. At the moment, we don't know enough about basic experience in various altered states of consciousness to make very sharp predictions. It is a problem. This systems approach is very much on a descriptive level yet. It's more "filling the filing cabinet" functioning of a theory; of finding a convenient way to stack your data where you can get at it, rather than being developed enough to start generating predictions about data you haven't yet seen.