

NOT ONE, NOT TWO

Position Paper for the Mind-Body Conference

BY FRANCISCO J. VARELA

This paper has two parts. In the "Notes on Dialectics" I develop some ideas that apply to dualities quite generally. In the "Epilog," I have stated my ideas on the Mind-Body Problem from the perspective taken in the notes.

Briefly stated, my feeling is that if there is going to be a change in our perception of the Mind-Body relation, there has to be a change in the context in which the problem is seen to arise. This implies, at least, a change

(i) in the logic used to understand that dialectics and wholes are;

(ii) in the scientific ideas about what mind is, (moving away from the brain-secretion image, towards an understanding of mind as conversational domain); and

(iii) in the cultural conceptions about mind, (which restrict the kind of experience that are socially and individually accessible).

Points (i) and (ii) are treated in the following Notes. In the Epilog, (iii) is considered separately.

I. NOTES ON DIALECTICS

0. The Star

0.1 One possible way of access to the central concern of our gathering is to consider duality and dialectics as a broad philosophical idea. Accordingly I would like to see us discussing trinities.

By trinity I mean the contemplation of the ways in which pairs (poles, extremes, modes, sides) are related and yet remain distinct.

0.2 The metaphorical "trinity" can then be replaced with some statement which contains a built-in injunction (heuristic, recipe, guidance) that can tell us how to go from duality to trinity.

"trinity" = "the it/the process leading to it" (the Star * statement).

0.2.1 The slash "/" in Star *, and hereinafter, is to be read as: "consider both sides of /", i.e.:

"consider both the it and the process leading to it."

An active supporter of Allende in Chile, cybernetician Francisco Varela now works out of the Medical Center of the University of Colorado in Denver. Of all the mind/body position papers I think his has the most remarkable content. He appeared last issue in The CQ with an interview called "Observing Natural Systems."

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Thus the slash is to be taken as a compact indication of a way of transiting to and fro both sides of it.

0.3 In the sections that follow I would like to show

(i) that the Star * is effective, i.e. it is a way to proceed from disjoint pairs to their unity in a metalevel, and;

(ii) that one can map (project, reformulate) in Star a number of dualities, the Mind-Body included, and;

(iii) that Star is (can be taken to be) a compact expression to signify a broad paradigm encompassing that series of convergencies rightly demanded by Bateson:

cybernetics ↔ epistemology ↔ evolution ↔
ethics ↔ cognition ↔ ecology

1. Star Cybernetics

1.1 The first aspect (i) of Star that I want to consider is the cybernetics contained in it. Let us transcribe Star into the more convenient form of

* = "network/trees constituting the network."

1.2 This is pictured in Fig. 1. On one side (by convention the left) we see a network or mesh of interactions. These are left unspecified: the nodes could be anything at all (molecules, species, concepts, . . .), and their interconnecting arrows could be any processes whatsoever (computations, rearrangements, transformations, . . .).

1.2.1 It is assumed that any node could be seen (at another time, by somebody else) as another network, or that the initial net could be seen as a node in a larger net. That is: there are no initial or final "elements"; everywhere we look, everything has the same meshy appearance.

1.3 On the right side of Fig. 1 there is a tree of root *a* in which I have, step by step, drawn the nodes to which *a* connects, the nodes to which those nodes connect in turn, and so on. Had I continued to do this, I would have come back, after a while, to write *a* again. Thus the process could go on forever (whence the ". . .").

1.3.1 The stages of this procedure are conveniently tracked by 1,2,3, . . ., to indicate the successive depth of the tree.

1.4 The way to go from left to right in Fig. 1 is: chop (prune, truncate) at *a*. That is: take *a* as if it were an initial element, and proceed as if the time at which this is done is zero time. Please note that the act of chopping demands somebody who does it, and sometime to do it.

1.5 The way to go from right to left is more tricky, hence usually disregarded. If we go down the tree we would

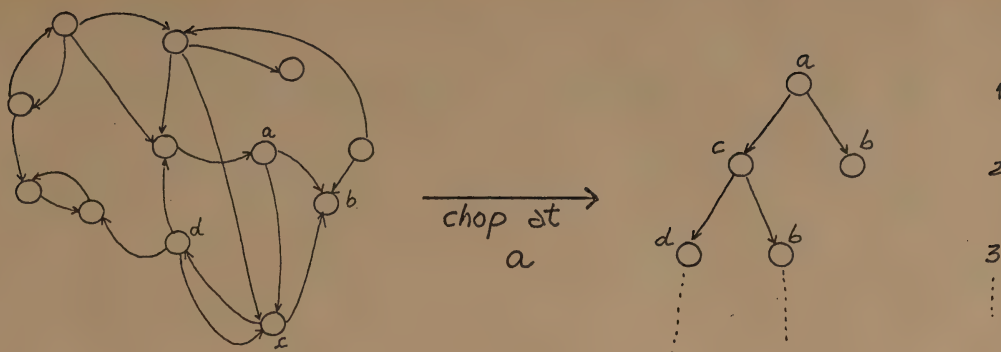


Figure 1

pass through the net components once and again, but this is never the initial net, it is still a tree branching and branching. We can't get back to the initial net in time. So we must do it by eliminating time, i. e., in eternity. That is: we take this recursion in infinity (a limit process, a leap beyond the time-bound steps). The net re-appears as a fixed point (eigensolution) of this repetitive process. (Cf. Heinz's *Recursion Primer* [Von Foerster's position paper].)

1.5.1 Thus any finite, time-wise study of the net's tree is an approximation to the net as a totality. Example: consider the feedback circuit of Fig. 2. In the usual description of it, we start with some initial response $x(t_0)$, and then consider what happens at $x(t_0 + \Delta t)$, and successively at $x(t_0 + n\Delta t)$ (with Δt perhaps very "small," infinitesimal). This is depicted below in Fig. 2, in the series 1, 2, 3,

Consider now this series of cycles around the circuit in contrast with the entire circuit itself. Note first that from the completed circuit one can generate the infinite series of cycles by chopping it at x at some t_0 , and taking some b as given. Note that this circling around and around will never be different from that; the total circuit will not appear. Thus at some time we stop, we have to stop. But if we take a limit through infinity the circuit is again closed. Thus what we actually do is an approximation, for as much time, and as close as we can get, to the simultaneity suggested in the graphic representation (it looks closed doesn't it?). But these two things are surely different. By contrast, the circuit's stability is a timeless property and can be taken as one possible description of the whole system, of its simultaneity, of its closure.

1.5.1.1 (Had I taken an example requiring a more abstract level of description [logic, set theory, algebra] we would be in deeper trouble than with the above circuit example.

This is because a full formal expression of the Star cybernetics requires a considerable re-formulation of logic and mathematics, which is, at present, only partly achieved. I do not think that details on this should be pursued at the conference. But I do think it is worthwhile to assess just how much potential for an epistemological earthquake have the ideas under consideration.)

1.6 Thus the net/tree duality is explicitly connected by processes in both directions. We make sense of the timeless (simultaneous) net by dealing with it in time, piecemeal. We make sense of the part-by-part approximation of the trees in the net by seeing how they lead to the stability of a simultaneous total system. Hence the pair net/trees is of the form Star *:

the it (the net)/the processes leading to it (the trees).

2. Varieties of Stars

2.1 The trinity net/trees is a somewhat formal expression of a more generally appealing Star:

whole/parts constituting the whole.

2.1.1 A whole is here a set of simultaneous interactions of parts (components, nodes, subsystems) which exhibit stability as a totality. The parts are the carriers of particular interactions which we can chop out from the whole and consider their participation in various sequential processes that constitute the whole. The whole re-emerges when we see the resulting total stability, (i.e., the fixed point of the limit process).

In other words, an equivalent Star, but a bit more operational is

stability/approximation in time.

2.2 Let us take this further, and reformulate a number of other dualities in this Star framework.

To this end take any situation (domain, process, entity, notion) which is holistic (total, closed, complete, full, stable, self-contained). Put it on the left side of the /. Put on the right side of it the corresponding processes (constituents, generators, dynamics).

For example:

<i>being/becoming</i>	<i>environment/system</i>
<i>space/time</i>	<i>context/text</i>
<i>reality/recipe</i>	<i>Nirvana/samsara</i>
<i>right intuitive/left logical</i>	<i>territory/map</i>
<i>simultaneous/sequential</i>	<i>semantics/syntax</i>
<i>female/male</i>	<i>topic/notion</i>
<i>arithmetic/algebra</i>	<i>enlightenment/neurosis</i>
<i>theorem/proof</i>	<i>program/subroutines</i>
<i>analog/digital</i>	

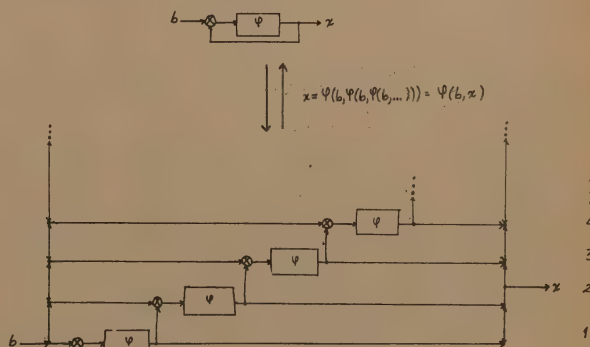


Figure 2

2.3 In each case the dual elements become effectively complementary: they mutually specify each other. There is no more duality in the sense that they are effectively related; we can contemplate these dual pairs from a metalevel where they become a cognitive unity, a second-order whole.

2.3.1 Note that this superation of duality is no "synthesis" (in the hegelian sense), since there is really nothing "new," but just a more direct appraisal of how things are put together and related.

2.3.1.1 (The closest I have come to finding a philosophical lineage of this view of dualities, is the Law of Three in the sufi tradition, or the buddhist doctrine of the middle way. There is in both a practice of balance, neglecting nothing, yet in the middle of whatever is going on. It should be more accurately be called the Law of Zero, since everything stays just the same.)

3. Evolution

3.1 I think that the previous sections signify a departure from the classic way of understanding dualities and, *a fortiori*, from the understanding of what dialectics is or should become.

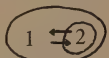
3.1.1 In what I call the classic or hegelian paradigm, the notion of dualities is tied to the idea of polarity, a clash of opposites. Graphically:



3.1.1.1 The basic form of these kind of dualities is symmetry: both poles belong to the same level.

The nerve of the logic behind this dialectics is negation: all pairs are of the form *A/not-A* (e.g., *+/-*, *oppressor/oppressed*).

3.1.2 In our (shall we say) cybernetic or post-hegelian paradigm, dualities are adequately represented by imbrication of levels, where one term of the pair emerges from the other. Graphically:



3.1.2.1 Several paraphrases for what I want to say are the following:

- Mythology: female gives birth to male which fertilizes female.
- Cognition: intuitive understanding gives a ground for logical thinking which leads to intuitive understanding.
- Cybernetics: a whole decomposes in parts which generate processes integrating the whole.
- Formalism: a net chopped into trees that generate the net by infinite branching.

3.1.2.2 The basic form of these dualities is asymmetry: both terms extend across levels.

The nerve of the logic behind this dialectics is self-reference: pairs of the form: *it/processes leading to it*.

3.1.2.3 The notion of level, in the sense used above, is intended as a reference to the hierarchical arrangements of whole systems (strata of stability, levels of order), the chinese boxes of totalities in nature.

Let me try and be clear in the terminology here: for every system there is an environment which can (if we so decide) be looked at as a larger whole where the initial system participates. Since it would be impractical to do this at all times, we often chop out our system of interest, and put all the rest in the background as "environment." We are in the Star: *environment/system*. To do this on purpose is quite useful; to forget that we did so is quite dangerous.

Such hierarchies of imbricated systems give rise to the idea of increasing degrees of complexity. To be sure, my view of

complexity is not yours. But given a certain view, a system's hierarchy is naturally associated to it. One such arrangement is in Fig. 3.

Let us agree to call a level any one step in this (or a similar) ladder of imbricated stabilities.

3.1.3 Pair of opposites are, of necessity, in the same level, and stay at the same level for as long as they are taken in opposition and contradiction. Their effective interactions are not (cannot be) specified.

Pairs of the form Star bridge across one level, and this crossing is operational. They mutually specify each other.

3.1.3.1 It is, of course, the case that when we look to natural systems, nowhere do we find opposition apart from our own projections of values. The pair predator/prey, say, does not operate as excluding opposites. Both generate a whole unity, their ecosystemic domain, where there is complementarity, mutual stabilization, and benefits in survival for both. So, although we can project values to the opposites predator/prey, the effective duality is a larger one, of Star form: *ecosystem/species interaction*.

3.1.3.2 We have in general the Interpretive Theorem:

For every hegelian pair of the form a/not-A there exists a more inclusive Star, where the apparent opposites are components of the right hand side.

3.1.3.2.1 Another way of saying the same thing is: in hegelian dialectics dual interactions are of the zero-sum form: what one side gets the other side loses. The operational form of interactions seems almost universally to be of non-zero sum form: every participant can win (by playing the game of the whole).

It is, I suspect, only in a 19th century social science where the abstraction of the dialectics of opposites could have been concocted. Certainly it has been peculiar to man's social dynamics to generate interactions which operate as excluding opposites with a zero-sum strategy.

3.2 This view of dialectics has associated to it also a revised view of transformism, i.e., the understanding of system's changes. Star-effective dualities bridge across levels. But observe that movement across can take place in both directions: upwards or downwards in the hierarchy. This is interesting: there is a Star creeping in here.

3.2.1 Science in the west has preferred the ascending view of transformism, from simple components of the ladder upwards, man sitting on top. This is usually referred to as evolution, when taken in a loose, i.e., not strictly darwinian, sense. Traditional religions and folklore have taken by and large the descending view, from creator to creature, from complex to simpler. This is (shall we say) de-volution (manifestation, descent, creation).

Both views have been seen as incompatible in the history of the West, at least since the Renaissance.

3.2.1.1 The key difference between these two seemingly opposite views is time. Devolution is done in a jiffy; in fact, the whole ladder of systems must exist simultaneously for devolution to take place at all. Evolution, however, takes a long time to establish a new stable level.

It is only in a very low level of the hierarchy of systems that both evolution and devolution can be found in science parlance. I am thinking, of course, of devolution as the degradation tendency stated by the Second Law, which complements the small pockets of inhomogeneity out of fluctuations that make the emergence of stable units possible in the transformation of matter. Note that both directions are effectively complementary: homogeneity and fluctuation.

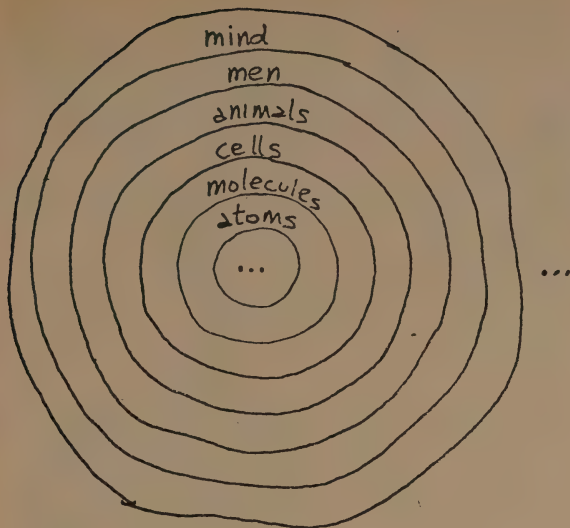


Figure 3

Note also that the time it takes, say, for a cell to be degraded is negligible compared to the time it took on earth to establish cells as viable.

3.2.2 These two views on transformism are, I submit, the components of a historical Star.

The religious tradition has emphasized the devolution side. Their approach is bent towards an intuitive and simultaneous mode of apprehending. In science, the emphasis is on the analytical, sequential mode, and hence evolution is favored. These contrast has been taken (is usually taken) as a hegelian pair.

But, as everybody practices, these are not effectively opposed views, but complementary modes, associated, I suppose, to the cognitive Star: *intuition/logic*. Correspondingly, there is something very gross about looking at science/religion (or materialism/idealism) as a hegelian pair which implies a preference for either evolutionary or devolutionary mechanism, e.g., Darwin vs. Bible, Marx vs. Hegel.

Maybe there is a way to suture this gap within the Star framework. This means replacing the apparent pair of opposites by a more inclusive Star which contains them as parts of the processes. Accordingly, I propose to view the hierarchy of systems as containing bi-directional processes of evolution and devolution for crossing levels, complementing each other in the specification and constitution of the hierarchy as a unity, as the totality-of-what-there-is (gasp!), as Reality. In other words there is an ultimate, or Universal Star:

Reality/levels of reality.

From this bi-volutionary point of view nothing really goes anywhere, there is just shuffling and re-shuffling of the stuff through levels of stability, the net result being null.

3.2.2.1 It is apparent that this bi-directional view of transformism lends itself to various sorts of religious analogies. So much the better. But I am proposing it also in all seriousness as a valid paradigm for a perfectly scientific improvement on our ideas on evolution, which seem to be too one-sided, and are stumbling blocks when it comes to studying things like mind's ecologies. To be sure, this proposal needs much, much refinement and thought to become a workable hypothesis. I propose to discuss this at the Conference.

4. Epistemology

4.1 Let us come back to us, observers and cognizers, the systems that do descriptions of wholes and systems.

We must turn to a characterization of what it means to participate in a cognitive act to see what is the epistemological ground we are trodding into.

4.1.1 Three main properties (at least) characterize an observer:

- (i) capacity for indication: to decide boundaries, to come up with nodes, systems, to have criteria for stability.
- (ii) capacity for time: to chop a net and start a sequence, to compute through a process, to approximate the stability of a whole.
- (iii) capacity for agreement: to externalize, to synchronize with other observers, to re-produce other's distinctions and follow corresponding time patterns.

Let us call an observer anything possessing these properties. I am taking a conscious mind to be characterizable, for the present purpose, as observer-able.

4.2 For an observer is necessarily the case that whatever he describes (sees, perceives, understands) is a reflection of his actions (perceptions, properties, organization). There is a mutual reflection between described and describer. They are mutually revealing.

Now, here again creeps up the hegelian temptation to take these terms as opposing dualities, i.e.,

*observer/observed – describer/described
– subject/object*

It is very obvious, however, that these poles are not effectively opposed, but rather moments of a larger whole which sits in a metalevel with respect to both terms; it's time to apply the Interpretive Theorem to this hegelian pair.

4.2.1 For me the best way to make sense of this encompassing whole of the terms subject/object is to take really in all seriousness Bateson and Pask's insistence that the notion of a conversational domain is quite crucial.

Species interaction achieving a stable ecosystem can be thought of as the biological paradigm for a conversational domain. Evolution is then the changing theme of the conversation between species and environment.

But the idea of a conversational domain goes further in that all cognitive interactions can be similarly treated, as participants engaged in a dialogue, whether we enter in interactions with ourselves, with each other, with nature, society or what have you.

4.2.1.1 This relates to 3.1.2.3. For every system there is a larger whole which it integrates, to which it contributes for its stability, and from which it receives constraints. All I am adding now to this idea is that such interactions between a whole and its constituents systems, are, when we take the perspective of one of the systems, neatly expressed as conversational domain. Specially at the biological and social level. In this sense, the domain of interactions of a system is well captured as carrying a semiotic value with respect to the system's organization.

4.2.1.2 In the net that embodies a conversational domain there are stable patterns and relations that constitute units of observable behavior. It is to this level that the whole constituted by subject and object participants belongs to. Bateson has referred to this whole as message-in-the-circuit. I prefer to avoid a word such as message; all I want to denote is a stable process of interactions. For lack of another term, let me call this a conversational pattern: a fixed point in the infinite recursion of interactions between a set of participants. The hegelian subject/object becomes then part of the right hand side of the Star:

*conversational pattern/
participants of the conversation*

[more →]

We are participants in the quite large conversational domain of the biosphere. And all we have said before about the complementarity of a whole's parts applies in particular here for us (pairs of subjects, objects) as participants of this specific whole, the biosphere.

4.2.1.3 As with the idea of bi-directionality in transformism, I believe the notion of the biosphere as a conversational domain, the conversational patterns that can arise from it and the dynamics which regulates these exchanges, all lead to various mystical correlations. But again, I intend them also as a scientific construct that should become workable provided that we do something with it. This is one other major point that I would like to see us discussing at the conference.

4.2.2 In this context, the mind-body duality is just one form of the above Star, that is:

*mind(conversational pattern)/
bodies (processors of the participants).*

4.2.2.1 It is quite interesting to consider this *Star mind/bodies* at the light of bi-volution. On the one hand is the evolutionary direction of the development of brains capable of subtle properties to establish a conversational domain of the complexity of mind. This is the puzzle that psychobiology confronts explicitly.

But consider now the devolutionary direction. It means that there is a dispersive tendency for the participants in these conversational patterns to chop themselves out, to detach from the wholes and become isolated, rigid participants. This is equivalent to Heinz's Principle of Cognitive Homeostasis:

*The nervous system is organized so as to
compute a stable reality.*

In other words, the capacity for conversation makes it possible for bodies to constitute the mind-conversational domain. The biological stability makes it necessary for these bodies to attach to a particular construction (a particular behavior) the value of the whole, and thus to become isolated and identified with one participant or subject. Conversation becomes monologue; the *Star mind/bodies* becomes the hegelian: *my mind/my body*. This can equally well be described in terms of the stabilization of belief systems, of psycho-pathological notions of neurosis, (or of religious ideas on the downfall of man for that matter).

5. Paradigm

5.1 I have addressed the central concern of this conference via the study of dualities, and the notion of dialectics as an encompassing philosophy. This choice is quite harmless. As we saw, conversation theory, cognition, cybernetics, evolution and ecology, would all lead to the same central concern.

And just what is this central concern? I take it to be a paradigmatic shift, in the strict kuhnian sense. At the core of it is the sense of having, not only an understanding of nature, but side by side to it the process through which this understanding was arrived at. There is in this paradigm a strong sense of the observer coming to the foreground, a concern with man's capacity for reality rather than particular forms of realities. The form of this paradigm cannot be formulated precisely. I have tried to give a token expression of it in the *Star * Statement*. Alternatives? Can we formulate more precisely the research programmes implicit in this paradigm?

There are very many implications of this view of science and rationality for individual and collective action. At the center is the explicit recognition of responsibility for what it is seen and understood, inescapably reflected by what is that we have decided to see and understand. In particular (and

by a simple consequence of Ashby's Law of Requisite Variety) this paradigm brings out the need of limits in many spheres of human life, as Illich has presented so forcefully. In particular, it leads me to see that there cannot be a distinction between the external and the internal front of political action.

Does this mean that this view of science and rationality we are moving to, is closer to earth and basic sanity? Riddles, riddles, riddles, . . . (the Sphinx giggles in the fading background).

II. EPILOG ON THE MIND-BODY PROBLEM

In the preceding notes I have stated two departures from the traditional views which bear upon the Mind-Body relation. In terms of what I said in the introduction, I have proposed a change in

(i) the logic with which to consider dualities and dialectics; and

(ii) the (scientific) model of mind required to encompass what the phenomenology of mind is, away from the brain-enclosed private talk to a conversational domain idea, where mind is distributed to the stable interactions occurring in the biosphere.

To what extent this touches on the traditional or philosophical view of the Mind-Body Problem (MBP)? This epilog tries to take up that question, i.e., I am allowing myself some table-talk about it.

First of all let me state more closely in what sense do I still see a problem here. The crux of the matter is the fact that there is an asymmetry between the consideration of other's minds and the consideration of my mind. Other's minds can be accounted for in some descriptive, nomological paradigm (i.e., our choice of a conversational pattern or what have you). My mind is still a different affair which is not exhausted by that description; there is a residue left, a remnant that we may call the experience of the mind, the sense of self. Interestingly enough, both the analytic tradition (i.e., Feigl and followers) and the phenomenological tradition (i.e., Merleau-Ponty) agree on this point. As long as there is such a remnant in the mind's description of minds, this sense of self that evades any descriptive net, the Mind-Body relation is still a problem.

Nothing that we have said before really illuminates this central core of the MBP. In fact, nowhere have we talked about the experience of having a mind. I intend to do so now from the perspective taken in the Notes.

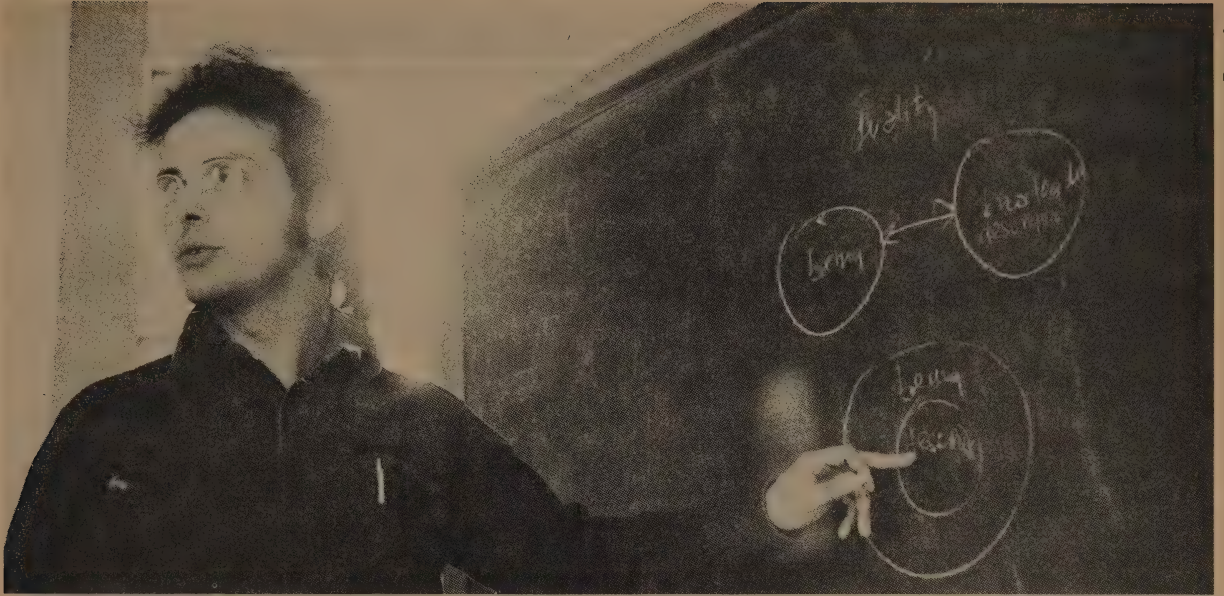
Before even considering what is the content of any experience of self, let me point out that here again we have to apply our *Star telescope*. In fact, whenever a distinction is made between experience and description, these two are put in the poles of a hegelian pair. I submit that the distinction should be made, but that both sides belong to most interesting *Star* which I want to phrase as

being/knowledge

By being here I mean, for the purpose of this discussion, the same as experience, sense-of-self or direct-knowledge. By knowledge I mean the same as description, nomological net, logical discourse. I take it that this *Star* is closely related to two other stars we have mentioned before

*intuition/rational –
simultaneous/sequential*

In other words, and again for the present purposes only, the qualities of being can be thought of as perceived by intuition better than by discourse, and in a simultaneous whole, rather than in piecemeal approximation in time. I also take it that being should be on the left side of the *Star*, insofar as introspection says that it is out of this background of being that thought occurs, it is the archipelago of ideas in the giant sea



Francisco Varela

of feeling and experience. Similarly I assumed that intuition is the earth from which discourse can be built, and to where it eventually returns.

So much for the general characterization of what I mean by this Star: *being/knowledge*. Note now that knowledge is habitually represented as much more corrigible than being. Effectively however, it is the case that both sides mutually specify each other and that every knowledge requires a certain level of experience and viceversa. In other words there is necessary balance (stability, complementarity) in this Star (just like in any other Star). My claim is that it is this balance which is the key to a fresh understanding of the M-B relation.

In other words, if we represent mind as conversational pattern, this does not mean that there is a corresponding experience of this larger whole; experience is usually kept at the subject side of the computations in a conversational pattern. (Accordingly, those who favor the so-called Identity Theory of Mind-Body relations search for neural states that could be related to consciousness).

I am landing flat on my face in a very delicate domain to talk about: the transformations and unfoldments of human experience. My view is this: if we are to have an understanding of mind from the point of view expressed here (cf. also Bateson and Pask), and if this is going to be a viable alternative, this knowledge has to balance with a corresponding being. As long as we experience us mainly as individuality, this knowledge is not forthcoming, or I do not believe it will be fruitful. Now, religious traditions have always emphasized the idea of a conscious evolution, of a human unfoldment. Translated: an expansion of experience, a redressing of the balance between knowledge and being. Traditions in the east have accumulated subtle know-hows to further such transformations in experience.

Now, it is an axiom that we can only experience what corresponds to our organization; we do not have the experience of being submarine holothurians. But how on earth can we comprehend this agility of experience to expand to the metalevel and encompass what seems transpersonal? I pass on this one. Yet I cannot but take as consistent the fact, that socially so many different cultures, and individually by so many routes, these leaps of experience can occur and are quite isomorphic. In other words I am assuming that mind

as the unity of the conversational domain of the biosphere, (i.e., mind-at-large, or mind proper) can be experienced, and further, that more or less all of us have experienced it.

The obstacle to be surmounted in this process is nothing less than the cognitive homeostasis of each of us, the tendency to stick with our interpretation of reality, entrenched and made stable by emotions and body patterns. To work through this veil of attachments, and to see (experience) reality without them is part of the process of unfoldment. I will not elaborate on this more. Hopefully at the conference others will be more articulate than me about this point. But what I see as an important ingredient of our discussion is the fact that a change in experience (being) is as necessary as change in understanding if any suturing the mind-body dualisms is to come about. I also believe the knowledge part can come about more easily.

This correspondence between knowledge and being should be (naturally is) part of the rational paradigm we are considering. In this, the proposed paradigm is quite unique: it contains a limit for itself by containing its being-balance; at a point the description can only become a speechless finger containing, rationally, the complement of its rationality.

To conclude:

The MBP is no pseudo-problem at all. As it is currently conceived, I see it as having

- (i) a component which can be improved on and done away with; and
- (ii) an irreducible basis.

The irreducible basis is the complementarity being/knowledge, inextricably bound to existence. (I refuse to comment more on this.)

The part of Mind-Body Problem that can be improved on is

- (a) the compulsion to consider this Star: *Mind/Body*, as a hegelian pair, and thus to view Mind and Body as opposing qualities;
- (b) the compulsion to see mind as tied to only one side (subject) of a larger computation, constituting a conversational domain.

The last two points we can really work on and deepen our understanding. To bring about a corresponding experience is another matter. ■

The case FOR Mind/Body dualism

Dear Mr. Brand:

I notice in the latest CQ that you're holding a meeting to "formally dissolve the mind-body dualism" of Western culture. I'm writing to wish you luck, but also to indicate why I don't think you'll succeed. While it is true that for most practical purposes mind is body, and it's important for people to learn this, both human experience and recent scientific evidence indicate very strongly that mind is something else that is at least semi-independent if not capable of being fully independent of body.

I've been into humanistic psychology for a long time and put a lot of effort in my humanistic psychology course, letting the students get a feel for just how strongly their body affects their mental processes. It's easy to demonstrate with simple exercises like letting people walk around in a slumped posture and seeing how easy it is to feel depressed and how difficult it is to feel happy. There they see that while bodily posture does not totally determine mental processes, it certainly has a strong effect on them. Other exercises can demonstrate this even more strongly. The typical Western attitude of regarding yourself as some kind of "higher" intellect, with your body as a convenient servo-mechanism to move you from place to place, is clearly pathological, since it cuts you off from a highly important reality. As a day to day practical operating philosophy for dealing with your life, typical Western dualism is lousy.

In terms of a conceptual system that more adequately reflects reality, however, a strong case can be made for dualism. I'll briefly mention three lines of evidence. First, the direct experience of many people is that they have temporarily been in contact with things at a distance when our physicalistic view of the world says this couldn't be, and some have even had what is technically termed an out-of-the-body experience, where they temporarily experience themselves as being in another place than where their physical body is and yet feel a state of full, normal consciousness, not in some kind of dreamlike or pathological state. To those committed to a physicalistic philosophy, these kinds of experiences would most often be rejected a priori as due to hallucination, faulty memory, just plain lying, etc. To the people who have an out-of-the-body experience, however, the almost universal reaction is an absolute conviction that some part of them will survive bodily death, as they have experienced a functioning outside their physical body. Direct experience carries a lot more weight here than any kind of logic does. Some of these people also describe events at a distance which can be verified, and which they couldn't have known about normally.

The experience of perceptions at a distance and the like led to the scientific study of them by very small number of scientists, and today we do have a field of science called parapsychology, although, again, its findings are ignored by most orthodox scientists. Under laboratory conditions it has been shown beyond any reasonable doubt that occasionally people can pick up the thoughts of others (telepathy), get information about purely physical events that they are sensorially shielded from (clairvoyance), accurately predict the future when it can't be inferred from a knowledge of present events (precognition), and sometimes influence physical events, such as the fall of dice simply by wishing for a certain outcome (psychokinesis). All four of these basic phenomena seem incompatible with our current physicalistic world view, the same world view from which we ordinarily argue that mind must be totally reducible to electrical and chemical events within the brain, nervous system, and body. Thus they serve as a very good reminder that our present scientific ideas of the universe are very good theories for dealing with some aspects of reality, but hardly complete.

It took many years before parapsychologists were satisfied enough with the evidence of the four basic phenomena mentioned above, under stringent conditions, to start branching out again into the more exotic experiences like the out-of-the-body experience, but we have started and gotten interesting results. I began the trend back in 1968 by publishing an article, "A Psychophysiological Study of Out of-the-Body Experiences in a Selected Subject," in the *Journal of the American Society for Psychical Research*.

I had met a young woman who regularly (once a week or so) experienced waking up during the night and finding herself floating above her body, near the ceiling. To make a long story short, she spent several nights in my sleep laboratory and showed a unique brain wave pattern while having these out-of-the-body experiences. I also wanted to check the reality of it, so each night I would put a different five-digit random number on a shelf up near the ceiling, readily visible from the ceiling, but not at all visible from down in the room. On the one occasion when she claimed to have been in the right position to see the number and memorize it, she correctly got it: with 100,000 to 1 odds, it argues pretty strongly that something was going on.

My own studies of transpersonal psychology, altered states of consciousness, and parapsychology have made me think that the best concept so far is that basic awareness may very well be of some "non-physical" (in terms of current physics) nature, but we very seldom have a direct contact with this direct awareness. Rather, we know the wholistic result of this basic awareness intimately merging, interacting with, transforming, and being transformed by the hardware of the brain, nervous system, and body. Some of these kinds of interaction in terms of altered states of consciousness are discussed in my recent books, *Transpersonal Psychologies* (Harper and Row, 1975) and *States of Consciousness* (Dutton, 1975), although I concentrate on the more "orthodox" side of things there as I don't want to scare off conventional scientists right away by pushing their buttons. On a personal level, I keep up my aikido training and other kinds of body awareness training, but my research work makes me more and more question our conventional notions of space, time, and body.

Again, good luck on your Conference. But until we begin to take these kinds of human experiences and the data of modern parapsychology into account, I don't think we'll do any more with the mind-body problem than talk about it.

Charles T. Tart, Ph. D.
Professor of Psychology
University of California
Davis, California

Unusual energy report

I've seen portions of a report being prepared for the Energy Research and Development Administration by Stanford Research Institute titled, "A Preliminary Social and Environmental Assessment of the ERDA Solar Energy Program 1975-2020." It looked so good (critical, conservative, insightful) I wrote to the ERDA Project officer, James Benson, for details. He replied:

Dear Stewart,

This letter is in response to your request for information about the study being performed under me by Bill Harman at the Center for the Study of Social Policy at the Stanford Research Institute, Menlo Park, California 94025.

The study is an assessment of the major social and environmental implications of the national solar energy program as outlined in document ERDA-49. The study examines the required social implementation steps and potential environmental effects of several energy scenarios through the year 2020. The energy supply scenarios vary from 85 to 180 quadrillion BTUs in 2000, compared with about 70 quads this year.

The study also discusses the increasing public demand for small scale decentralized energy sources, different societal paradigms and a variety of social policy issues which will have to be confronted before our energy situation is resolved.

The final report is due by the end of this September.

James W. Benson, Program Manager
Environmental and Resource Assessments
Division of Solar Energy

People interested in seeing the report should request copies from: Division of Solar Energy, ERDA, Washington, D.C. 20545.

—SB