

Quantum Linguistics Roundtable Discussion

"Quantum Approaches to Consciousness" Physics Conference

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[lightly edited by Moonhawk]

A. Opening and Brief Sketch of Quantum Linguistics

Dan Moonhawk Alford: "The Quantum Linguistics Roundtable". I want to extend my thanks to Stuart Hameroff and Gordon Globus for opening the door for this whole experience to happen. I want to give special thanks to Sanford Berman, who's not here with us but who helped keep the door open financially for a number of these things to happen.

Well, the most frequently asked question of me during this conference is: *What is quantum linguistics?* In a few words, it's a corrective linguistic lens for quantum theorizing. It's a response, to Heisenberg's Lament: "We've reached the limits of our language." And, it's an antidote to the unchecked Chomskyan formalism that has been dominating linguistics for the past few decades.

Quantum linguistics is to normal Chomskyan/classical linguistics as quantum physics is to classical physics. In physics, you often get your insights from fairly culture-free mathematical languages. But quantum linguistics derives

most of its insights from the qualitative language/culture systems of Native America. I can give you quickly, in a brief sketch, three foundations of quantum linguistics: consciousness, nonlocality, and relativity.

1. Consciousness

My work really began long ago, when a Native American, Sa'ke'j Henderson, told me what has come to be known as the Cheyenne Tower of Babel teaching. It goes like this:

Long ago, people and animals and spirits and plants all communicated in the same way. Then something happened. After that, we had to talk to each other in human speech. But [it goes on], we retained the Old Language for dreams and for communicating with spirits and animals and plants.

So, what we have here is a Native view of language that includes both the spoken language and the nonverbal, the Old Language, as both being powerful in our lives -- although some in our culture forget that they still have this Old Language.

And, frankly, I was a bit surprised during this entire conference, to hear everyone talking about consciousness as if it were some sort of monolithic noun. I heard nobody talking about alternate states of consciousness -- and that's exactly what this teaching points to: that there are different languages appropriate to different states of consciousness.

2. Nonlocality

I've been writing since 1978 that human speech is a special case, a subset, of telepathy. And you must take, then, telepathy as being a field effect of some kind, supplemented by nonlocality. And if you look at the Cheyenne Tower of Babel teaching that I mentioned, when you're communicating with spirits and animals and plants, you can call that telepathy, you can call that prayer, you can call that any number of things; but, for me, it's at the bottom of everything that language is -that the tokens I am passing across right now would mean nothing if there weren't this invisible meaning flow [or, better, *sharing*] that's going along with it.

3. Relativity

I have [written] a lot of stuff over the years on how Benjamin Whorf, who's known for the Whorf Hypothesis, which I now call "The Great Whorf Hypothesis Hoax," [got a bum rap]. Basically, the problem was [that of] linear thinkers trying to understand a holistic thinker.

Benjamin Whorf pointed toward linguistic relativity -- and there's a whole history that you can read in one of my papers called "Stealing the Fire." Just

do a search engine search on Moonhawk and you'll find it at some point. And relativity really has to do with--*when the language that you're using to describe phenomena no longer adequately describes the phenomena, you want to change the language.* When Einstein did it, it was [about how] you can't describe 4D spacetime with a 3D space language-, you have to change the language to do it properly. So, every language carries with it its own worldview that tells what the universe it lives **in** is all about. And this is as true of programming languages as anything else: you choose your programming language f@r doing easily what you want to do.

And we have the same thing in Native America. Where English and other Western Indo-European languages are noun-dominated, Native American languages are verb dominated-, they are relationship/process-oriented, rather than object-oriented: watching the dancing rather than the dancers -- the dancers fade back- into the background as you just describe the rhythms and the motions of what is.

My Indian friends say that they can talk all day long and never utter a single noun. And this is real boggling to us English speakers. We couldn't even think of doing that. But when you have verbs that are like our English verb "slither," where there's basically only one thing that slithers, you know what the subject is; and [it] you multiply that by many thousands, you can get an idea of how you can talk without nouns.

[Compare that with Whitehead's "All we know of an atom is its radiating ... but there is no 'thing' there radiating!" -- structurally similar: no nouns, no things.]

One other thing -- well, let me just hit a few topics that are also of interest in quantum linguistics. Very specifically, *speaking from the heart is qualitatively different from speaking from the head* -- and our society does the latter a lot, and we have to get to a certain place to be able to speak from the heart. This brings in, of course, *ethics*; it brings in *intention*- it brings *women's ways of knowing* into quantum linguistics.

The view of language that I have is an evolutionary, *inside-out* view of language that includes [rather than excludes] other life forms in Earth. And I propose it as a *complementary* view of language to go along with the synchronic view that Chomsky and others go by. I actually also, within this system, see complementarity itself as a cosmic universal. And it's the going back and forth between the two sides, trying to balance, that brings forth vibration.

I've talked here, in [conference] comments, about how I see analogs [to physics] in linguistics because of a common base of twentieth-century structuralism between physics and linguistics. I've talked about superposition [phonemes] and the collapse into certain sounds; how time and

subject/object distinctions are verbal hallucinations that we project onto reality and then see it out there and think it's really out there.

Quantum linguistics also investigates topics such as: *glossolalia*, speaking in tongues; *xenoglossy*, the speaking of a language that you aren't supposed to know-, *mantra*; *clairparlance* (it goes along with clairvoyance and clairaudience and things like that -- just powerful ways of speaking), *channeling*, and a number of other phenomena.

So that's kind of a brief sketch of what quantum linguistics is.

A2: Brief Sketch of Bohmian Science Dialogues and Navajo Road Trip

Before I turn things over to the panel, I'd like to give you a brief sketch of Bohmian Science Dialogues, which the people here attended. This began in the early 1990s when Leroy Little Bear, a Blackfoot leader up in Canada, had read David Bohm's *Wholeness and the Implicate Order* and his writings on dialogue, and he conceived of the idea of starting a dialogue between quantum physicists and Native Americans. He got David Peat and David Bohm both interested in this, and in April 1992 we had our first Bohmian Science Dialogue in Kalamazoo, Michigan.

My view of the consensus that came out of it is this: that linguists and Native Americans and physicists and psychologists and others all came to this Dialogue to discuss what reality is made up of and what reality is. And each came with their own favorite realm -- let's just say it that way: the physicists *the quantum realm*, the linguists *the meaning realm*, the Indians *the spirit realm*, psychologists *the mind*, I guess. And after just a few days, we started seeing a consensus emerging, that if we were talking about these favorite realms, there were certain fundamental principles that they had in common that they did not share with the Newtonian realm. So, for instance: everything that exists vibrates, in a primary frequency domain, the only constant is flux in these realms; everything is interconnected in these realms, and in a part/whole relationship, a holographic organization.

And by the time we left, we realized that these seemed to be different facets of the same diamond, different paths leading into the same place, and that when physicists use the word "quantum," it was like when the Indians used the word "spirit" and when linguists used the word "meaning" -- that they were all [labels for] the same invisible realm. And the scientists went away shaking their heads, wondering, first, how come Indians had preknowledge of this realm that they weren't even supposed to know about, and, second, why their languages seemed better suited structurally to talking about eventings in that realm. Big puzzle.

So, we've had five other dialogues since then, and last weekend was the seventh Bohmian Science Dialogue, that we held in Albuquerque. Very

quickly- We gathered together a number of Native American leaders [who, with] these people here, sat down at an actual round table, an inner circle with an audience on the outer circle, and we talked, as Leroy Little Bear moderated, the way he has all of the other dialogues. We talked about many interesting things, some of which i-nay come out from these people.

Then, the second part of our grand experiment was that we had a few days to cool off and think about things and go deeper with some of the Native speakers in a one on-one sort of way. And then we took a road trip through the Navajo reservation, and there were some amazing experiences that happened there, which may be touched on, including some mishaps in the camping in Canyon de Chelly. And finally we wound up here on Wednesday.

And I just really want to acknowledge the courage of all of these people here who put themselves in the hands of a stranger, for most of them, for six days. as I became their tour guide into intellectual[/spiritual] Native America.

A3: Introduction of Panelists and Roundtable Question

So. Without any more, I'd like to introduce our panel:

- * **Steven Gamboa-Eastman** [inventor/physicist]
- * **Brian Josephson** [Nobel Laureate physicist]
- * **Martha Bartter** [English professor]
- * **Andy Hilgartner** [symbolic theorist and M.D.]
- * **John Erskine** [experimental physicist]
- * **Sarah Voss** [mathematician/minister]
- * **Carol Josephson** [thinker]
- * **Fred Alan Wolf** [author/physicist]

I have a roundtable question for them all to answer at will; it's very broad and general, and it says-*Given what you've experienced since last Friday week, have you experienced anything that would lead you to expect that benefits could accrue from partnerships and dialogues between physicists and Native Americans?*

B. Panelist Remarks

Fred Alan Wolf. Yes, I do believe that an enormous benefit to the practice of science would occur with some interrelationships with Native American

practitioners of their own kind of spirituality, which is essentially "they walk their talk", is the terminology I use. It's very difficult for us, because we've been trained so well in Western science to think along the lines that our theories have developed for us. -We are so used to doing it that we can't even imagine, for many of us, that there **is** an alternative, not only a language structure, but a whole other way of experiencing the world which is not the same as the world we normally experience in our everyday Western life. It is a spiritual way. It's a way in which spirit is a primary part of everyday life, and one is always aware of it. It's not something that you do only on Sundays, or when you're falling in love with somebody, or It's something that occurs on a regular everyday basis. It reemphasized, this meeting that we had, a number of things.

As I went walking into the Three Turkey Canyon (I don't know what that's exactly called) -- but, having spent time in Native America before and having spent time in Australia with aborigine shamans and with shamans in the South American jungle and as seeing their different worldviews, I was struck immediately how even the language of the mountains and the colors would shape and alter the thinking of the people that lived in that area. I was just thrilled. The sun was setting and I could see how remarkable all of the pinks and purples and violets [were], and I even believe I saw indigo [chuckles] a*.the sun was setting, and oranges and colors. It's ..., this is truly a remarkable, beautiful scene. That just..., I could feel in my own way, in my limited way, because I'm not a Native American in that sense, I could feel spirit. I could sense it. And I can sense it when I'm with you. If I'm talking with you and I'm with you, I can feel whether the spirit is quickened or whether it's awake or whether we re in a head trip. And a lot of us are so much in head trips that we don't realize that there is a spirit in us.

And so I try to always engage that spirit in everything I do. And I think that's something that, as a scientist, you would find if you did that more often -- just become aware of it in some way, and I can't tell you how because it takes practice -I think you'll find that your creativity in science will increase multiple-fold, because you 'll be touching on a realm which is not the strict, logical, blinder horse-drawn realm of the modern scientific establishment way of thinking, that's very vital and very important; don't get me wrong, but there is another way that one has to get out of it in order to see creatively. Those of us who know what I'm talking about or have maybe a different view of it understand this very well. Those of you that don't, I would say you'd benefit enormously by having congresses or meetings in which the Native American point of view could be explained to you, and maybe even doing some ceremony, which I think would open up the heart/mind connection in a way that you may not have experienced. Thank you.

Carol Josephson: So I'm Carol Josephson, and I actually am not with a university at all, but I did attend, [and] I missed very few of the sessions in the

week that was in Albuquerque, and I suppose 50% of the people who are here that are on the roundtable, because the rest were the Indians and maybe a linguist as well. And, when Dan Moonhawk mentioned partnership with Indians, I'd just like to say that I find their presence full of great intelligence and dedication. And as far as a partnership was going to..., I feel like backing off a bit, like in a love affair maybe -- you don't want to charge straight in there. It might even be better if they had separate funding or something, or their spirit might get siphoned off in this partnership. [pause].

Brian Josephson: Well, I've found the proceedings of these few days ... absorbing. This is not really a new area to me, because I have both some experiential things through meditation and I've some intellectual understanding of the paranormal realm, which I've done some work on. What I felt I gained from it was a more detailed understanding of this realm. The Native Indians spoke of what their reality was like, the things that happened in it. This is all consistent with what I knew, well, especially maybe from reading the writings of Castaneda, but I felt this was leading to quite a promise in which I could see connections. They were an extension of what I understood already. In fact, in a collaboration with Fotini Pallikari, who's a physicist with some psychic experiences, we had said that the paranormal realm should be the quantum realm with details in that are just averaged out by science, because [it] hasn't got the tools for studying these things. So, these people are actually describing these missing details, and this I think [provides] a lot of food for thought. It also connected nicely with the relational aspect of science which I talked about in my talk a few days ago. So it seems to me we have now bits of a puzzle and we can now go ahead and try and work out the details of how it should all fit together, which of course can be done partly without collaboration, but I'm sure that discussions between the scientists and the Indians will help to fill in the details.

Martha Bartter: Well, I'm not a scientist, I'm not a physicist. I teach. I teach English. And I've found a different way of thinking about myself, and my teaching. I see myself now as *iyeska*. The word means a lot of different things depending on context. It means someone of mixed blood, or someone who translates from one language to another, or someone who steps from one realm, one world, one reality, into another. And, I see my job as making the realm of what I'm teaching real to my students and offering them an opportunity to translate that into their own language and move into it themselves. That's sometimes more difficult than I had at first anticipated. And the conversations in Albuquerque gave me a very strong sense of relationship in this task of translation, the job of making meaning *real* so that it's not a thing that students have to memorize and regurgitate on a test, but something that will take place, a process in their lives.

So, I think we all stand in a very long-term relationship to our world. We've all absorbed a great deal of our culture, our language, our ways of thinking, from

our ancestors. Each of us has a way of adding to it, of contributing something to that. And then we have the job of passing it on. And I think it's terribly important that all of us, and I suspect that includes people who work with enormous systems of power, perhaps even more directly than those of us who do things like poetry and so on, because the greater the power, the greater the responsibility.

And so, seeing this world as a whole, as a living whole, as something that we have to care for, and pass on. That's what I got from Albuquerque.

Andy Hilgartner: I don't function --, I don't do physics. I consider myself a scientist, but I don't I've written an original theory of human behavior. I'm not going to say much about Dan's roundtable question, particularly, although I do see value I see any dialogue as leaving all participants altered in fundamental ways. And, we sorely need an alteration of viewpoint.

I grew up in a Western Indo-European or WIE language, with English as my native tongue. Furthermore, I became a scientist of the Western Indo-European tradition. So, like most everyone else in this room, I unthinkingly sliced up the world into static, unchanging things that enter into more-or-less transient relations, which, in my WIE language, I designated respectively by means of static, self-identical nouns and not self-identical verbs. As a youngster, I subscribed to the dualisms, mind/matter and so on, not realizing then that the dualism is simply a projection of the grammar of Western Indo-European languages onto the cosmos. Mind/matter: we take one side as static and the other side as not. Depending on whether we're doing physics or psychology, we can take one side or the other as the static one, that's what we study, and -- well, anyway. Eventually, my research led me, forced me, and enabled me to reject and discard the WIE way of slicing up the world. In order to continue my inquiries, I had to overcome the disadvantages imposed by the received knowledge I had assimilated and made my own.

In particular, I disclosed a fundamental theoretical error, the kind of thing that in my opinion no one would willingly subscribe to, knowingly subscribe to, built into the grammar of the Western Indo-European languages and therefore into the foundations of our logics, or mathematics, our sciences, our philosophies, our jurisprudences, our religions ... all our linguistic specializations contain this fundamental error. I found ways to discard the error, and, in the process, the grammar of the Western Indo-European languages, at least for me, collapses and I had the opportunity to clear the rubble of the WIE frame of reference out of the way and then managed to generate an alternative frame of reference, which appears more general than any other human viewpoint that I know of. From the very beginning, so to speak, this alternative frame of reference presumes a dynamic cosmos, not a static one, which it describes and evokes by means of a new kind of symbols.

The notation which I devised comes out of these studies, uses no nouns, no verbs, nor any of the parts of speech used in Western Indo-European languages and named in the so-called Latin grammar. Among other advantages, this frame of reference does not utilize the dualisms. It does not utilize any construct of mind or matter, or oppose them as [pause] things that are opposed that you can't bridge between, or however we'd say it our philosophy, which the exponents of the Western Indo European frame of reference seem unable to discard even when they want to. I've used this frame of reference to describe an account for human behaving-andexperiencing, a pair of related topics systematically split apart within Western Indo European frames of reference, and to criticize and to propose revisions to various fields of Western Indo-European science.

Uzi Awret poses an interesting question: Is quantum mechanics philosophically relevant? Does it provide the radically new ontology which is needed to make progress on the mind/body problem? I answer that question with a resounding No! Speaking from a standpoint which successfully disallows the dualisms characteristic of Western Indo-European frames of references, I report that the attempt to "resolve" even one of these dualisms from within a WIE frame of reference cannot succeed. Now, no one can understand a frame of reference from within that frame of reference, so I will not belabor this point. But, from my point of view it looks like a lot of work to cling to the fundamental theoretical errors which deliver the dualisms. And it seems to me both simpler and more parsimonious to arrange one's point of view so as to disallow them.

At the Albuquerque conference between mostly WIE physicists and Native speakers of Blackfoot, Cherokee, Navajo, Tiwa, and the Yakima languages, perhaps among others, I found myself occupying a vantage point that's a little hard to describe. As I listened to the physicists, I could see how the nouny mathematical and discursive languages they relied on got in their way as they tried to bridge between their quantum viewpoints and the lived and spoken viewpoints of the Native peoples. The Natives, however, had little difficulty expressing the correspondences they sensed between their viewpoints and those of quantum theory, even though they had to express these in English. When I had opportunities to express my alternative viewpoint to members of the Native peoples, and I had the most time with David

Begay of the Navajo nation, they quickly took in the relationships I expressed and then replied with corresponding relationships within their own Native viewpoints. My most passionate concerns, and theirs, seemed to match.

I often expressed my concerns mainly around the ways the currently dominant world culture abuses the foundations for life on the planet, and so courts species suicide and extinction -- and, what we must do to alter these

abusive ways of living into respectful, viable, sustainable ways of living. Begay expressed his corresponding concerns [pause], the family of living things. In general, since their lived and spoken viewpoints lack the burdens which the exponents of Western Indo-European languages and linguistic specializations cling to, the Native Americans immediately understand and express support for a theory of assumings which supports the continuation of life on Earth. Science that splits the living world into bits and pieces, and treats these pieces as things, assures their destruction. Science that sees the living world as a whole, to love and respect, allows for its continued life.

John Erskine: Of the four physicists on this panel, I'm the experimentalist. What I want to do is bring you three pieces of data that I've picked up during the Dialogue and the Navajo road trip. But first, let me tell a little bit about myself. I am a nuclear physicist and I spent the first part of my career at Argonne National Laboratory working with particle accelerators studying the structure of atomic nuclei. The second half of my career was in Washington, D.C. in the government office that provides the funding for most of basic research in nuclear physics in the country. This is the Office of High Energy and Nuclear Physics in the U.S. Department of Energy. In that office one of the main motives for doing research is looking for physics beyond the standard model. We are interested in questions like: Does the neutrino have mass? How are quarks confined in the nucleus? What is the detailed process of nucleosynthesis in stars? So, coming from that background, I was alerted when I first saw emails from Moonhawk that told about the field of quantum linguistics, and the possible opportunities to learn new physics from the way that Native Americans speak and live.

From the Native American experience I learned that the Native American languages and modes of conscious are very different from the usual Western consciousness. And I could see that by studying these differences we might learn something important about the collapse of the quantum wave function in the human brain. This was a possibility. Consciousness is weird. We need help in trying to understand consciousness and, if possible, to put it on a physical, scientific basis. And so, learning about the Native American worldview and studying their type of consciousness, we might learn new ways to sort out this weirdness. I think of this as studying physics beyond the standard model.

Let me give you several pieces of data, examples, to give you a feel for the differences between Native American and usual Western ways of thinking. The first example is about horsebackriding. This comes from Amethyst First Rider. In English, when we say "the man rides the horse," our language forces us to think in terms of a subject, the man, and a verb phrase, "rides the horse." We get a clear visual image, but we pay a price. In Blackfoot language, the emphasis is on the physical feeling. It's a kinesthetic language, mostly verbs. So, in Blackfoot, to convey the same meaning, what's said is

something like this: The way your body talks to you as you feel the movement of the horse beneath you -- that's the verb. The verb conveys the kinesthetic feeling of the horse under you. And then comes a bunch of verb modifiers which tell about the rest of the information in the sentence, such as details about the man, the speed of the horse, how long he's been riding, and, other things. The primary thing is the feel of the moving horse underneath you.

A second example is about the Blackfoot language itself. This comes from Leroy Little Bear. Leroy says there is no Blackfoot language -- it's just 800 variations on "to be." He makes it up out of root words as the experience flows through him.

The third example is again from Amethyst. She says there are no metaphors in Native languages. It only sounds that way when translated into English. In English, the meaning of the word is generally not connected to the way the word sounds -- mostly arbitrary assignments. Not so in the Algonquin language, of which the Blackfoot language is a member. Can you imagine a language in which the names of trees are assigned by the sounds that the leaves make in the fall of the year, when a gentle breeze is blowing?

Moonhawk: At an hour after sunset.

John Erskine: Yeah, okay, add that -- even more specified: an hour after sunset.

Moonhawk: That's because the wind comes from a certain direction.

John Erskine: Mmm hmm, [affirmative sound]. And the next year, if there has been no rain, the name may change slightly, because the leaves are a little different. There are no metaphors. What's going on here is that Native American culture seems to be consciously trying to match their language as closely as possible to the lived experience of the natural world.

At this conference, we are all struggling to understand the circumstances which bring about the collapse of the wave function for the conscious human observer. Real data at this point is almost beyond our reach. We need to look at all possible kinds of data. I believe Native American modes of consciousness are uniquely different and should be explored. Perhaps a place to start might be to look at the fundamental awareness of the Native American, which is his sense of relatedness to all things. As they say, all my relations, or we are all related.

Andy Hilgartner: *Mitakuye Oyasin.*

John Erskine: [affirmative sound]. And these phrases indicate the notion of the Old Language, which Moonhawk told us about in the Cheyenne Tower of Babel teaching. So, it seems to me that somehow it may not be so difficult to pull this sense of universal relatedness out of quantum theory, or somehow to learn how to express quantum theory in a way that would vividly show up the Old Language which Native Americans tell us is very primary.

Moonhawk: What did you tell us at breakfast about 'moccasin'?

John Erskine: Oh. Oh, that's rather beautiful. Yeah, David Begay, the Navajo Dean of Dene' College. We were sitting around this large hogan in one of the college buildings, and talking about things. David said everything in Native American is always balanced between the masculine and the feminine, Father Sky and Mother Earth. But then he said the word "Mother Earth" is a poor translation of the Navajo, it just doesn't get it at all. And then he gave us a couple of concepts. One of them was something about the earth beneath one's moccasin, or the feel beneath one's moccasin. And he had some other phrases. So I thought about these things, and I tried to translate it into English as good as I could, using a verbal form, and what I came up with ... now, if I can just remember what I told you this morning at breakfast, [pause], if I can get it into the right grammatical form [pause] "Lifts the moccasin gently." There it is: "Lifts the moccasin gently."

Moonhawk: "Supports."

John Erskine: "Supports my moccasin gently". [pause]. That conveys to me the sense of being lifted. There's a feeling sense to this and yet it's alive. In Native America God is not a noun. It has to be in some verb form.

["ends side 1" -- tape turnover]

Sarah Voss: I appreciate John's bringing up the idea that I heard for the first time at this dialogue, that there might be no metaphors. I'm having a really hard time with that idea. Because virtually everything I think and everything I do is metaphorical, in that I was trained to some degree by critical realists who say that the only thing that there is for us, the only way we really have of communicating with each other, is via metaphor. And so this was a novel idea, for me, to consider.

Let me share a little bit about how I came into being a part of this dialogue. It was the word "quantum linguistics" that did it. The curiosity of that. Because, that's a metaphor. [some light laughter] -- and nothing I have heard since I've been involved in this has changed my thought on this. It's not that linguistics is done with quantum techniques. It's that quantum techniques and the characteristics of quantum world apply metaphorically to the linguistic view and offer a different view, an alternative view to the ... Chomskyan? ...

linguistics. I'm not a linguist, here. What I am actually is a minister. I'm a Unitarian Universalist minister, and, before I was a minister I was a mathematician. And when I became a minister, I tried to relate mathematics to spirituality, religion, and have been trying to do that ever since. And I found I could do that by reconceiving my notion of mathematics, as a language.

Now, I heard last night Linda sing this wonderful song about how "mathematics is the language of science," and I think she was singing to the choir, in this case. I also think that mathematics is a language of religion, of spirituality, and I'd say that history supports that. And, as I've done my research and looked at that, I've left off what I call either the qualitative aspects of mathematics or perhaps the metaphorical aspects of mathematics. And so, I was drawn into this discussion because I have worked so much with those qualitative aspects of mathematics. Quantum mind is a mathematical metaphor. There's a mathematical metaphor embedded in that notion, that mind, or consciousness or whatever else you want to put into that concept, is in some way like quantum physics. There's some connection to it, there's some characteristics, and I'm still trying -- one reason I'm here is I'm still trying to sort those out, to understand what those characteristics they are and how they can relate to our popular society, because I think our popular society is very interested in these notions. And so I'm trying to be at least somewhat accurate in what my own understanding is before I try to lift up these metaphors, and perhaps I then won't be accused of misappropriating them, which is of course always a concern whenever you take metaphors out of any area. or words or nouns out of any area, and apply them to any other area.

So! To get this around though to what I found in this experience -- and it has been an experience! It's been a wonderful experience! And to also bring it back, I think, to your question, Moonhawk, about: do I, having been through this, think that there's any reason why physicists should lift up or should try consciously, intentionally, spending some time understanding Native American viewpoints on this? And the answer, the brief answer, is Yes. And I could stop there, but I won't. Because I think I need to share a little bit more about how I got to that -- because it wasn't immediately obvious to me that physicists who speak English and mathematics and maybe something else, as far as that, but that's what I've heard here [chuckles] is English and mathematics I don't have any sense at all that everyone's going to rush off and learn Native American languages in order to do their physics. That doesn't make a lot of practical sense to me.

So what else is there that could be a reason for you even to spend some time with it, if you were a physicist? And I think that comes from a different perspective, and that goes back to the original thing that you said when you set it out, Moonhawk, as being that quantum linguistics is a complementary aspect to Chomskyan linguistics, and Chomskyan linguistics being the way

that we are used to understanding our English, that we think in English, etc., etc. It's part of our culture, the way we think and look at things. And I realize that, at least what I've gotten from this is not that quantum linguistics means Native American languages, because I don't think they equate, but rather that quantum linguistics is an alternative way of examining or experiencing language, any language -- English language, the Native American language, whatever language, maybe even mathematics [chuckles a little]. And that this bring in different characteristics. There's the same kind of characteristics that the physicist among you here are working with in the quantum field, where things interact differently. They are in a relational mode. They don't do the things that classical physics has done.

And so what happens is, when you attune to some of the differences in the language, even if you can't speak it -- and I certainly don't speak any Native American, other than English, if that's a Native American language --, you begin to understand the differences. It allows you to get outside of the box of our normal language and that opens us up, and allows new kinds of experiences. What John said about Amethyst talking about the horse-riding: as she expressed that, she talked about feeling it, and she said it's not visual for her. When she pictures a horse, riding a horse, what she does not get is this mental image. I get mental images as soon as somebody says "riding a horse," that's what comes, is a mental image. The very concept of not doing that is difficult for me to get around. And that's the same kind of thing that I think is happening in the difference between classical and quantum physics, as I understand it. It's difficult to grasp it.

Now, I'm taking it on faith that the Native American language has some things more in common with the flow of the quantum physics -- but I am taking it on faith, after this little bit of experience. And it seems to me like it would be worth exploring some of that, in some way, and helpful to the physicists.

Steven Gamboa-Eastman: I just want to add a couple things. First of all, I just want to say, Moonhawk mentioned it, but it was the Native Americans who essentially sought us out. Leroy Little Bear and Sa'ke'j Henderson and those people sought out David Bohm. They went to the Fetzer Foundation, and got the money and did that. So. I think that's a very important point, that they sought us out. And I think the reason that they sought us out was because they feel that the Earth and our species is in imminent danger from the environmental catastrophe that we have created here, and my work around Chernobyl and in the human communities there certainly drove that deeply into my own mind -- that urgency was required, that this was not a time of business as usual. So, I just wanted to mention that they did that.

And one of the things that we discussed over the weekend were some of the similarities, for example, between some types of sacred spaces and Hilbert

space, rules for quantum mechanics, quantum mechanical primitive things. We discussed the collapse of the wave function and other things and tried to relate that back and forth. In my theoretical work, I use a lot of topological stuff, so I'm trying to think that way. So, I think they have not only a point of view and a language system which is extremely flexible, and unstatic, because it can create words on the fly to specifically delineate exactly the meaning that you have at this moment with this particular thing. Like, for me, the thing about the wind through the trees, it's very poetic, but it's very precise, and it's kind of like an address system. It's way of grounding yourself and fixing yourself in the world. And I think that that's of fundamental importance because, as everybody can see, we're developing rapidly some extremely powerful technologies and there are others that are sort of just being whispered about that may take place soon. So, all of these things should be grounded in the planet as a basic reference point and frame of reference, and then maybe some of these things will be able to help us overcome the deficit we've created. So. It seemed like there were some very interesting and concrete ways of approaching problems that have resisted solution up to now by expanding beyond the formalism itself into like taking into account things like intentionality, creation, how to create things.

So, anyway, everybody pretty much said all of those things. But, I think I'm just going to -- a couple of people asked me what these sticks sounded like, so I'm just going to bang them for about a minute. [click, click]. These are from the Yucatan. They're mahogany. [musical clicks]

Martha Bartter: I was thinking as Sarah was talking: one of the things that Einstein had to change in the language was to create a word "spacetime" as opposed to "space and time." And listening to so many of the presentations here, I'm wondering if we can create a word that does not indicate the separation of mind and matter, or that makes consciousness a verb. I've heard so much here, people talking about consciousness as something you could perhaps set on the table and examine, and that mind, somehow or other, is separate. And when we look at ourselves and think about ourselves, we know there's no separation. We consist of a psychospiritual [pause] being, a force, whatever. I know, I'm not thinking of the right words, but perhaps thinking of it as a unity would redirect some of the experiments in useful ways.

Moonhawk: Any other comments from our panelists to our panelists here, before we open to the audience?

C. Audience Remarks

Maureen Gamble: Hi. One of the things that I think may be gained by the dialogues between physicists -- scientists in every realm in fact -- and Native peoples, maybe not just Native American, but Native peoples in general, is something that I think is best expressed in the very foundations of many of, at

least in this country, our Native American concepts of ways of being and ways of living and making laws and investigating how we live within the universe. I just returned recently from the Institute of Noetic Sciences national conference, and one of our speakers said that the basic foundation of the ideas for how they developed the laws, the foundations, for civilization that Ben Franklin noted and then commented on and then helped to incorporate into our very country's beginnings, was that, whatever decision we make and whatever law we observe, that we consider what it does to the seventh generation. If nothing else is to be gained by scientists and Native peoples getting together, perhaps a change in ethics would be beneficial. I'm always amazed when I read an interview in the newspaper with some scientist that's about to do some amazing breakthrough thing, and the report will say, "And what do you think will happen when you do that?" And they say, "We don't know, but we're eager to find out." [chuckles a little]. And I remember when I was much younger and they were building the first cyclotron and they said, "What do you think is going to happen when you break apart the atom?" And they said, "We don't know. We could blow up all of Chicago. But, but we're going to find out." And this is not thinking about what's going to happen to the children in the seventh generation. So that I think may be a real good basis for a start.

Male Voice: As I was listening to the panelists, a couple things occurred to me. One was that the Natives seemed to be describing a way of being, or a way of consciousness, or a way of knowing, which doesn't reduce, so to speak, or collapse a wave function. I know I've just made a big metaphor there, but [some light laughter].... but just to describe my experiences, it seemed as though you were describing a way of interacting or of being in life which doesn't create separation. And my understanding of quantum physics is that all of classical physics is about separation, quantum physics is about non-separation, and our effort to understand the link between the two comes to naught because we're trying to understand quantum physics from a point of view of separation. And so we're using separatist or a separating language to understand something which is essentially not separate. So I was wondering if you'd care to comment on that.

Moonhawk: You have some really good insights there. I've got nothing to add to it. That was beautiful. Thank you.

Jane: My name is Jane. When you were speaking about the concept of appreciating nature, that we need to love all of nature, all of nature's creatures, I assume that means all of the bugs and all the little worms that crawl and everything on the planet Earth. One of the problems I have is, there is a certain need to handle certain creatures so we can live in a comfortable manner. For instance, I come from Tampa and we have little bugs that eat up the fruit constantly. Now, the question is, Are we allowed to leave these bugs live? Or should we exterminate them to preserve the fruit?

So there comes a division line between our love for the ecology and our love for keeping our comforts and keeping food, keeping our houses clean of termites and cockroaches, etc., etc. So when I see a bug in my kitchen, I ask myself this question: Should I let it live, because I do love the universe and I'm one with God? Or should I kill this creature so my house will not be overrun and I'll be able to live in a clean environment?

Moonhawk: Everything is a balancing act. There are no absolutes, for instance, in Native America. Everything always has to be balanced. So, what you're doing sounds eminently feasible.

Ravi Gomatam: I just wanted to respond to this gentleman's point, but she raised another point which also I wanted to raise a little earlier. It's good that Sarah, if... that's her name, I think, she talked all generically [about] quantum linguistics [being] more broadly about any language. Now, in Sanskrit the word for citizen is "prajad" and "prajad" really comes from two roots, "pradesh" and "jaiday," which means anyone who is born in a land is a citizen. Cockroaches, birds, not just human beings. So, when I grew up in India, we had these grocery stores where they used to have in gunny bags, huge gunny bags, rice and dahl and everything. And the person who was the owner of the shop when he goes for lunch, he would take little bowls in the center of the shop and keep in each bowl every one of the items he sells. And the same thing he does in the night. And we have always seen that they, all the rats and everything will come and eat only from the bowl and they'll never touch the main things that are being sold. So, the whole idea of insect pesticides and this and that is that we don't recognize that everybody has a share of what's growing in the earth. In other words, the best way to deal with insects would be to give them what they need, and they know just to take that and leave the rest alone. So, the basic idea in Sanskrit is "yisha vasham edam sarawam." Everything ultimately belongs to God, but God has given everybody what they are entitled to, so take your portion and don't try to deprive anybody else of their portion. So, there are other ways of looking also that are really relevant to this.

And, coming to a more technical point, Siegfried raised this question that we are basically trying to understand, the inseparable quantum whole from the perspective of the separable thing, because our perspective of the observational level today separable. So, in my talk I said that unless we change the way we look at the ordinary world we will not be able to understand quantum mechanics. Now, what I see as a gap between this effort that's being done now, to bridge quantum physics, or at least to find similarities between quantum physics and Native American languages, that we may be jumping, so to say, from one problem to another problem. I see a potential for this approach to be infertile if we don't recognize that there is objective reality. Otherwise, science would not have succeeded. And, there is also the subjective realm, the basic Vedic ontology is that there's God and

there are different energies -- matter is one of them. So it is the way we conceive matter that's wrong, not that the matter/mind distinction itself is to be done away with and it'll all be just one, big California mush, as to say. [laughter]. And I'm from California, so ...

Moonhawk: I resent that. ;-)

Ravi: [chuckles]. So the last one of this ... Just to say, that is, that the way to bridge The very question was raised- Does quantum physics have anything to say about contributing to the ontology that would help resolve the mind/body problem? I would say the answer is a resounding Yes, because, I'll just give a little example and close it. It's like if I'm in a prison, and if I think of the world as outside as something other than the prison, then definitely the world outside is something other than what I live. But if I see the prison as a part of the world, then and only then we can actually link the two, without doing away with the distinction between the prison and the rest of the world. So, Descartes made the distinction between *res extensa* matter as we have seen classically with extension, and mind as *res cogitant*, where they can say it's *non-res extensa*. And I propose that the informational point of view, for example, if you take a big chair and a small chair, they are both chairs. If you take a big pencil and a small pencil, they are both pencils. That means pencil is not categorized by extension. So we can learn to see the world in a nonextensional way, that would actually lead to quantum mechanics: we could have the cake and eat it too. We could have objectivity in science and yet have a view of matter which is more congenial to relate to mind and then go on to spirit. So, I think there's much more to be done here than just going from separability of classical physics to inseparability of quantum mechanics. That's my point.

Moonhawk: Red shirt and then Henry over here? Wasn't it Descartes who said, "I think, therefore I am in prison"? [laughter]

[Red shirt]: Okay, there are two points, not particularly related.... The second one is more related to this question of quantum linguistics, and when you started out, Moonhawk, talking about the idea of telepathy, in my own language I would say 11 empathy." And, in listening to the panelists speaking about the Native American languages, that seemed to come across very strongly to me. And, when I think about this, I think about the word "reason," which originally goes back to a proto-Indo European word that just means "fitting together," and so we say, there are different ways of fitting things together, and empathizing with them is one of them. I fit ' myself into the situation and how do things fit. There are two other ways if I want to get more Western about it. I could say there is analogy and there is analysis. And different cultures would seem to emphasize one of those to the exclusion almost of the other two. In the Western world, we are very, very strongly analytical and we don't pay much attention to analogies or empathetical kinds

of reasoning. I think it would be very interesting for quantum linguistics as you are pursuing it to study not only Native American cultures and their forms of thinking, and the Western culture that we already have that we can look at, but also look at cultures where the main emphasis has been on analogy -- and, unfortunately, there don't seem to be too many of those in existence to my knowledge now, but historically, if you look at some of the higher magical cultures you might find that.

Moonhawk: Thank you. And, Henry?

Henry Stapp: The question that was posed was, Are these ways of thinking that you have been discussing here of potential value to scientists? And so I am going to give a rather more technical take on this than the comments we've heard before. As I was saying in my two talks, the issue or the question in quantum mechanics and science today, at least from this quantum mechanical point of view, is the relationship between Well, it all depends upon knowing, and the picture that we saw on the cover of our brochure was the dead cat and the alive cat. So we have two objects there. One object is the dead cat and one is the alive cat, objects in certain kind of static positions. And the way that the scientist understands the collapse is knowing the dead cat, this form, or knowing the alive cat, or knowing that the pointer is pointing here or the pointer is pointing there. And of course we know many other things, which are not so object oriented, and the question is even, What is it that we really know when we know about the cat and his current state of being? Well, this is actually a pretty big technical problem in putting these ideas to work. And I think the message that I'm getting from this is that really what we know, like, what we know about the tree in the forest, is really some more of a feeling about the tree and a feeling of what it's doing. So I think it might in fact be quite to the point that the way of understanding the knowings is really a knowing of feelings and these feelings are themselves more active than object-oriented, and that once we want to really relate -- make the step in quantum mechanics of understanding the collapse of the wave function and associating it with what we know -- we're going to have to understand maybe better what we know, and that the sort of approach to what we know that you've been talking about in your panel might be quite useful.

D. Closing

Moonhawk: Thank you very much. I believe we're out of time, unfortunately. Perhaps we can talk out in the break. I want to thank the audience for some really perceptive comments here, and all of my panelists. This is the end of our grand experiment as we now pull it to a close, and I just am so appreciative of every one of you that joined in with me on this. And perhaps we can do the thing again in another time and have some of the rest of you join in on another grand experiment. Thank you all very much.

[applause]

