

ANPA WEST

**Journal of the Western Chapter of the
Alternative Natural Philosophy Association**



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Alternative Natural Philosophy Association

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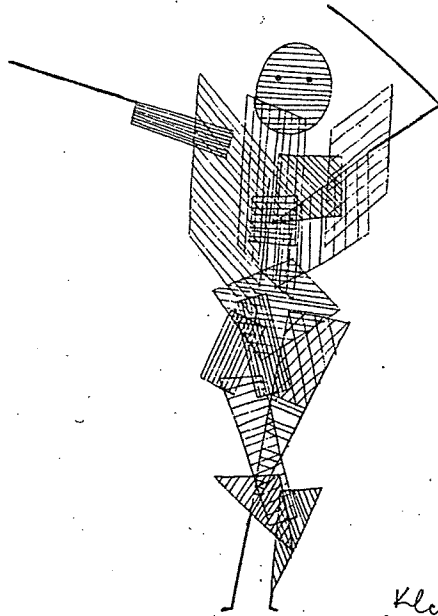
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ON THE COVER

Over the years, our journal has kept several strands of thought going. One has to do with foundations of physics, especially quantum mechanics. Another has to do with questions concerning mind, body and society. These two strands interweave in this issue.

The image of the lotus we feature on our cover was painted by an unknown artist of the Sung Dynasty in China. This flower, with its roots in the mud but rising above the water, symbolizes for Buddhists the enlightened mind.



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by *Emmanuel Ransford*

This essay presents a dualist account of the mind–body relationship that relies heavily on quantum mechanics for its guiding ideas. Unlike many current quantum theorists of consciousness, Ransford is not afraid to follow consciousness all the way down to the elementary particles.

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by *Tom Etter*.

One normally classifies mind–body theories as either dualist or monist. This essay presents mind–body as a polarity like up and down, very asymmetrical in everyday life but symmetrical in the larger picture. Instead of minds and bodies there is a mind–body field whose mathematical structure involves the "curvature" of logic. Despite this very different starting point, there are some significant points of agreement with Ransford.

Knowledge, Love and Happiness 38

by *Niklas Damiris*

The pioneers of modern psychology patterned their new science of mind on physical science, hoping to duplicate its successes by adopting its methods. There is a growing body of thought today, especially in Europe, that sees this as a great mistake. Psychology is about us, and to divorce it from the big philosophical questions about who we are and how we should conduct our lives is to trivialize its subject matter. Damiris here tackles the big questions. Taking his point of departure from Foucault's reflections on individuality and society and Lacan's reinterpretation of Freud, he challenges us, all of us, to reinvent ethics. This and the previous essay, though their subject matters may seem quite different, are actually much of a piece.

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TOWARDS SOLVING THE MIND-BODY PROBLEM

Emmanuel Ransford

What is awareness ? Broadly speaking, there are three ways to look at it. Either it is a seemingly weird — but in fact not so special — property of matter (or rather, of some purely material process). Or it is an unearthly phenomenon, unrelated to our material world. Or else — and this is our assumption — it is an 'earthly' yet nonmaterial occurrence, which lurks within matter as an usually hidden virtuality. In this case it may, to be spurred into full-blown existence, depend on some material processes — even though it is not material in essence. Such processes would routinely be carried out, on a large scale, in any normal living brain...

Is there more to mind than matter ? Shouldn't we take it for granted that present-day knowledge, based on neural and cognitive sciences, fully supports the claim that consciousness is nothing but the result of brain processes — *that it is purely material in essence ?*

In this short paper, we want to outline two considerations. The first one is widely known. It is that neurosciences provide ample and strong evidence that conscious mental processes can no longer be thought of independently of some specific brain processes. However, the reason why it is so is still fairly unclear and elusive. (It must also be borne in mind that *not* all brain or neural processes do contribute towards consciousness. Indeed we know beyond doubt that only a small part of them do so.)

Secondly, we want to introduce a new paradigm which aims at solving the long-standing mind-matter riddle. This paradigm leads to the *im-im model*, which holds that consciousness is both *immanent* and *immaterial* (or rather, *unmaterial*). (1)

Its being *unmaterial* means that it is not a mere side-effect of some material processes. Although it is clearly related to such processes, there is more to it than that. It is not just a by-product of them; it partially stands on its own.

Its being *immanent* means that it belongs to our world, just like any table or stone. It is but one of its contents. It is not transcendental, nor 'otherworldly'.

But there is a hitch : how can we reconcile this view with the glaring fact that none of our everyday objects seems to be aware ? The answer is straightforward : we must assume

that consciousness is usually latent, or 'silent' as it were. Hence it doesn't show....

What can we do out of that ?

This is a big question. We basically consider that our universe is not wholly material. We envision it as being made of a more complex substance, which is bidimensional and may be called psychomatter. And this brings us to a new challenge.

We now have to understand why and how the 'psychic' and the 'material' contents of psychomatter can be made to interact (within our brains, for instance). We must find out under what circumstances the psychic content — which is usually *latent*, as we said — becomes active.

We know from physics that *psychomatter* is made up of discrete entities, the so-called 'elementary particles'. But this is a misnomer: these micro-objects are neither elementary nor particles in the classical sense. Indeed, they display most of the time wavelike properties. On these grounds, I shall call them *wavicles* instead.

In order to make a long story short, let us assume that we can generally represent these wavicles as tiny cloudlets. Let q_1 and q_2 be two of them. We then have the following drawing :

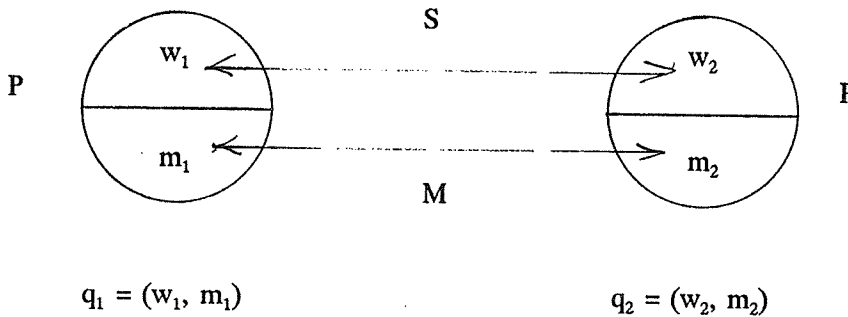


This is not the whole story. We yet have to make it plain that they are made up of psychomatter, which is bidimensional. To allow for this, let us use an obvious notation : $q_1 = (w_1, m_1)$ and $q_2 = (w_2, m_2)$. Hence we get :



Here w_i and m_i ($i = 1, 2$) are respectively the psychic and the material components, or parts, of the wavicles (m as matter, w as... wit).

Now comes the next – and last – step. We must 'dress' our 'naked' wavicles. How? By putting on them the various interactions they can be subject to. This leads to our last drawing :



We successively have :

M : material interaction (between m_1 and m_2)

P : paral interaction, or phase (between w_i and m_i , $i = 1$ or 2)

S : supral interaction, or link (between w_1 and w_2)

Now the good news : it turns out that within our framework, *we do not need anything else to solve the mind-matter problem !*

To show this, we must :

- single out likely candidates – *if any* – for our nonmaterial (viz., paral and supral) interactions;
- assert how this provides a potentially relevant explanation as to why the brain is the organ of awareness.

These two points go beyond the scope of this introductory note. We kindly refer the reader to our text mentioned in Ref(1). (2)

Let me just add a few points, which can be fully substantiated. If the im-im model proves right, then the following statements hold true :

- **The paral phase is nothing but the 'wave packet collapse' of quantum**

mechanics (I also dub it the *activation*). *It is at the core of mind–matter interaction, at the elemental level.*

● **Supralness (that is, the existence of a supral link) is nothing but quantum 'nonseparability'.** It welds together formerly unrelated wavicles into psychic wholes. *Our minds are examples of such suprally assembled 'macropsychic' entities....*

We thus have found our 'likely candidates' : this again is very good news. It gives some glow of credibility to our model.

If we christen **paral** the state a wavicle is in as it undergoes a paral phase, the *im–im model* brings us to the following conclusions:

● **Our brain is the organ of consciousness because it can produce, on a large scale, some suprally connected paral** (it does so through some of its 'massively parallel' neural processes);

● **Our mental memory is supral in essence** (in other words, our 'explicit' memory –which deals with our conscious recalls– is encoded or 'engrammed' in some specific supral circuits of our brain, which bind together a host of different wavicles).

In a nutshell, consciousness would actually consist of large–scale supralled paral. That is the way we believe it is ! Supralness entails that our mind is holistic in nature. By the same token, our memory is nonlocal.

We can readily derive other striking properties. Some of them are akin to the so–called 'paranormal' phenomena, such as telepathy. The interesting point is that all this renders our *im–im model* perfectly testable, or 'falsifiable'. (For instance, we can experimentally check its account of our psychic memory.)

Now there is a snag : according to the conventional interpretation of quantum physics, activation is *exclusively* sparked off by quantum measurement acts. If so, then our model requires that our brains — in order to beget large–scale paral — be equipped with a wide array of macroscopic measurement apparatuses. Clearly that's the end of it!

This highlights that our approach can only make sense if the paral interaction (or the wavepacket collapse) is NOT exclusively tied to quantum measurement processes. (3) If true, this is a sobering fact, for it incidentally rids us of puzzles which smudge the conventional interpretation ever since its inception quite a few decades ago. (4)

Let us add one last concluding remark. If our assumption is correct, the very existence of psychomatter — instead of plain matter, as we wontedly think of it — has far-reaching consequences. One of them bears on the big bang theory and on the origin of our universe. It raises the possibility of a transcendental or 'unworldly' being, whom we may wish to call God. More than a possibility, it is rather a *conceptual and logical necessity*. I already touched upon this exciting issue elsewhere. (5)

FOOTNOTES

(1) It has been presented in the French magazine 3° Millénaire N° 28, Summer 1993 (B.P. 40, F-75661 Paris Cedex 14) under the title : *Les Trois Piliers du Cerveau Conscient*.

(2) Its English version is available upon request.

(3) To show it, it suffices to prove that the decay of an unstable microsystem involves a paral phase. Or else, that any spontaneous quantum jump is brought about by an activation (which then occurs *without observation* — that is, regardless of any measurement process). How can we establish this ? Clearly enough, such a decay breaches the least action principle (this can easily be shown). The least action or wavelike movement does not allow such a transition from the initial (*undecayed*) to the final (*decayed*) state of the system. ***This is enough to prove that a paral phase is triggered at some stage in this evolution.*** Why ? For there is just no other alternative. Whenever —in a given quantum process— the least action motion can be shown to be breached, we can safely infer that at least one activation took place between the initial and the final states. This is so because quantum physics leaves no choice, besides the wavelike motion and activation. Hence wherever one of these evolution laws is violated, it entails that the other has been enforced somewhere along the road. *Whether or not any measurement has been performed....*

(4) This interpretation hinges on the belief that no activation or paral phase can happen *unless* an act of measurement is performed (which requires the participation of a *macroscopic* measuring device, and of a conscious observer). This leads to the demise of an independant reality : along these lines, *reality comes into existence only when observed*. This also calls for a tight yet ill-defined dividing line between the (quantum) microcosm and the (classical) macrocosm. To make things even worse, it raises some baffling paradoxes, as exemplified by Schrodinger's cat. There is a blatant credibility gap!

(5) For instance in my article : "Le big bang et la genèse du monde", in *La Jaune et la Rouge* N° 462, Feb. 1991 (5 rue Descartes, F-75005 Paris). □

EMPATHY

by Tom Etter

Section 1. The Spirit of Matter.

Quantum mechanics began as a technical fix. Certain problems had arisen in a small branch of physics called atomic spectroscopy that could only be solved by assuming that light is emitted and absorbed by atoms in small jumps called quanta. This "solution", however, quickly led to much bigger problems than it solved, problems that point to really basic flaws in our whole traditional conception of matter. Most of today's physicists have learned to ignore this threat to their tradition; they are like the prosperous citizens of Pompeii who tilled their fertile fields under the shadow of Mount Vesuvius, scarcely aware of its occasional distant rumblings. But it was quite otherwise with the quantum pioneers, especially Pauli.

Pauli's insistence on clear thinking together with his intolerance of shabby work and his excellent sense of what is really worth investigating earned him the title of the conscience of physics. But as he matured he became less interested in physics proper, believing that the conceptual problems raised by quantum mechanics can only be solved, and indeed can only be properly stated, within a wider framework. A collection of letters he wrote to his protege Fierze has recently been published^{1,7} which reveal something of what he had in mind, and this was nothing less than a radically new kind of science; in one letter he called it *the science of the spirit of matter*.

For Pauli the real threat was not from new ideas but from the smallness and rigidity of the overly rational system that houses our old ideas. As we learn from Pompeii, if you ignore nature it can destroy you, and we in our obsessive drive to *master* nature have ignored its unmasterable darker side. Quantum mechanics was a veiled warning. Today the warnings are less veiled: the poisoned oceans, the depleted ozone layer, the nuclear sword of Damocles, etc.

But Pauli was no prophet of doom. His message was essentially positive. Rationality is not something to be rejected but to be *expanded by a marriage* to the

irrational. For the alchemists this marriage, called the *conjunctio*, was the supreme goal of their art. For us, though, their's is a lost art – we can't go back to the rituals and beliefs of a pre-scientific age. Today it is reason, in all of its mature power, that must take the initiative in courting the irrational. Pauli was not calling for a new religion but for a new *science*.

How will this new science differ from the old?

First and foremost it by *acknowledging* the irrational. In quantum mechanics this means taking seriously the idea of complementarity as *logical incompatibility*. It was von Neumann who first clearly grasped the logical dimensions of complementarity, though this is implicit in the two-slit experiment, where if you try to combine information from complementary frames you come up with the absurdity that A is possible, B is possible, yet (A OR B) is impossible! We'll return to this later.

Second, by paying more attention to acausal forms of order. Causality is today's version of animism. We fill the world with causes just as our primitive ancestors filled the world with motives. The supposed conflict between free will and causality is really a conflict between two wills, the one directly felt as our own, the other projected onto something called "necessity". Knowing what causes an event means knowing how to *produce* or *reproduce* it. Causal knowledge is knowing how to get the best of necessity, how to bring the situation under *control*.

Pauli adopted Jung's term "synchronicity" for acausal order. As examples he cited the so-called paranormal or psi phenomena, of which he had many personal experiences. Today's science takes two views of such things: the majority view, which is to keep them firmly locked in their closet, and the minority view (and it's a very small minority) which is to open the closet for a good airing. Pauli's view? "That's no closet, that's the front door!"

In keeping with this view he saw quantum phenomena as a special case of synchronicity, bordering and overlapping the causal; they lie, so-to-speak, just on the threshold of the front door. Had he lived to hear about Bell's theorem he would have no doubt welcomed EPR as an example of something clearly over the threshold. Someday his new science will certainly venture far outdoors, and who knows what it may find?

The third feature that distinguishes Pauli's new science from the old is its break with the Cartesian concept of objectivity, its rejection of "the view from nowhere"² In

its place will be a unified conception of mind and body. But that's what this paper is all about.

Section 2. Minds and Bodies.

Consciousness is a hot topic these days. Books on the mind–body connection no longer make their debut back in the philosophy section but right out in front on the "New Non–Fiction" table. Mind–body is a live issue, as William James would put it. To a large extent this is because of computers. Aristotle said that man is a rational animal because he can do sums. A computer can do sums very well. Is a computer a rational being? Does it have rational thoughts? Does it have any thoughts at all?

More and more, computers are invading territory which we thought we had staked out as uniquely human. It won't be long before the world chess champion is a computer. What are we going to say to computers when they plead with us to spare their lives as we start to shut them down?

Far fetched? Perhaps, but in certain intellectual circles it is an article of faith that the workings of the mind are nothing but computation. If this is true, and if the computers we build can really think like we do, aren't they entitled to the same fellow feeling that, ideally, we extend to each other? Is there something about our protoplasm, our "wetware" as it is sometimes called, that differs from "dryware" made of silicon in a way that turns its computations into true thoughts? Or is the prevailing idea that brains are computers simply a mistake? Whatever their answers, these are no longer academic questions.

The mind–body problem has never been much of a problem in everyday life, although there has always been a strange breed of people called philosophers who concern themselves with questions like "How do you know there are other minds?". These people also ask silly questions like "How do we know the apple is really red?" For the rest of us, these are not live issues. Most of the time we run on what Santayana called animal faith. I know that the apple is red because I see that the apple is red. If I want to know what's on your mind, I simply ask you, and usually I get an answer that settles the matter.

Philosophical problems arise when animal faith is betrayed. I see a red apple, and then some trickster turns off his hidden laser spotlight, revealing that the apple is really

green. What, then, is redness? Is it just what I see? Then in what sense is it an attribute of the apple? etc.

As the author of a computer conversation program (footnote on Racter), I have watched someone seriously argue with what I know to be a mere bag of tricks; I know this because I devised them. But for the person at the keyboard, animal faith has for a moment transformed my bag of tricks into another person. Eventually the spell is broken, animal faith is betrayed, and the philosophical mood takes over: "This is ridiculous, I'm not talking to a person with a mind; this is a mere device, a mere thing that spouts words! But, then, how can I really know? Is my husband a mere thing that spouts words? Sometimes it seems that way."

When faith is betrayed, we can go off the deep end. Animal faith is the ground in which all sane thought is rooted. Philosophy that merely throws it away is bound to be silly. So let's reflect for a minute on how we deal with other minds in everyday life.

When you ask somebody "What's on your mind?", what are you really asking for? Certainly it's not a list of properties of some object called a mind. What you want to know is what it's like at that particular moment to be in that person's shoes. "What if I were her? What would the world be like? What would I want? What would I feel? What would I see? What would I believe?" What you are asking for is something on which to base your *empathy*.

Let's switch gears. Suppose you say to yourself: "What on earth did I have in mind when I said that!?" What, in fact, did you have in mind? Did you have anything in mind? The next day, it may on reflection be quite apparent that you didn't. That, in fact, you were especially absent-minded. Despite your high spirits and your ensuing wonderfully high opinion of the words that you spoke, you said nothing at all!

And yet, in that painful stretch backwards in time, you extended your *empathy*. Maybe the primal form of empathy is mother's love, but following close after is the empathy you extend to that person who stood in your own shoes yesterday and will stand in them again tomorrow. Whatever may justify your claim to having a mind would evaporate in an instant without such *self-empathy*. The sociopath who is incapable of empathy is a villain we all love to hate, but he is pure fiction. Such a person would not only be incapable of memory, he would be incapable of any self-interested action, since the benefits of such action would always accrue to a stranger.

Actually, there are two lessons here. The first is that empathy is no luxury, it is

the glue that holds together the consecutive moments of our life – it is the very stuff of self. The second is that empathy is not information or knowledge; although it may involve these things, its essence is a more direct form of connection.

Empathy may not be information or knowledge, but it certainly can go astray! The child's Teddy Bear rips its leg on a nail and the child bursts into tears: "Poor Teddy. Poor Teddy hurt himself!" What's going on? The experience is in some sense right – it's a step in the child's learning to feel for others. But in another sense it is obviously wrong. The psychologists have a word for such a mistake: *projection*. In a child it's part of growing up, but in an adult it can be a deadly fault, as when someone's free-floating hatred is projected onto a stranger because he is of the wrong nationality or race.

How can we tell the difference between empathy and projection? How do we know whether Teddy really hurts, or just looks that way? That, in a nutshell, is the mind-body problem.

Suppose Teddy says "Ouch!". Does this mean he really hurts? It's a *sign*, but not a very significant one today, since we know that some Teddys have built in tape recorders. Think, though, what it would have meant in the Middle Ages!

Suppose Teddy is not Teddy Bear but Teddy Roosevelt, currently residing in Disneyland. He not only tells you how exhilarating it was to charge up San Jaun hill, but his eyes flash, he waves his arms and jumps up and down and practically sweeps you up in his charge! Surely he must be reliving this glorious moment. But alas, no, the tricksters are at it again.

But let's look ahead 20 or 30 years. Teddy Roosevelt has obviously matured. Now you can sit down with him and have a long and informative conversation about the pro's and con's of American imperialism, circa 1900. He's not only talking, he's *responding* to what you say, and responding very cogently. Surely he must be thinking the thoughts that he expresses so well!

That's pretty much how it stands today. Sooner or later Teddy Roosevelt, or someone like him, will pass the Turing test with flying colors. He will not only act like a human being, he will *interact* like a human being. And then we'll have to grant him the status of a human being. Or will we?

If in the Middle Ages a statue of St. John had recited a passage from his gospel,

this would have been a conclusive *life sign*. Maybe it was John himself back from the dead, maybe it was a devil speaking, maybe it was a trickster speaking through a speaking tube, but it was someone. We smile, but remember in that context there were no tape recorders, and it was quite inconceivable that anything but a living and thinking being could talk. Today it's inconceivable for most people that anything but a living and thinking being could talk *back*. But as clever programmers come up with better and better tricks for handling natural language, and tell us about how they work, doing well on the Turing test will carry less and less conviction as a life sign. Life signs, like all other signs, only signify in a context, and the context here is rapidly changing.

SIGNS OUT OF CONTEXT SIGNIFY NOTHING!

We all agree that life signs like "My foot hurts" spoken by a friend are highly significant and usually conclusive. The problem is that they only apply in a narrowly human context and give no hint of how to identify and interpret life-signs in other creatures, computers etc. Unlike the situation in physics and chemistry, there is no *theory* here to take us beyond the familiar territory where animal faith is a safe guide.

One attempt to create such a theory was behaviorism, which tried to analyze human behavior in terms of behavioral *dispositions* like reflexes and habits that can be defined independently of a human context and yet which closely correlate with what we say when we report on the thoughts that accompany our actions. In its original form, behaviorism eschewed empathy in any form, including introspection, but this is not really possible. Without empathy, psychology has no distinctive subject matter – how do you distinguish psychological behavior from chemical or ballistic behavior?

But if we think of behaviorism as an extended guide to empathy, it makes sense. What, then, are the general behavioral signs of a mind at work that we can use to properly steer our empathy and avoid projection? This is the version of the mind-body problem that most people have in mind today when they argue about whether computers can think. I believe that it is insoluble in principle.

I'll return to this in a minute, but first let me briefly touch on the "dualistic" or "mentalistic" approach to psychology which seems to be coming back into favor, especially among quantum physicists. I think some of the recent speculations in this vein are barking up the right tree, but they are trying to operate too soon on too advanced a level, without adequate conceptual foundations. The problem with taking concepts like "mind" and "consciousness" as building blocks is that when you try to generalize them beyond the human context they quickly lose their ability to guide our

empathy and become merely things among things – in effect, we end up with another form of behaviorism, and a not very plausible one.

How, then, *do* we distinguish empathy from projection? There is an analogy here to a question that much occupied physicists in the last century: how do you distinguish gravity from acceleration? Einstein came up with a startling answer: you can't! Of course he wasn't denying the obvious fact that these two things have a very different role in ordinary life, where there are many reliable "gravity-signs" (just as there are many reliable life-signs.) What he was saying is that at a deeper theoretical level gravity and acceleration are essentially the same. But then he sprung a second surprise: At an even deeper level they are essentially different again! To reach this deeper level you have to take the very radical step of tossing out Euclidean geometry and identifying gravity with an aspect of the "curvature" of space-time.

I suggest that at the first deep level of theoretical science, the "classical" level of science today, empathy and projection are quite indistinguishable. This in itself is worth noting: it may give us more compassion for the child with his hurt Teddy bear and the lunatic with his assault rifle. But it is a strong call for us to look for an even deeper level where they are distinguishable again.

This second level is Pauli's new science, the science of the spirit of matter. The key here is the *conjunctio*, the marriage of the rational and the irrational. To pursue further our present analogy, what is required is a notion of "curvature" in logic. Curiously enough, the idea of curved logic is amenable to mathematical treatment, as we'll see in section 6. Classical science uses flat (Boolean) logic, which is why it can't distinguish empathy from projection. True empathy is in the logical curves.

But what does logic have to do with empathy? What we today call logic is the science of a few short words: "and", "or", "not", "all", "some", "is", "it", "if", "then", "true", "false", words whose meanings are inextricably woven into the fabric of all experience. But there are other short words – "I", "we", "you", "him/her", "them", "this", "that", "here", "there", "now", "then" – that are equally woven into the fabric of all but the most attenuated experience. A major task of Pauli's new science is to make a place for these words, which have no place at all in "empirical" science as it is practiced today. The nature of this task can be fairly described as broadening the scope of logic. In this paper we'll take brief forward look at the prospects for such a new logic. But before we do so we need prepare the ground by a more focussed look at the so-called Cartesian split.

Section 3. The Cartesian enchilada.

A lot can be learned by paying careful attention to a very simple and familiar situation. You are sitting at a table on which there is an object A facing right. Bill, who is sitting across from you, says that A is facing left.

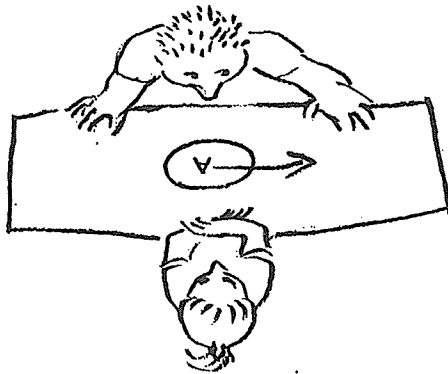


fig. 3.1 *You and Bill.*

Is Bill mistaken? Is he lying? No. How do you know? By putting yourself in his shoes, or more exactly, in his chair: "If I were sitting there, I too would see that A is facing left." Without our ability to empathize in this way, to imagine ourselves as another person in another place facing in another direction, the observation of spatial qualities and relations would be a purely egocentric affair. Without empathy, physical science, which is largely the search for properties that are invariant under the fickle facts of perception, would be totally impossible, as indeed would be any other kind of social activity that requires us to communicate about things and places.

Your act of empathy with Bill involves two kinds of truth. First there is the "external" truth about the physical situation, i.e. about which way A is facing, and second there is the "internal" truth about what is on Bill's mind.

External or *factual* truth. The question: What is the case with A? The answer: A judgement of fact, a discrimination, a narrowing of the range of what is possible, in short, *information*.

Internal or *empathic* truth. The question: What is it like to be Bill? The answer: Not a

judgement but an *experience*. It is of course a vicarious experience, but ideally it is the *same* experience as Bill's in all but one respect, which is that it is tagged as his rather than your own. This empathic experience does contain an external judgement of fact about A, but the truth of that judgement is not what is in question.

We are accustomed to thinking of the Cartesian split between mind and matter as a neat division between internal and external, but now we can see that the situation is better described as a kind of sandwich. The top piece of bread is *mind*, the bottom piece is matter, or more generally, *things*, and the meat in the middle is *ideas*.

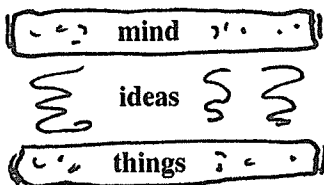
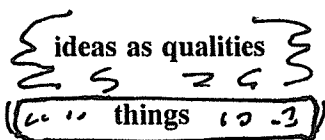


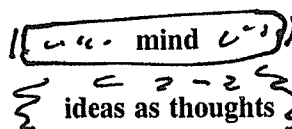
Fig 3.2 *The Cartesian sandwich.*

In our present example this meat in the sandwich is the idea of facing left. So faces the object A. So thinks Bill. These two matters of fact, how A faces and what Bill thinks, so profoundly different in kind, are inextricably linked by a common idea expressed by the sentence "A is facing left." Neither matter of fact could exist without it! The two pieces of bread not only enclose the meat, each of them *contains* the meat!

There are really two Cartesian splits. Split #1: remove the top piece of bread and get ideas plus things, where ideas are now *qualities* of things. Split #2: remove the bottom piece of bread and get ideas plus mind, where the ideas have changed hats and become *thoughts*. We can picture these two splits as two open sandwiches.



Physical science



Psychology

fig. 3.3 *The two open Cartesian sandwiches.*

The first split, in which ideas are cast out into the cold world of objects to thrive as best they can as qualities, attributes, relations, facts etc., was probably an essential step in the intellectual development of the West, and is what led to physical science. The second split came later, in the West at least, with the Romantic rebellion, which glorified subjective experience and disdained what Blake called "Newton's sleep", the mere knowledge of objective facts. Around the turn of the last century it took a more sober form in the various schools of "mentalistic" psychology that grew up around James, Freud, Jung etc.

The philosopher Husserl tried to effect a third and more radical split by discarding both pieces of bread and keeping only the meat of pure ideas. Whether this is a viable enterprise, whether it even makes sense to speak as he does of a science of pure ideas or *phenomena*, is open to debate; I for one am a skeptic. Whatever the case, he was looking for the opposite of what we are here, which is a science of the whole sandwich.

Actually, our open sandwiches aren't really all that open; each is quite haunted by the ghostly presence of its missing bread. In physical science, the ghost of missing mind is called *viewpoint*, while in "mentalistic" psychology the ghosts of the missing material objects are very much there as *images*, whose apparent objective presence is what philosophers call *intentionality*. Here's a more accurate picture:

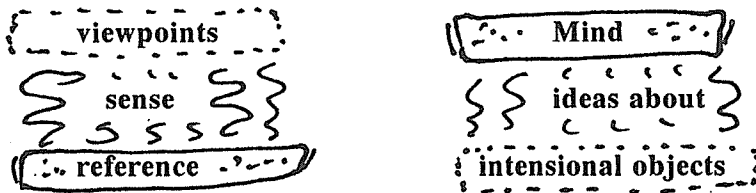


fig. 3.4 *The haunted open sandwiches.*

Let's return to you and Bill. What if Bill were your Teddy bear? To ask what it is like to be Bill and to answer with "I see that A is facing left" would then not be empathy but projection. But still, this imagined act of empathy contains an important element of truth. If, quite literally, you were in your Teddy bear's shoes, then A facing left is indeed what you *would* see. The question of fact here is no longer what it is like to be Bill, but it is something resembling that, which is what would it be like to have Bill's viewpoint? Though this act of empathy is imaginary, it can still be right or wrong, and fictional rights and wrongs of this particular kind are at the core of our

matter-of-fact understanding of spatial relations.

The logic of things is about judgements of what is the case; it's a logic of information. Provided distinct cases are always labelled by distinct ideas, the mathematical form of such *case logic* is Boolean algebra. When we consider more than one viewpoint, however, this proviso can be badly violated, as our example clearly shows. We then need a richer logic than Boolean algebra, as we'll see in section 5. If we hope to combine and accumulate information collected from different viewpoints, we must pay careful attention to Frege's distinction between *sense* and *reference*.

When you and Bill both say "A faces left", your words have the same sense but different references: they refer to different cases. On the other hand, when you say "A faces right" and Bill says "A faces left" you are referring to the same case but your words have opposite senses. The same is true even when Bill is only a Teddy bear whose words are only in your imagination. When you extend your imaginary empathy to that ghost of a mind called a *viewpoint*, it is not to connect with an actual thought – ghosts don't have actual thoughts – but rather to experience the *sense of a case*. As we'll see in section 5, formalizing the logic of such imaginary empathy is a small but important step towards recovering the whole sandwich – actually, as we'll see, the whole *enchilada*.

But now suppose that you are a psychiatrist and Bill is not your Teddy bear but your patient! When Bill says "A faces left" you realize that at last he has symbolically connected with an important childhood trauma. The issue of what is physically the case with A on the table is totally irrelevant. And yet, Bill is talking about A. Our thoughts, our ideas, whether right or wrong, are almost always *about things*. We can perhaps get rid of things, but we can never get rid of the *pointers* to things that belong to thoughts themselves. The ghost of the objective world, which is what the philosophers call intentionality, can no more be exorcised than the ghost of mind. We don't have a formal logic of thoughts like our formal logic of cases, so the lesson here is harder to apply, but it should not be forgotten.

I wrote above of restoring the full sandwich as if this were simply a return to some state of innocence. But innocence is hard to come by in today's fallen world. We find it easy to bind ideas with things, or to bind ideas with minds, but we seem to find it impossible to do both at once. How, then, to proceed?

In the Cartesian sandwich, mind and things are two separate pieces of bread. This of course is not quite right. Here's the missing truth of the matter: Everything is a thing!

MINDS ARE THINGS TOO!

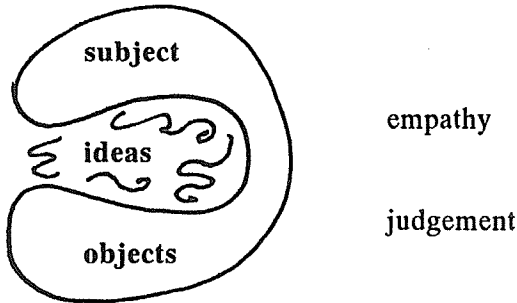


fig. 3.5 *The whole Cartesian enchilada.*

The first stage of science is to classify things. Aristotle classified material objects into heavy objects like stones that fall to Earth and light or *superlunary* objects like planets and stars that reside in the Heavens, a distinction that medieval science found very useful since it was congenial to the theology of the time and thus assured it of the backing of the Church. The Cartesian classification of things into minds and bodies is congenial to the extraverted spirit of the modern age, but it is equally superficial and silly when carried too far.

The next stage of science is to study relationships. *Light* and *heavy* gave way first to the attractive force of gravity, then to the gravitational field, then to curved space. Notice that these advances in understanding did not erase the more primitive distinction between light and heavy, or between up and down, but they revealed a much more subtle context in which these first distinctions occur as limited aspects of a global form.

We can expect the same with mind and body. The Cartesian sandwich, though it still rests on the mind–body distinction, begins to reveal a structure of logical relationships hinting at a deeper theory. The Cartesian enchilada goes further. Now the mind–body relationship, or more accurately the subject–object relationship, becomes a *polarity* within a single unified domain of things. This polarity is defined by the following asymmetrical three–term relationship among things called subjects, ideas, and things called objects:

Subjects have ideas and ideas qualify objects.

Subject and object are now poles of an arrow, like up and down, and ideas make up the "shafts" of these arrows. Notice that there are occasions when "up" and "down" do become names for places, for instance when "up" means up in the air and "down" means down on the

ground. Just so, in a human context the structure of the subject–object field does sometimes have bumps and kinks that we can properly describe as subjects and objects. Human beings are subject–objects of a special kind. Starting with "things" like us, the science of the future will trace field lines outward in the subject–object field that map paths of empathy and paths of judgement to all other things, whether these other things are like us or not.

Now we see the first hint of the kind of science that can distinguish between empathy and projection. Empathy occurs when the empathic "field lines" are somehow in sync with the cognitive "field lines". Projection occurs when they are not. There's no way to bring them into sync if you take the "view from nowhere". You see, we're not now just talking about new facts and new laws – the new science means a whole new practice! Pauli's odd phrase "the science of the spirit of matter" no longer sounds quite so far fetched.

Section 4. The clone paradox and logical privacy.

As I said in section 2, the subject–object field is not a spatial field but a "logical" field, whose field structure is analogous to spatial curvature. We can get a glimpse of what is involved in such "logical curvature" by looking at a certain strange twist in the logic of self–empathy.

Suppose that one night you are cloned, and one of your clones is sent off to Florida for a vacation, the other to Maine on a work assignment. To which of these place do *you* go?

The obvious answer is both places. But that's a third party answer. Give us an answer from your own experience! Think about your state of mind the night before: "Will I wake up in Florida or in Maine? Will I get my well–deserved vacation, or will I continue to be overworked?" These are not academic questions, they are live issues! Someone is going to both places, but you are only going to one of them. The fact that someone who looks just like you is on vacation isn't going to be much comfort if you end up in Maine. On the other hand, if you are the lucky one who ends up in Florida, the few pangs of guilt you feel about that poor soul slaving away in Maine are not going to spoil your vacation.

We are now dealing with four viewpoints: that of an external observer, yours the night before, yours in Florida and yours in Maine. There's no way that all four of these viewpoints can logically reconcile their accounts of where you have gone. Notice that viewpoint #1 labels the outcome "Florida AND Maine" while #2 says "Florida OR Maine, but not both". This is not at all like the example of you and Bill across the table, where there is a single Boolean algebra of propositions whose elements are differently labelled in the two viewpoints. Here there is no such single Boolean algebra. There is no range of mutually exclusive cases of

which one is true, the others false. The various viewpoints each have their own logics; these overlap, but can't be combined. In short, these viewpoints are *logically private!*

I said in section 2 that a logic of empathy would have to encompass words like "I" and "you". Now we see that these words cannot simply be plugged into logic as we know it. Even the ordinary logic of AND, OR and NOT must be modified to accommodate the concept of *logical privacy*.

This concept is utterly alien to classical science, but is quite natural in quantum mechanics, where it is the simplest and clearest interpretation of Bohr's complementarity. I've written extensively on this elsewhere³ so I'll be very brief here. Complementary viewpoints like position and momentum are estranged from each other in the sense that they cannot completely share their information. Many attempts have been made to understand this causally in terms of measurements disturbing the state, etc., but none is very satisfying. Von Neumann cut the Gordian knot here by declaring that it's not measurement that is at the root of the problem, but logic itself. His proposal for an alternative to Boolean logic was ill conceived, but his original insight points in other directions that are much more promising, as we'll soon see.

As our example shows, mental events seem to share the "illogic" of quantum events. The four observers of your cloning experience have complementary viewpoints. This confirms what we noticed about self-empathy in section 2, that it is not just information or knowledge. To use Jung's and Pauli's language, the psyche necessarily has one foot in the irrational. How to come to terms with this is the great challenge to psychology and physics alike; it's today's search for the philosopher's stone, the conjunctio.

Section 5. Boolean geometry.

Back to the Cartesian enchilada. We visualized it in section 3 as the Cartesian sandwich made with a single piece of folded bread. And indeed this is not too far off as a portrait of the human situation, though the bottom part should be larger. However, we're looking now for a way to go beyond the human situation, at least far enough beyond to include computers, and preferably much further. Let's then forget the particular shape of the enchilada and keep only its subject-object *polarity*. Our aim is to find the structure of this polarity, or to put it another way, to create a general theory of the *subject-object field*.

In section 2 this field was compared to the gravitational field, which today is understood to be an aspect of the metric field of curved space. It was suggested that we need to understand the mind-body field in an analogous way as an aspect of "curved logic". Let me now spell this out.

Think of subject and object as like up and down. Then our situation is not so much like living on the surface of Earth as living among the rings of Jupiter. There the gravitational field would enter our everyday experience not as a uniform and constant common direction but as a complex and highly articulated dynamic structure. Its bumps and kinks are neither huge and fixed, nor tiny and randomly changing, but on a human scale. It's very unlikely that we would ever guess Newton's laws of gravity, much less Einstein's, by observation alone, since the observed trajectories are so complex. By analogy, I think it's very unlikely we'll ever arrive at a theoretical understanding of mind and body by pursuing the kind of research that goes on in psychology and psychophysiology today.

The key ideas for a mind-body theory must be sought at a more fundamental level. As I said, the right level here is logic. Let me now give a brief and tentative sketch of a "curved logic" that can represent the subject-object field. First, here are three guiding principles:

GP1. No Platonic Heaven.

The qualities of things don't fly down from some ideal perch and alight on raw featureless matter, but are constituted by actual minds.

GP2. We live in a near-Platonic field.

Regarding qualities: There are many more red things in the world than will ever be seen by you or I. This means that the actual mind that constitutes red is much larger than yours or mine. I experience this larger mind as a kind of "mind-field" which encompasses the possibilities for my own awareness, but which extends far beyond what is realistically possible for me alone. My sense of things blends into an indefinitely larger social "sensibility" wherein it has both its particular place and a certain freedom of movement. The paths along which this sense moves in exploring the qualities in things are not simply created by me as I go; mostly they are already there as what I call the relationship of *resemblance* among things. Insofar as resemblance is an equivalence relation, its equivalence classes play roughly the role of Platonic ideas. Indeed it is only in this role that ideas become things at all; otherwise they are inseparably integral to the subject-object polarity.

Regarding thoughts: The paths that connect viewpoints to create the relationship of resemblance are also the paths along which we extend our empathy to those who actually occupy these viewpoints. Near-Platonic ideas are the shared qualities of similar things, and are also the shared thoughts of mutually empathic minds.

GP3. Hamilton's principle: Any change can equally well be regarded as a change of viewpoint or a change of state.

Uniform motion is relative, which is to say we can think of it either as motion of the observer or as motion of the observed object. In the middle of the last century, Hamilton found a remarkable generalization of this familiar principle which says, in effect, that any evolution of the state of a Newtonian system can equally well be regarded as an evolution in our viewpoint on that system. His principle has survived in quantum mechanics as the equivalence of the so-called Heisenberg and Schrodinger representations, the first being in terms of changing observables, the second in terms of changing states.

How Hamilton's principle applies here is that it strongly suggests that the basic dynamics of the subject-object field are symmetrical with respect to reversal of subject and object! This in turn suggests a strategy for discovering the mathematical structure of the field. We start with the near-Platonic field and analyze the structure of the top-haunted open sandwich, where minds have disappeared, leaving behind only their viewpoints. This is pretty easy, since it is terra cognita for common sense. Then we use the symmetry principle to replicate this sandwich upside down as a bottom-haunted sandwich. Then we fit the two together and join the two pieces of bread. Finally we shrink or "de-Platonize" the meat, getting entirely rid of ideas as things, which leaves only a field relationship among the things that remain, things which in themselves are neither subjects nor objects.

Needless to say, this is hardly a *fait accompli*. However, some parts of it have actually been worked out in some detail. Here's a brief and greatly simplified account of stage one, which is the construction of the top-haunted open Cartesian sandwich. This construction will be presented as a theory of viewpoints.

By a *viewpoint* will be meant a Boolean algebra of labelled cases. The idea here is implicit in the example of you and Bill. Consider your viewpoint. You are presented with a *menu* of two mutually exclusive and exhaustive cases, "A is facing left" and "A is facing right"; let's label these two cases L and R. To form the Boolean viewpoint generated by a menu, you AND and OR the menu items in every way possible. In our example this adds two new cases, the impossible case (L AND R), which we'll label 0, and the necessary case (L OR R), which we'll label LR. 0 and LR are the null element and the universal element in this four-element Boolean algebra.

Bill's viewpoint is formed in the same way. We'll distinguish his labels from yours by adding primes, i.e. his cases are L', R', 0' and L'R'.

As remarked, L and L' have the same *sense*, as do R and R'. An equivalence class of labels with the same sense will be called an *idea*. 0 and 0' have in common the idea that the two menu items cannot both be true, while RL and R'L' have in common the idea that at least one menu item must be true.

L and L' cannot both refer to the same fact, however; indeed if one is true then the other is false. It is L and R' that have the same factual reference, in the sense that L is true if and only if R' is true; similarly R and L'. An equivalence class of labels under such *logical* equivalence is what we are calling a *case*. 0 and 0' belong to the same case, as do LR and L'R'.

The two kinds of equivalence don't agree. Going from yours to Bill's viewpoint involves a *relabelling* of cases by different ideas. A relabelling that results from a change of viewpoint can be represented by a 1-1 mapping T on the set of ideas; call T a *Heisenburg transformation*. If the same relabelling is the result of a change in the object, for instance if A in our example were reversed, then it is more natural to represent it by the inverse of T as a 1-1 mapping on the set of cases; call this a *Schrodinger transformation*.

What are the general rules for relabelling? This is not so easy to say. There is one rule, however, that we apply so habitually we are seldom even aware of it, which is that relabelling should preserve logic. This means that if A is relabelled B, and C is relabelled D, then the label for (A AND B) must be replaced by the label for (C AND D), and also the label for (A OR B) must be replaced by the label for (C OR D). Applying this to our present case, we see that 0 must be replaced by 0' and LR by L'R'.

If there is one thing that the history of science should teach us, it is that our habitual beliefs don't always withstand close scrutiny. Just because it goes without saying doesn't mean that it's true! Can the rule that relabelling preserves logic withstand close scrutiny? Let's remember the clone paradox.

The two items on the menu are "I will wake up in Maine" and "I will wake up in Florida". Let's label them M and F. Now the third party observer knows that you will go to both places, so he must label this by his label for the case (M AND F). You, on the other hand, know that you are going to one or the other but not to both, so your label says (M OR F). But this means that, if you both have valid viewpoints, the relabelling involved in switching viewpoints does not preserve logic!

Can it be that AND and OR are *relative* like left and right or up and down? Actually, there is indirect evidence of this from quantum mechanics³ but here we seem

to be directly confronted by a common-sense case of it! The rule that relabelling preserves logic must be seriously questioned. But what could take its place?

In real life it's rarely true that two expressions have exactly the same sense or exactly the same reference. When we defined ideas and cases as equivalence classes, we were simplifying the situation. Meanings are usually fuzzy. Thus ideas and cases are usually fuzzy. We create the parts of an articulated structure like a Boolean algebra of cases by making somewhat arbitrary divisions, as when we divide an interval of time into seconds.

How can we represent this fuzziness? One way is by embedding our nominal Boolean algebra of cases in a more refined Boolean algebra where its cases blend into each other via interpolated intermediate cases. This larger Boolean algebra has a *fuzzy menu*. What this means is that two cases are to be regarded as almost equal if they contain almost the same sets of menu items. Given Pascal's definition of probability as the number of "favorable" (menu) cases divided by the total number of (menu) cases, this is equivalent to saying that two cases are almost equal if the probability of each conditioned by the other is close to 1.

Let's now assume that our viewpoints have fuzzy menus. What we now have is fuzzy ideas somewhat loosely attached to fuzzy cases. How does this fuzziness effect the concept of a transformation that results from relabelling? Notice that if a transformation preserves logic, it preserves fuzz. More exactly, it preserves the relationships of *neighbor* among cases, where two cases are called neighbors if their menu sets differ by exactly one member. The structure of this neighbor relationship can be represented as an unoriented graph; those of you who know about the Boolean cube will recognize it as the edge graph of that cube. If we define distance as the minimum path length between two points in this graph, it becomes a metric geometry, which will be called *Boolean geometry*. Define the *size* of a case to be the number of its menu items. Two cases are almost equal if the distance between them is very small compared to their sizes.

Let's now consider a transformation on a fuzzy viewpoint, i.e. a relabelling of its fuzzy cases by the same fuzzy ideas. Fuzzy cases don't form a definite set with a definite membership, however, nor do fuzzy ideas. Thus it is meaningless to represent this relabelling by a permutation of the fuzzy ideas themselves; what could it mean to permute the clouds in the sky on a hazy day? Our only course is to represent this transformation by a permutation T on an underlying refined Boolean algebra with a fuzzy menu. Such a T must of course preserve the fuzz. Or to put it another way, T preserves Boolean geometry.

As remarked, this is automatic if T is logical. But the clone paradox shows us that our theory must also take illogical relabellings into account. Now tossing out logic is certainly not going to guarantee that all our ideas will become absolutely precise! This means that if we are to have any kind of mathematical theory of illogical transformations, it must incorporate the mathematics of fuzziness. Thus we conclude:

All changes of viewpoint are represented by automorphisms of Boolean geometry!

Just as complete physical disorder among objects leads to large-number order among their aggregate shapes and motions, so complete logical disorder among our thoughts leads to a kind of field-order in their aggregations. Suppose you want to be completely wild and woolly. Suppose you want to be as vague as possible, to throw logic completely overboard. However, as a civilized person you also want to remain aware that you are being vague. This means you need to hold onto a concept of what it means to be vague. You then have no choice but to keep in mind the invariant part of logical fuzz, which is Boolean geometry.

Boolean geometry is one of those pieces of the picture referred to above that have been worked out in considerable detail³. We'll see in section 7 how it bears on quantum mechanics. For now, let it suffice to note that the structure of Boolean geometry, like Euclidean geometry, is homogeneous; any two points are interchangeable. This means, of course, that the automorphisms of Boolean geometry do not all preserve Boolean algebra, since the algebraic automorphisms leave the null element and the universal element fixed.

In fact, negation is a geometric automorphism. Recall that De Morgan's law says that negation reverses AND and OR. But now we have the solution to the clone paradox! The third party says AND but you say OR. How can that be? Because going from his viewpoint to yours doesn't preserve logic but only Boolean geometry.

If we think of a geometric automorphism as a relabelling (Heisenburg transformation), then the homogeneity of Boolean geometry means that any case can be relabelled by the label for any other case. It's not just that "(A AND B)" can turn into "(A OR B)", it could turn into "B" or "C" or "NOT(B)" or whatever. One might think that this would create complete chaos. How could science possibly remain invariant under such a wide group of transformations? Curiously enough, it can, as we'll see in the next section. Boolean geometry is a stronger structure than it seems.

Section 6. Quantum puzzles.

In classical science, the ideal observer sees without acting. His bodily existence is never acknowledged; he is a pure viewpoint. But today, because of quantum mechanics, the observer

has taken a more solid form, if not in person, then at least in proxy via his instruments. The top-haunted open Cartesian sandwich that we examined in section 4 is no longer an adequate framework for scientific thought. Let's try to do better.

Quantum physics has managed to hold onto the open sandwich by means of a delaying tactic that goes something like this: We, as sentient beings, never directly observe "things" like electrons and photons; we only observe our measuring instruments, and thus, in practice, remain in a classical world. The quantum objects that our instruments "measure" are relegated to an imaginary realm of so-called theoretical constructs, where they function only as aids to our calculation of events in the classical world. This is at best a temporary solution. Classical objects, being made of quantum objects, can themselves be regarded as quantum objects, so why shouldn't they too be relegated to the realm of theoretical constructs? But if the classical world itself is only an aid to our calculations, just what are we calculating?

Eventually we're going to have to swallow the whole enchilada. So when do we start? There's no time like the present. Where do we start? As good a place as any is quantum mechanics. We'll next take a brief look at the mysterious quantum phenomenon of *interference*, and in the process we'll pick up a new basic concept: the *body*.

As mentioned before, there are situations in quantum mechanics where it seems as if A is possible and B is possible even though (A OR B) is impossible. This happens when A and B are mutually exclusive cases, and the *probability amplitudes* of A and B have the same non-zero magnitude but are of opposite sign. Now amplitudes add for mutually exclusive cases, and amplitude is the square root of probability. Thus A and B are individually possible, but (A OR B) is impossible since its amplitude is 0.

The paradigm case of interference is the two-slit experiment. A particle source S and a detector D are separated by a barrier in which there are two holes, H1 and H2. The amplitude of a particle getting from S to D via H1 is +a, while the amplitude of its getting to D via H2 is -a. This means that if you close either hole, some particles will get through to D, but if you leave them both open, none will. It's as if you can get from Palo Alto to San Francisco via route 101 as long as 280 is closed, but you can't get there at all when 280 is open!

What's going on? Could it be that the particle in some way divides and goes through both open holes at once? The problem with this hypothesis is that if you put detectors at both holes you find that the particle goes through only one of them, and furthermore, there is no detectable phenomenon of any kind at the other to indicate that the particle even exists. A more popular theory is that the particle is steered by an undetectable "guide wave" that goes through both holes and interferes with itself. The guide wave theory has serious problems too; for one

thing, it must act non-locally, as Bell's theorem shows.

What's really wrong with these classical explanations is that they invoke complicated specialized mechanisms to explain something that in itself is very simple and very basic. You add amplitudes in the same way you add probabilities, and it makes sense to do either in any situation where you can distinguish among alternatives. To explain interference as the workings of a hidden mechanism is a bit like explaining $2+2=4$ as the workings of a hidden adding machine. It makes more sense to think about interference on the level where the logical puzzles arise, namely logic.

The interference "paradox" arises because we are dealing with two complementary measurement situations, to use Bohr's term. In the first situation, call it P, we ask whether the particle goes through H1 or H2, while in the second, call it Q, we ask whether the particle does or does not arrive at D. Bohr contends that it literally makes no sense to ask both questions at once; in this respect P and Q are like position and momentum. As remarked in section 4, it is natural to interpret Bohr as saying that the logic of P and the logic of Q are mutually estranged. Another way to put it is that words like AND and OR are *relative* to the "viewpoints" of P and Q, just as LEFT and RIGHT are relative to your viewpoint and Bill's. In essence, this is the position I am taking here.

Einstein produced a devastating argument against Bohr's notion of complementarity by showing that in a very real sense you *can* measure P and Q at the same time. It's possible in principle to produce pairs of quantum *twins* on which all measurements agree. Furthermore, a measurement of P on twin A' leads to exactly the same predictions for the future of twin A as a measurement of P on A itself, and vice versa, which is to say, a measurement of either is a measurement of the other. Thus if you measure P on A' and Q on A, you have measured both P and Q on A.

This argument is not only telling against Bohr, it presents serious problems for us too. I've described the relativity of logic as meaning that P and Q have incompatible logics. Suppose this is so. But then suppose that you measure both P and Q in each of a long series of trials and a public record is kept of the outcomes. Assuming there is enough variety in the objects measured, the measurement process would map the Boolean algebra of P's logic isomorphically onto a subalgebra of the Boolean algebra of subsets of the set of all trials. The same is true of Q. But this is exactly what can't happen, since it would mean that P and Q are logically compatible.

Does this mean we must go along with Einstein and regard P and Q as logically compatible? No, since this presents even worse problems. If it were true, there would be

nothing in principle to stop us from imagining a third particle A'' which is the twin of both A and A' , thereby allowing us to measure any three observables. But the existence of such trios flatly contradicts the probability rules of quantum mechanics; this is the essence of Bell's theorem.

So it's back to relative logic. But we've learned something very important: Logically estranged viewpoints cannot all speak at once for the public record. But then, come to think of it, what kind of viewpoints can? Words don't come from viewpoints, they come from mouths! So far we have been neglecting a crucial ingredient of the measuring process, and indeed of the whole life process: our bodies!

Section 7. Body.

Since the whole point of our enterprise is to overcome the Cartesian dichotomy of mind and body, our neglect of the body has been a serious oversight, and must be remedied at once. Let's go back to the beginning. Actually, let's go back to before the beginning, to the mythical state of primal unity, to the proto-realm of animal faith.



fig. 6.1 "The state of primal unity."

Everything is harmoniously connected to everything else. Nothing stands out, nothing *exists*, taking the word "exists" in its original Latin meaning.

But then something emerges: Eve sees the apple.

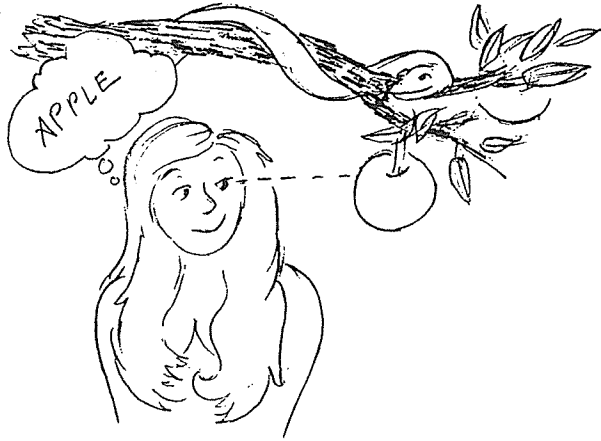


fig. 6.2 "Animal faith."

Harmony still reigns. Though the apple now stands out, the apple and Eve are still connected to each other and to the whole. But then there is a faint whisper: "Is that really an apple over there? Couldn't it just as well be a red leaf or a bird? How do you know you're seeing anything at all? Maybe it's all just in your mind."

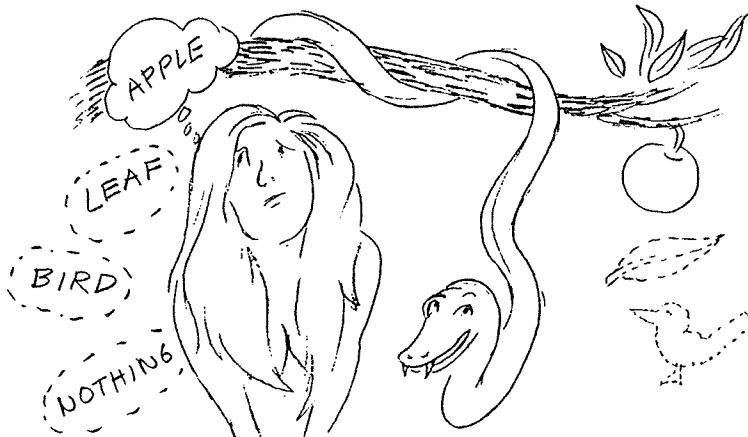


fig. 6.3 "Cartesian doubt."

Now, instead of there simply being one object *present*, there are several objects *possible*, or more accurately, several possibilities for the condition or state of the object. And corresponding to, but no longer coupled to, the qualities that define these possible states, there are several possibilities for *experience*. The thing for which these possible experiences are states was called by Descartes the *mind*. Western philosophy followed suite, and so arose the mind-body problem.

But why mind? Why not body? After all, we are speaking of Eve's experience, and Eve was somebody, not somemind. Descartes started his meditations by suspending belief in all physical objects. Needing a name for the repository of those things he still allowed himself to believe in, i.e. his own experiences, he chose mind. However, his agenda is not ours. We've followed common usage by using his word "mind" for the top layer of our Cartesian sandwich, but now that we're turning that sandwich into an enchilada, we need a better word, a word that applies to what is both on top and bottom. The obvious word is body.

Let's not assume anything about the physical or material nature of bodies, since those two concepts are now in the melting pot. Let's also suspend all consideration of space and time. For now, we'll take "body" as a primitive concept: we're only concerned with a certain kind of connection between bodies, exemplified by Eve seeing the apple. Actually, "seeing" is only a very special case of the concept we want. A better term would be *sentient connection*, since it applies not only to people but to all living creatures, and perhaps in some sense even to stones and electrons.

To form a clear idea of sentient connection, or any other kind of connection, we must be able to imagine what it means for such connection to be broken. Following Husserl, let's call the act of cutting a sentient connection an *epoché*. The *epoché* separates two *menus*. Consider Eve and the apple. The first menu, which we'll call the *subject*, is the range of Eve's possible experiences. The second, which we'll call the *viewpoint*, is the corresponding range of possible qualities of the object ("appleness", "leafness" etc.). The *epoché* not only separates these two menus, it creates them; animal faith knows only what is, not what could be.

Actually, it's not stretching it too far to say that the *epoché* creates bodies too, for without the *epoché* there would just be *body*. Let's then take Body as our first primitive concept, written with a "B" to avoid confusion with "a body" etc. *Epoché* is our second primitive concept: an *epoché* is a cut in Body that creates the enchilada! We'll assume that there can be any number of *epochés*, and the mathematical theory of the enchilada, which I'll now briefly sketch, is about the ways in which *epochés* can be related to each other.

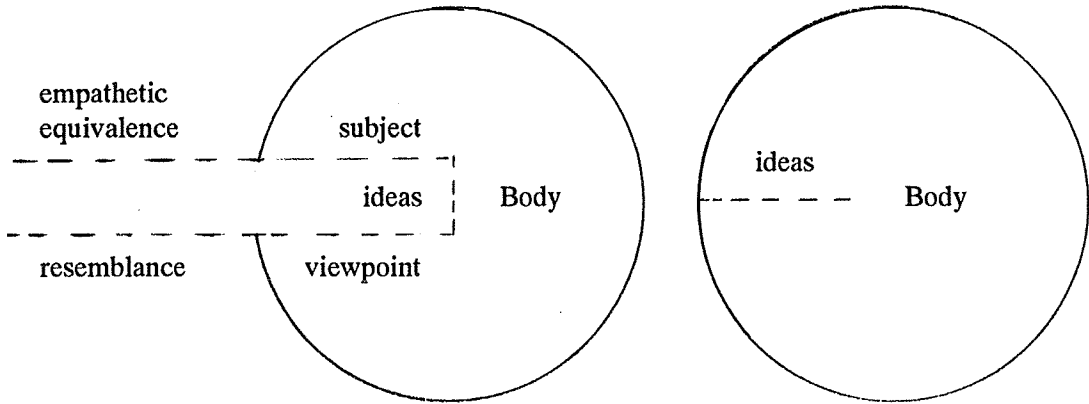


fig. 6.4 Epoché and contraction.

Our third primitive concept is *contraction*. Roughly speaking, contraction means healing the epoché. But it does *not* mean restoring the state of innocence! A better image is sewing up the gap left by the epoché, a procedure that can leave permanent scars. The contraction can't be said to restore a severed connection, since before the epoché the connection doesn't properly speaking exist at all – there is only inarticulate connectivity. It would be more accurate to say that the contraction *creates* the connection. Let's now make all this more precise.

Recall the theory of viewpoints in the last section, where a viewpoint was defined as a Boolean algebra of labelled cases. Our program then for creating the enchilada was to use Hamilton's principle to replicate this theory "upside down", as it were, as a theory of the subject, and then glue the two replicas together. This, in effect, is what we are now doing. The epoché creates the *subject* as an "upside down" version of the viewpoint, while the contraction connects the subject and viewpoint, merging them a single neutral labelled Boolean algebra of cases.

Variable: The menu of a Boolean algebra of labelled cases.

Enchilada theory is an *open* theory in the sense that it deals with a growing structure on which we can continue to perform new epochés and contractions. The subject and viewpoint variables created by epoché will be called *free*, while neutral variables created by contraction will be called *bound*. Two free variables from the same epoché will be called *mates*. Contracted epochés will generally be relegated to the background where they serve as markers for reopening epochés (Mac and Windows users can think of them as like applications that have been reduced to icons). They are the connections in the world that have been recognized

as connections but are not currently being analyzed.

In classical enchilada theory, which we'll start with, all variables are compatible. This means that all the case algebras are sub-algebras of a single "global" Boolean algebra, or to put it another way, all variables are partitions of a single "world" variable. Notice that this world variable is expanded by epochés and contracted by contractions. Any set of compatible variables can be combined into a joint variable of which they are partitions. The world variable is the joint variable of all variables.

We'll assume that all menus are finite; this will make it possible to count cases. Let N be the number of cases in the world menu. If n is the number of such cases that are "favorable" to $x=c$, where x is some variable and c a particular value of x , then n/N is the Pascalian probability of $x=c$. Note that this is a purely logical concept. Let's call a statement of the form $x=c$ an *event*.

Independence: Two events $E1$ and $E2$ are called independent if $\text{prob}(E1\&E2) = \text{prob}(E1)\text{prob}(E2)$. Two variables are called independent if all events for one are independent of all events for the other. Two sets of variables are called independent if the joint variable of one set is independent of the joint variable of the other. Independence too is a logical concept, since it rests on case counting.

Tensors: A logical tensor is defined as a set of free variables that does not contain any of its mates and that is independent of the set of its mates. A case count tensor is defined as the array of case counts for all joint events in the variables of a logical tensor, indexed by these variables. A tensor network is defined as a set of case count tensors in which some of the indices are contracted. If all of the indices are contracted, the network is called closed.

Density matrix: The two-index tensor of an epoché in a tensor network that is otherwise closed.

Needless to say, a rigorous exposition of the math here is well beyond the scope of the present essay. All I can hope to do here is hit a few highlights – details can be found elsewhere^{4,5}.

The first highlight is the remarkable resemblance of enchilada theory to the abstract core of quantum mechanics. In von Neumann's formulation of quantum mechanics there are two core laws: 1) The probability rule $\text{prob}(P) = \text{trace}(PS)$, where P is a proposition represented by a projection and S is a quantum state represented by a density matrix, and 2) The general dynamical rule $S'T = TS$, where S' is the transformed state and T the transformation matrix. It

turns out that 1) is satisfied by all of the density matrices in any tensor network, and 2) is satisfied for any two-index tensor T , where S and S' are the density matrices defined by the epochés on its indices.

Does this mean we have arrived at quantum mechanics? Definitely not! In classical enchilada theory the "amplitudes" are case counts, so they are always positive. This means there are no interference effects and no funny logic. However, if we imagine for a moment that cases could count negatively as well as positively, the situation becomes quite different. Quantum mechanics then becomes a very natural special case. The condition required for the core laws 1) and 2) to be quantum laws is simply that all epochés are symmetrical (i.e. their matrices are self-adjoint).

If we think of quantum observations as contractions of epochés, which is how we started out, then the quantum condition says that the observing body and the observed object contribute symmetrically to the outcome. This insures that those amplitudes that count as probabilities are never negative, and it hides the incompatibility of complementary logical viewpoints in the unobservable meeting ground of body and object. The judgements of different logical viewpoints on the object never make it into the public record, since to do so viewpoint must merge with subject and deliver its "information" through the body, and the logical weirdness of this passage through the body exactly cancels the extensional paradoxes we considered in section 6. Body has come to the rescue!

But there is still a big question mark: What on Earth are negative case counts? Recall that we assumed that the logics of the variables were all compatible, i.e. they share a common global Boolean algebra. That assumption must be weakened. Let's assume instead that all they share is vagueness. As we saw, this means that they share Boolean geometry. Surprisingly enough, this is a much stronger condition than it might seem. It gives us definite rules for case counting which resemble our old rules in all respects but one: cases can now count negatively!

What about imaginary and complex amplitudes? Mackey showed that these can be defined in terms of real amplitudes⁶. Here's a simple way to do this: Start with real amplitudes only. Now consider a single two-state (real) quantum object – call it the *Janus particle J* – satisfying two conditions: 1) J belongs to every other quantum object and 2) the state of J is unobservable. The resulting theory is equivalent to quantum mechanics with complex amplitudes.

But what is J ? What makes the most sense to me is that the J represents the symmetry between subject and object described by Hamilton's principle (section 5). Reversing its two states reverses the polarity between body and object, between subject and viewpoint, between

the Heisenberg and Schrodinger representations. Complex amplitudes are essential in quantum mechanics for defining the physical properties of matter. This would mean that quantum matter is in itself perfectly symmetrical with respect to the subject-object, or body-object, polarity. This is consistent with the fact that the quantum condition on tensor networks is symmetry of the epochés. Matter, on this view, is the unpolarized state of the mind-body field.

Body, then is only partly material. Curiously enough, it's the material part that is most mysterious, least accessible. The aspects of body that you see and touch, that exist in space and time and constitute the public domain, are complex distortions of the field symmetry that average out to the everyday Boolean reality of the near-Platonic field.

Section 8. Empathy and Pauli's new science.

The technical exposition in the previous section has been necessary in order to make clear that the philosophical reflections in this paper actually lead to hard science and to give something of the flavor of that science. But I'm afraid that the larger picture got rather lost in the process. What has happened to ideas? To ideal and case equivalence? To the near-Platonic field? To empathy? These things do have their places in the rigorous theory, but not till near the end of a long book. Here we're just trying to get oriented, so let's return to a less formal approach.

How do we stand with the mind-body problem? In section 2, I said what I think the problem is: How do you distinguish empathy from projection? This statement now needs some updating.

First of all, empathy always involves an element of projection, since we can only understand someone else's experience in terms of our own. Thus projection is not necessarily a pejorative term, and it is perhaps better to take it as the general term for an act that can range from highly empathic to completely off-the-wall.

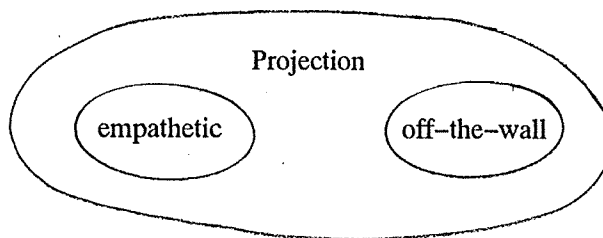


fig. 8.1 Empathy and projection.

The act of empathy is like the act of observation. Sometimes there is a clear right and wrong, but at other times, as with quantum observation, some substantial part of the result is unavoidably created by the actor (It's a happy coincidence that "projection" is also the term for the mathematical operation representing quantum measurement). Thus there are two parameters that apply to a projection: First there is how right it is, i.e. how empathic, and second there is how determinate it is.

In the last three sections I have sketched a theory of the subject–object, or mind–body, connection field. Since this field is symmetrical in its basic polarity, let's just call it the *connection field*. Each connection has a status: it is either epochèd or contracted, i.e. open or closed. We are free to reverse this status as we choose. It is the open condition that reveals the mind–body polarity within a connection as the contrast of subject and viewpoint. The epochè divides subject from viewpoint by decoupling the cases of the body from the cases of the object. It does not decouple the ideas, though; i.e. it leaves in place the links of what in section 5 we called ideal equivalence. We can extend this ideal equivalence beyond the epochè in either of two ways: from the object, in which case it becomes the relation of resemblance, or from the subject, in which case it becomes a relation which I'll call *empathic equivalence*. The field structure is given by a tensor network in which the connections are the arrows; an epochèd connection is a broken arrow. Though these tensor networks are most naturally introduced as discrete structures, there is no problem in going to the continuum limit.

We should not think of the connection field as something "out there" in the world. But it is not just in our heads either. Things and people really are connected, and these connection can really be broken and remade. The connection field as a whole can be compared to a coordinate system that extends the checkerboard marble floor we are standing on into a coordinate system for the whole Earth. In one sense this extension is "unreal" – we have not paved the Earth with marble. But the metric distortions in this imaginary grid can be used to describe the shape and size of the objective Earth. By analogy, the logical distortions in the connection field can be used to describe whatever is "objective", i.e. invariant, about the world pattern of mind and body.

In a classical field, the subject–viewpoint arrows can be assigned arbitrarily, and these assignments are independent for every connection. Thus there is no criterion at all for saying whether or not a connection is empathic. Empathy is completely indeterminate. Do computers think? Of course, if we say so. Does Sherlock Holmes think? Of course, if we say so. This total freedom to project empathy and meaning as we please is the engine of the *symbolic world*, to which computers are the latest addition — silicon computers, that is.

At the opposite extreme is the quantum field. The direction of the subject–viewpoint

arrow is still arbitrary, but since it is represented by the state of the Janus particle and there is only one Janus particle, it can only be assigned once! The phase coherence of the quantum wave function corresponds to a kind of coherence in the way we must assign arrows to different connections. The classical field has total phase incoherence, which is why we can assign arrows independently.

The classical and quantum fields don't give us a mind-body theory, either separately or together. But classical and quantum are two very special cases; in both, the field is highly homogeneous, so there are no localized structures of "logical curvature" that could be identified with particular minds or bodies. We saw how to simply characterize the quantum case in terms of the density matrices in the tensor network; there is an equally simple way to characterize the classical case^{4,5}. But it is the more general networks, in which the states have neither classical nor quantum symmetry, where we find the logical "shapes" that point to minds and bodies as we ordinarily encounter them. It's like the situation in relativity where it's the asymmetry of the metric field that enables us to point to moons and planets and stars and galaxies.

So then, how does this all this abstract reasoning answer our first question? How does the science of the subject-object field help in distinguishing empathy from projection? Or, more accurately, how does it guide our projections towards empathy and away from off-the-wall imaginings? Can it tell us why our hurt Teddy bear is not in pain?

No, not yet. This would be a bit like asking the chemistry of 1600 to explain why Hemlock is poisonous. There's a huge amount of detailed technical work ahead. The important thing is that we're now getting a glimpse of the first principles that will some day lead to real answers.

We began with Pauli's science of the spirit of matter, and it is fitting that we end with it. How far have we gone towards reaching Pauli's goals?

His first goal was the *conjunctio*, the marriage of the rational with the irrational. With curved logic and the mind-body field we've certainly made a place for the *conjunctio* in our thoughts. But how about a place in our lives? That's another story.

His second goal was to go beyond causality. Here we've made definite progress. One of the solid accomplishments of the tensor network approach is to give a clear and obviously correct general definition of causal and statistico-causal structure^{4,5}; indeed, this is just what characterizes the classical field. From the tensor point of view quantum processes are revealed as acausal. And yet, as Pauli suggested, they are at the

threshold of causality; this is because their symmetry is what turns certain amplitudes into classical probabilities. But the whole vast range of network structure in which mind–body takes shape is still terra incognita. The states here are neither classical nor quantum, and should manifest themselves in ways that are quite inconceivable to present–day science. Here's where I expect to see the first big surprises in the empirical branch of the new science.

His final goal was to heal the Cartesian split. Towards the end of his life he expressed a strong and rather mystical conviction that the number i , as it occurs in complex amplitudes, is the key to uniting physics with psychology⁷. I had no idea of this when I started to think of i as having to do with subject–object symmetry, but I find it very encouraging, since Pauli's intuitions are never to be taken lightly. Is the present theory in line with what he foresaw? We unceremoniously dumped Descartes by simply replacing mind by body. For Pauli, the problem of mind and body was more a struggle of opposites. Perhaps for us the struggle has yet to begin. □

NOTES

1. *Beyond the Atom – the philosophical thought of Wolfgang Pauli* by E. Laurikaenin.
2. Thomas McFarlane in conversation.
3. "Boolean geometry" by Tom Etter, manuscript.
4. "Inertia and Tao" by Tom Etter, ANPA W. J., v2#2
5. "Racter report #1: Acausality" by Tom Etter, ANPA W. J., v3#1
6. *Mathematical foundations of quantum mechanics* by George Mackey, Benjamin 1963
7. "Wolfgang Pauli's dialogue with the spirit of matter" by Herbert van Erkelens, Psychological Perspectives, #24 Spring Summer 1994

KNOWLEDGE, LOVE AND HAPPINESS

by Niklas Damiris

I wish here to imagine what an ethics of embodied thought would be like. One of the great questions of ancient philosophy was: What is the Eros of thinking? What is the passion that drives one to philosophize and that philosophizing requires of one? Doing philosophy was thought to be a way of life that had to defend itself against false pretenders. Philosophers were to be *filoi*, i.e. friends, but friends of what and in what sense? And the answer given by the Greeks, at least, was that philosophy was the passion for the Good. For them the passion of thinking (Eros) was indissociable from the striving for the good (Ethos).

One can not say that such questions much preoccupy contemporary thinkers concerned with philosophical matters. In the dominant debates over what is good for us and what is right for us to do, we have lost the sense in which philosophizing itself was to entertain such passionate, erotic relations with ourselves and others.

I want to get at the Ethos of 'my' passion for critical thought which incites in many a person fears of corrosive nihilism or of cynical inactivity. Since I am one who is writing out of difficulty, this forces me to rethink style, my style of doing philosophy.

The issue of 'individual conduct' becomes prominent and therefore the 'question of the subject' needs examination. But wrestling with this raises immediately a concern for its links to thought. What has thought got to do with subjectivity? In particular in what ways can it be said that thought forms part of a way of life? What role has it played and might it yet play in the manner in which one leads or conducts one's living?

Deleuze said of Foucault: "The logic of his thought is the set of crises it goes through." What were Foucault's crises? The first concerned "Man": "Man" as a founding entity was dead. The second was the crisis in the political assumptions of an ambient textualism. But with it came the realization that thought can be a form of strategic warfare. The third concerned the problem of style in writing which had become a crisis of style in living. For Foucault writing books would not be a way of expressing oneself but would form part of a way of living. Usually this subjective experience of making books is kept off stage, as one

presents one's monograph as a finished product to the public. But Foucault in his search for a style that would not avoid the question of the subject, tried to bring out the sense in which to write a book was both an experience and an exercise in thought. In short, a question of embodying thought! Foucault's search "for other rhetorical methods" which would not avoid the question of the subject remained unfinished; I consider my work a continuation of the trail he opened.

To have a concern for oneself has been a distinctive mark and an exemplary difficulty of critical thought since Socrates who considered living by the Delphic injunction: Know Thyself! More important even than obeying the laws of the *polis*. To think critically is to be thus concerned with oneself; the difficulty is to know how. Strongly put, subjectivity belongs to critical thought. Since then a dominant Christian tradition has taught that self-renunciation is the means to salvation. A parallel secular tradition tried to base morality in a public law, external to the self.

Two interconnected results were to follow from this: The first is that our present-day morality — a morality of asceticism — insists that the self is that which one can reject. The second is that preparing for salvation replaced the ancient task of taking care of oneself. In contrast to this I want to imagine an ethics where the relation to oneself is *not* rooted in the idea that the self is what we can reject and where the aim is not submission to an external law independent of our experience of our selves.

With Foucault I hold that subjectivity is constituted through varied and changing public practices. Our subjectivity is not given by an intrinsic nature, whether theoretical, theological or biological. It is rather the cunning of self-identification, or self-knowledge which makes our subjective experience seem private, natural or absolute. The question of the subject, as Foucault pointed out, cannot be separated from the questions of knowledge and power.

So what form should the experience of free critical thought assume when confronted with our ways of knowing and governing ourselves? It is important here to remember that our 'subjectivity' is not the same as our 'individuality.'

I am searching for an experience and practice of embodied thinking that would not be separated from the specific forms of knowledge and power we accept, and which would not be based on the ascetic assumption that the subject is something we can reject in the name of an ideal of rationality. What would it mean to be openly concerned with ourselves, when it is not a matter of eliminating the part of ourselves that stands in the way of our discovery of a loftier, truer nature? How do we live in our bodies instead of blaming them for all our mishaps?

Foucault next went on to ask what role friendship among humans, young and old, should play in this. He asked: "What does it cost for reason to tell the truth?" For there arise occasions when people will no longer tolerate their conditions without possessing in advance a procedure or theory to know what to do about it.

For Foucault the role of what he called "the specific public intellectual" is not to supply officials with a policy plan to resolve the difficulties in the complex and anonymous experience, but rather to analyze the costs of everyone's participation in maintaining this experience. He conceived of, what he called the "intolerable" in terms of the costs we pay for our own self-constitution. He was concerned with, what I would call, a general economy of bodily existence.

We make ourselves only at a cost which we often pay without recognizing or realizing that it is not necessary to do so. We accept uncritically the motto: 'no pains, no gains,' instead of understanding what it means exactly in specific situations. The task of public intellectuals is precisely to expose these costs, to show how easy it is to transform policies into ways of policing.

The experience of critical thought would start in the experience of such costs. Thus before asking what we must do to behave rationally, we would ask as practical thinkers: what are the forms of rationality that secure our identity and delimit our possibilities? Asceticism tries to determine what we must sacrifice of our selves to know what is good or right; it sought to define the legitimate violence, the pain and the pleasures of turning ourselves into beings with the 'right stuff,' virtuous or dutiful. With Foucault, as I understand him, we could start instead with a different sort of violence: the violence of our own historical self-institution. Our freedom would lie in our recognition that this violence is not a necessary one, that it is subject to reversal and change. It is a violence we can identify, we can cease to accept and in whose workings we can refuse to participate. To recognize it, to seek to reverse it, is also a violence of sorts. But this violence in our capacity for description and action is not in itself ascetic: it does not suppose that we know in advance who we should be; it does not follow from it that we must renounce ourselves. This refusal of our 'individuality' is not an attempt to ascend to another purer world but to experience something not yet done or thought in this world: the experience of transcendence without a 'transcendental' ideal, regulative or constitutive.

There is a new difficulty that comes with embodied thinking: it emerges in those moments when we cease to tolerate our conditions, and attempt to band together in critical action and reflection; in these moments often our self-identifications seem contingent and violent in ways we had not anticipated. The moments that separate us from our individualities expose their costs and raise the open question of their refusal. The subjectivizing experience of

living sensually, 'sense-ably,' would arise from these moments when it is no longer a matter of 'discovering' ourselves but of crossing the line to a new incredible and improbable identity! In true Socratic fashion this will be not a matter of remembering where we've gone astray, but of an anamnesis of what we have been unable to see in what we have been doing and thinking. Perhaps to embody thought is to find oneself in a peculiar difficulty one knows not yet how to specify. And the problem of 'style' in one's philosophy is the problem of finding the words and the acts appropriate to the difficulty one thus discovers or brings to light. The *filia* of embodied thinking humans would not lie in a love for an ideal they have in common but in the passionate confrontation of their difficulties with themselves and with one another. To discuss and examine the thought of another thinker would thus not be to reconstruct a doctrine but to isolate and rethink his/her difficulty. Philosophical friendship then would be the passion of understanding the difficulties of others in terms of one's own and one's own in relation with others.

Another influence in what I am endeavoring here has been the work of Freud and the philosophical appropriation and critique of psychoanalysis by Lacan. Lacan declared that in offering people the possibility of speaking about themselves in a certain manner Freud had created a great demand (unlike the market mechanism where it is the demand that creates the supply), namely the demand for the Talking Cure. But Lacan indicates also the difficulty that in order for the Talking Cure to work one must be able to speak truly of oneself. Freud's analysis would be teaching of the difficulties we have in reconciling our idealized images of ourselves with our passionate relations with one another. Lacan points out that this requires another sort of passion — and a different way of talking — than the one that follows from the supposition of a good or an ideal; this is why he takes Freud to be calling for a new ethics. While self-idealization is required to enter a social order, it becomes an impediment when one tries to enter into passionate relations with others. The difficulty would be how to be 'friends' in this world. This is why one's identity, formed on the basis of self-idealization, is inherently violent, for preserving identity takes precedence over the embodied contact with the other. Analysis for embodied thinkers would be the attempt to overcome this violence not by proposing an alternative 'ideal' for the self, but instead by concerning itself with the aggression inherent in our relation to such self-images. This introduces a peculiar difficulty in ethical conduct: it can no longer base itself in the idealizing view of love or friendship as they have been traditionally understood. Such analysis is neither pathos nor agape, neither altruism nor self-interest!

Lacan stressed that the Freudian elaboration on the notion of the unconscious is not of something bizarre, an added eccentricity to our thoughts or minds. Rather it is a radical view of our thoughts and minds and their relations with our bodies. We can not even identify it within our received vocabularies and practices for it is "always already" an element in them.

Analysis à la Lacan is not an ethic of basic needs and the adjustment of social arrangements to meet them. It is not an ethic of actions and their predictable consequences. It is also not an ethic of the weaknesses or failures of the will. It replaces the scientific psychology of motivating intentions, rational expectations and biological needs, with a phenomenology of the unconscious: of our non-anatomical bodily destinies, our symptomatic acts and the difficulties of our words. The kind of difficulty it introduces into ethics is thus not one that can be resolved by more subtle ways of distinguishing reasons from causes, the "is" from the "ought," passion from rationality.

The difficulty of teaching and speaking about this unconscious is twofold: there is the difficulty of articulating its place in our thoughts; and then there is the singular difficulty of how we would experience its role in our living. "Remember, it was the hysteric who taught Freud about the unconscious," said Lacan. Hysterical women obliged Freud to remove the very concept of a symptom from the medical discourse emphasizing anatomical localization. Freud made it instead part of the idiosyncratic ways the hysterics at once masked and gratified their desire with their bodies and their words. They thus obliged him to ask what is the subject such that this kind of symptom formation is possible. An analysis was to become something other than diagnosis and prescription. It was to be a matter of adopting a sort of suspension — or epoché — in the face of the other's desire, which would allow for a neutral, 'floating' way of listening: a neutrality and a listening that would create the space of 'transference' that would organize the effort of re-articulating this desire in a concrete situation! One domain of ethics had been the ends of virtue, another the rules of duty. Each had invented one way of raising the question of moral knowledge. Kant had made duty abstract by separating it from all 'pathology', from anything that happens to us as embodied beings. The goal of analysis as Freud conceived it, would be to rediscover the connection between Ethos and Eros without reverting to a supposed knowledge of the good. In his revolution Freud would then reconnect Ethos and Eros in a new way: both the knowledge of the good life and the abstract rationality of the moral law would revolve around the 'desire' to which each of us gives testimony in his/her unconscious. But what a life is and what it means to conduct or live it, has not always been conceived in the same manner. To live a life has meant to unearth an essential nature, to respond to one's fate, to acquire self-sufficiency, to maximize one's pleasures, and so on. The question of how best to live has accordingly varied with the conceptions under which people have placed their lives and their living.

For Freud, the unconscious is a strange and laborious sort of knowledge about our lives which we have repressed or forgotten. The issue becomes: what can we make of ourselves in virtue of this 'discontent' which the effect of analytic experience reveals? The scenario Freud offered of life was the tragic one. He painted the picture of a traumatic libidinal necessity that exposes us to the fortune of our destinies and so divides us from ourselves and from one

another. It is a picture of basic morbidity that can not be averted by anything we can know or calculate as our good! Indeed we think with our bodies in ways we had not realized.

Our embodiment is fundamentally traumatic and the unconscious is the way this trauma works itself out in the particularities of the living of each one of us.

Hysteria showed that if we think with our bodies, it is in idiosyncratic ways which no anatomy can classify. Nor is the libidinal body the instinctual body.

For drives — unlike instincts — are not tied to specific conditions of satisfaction but are submitted to an open-ended plasticity, ever susceptible to substitutions in their objects and aims. Freud thus spoke of the 'destinies' of our bodily drives picturing them as broken paths, paths in our living that are not internally ordered or predetermined. They are ruptured by events which cause the body to turn back on its history and start up again. The image of death 'attacking life' gets replaced with the image of the 'pathological life.' And death is imagined not as macabre but as morbid. As death becomes a question of individual morbidity, disease breaks away from the metaphysics of evil to which it had been linked. Death became something that singles us out from within, something that requires of our body "a style of its own truth," as Lacan put it.

Our symptoms are then the interpretations of a fatality we can't yet read and the unconscious is the knowledge of this fatality at work in our lives. Here we have a new kind of problem for ethics: it raises the question of fortune in our lives in a new way, for it links fortune not to the Good we can know, but to the inherent morbidity in our desire which takes us on paths we can neither control nor foresee. To give a true Logos for one's life is thus no longer to know how to master it, nor is it to submit to a master that teaches us how. So in what sense do our libidinal bodies cause our symptoms, these mal-adaptations to which our dreams, our compulsions, the stumbling in our acts and tongues would bear witness? The body here acts neither as causal factor nor as mechanical explanation. Rather it is displaced within a space opened up by language, which is then filled not by the body but by its absence. The events that make up our libidinal destinies would then be events of a special ilk. They are the events that are 'forgotten' in what we say and do, and in who we are and become. They are the recurrence or insistence of something that we can never yet recount. Our unconscious is the memory of what we have forgotten!

Consequently, our fortunes would not, as Aristotle thought, come to us through our ability to make choices — through *proaeresis*, as Aristotle called it; it would be rather a matter of the 'missed encounter' which deflects the path in unknown directions. Our bodies never stop insinuating themselves in our destinies.

If there is a law of our destiny, a law of the morbidity of our desires, it has this peculiarity: we can not know it in advance! The law does not apply to desire itself; it structures the concrete way in which desire happens in our lives. But it is also not an interdiction, not a sanction, a command that forbids! In short, *we don't repress our desire because we have a conscience; we have a conscience because our desire is always and already repressed.* Via the demands of the superego we gratify ourselves in such a moral struggle. Our desire is fulfilled through the very idealization and de-eroticization by which we come to demand of ourselves its sacrifice. Can there exist an "I ought", or "I must", a responsibility that is not just another command of the superego? If so, we have the new problem of being responsible for our own desire. This also involves a new kind of conduct, that of telling the truth of this desire for which we can have no knowledge. An analysis must replace the faith that somewhere or in someone there exists a knowledge of it with a care to be responsible even though, or precisely because, one can have no knowledge of it.

Tradition has taught that love is what unites in reciprocity, complementarity, or fusion. Freud would teach instead that love is not what binds us together in a higher unity, but what supplements the hazards of our libidinal destinies. This is why the place of sex in the Freudian ethic is not that of a normal genital love! Rather sex is morbid and traumatic. It occurs at the expense of those self-idealizations that would unite us in the reciprocity of equal positions, in which we would compensate for what is lacking in one another.

Sexuality is not the same in each of us. It does not separate us into genders complementing one another. Rather sex singles us out in our libidinal destinies, and so divides us from ourselves and one another. Unfortunately, we thereby become capable of serving something for want of knowing how to enjoy other than through being enjoyed, since it is precisely enjoyment that we should not have. What is the 'necessity' in our desire that makes us think that we must observe the dictates of utility? What is, in other words, the pleasure we take in this fiction of utility? I ask with Freud how we might be brought together not by prudence, abstract duty or calculated utility alone, but in our partaking of the 'virtual structure' of repression which each makes one's own according to the contingencies of his/her fortune. We must learn to experience structures not as a positivity, not as something self-evidently there, but as something posited, that is, marked, so that we can remark it and appropriate it in the process. Sublimation then may become this public domain in which our singular bodies make contact with one another through the production of beautiful structures that stand in for them, without thereby abolishing what makes them singular.

Sublimation would involve another sort of bond among us. Art objects are exemplary cases of sublimation at work for they can quickly become those uncanny parts of ourselves that always seem other than ourselves: objects in which we die and live again. So back to

Foucault who started to ask: How on earth should/could we have ever turned something so peculiar and transitory as our `desire' or `sexuality' into a grand ethical universal? Indeed could it be, asks Foucault, that this wild 20th century notion of ourselves as `subjects of desire' in fact continues the confessional tradition of Christianity that made it possible to say only one sort of truth about ourselves: the truth concerning our `desire'? Foucault's problem was not the problem of desire per se but of its truth. How might we today `speak truly' of love and friendship without the 19th century conception of sexuality and its characteristic dimensions and aberrations. In order to understand how the modern individual could experience himself as a subject of sexuality and of knowledge, it was basic to determine first how for centuries Western man had been coerced into recognizing himself as a subject of desire.

How did this duty to desire arise? How did knowledge come to take the form of a desire? Foucault claims it was an invention of Christianity. The basic contribution Christianity would make would not reside in its code of forbidden and permitted acts but in the type of experience one was thought to have of oneself as an erotic being. Foucault's idea was that the conceptions under which sex becomes problematic to a people have varied with the kinds of morality they invented to deal with it.

He went on to distinguish the question of `ethics' from the question of a moral code. It is one thing to issue an interdiction; another to determine whether people obey it! In short, there are moral problems about the code, its principles and its applications; and then there are ethical problems about how to turn oneself into the right kind of person. He proposes to analyze such ethical problems and their transformations in terms of a fourfold scheme in which there is first, an image of the right sort of person or soul; then the authority which incites one to attain it; then the means provided to do so; and finally the description under which one's sexual experience becomes relevant for such self-transformation.

Foucault argues that in antiquity the description under which erotic experience was placed was that of aphrodisia — an interlocking of desire with pleasures that threatened to undo the proud self-mastery of the free man. In Christianity what one would be asked to attain is no longer the proud virility of the master but the inner purity of being. It is the start of the internalization of Eros. Adam's Eros was this loss of his will over his body; that is why the famous leaf was said to conceal an erection. Augustine gave the name "libido" to the rebellious movement of the male organ. The libido is not an external obstacle to the will: it is a sort of worm that eats it from within.

Now, my aim is to rid ourselves of this long internalization through which we've come to think of ourselves as subjects of desire and of knowledge. We have to go beyond the ancient model of virility and status, the Christian model of sin and confession and the therapeutic

model of cure and emotion. I want an ethic whose principles would not be derived from the demands of the superego, the will of God or the stages of evolution. The answer lies in beginning to see that our 'subjectivity' is in fact earned through many dispersed, contingent, and changing systems of discourse and practice, that enable us to identify ourselves both as autonomous individuals and as social collectives. Our subjectivity is not an indivisible unit in which we locate our identity; and it is not the exemplification of a common nature. It is not a single 'thing' and there are as many 'subjectivities' as there are forms of self-relation. Individual and social being are not opposed to one another as absolute entities, one requiring the dissolution of the other. Instead they are coupled, the forms of one being able to survive a change in the forms of the other. Thus they are not the givens of critical analysis but precisely what require it. There is always tacit community. The ways people devise to identify themselves are supported by their own activity. They have to be willing to do their part in maintaining the systems that define and delimit them. They must play their role in a playful game whose intelligibility and limits they take for granted. The tacit community of a system of recognition is everything people do to maintain its hold over them. But this hold does not and need not resort to the force of arms or to propaganda mystification; it resides in the force of its very self-evidence.

The possibility of an embodied community comes when the interruption, refusal or reversal of forms of a given community leads to the exposure of the tacit community which supports it. Thus Foucault maintained that 'resistance' has an analytic relation to truth: it exposes what a particular configuration of power is. It discloses something unseen and unacceptable in a form of identification and exposes it to risk. Embodied critical community is thus a result of a crisis in the self-evidence of a particular community. In short, a given community arises from identification of the form: 'I am an x.' Tacit community is the grounded system of thought — or grammar of conduct as Wittgenstein calls it — that makes x a possible object of identification. Critical community sees this grammar of conduct as powerful but contingent, finds something intolerable about it and refuses to participate in it. Critical community 'problematizes' identity and thus makes of our subjectivity an open question, at once individual and collective. The specific, public intellectual is the one who begins to question the thinking that secures various particular identities. As Foucault put it: "The point now is to transform the critique in the form of a necessary limitation into a practical critique that takes the form of a possible transgression."

Our 20th century problem is not *Gemeinschaft*; it is identity, the sort of identity shown in a spectacular irruption of racism and nationalism. One needs to keep in mind that great *point de capiton* of the 19th century: normality. Normality was based neither in contract nor in status. It was neither a legal principle nor a prudential injunction. It was rather a way of identifying us and of getting us to identify ourselves in such a way as to make us governable.

It did not oppose individual and collective experience and its central concern was not the antagonism of individual and society. On the contrary, the more all encompassing the reach of its administration of the life of society, the more 'individualizing' our identification with it became. An embodied, critical community is not the community of those a society excludes in order to function, but of all those who begin to refuse their part in maintaining the specific form of thinking and its grammar of conduct that define it and them, those who depart from it taking their modes and forms of experience in new directions outside its compass. The experience of freedom would not be an experience of a natural pre-given state, but on the contrary an experience of the fragility of a kind of identification taken for granted. Who we are would not be the image or source of this freedom but precisely what is constantly freed or opened to question by it!

Thus it is not in our basic individualities or communities that we are free; it is rather the historical forms of our individual and communal beings themselves which must be freed or exposed to the risk of new and unforeseen transformations!

Freedom is not a state one achieves once and for all, but a condition of an 'undefined work' of thinking, acting and self-inventing. If there is no society without some kind of power, there is also none whose power is total. Freedom is therefore not the end of all power but an inherent limit of its continued exercise. It follows that freeing or liberating ourselves is never absolute or total either. To be free thus is to be able to question politics. Such questioning involves our Ethos, our ways of being and ways of becoming who we are. What counts as freedom of action is always the result of a certain kind of description and a certain form of prescription at the same time.

I want to replace the Cartesian search for a method that leads to certainty with the question of the historical constitution of 'objects of knowledge'. What secures the objects of knowledge would be an anonymous regularity in thinking not rooted in a subject's relation — not even a transcendental subject's relation — to itself. Objectivity in knowledge would be based in such regularities and would not be defined by a basic or founding 'subjectivity' even if some rules concerned the sort of subjects who may make assertions in the mode of objectivity.

We would not be concerned with knowledge in general but with specific kinds and modalities of it and the practices associated with each. What can be known would be tied to what can be done and such knowledge/power is directed to the conception of particular forms of experience people have of themselves. In the practice of freedom would lie a characteristic concern for truth which, however, would *not*:

1) Consist in an expertise in the solution to our problems but would turn its 'curiosity' to the

unnoticed dangers in the precise techniques we employ to conceive and resolve our problems, to those areas of experience for which we do not already have accepted or acceptable 'procedures of solution'.

2) It would not consist in an esoteric wisdom to which one must convert as to a school or a sect, but would start its exploration from an experience of loss of assurance or certainty.

3) It would not consist in a nostalgia for what has been, but would direct its curiosity to those momentous events in the midst of our history initiating new and unforeseen potentialities.

4) It would not consist in the contemplation of a reason from which to derive rules and norms applicable to all, but would deploy its curiosity in those new areas of experience that question the 'reason' of the rules and norms we have adopted and so might require us to invent other ones. Perhaps we need a kind of thinking that is not content to leave the question of who we are to experts and their systems. Rather we have to understand that all orders, including systems of ethics are inherently violent and that an ethics of embodiment has to start with this insight. This might be what the unknown sage meant when he said, that "the unjust is first and without end." I call therefore for a new ethics that questions legality where there is only rule of law; that introduces the question of organization and government where there is only the exercise of power; that, last but not least, introduces the possibility of self-invention where there is only the workings of knowledge. *

** I would like here to acknowledge the work of Tom Etter, as exemplified by the previous article in this journal, and hope in future to collaborate with him to integrate the form and content of these two essays.*

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MODERN METAPHORS FOR NEW A MILLENNIUM

Herman Mueller

I walk at night in the hills above Stanford. I pass beneath the giant dish cupped to hear the conversations of the stars. Huddled like white bugs among the surrounding hills are the smaller dishes, listening with equal intensity.

I am alone again with my mortality. It slips over me like a familiar cloak. The dark hills are circled with the lights of the cities below; I think of all the lives down there, pursuing for this brief time, their hopes and their careers. I look up at the night sky, awed at the distant reaches of space, the beckoning stars. I surrender to the religious feeling enveloping me in a mood of reflective reverie. As the familiar keening sweeps over me I begin to recite softly the litany that comes to me at these times:

As the hart panteth after the waterbrooks, so panteth my soul after thee, Oh God . . .

When I consider thy heavens, the work of thy fingers, the moon and the stars, which thou hast ordained . . .

Where wast thou when I laid the foundations of the earth . . . who hath the measures thereof, or who hath stretched the line upon it . . . whereupon are the foundations thereof fashioned?

When the morning stars sang together and all the sons of God shouted for joy!

Canst thou bind the sweet influences of Pleiades or loose the bands of Orion?

Can mortal man be more just than God?

As the familiar phrases are conjured up in me I realize again how inadequate is the vocabulary and the metaphor for today. The imagery and the culture come from a small agrarian country, three and four thousand years ago. The icons are no longer relevant.

It would be more appropriate to slip off the gold cross and wear a miniature of this radar dish, or even better, the AT&T horn, whatever that looked like, through which Arno Penzias and Robert Wilson first heard the background hum. Maybe they should be our saints? Saint Arno and Saint Robert. And aren't they more properly our prophets than Jeremiah (of course, we may have to carry over Ezekiel and his "wheel in the middle of the wheel" because someone was probing outside his millennium then.)

In their awesomely fearful world, beset by every savagery of existence — sickness, disease and injury, the vagaries of the atmospheres, the terror of the seas, the wheeling heavens and the cycling seasons — men have attributed their fate to the will of the gods — anthropomorphic beings — gods whom they created in their own image.

People have been praying for ages, their prayers going upward like mists from the jungle, like an intense hum of bees from the cities — thin plaintive wails from the ghettos and from cathedrals, sonorous supplications — all winging upward, reaching out beggarly hands, clutching the garments of the God who must be there: our father who art in heaven.

People in the vanguard of the modern disciplines confess to this reflex to worship — theirs is a beseeching pulse of loneliness winking in the stellar void. In the cold silences of the atheist's mind, like a room shut off, the prayer lies waiting, a precious possession hidden.

Even Einstein, who placed us like foundlings at the door of the universe, was not free. Before he stole away he turned and said, "I cannot conceive of a genuine scientist without that profound faith." He was confusing the echoes of his own religious heritage with the sound of his particles resonating to the Big Bang . . . This lapse might be indulged, perhaps, when we recall his resistance to quantum mechanics. Einstein, one feels, felt more at ease walking with God in the garden in the cool of the evening than arguing with Bohr over quantum theory. "It is true, isn't it?" one can hear him say in intimate collegiality, "You don't play dice, do you?"

IN THE BEGINNING was the Big Bang and without it was not anything made that was made. Isn't that a concept I can deal with better today, than the story laid down in Genesis? Our atoms are in concert with the vast harmonics of space. Our smallest particles resonate to it. We have been hearing it for ages. Because we did not have the technical knowledge of today, we have confused the background noise with this urge to worship — to touch God. Perhaps it is not a spiritual impulse, but merely a physical response to a mechanical phenomenon.

The thoughtful man, freed of this confusion, must strengthen himself as he looks with new eyes into the reaches of space and the depths of the sub-atomic universe. He must formulate a new vocabulary, create new metaphors, invent a new poetry sufficiently strong to replace the cadences of the ancient religions upon which he was nurtured.

Job's wife, with the unanswerable logic that few of us are ready to accept in the face of God's capricious toying, cries out, "Curse God and die!" Is that the stage of logic we must come to in this new millennium facing us? No longer to awaken in the quiet of the night to hear the rustling of His robes?

We cannot caravan into the new millennium with this old religious baggage. There are no angels on the Internet with whom Jacob can wrestle. Yuri Gagarin, the first man hurled from the edge, said something like, "I've been up in Heaven and looked around and I didn't see any God."

For that fast approaching time we are like John the Baptist crying, "make his paths straight; after me there comes one the latchet of whose shoes I am not worthy to unloose".

This approaching millennium may be the era in which man will forsake the religions he devised to sustain him in the pre-scientific world. He will have to go out and wrest his destiny among the stars. There is an unexplored beauty out there in the explosions of color and energy against the black canvas of space. There is an intellectual exhilaration in living with the unfolding precepts of science which is not unlike the mystical experience of Brother Lawrence and Meister Eckart, who pushed to the outer precepts of the Bible.

What is the new language for our soul in this new millennium? In a universe where the very stars wander, what will we steer by? Stars wink out and whole universes are swallowed into black holes. Light is bent and time is stretched, sent snaking out like a bullwhip.

With a hundred billion galaxies to float among, it is not too difficult to understand that the spoors of life have drifted apart to such remote distances that we in this little eddying backwater of the milky way believe we are alone.

The other beings who walk their various ways on planets still unheard from, how do they wrestle with their souls' longings? Perhaps they have won through to a language and to cadences that can replace our own and we, newly discovered aboriginals, arrested in this Darwinian planet-island, will put aside our King James, our Sutras, our Bhagavad Gitas for a "religion" more appropriate to the science and culture they are bringing us. Do they have a vocabulary, whatever their millennium, will they perhaps, in some not too distant future, send us some missionaries here?

Way back in time, millennia ago are we. In the world to come we are mythology. Raft-born Polynesians, the dugouts in Man's adventure into space and time. We are the first cave men who can leave their names upon the walls. Einstein was our priest; lesser names are up there, too. Rocket to the island on our nearby horizon. Before Columbus are we in space, before the Vikings! Without coconuts, goats, or our women. Not the tiniest island colonized. Yet it was a brave and glorious time. Isn't it! □

Bugs in Writing

by Lyn Dupré
(Addison-Wesley; 1995)

Reviewed by Suzanne Bristol

Our language is often praised for its liveliness and an exceptional ability to change with the times. It should also be said that in everyday use, English is in decay. Bad writing is all around us. The precision of our words is being constantly eroded and with it, the precision of our thinking. The result can be found no further away than your nearest computer manual. Academic writing is even worse. Where once the ability to write with both elegance and force was the mark of an educated person, today awkward and confusing exposition — in the passive voice, of course — show the world that a scholar has earned his Ph.D. the hard way.

We are pleased to report that Addison-Wesley has just published a delightful book, **Bugs in Writing**, that could do something about this situation. The author, Lyn Dupré, is an experienced editor and writes with directness, wit, and a light touch. One of the charms of the book is getting to know the author (and her cat.)

The book is intended as a reference and runs to over 600 pages. Compared to E. B. White's **Elements of Style**, with its Haiku-like elegance, **Bugs in Writing** seems lengthy and prosaic. This is intentional. Ms. Dupré is giving special attention to the needs of professionals and technical writers. She knows we need many examples contrasting bad with good writing in order to retrain our ear. With so much wordiness in our texts and manuals, we have come to feel almost embarrassed by a clear direct sentence.

The author herself is not without the occasional lapse. After carefully explaining that parts of a sentence need to be in agreement, she concludes: "The principle for lucid writing here is that I encourage you to speak directly..." Still, we can't be too sure she isn't saying this to keep us on our toes: you did notice that the above example stated that her encouragement is a principle of writing, now didn't you?

Ultimately, it is the playfulness and humor of the author that encourages me to keep this book on my working shelf. I wish I'd had Lyn Dupré in fifth grade English.

ALTERNATIVE NATURAL PHILOSOPHY ASSOCIATION

Statement of Purpose

- 1. The primary purpose of the Association is to consider coherent models based on minimal number of assumptions to bring together major areas of thought and experience within a natural philosophy alternative to the prevailing scientific attitude. The combinatorial hierarchy, as such a model, will form an initial focus of our discussion.*
- 2. This purpose will be pursued by research, conferences, publications and any other appropriate means including the foundation of subsidiary organizations and the support of individuals and groups with the same objective.*
- 3. The Association will remain open to new ideas and modes of action, however suggested, which might serve the primary purpose.*
- 4. The Association will seek ways to use its knowledge and facilities for the benefit of humanity and will try to prevent such knowledge and facilities being used to the detriment of humanity.*

ILLUSTRATIONS

Cover: Anonymous, Sung dynasty
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