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Dec. 11, 87.

Dear Pam

You say you wish to pursue Native Math. If so, how about looking into "Native Geometry" ? The book: Native Mathematics talks only of Number Systems, and a little bit of Astronomy. Frankly, that is disappointing. Native Geometry is better. I explain why I think so.

Geometry includes Space Perception, How to deal with Motions, Fields, Relations, hidden, visible, and imagined. It also includes Time Dimension, future, past or side ways. It deals with Order, Disorder, and Nebulous. In short, it is a Cosmology, but relevant to practical life on the ground.

And a "Culture" always come with an implicit, but a fundamental Geometry. [Jung Thesis]. For example, ancient Greeks included "Geometry" as one of 9 Muses, along with Love Songs, Tragedy, Comedy, etc. It was a part of Wisdom of Goddess Sophia. And the Goddess of Wisdom was a representation of the "Collective Intelligence" of the ancient Greeks.

Native Culture also had a Geometry. It is just that you do not give a proper recognition to it. Most Europeans do not recognize the Geometry in their subconscious either. The only exception is Jung, but he did not go too far.

Greek Geometry was also a "Practical Art" for artisans. It was the first "Practical Philosophy" in helping people how to organize thinking and guide social scale actions. [Actions, involving more than few people and lasting for a duration beyond what individuals can manage by "reacting to immediate situation", require a Vision which constitute a "Collective Will". The Vision is a Geometry.] It was the first disciplined social scale exercise in Imaginations. It was also the first "Science" ever to be systemized in a Logical Structure. The Structure was built in order to have a basis for social scale communication. Naturally, it became the Mother of European Science. If I exaggerate a bit, the implicit Geometry, as the Pattern of Imagination, was the "Mind" of the Civilization.

Newton learned Euclid Geometry, through Descartes' analytical method --- which Angels taught Descartes in dream ---, and Projective Geometry from an Architect friend. This Architect was older than Newton, but perhaps he was the only friend Newton ever had. Incidentally, his school did not teach Geometry. Newton went to school, probably because he wanted to become a Theologian, not a scientist. Geometry

was just a fun. Yet, his Mechanics was based on a Geometry and the "Language of Differential Calculus". He wrote somewhere that, in writing Principia, he wanted to emulate Euclid. Euclid invented, aside from the Geometry, the prototype for Scientific Stylism.

From a modern view, what Newton did was simple addition of Time to Euclid Geometry. The reason Mechanics became stuck with Motions of Objects is that Euclid Geometry was Geometry of "Points and Lines". Geometry of "Fields" has not been developed until Einstein's time, some 250 years after. Micheal Faraday had a vision of Fields, but there was no Geometry then to "Verbalize" the vision.

Einstein barely managed with the little he knew of Geometry. His patron teacher, Prof. Minkowsky, taught him Geometry, but apparently Einstein was a poor student. Minkowsky was the one who admitted Einstein into the University by bending the admission rules. A story is that Minkowsky got mad at delinquent Albert and said to him "I do not wish to see you, never ever." [ If I come to teach you Geometry, I might have to say the same thing to you. You know, not everyboy can be patient and nice like Mouse Woman.]

But, it turned out that Einstein revived academic interests in Geometry, which was an obscure subject that nobody really cared about in the 19th century. Minkowsky got famous, because of Einstein. Now, the market value of Geometry is down again. Nowadays, high schools hardly offer Geometry. Universities seldom offer courses in Geometry, except in a few special places like Princeton. [ Harvard has never been good at Geometry.] Number Mathematics is a lot more popular. The reason, I suspect, is that Geometry is Visual and closer to Art. Intellectual snobism in Universities in general, and Mathematicians in particular, looks down on Geometry as "Unpure". It uses "Intuitions", "Perceptions", "Creative Imagination", "Images", "Gestalt", "Metaphors", etc. none of which is acceptable to the "Pride of Logical Rigor" of the Mathematicians today.

Yet, the entire Physics can be looked at as "Applied Geometry". All "verbalizations" of observed phenomena, if they are approaching the level of physics, are implicitly Geometrical. This can also be said for Economics, Social Theories, Psychology. Geometry is the bridge between Observation (Imagination included) and Verbalization. Geometry, therefore, has Hermeneutical elements --- that is, if one cares to look at how Geometry use Language ---.

Whether you know it or not, your talk on Ghii Lii is a talk on Geometry. Your Tree Vision is a Geometry. It is different from the European one, in that it is a "Field Geometry". Euclid Geometry was a "Geometry of Points and

Lines". You have at least Einstein's level of Geometry already, surpassing Euclid-Descartes-Newton.

[ It is my task to convince you that you started a fantastic thing. By uttering words like "Native Science", you opened Pandr's Box. You probably did not mean anything. But "Bears" are around, and overheard that. Because, the word mean something, you get into all kinds of Shits, including ones from me. If you knew what you were talking about, you would not have dared to utter the word. Europeans have a nice expression for that. They say "Where angels fear to step, fools trot." ]

There is one important thing about Field Geometry which you'd better know. The kind of Mathematics that is needed in Field Geometry does not depend on Numbers --- called Topology ---. But numbers can be used. And Differential Geometry (Geometry of Manifolds) is the standard tool today.

You might ask how anyone can do Differential Calculus without "Quantifying" by measurements. That is an Euclidian prejudice. Just because Euclid Geometry needed measured quantities such as "Distance" and showed off its "Numerical Accuracy" as if that is the "Proof" of it being Accurate Science, it does not mean that Science cannot be done by without "Accurate Number Measure". In fact, fantastic mathematical acrobatics in formula manipulation etc. can be demonstrated without anything to do with "Accurate Numbers". Toplogy is a "Fuzzy Science", and the "fuzziness" requires a lot more sophisticated thinking than "accurate number mathematics" needs.

If you are thinking of Social-Human Science, the "Fuzzics" that is emerging from Geometry is an ideal tool. This goes against the fundamental Pradigm of European Social Science today. But, it can liberate one from the much worshiped Numbers in Social science today --- or from the European Science as practiced by the majority today ---.

Needless to say it is difficult. Time and time again, even those who do Geometry fall back to Euclid Number Thinking. That includes Einstein himself. When one does not have numerical values, one loses confidence. Or one feels that people would not understand Geometry, therefore they sink into Silence. Since Geometry is repressed into silence, people do not learn it. The community remain ignorant. That makes communication more difficult. So one dares not talk about it. We have a Vicious Circle.

Now, I have a vested interest in Native Science, because I see there a possibility of Field Geometry. I

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need you to tell the Geometry. You are the poor victim. You have been receiving shits from me, because of that. On the top of it, I am now asking you to look into Native Geometry. That is a bad deal !

I know women over 30 are on "down hill" and cannot learn nothing much new. For that matter, men are no better after 20. ( I learned that the only way to get you interested is to make you angry. So I am trying the trick.)

Besides, I know being a mother is a full time occupation. Add 1/3 for being a wife, however a bad wife you are. Then add another 1/3 for being a teacher, even if you are a poor one at that. And whatever else you do ? You have probably 200 % excuse for not doing anything beyond.

[ One day, I was watching a girl with her little brother coming onto the bus I was in. She must be age 7 or 8. I saw a determined intention on her face to look after her brother who may be 5 or so. She let her brother put changes into fare box. Her attention was just like a "Mother" would have had in doing the same. The word "Responsibility" is not quite right for that. I do not know what that can be called. But I got impressed by her greatly. Somehow, she learned it from someone somewhere. I wondered if school education could do anything like it. In comparison to that, stuffs like Geometry is trivial. However, I have nothing better to offer to you. ]

But then, why do you utter words like Native Science ? I take it that you meant it. You would not like me to patronize on your weakness. But you have no idea how to make it real, doing it in the present condition of life.

But, perhaps, there is no harm in trying, even if you cannot hack it. So I make you an offer of making inputs from that side. It is from European Science, but a little better shit than Newton-Euclid ones. Raven would not hesitate to take advantage of whatever available for the means.

However, as to Native side, I do not know anything. That should give you ample opportunity to hit me back. We can be even at that. And more importantly, I tell you that unless you speak out, you learn nothing, and I learn nothing from you. You see a lot of people who are defending their Pride with thick armor, not realizing the self-imposed armor is a prison, the "Box". Children learn a lot quick, because they are not defensive. They say what they think, right or wrong. And they can accept things, because they are not worried about their vulnerability.

I am thinking of "Learning by and for Community", as a new strategy replacing "Ego Knowledge". That calls for

"childishness" in learning. However, in this, I do see a difficulty.

Namely, Natives have great deal of concern about their Dignity. It has a good reason, for if they lose their Dignity, they are finished. That is why Elders talk of Tradition, or The Old Way of Ding Things. But learning is a Creation. And Creation means Death of the Old. To learn something is not "addition" like putting money in banks. It require a structural change, which means dying and "borning". Sensitivity that required for Creative thinking is inherently "Unstable", if not Catastrophic. In that Creativity is the Arche-enemy of Constancy.

I am also aware that "Environmental Conservation", "Peace", "Harmony", "Steady State Economy" etc. come with in metaphors of Constancy. But you note that what a Big Change is needed to achieve any one of these ideals. And here Hope Philosophy is crrect in saying that nothing is constant. Hopi Prophecy is for catastrophic changes. It may be more of the "Traditional" Spirit to be "radical" than fixated in an illusionary Constancy on surface.

This ought not be taken to be disrespect of Elders, nor disregard of Native Culture. I think the respect has to do with learning of the Original Meaning and Creatively Applying it to the changing situations. It takes more profound understanding of the Ancient Spirit and Creativity to live in the present difficulties than just follwoing formalities as routines. I talked of Speaking Up, but I am not ignorant of the value of Silence. Silence can be louder than any big noise. Besides, "speaking" has to be matched with "listening". As to how to work out these balances, we have to think about it further.

Maybe, this problem of Tradition and Radical Creation holds the key that we need. To reject someone, something in contempt is too easy. To understand something we do not like in respect requires learning of the level we try to achieve. The problem is a gift. It is interesting to note that your Ghii Lii story came out in a contxt of you talking of "Going back to the Source". We all get very much impressed by your lecture. Now, it is your turn to listen to what you said, and get impressed by its profound meaning.

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In a sense, the real test of "Validity" on Geometry or on any other Theories, Phiosophies or Teaching, is whether or not it helps us to deal with such problems. Castaneda's story, or D.Bohm's Theory is "Valid" in so far as they help people in troubles. If not, it matters little if real Don Joan existed or not. I think Geometry --- ie Vision ---

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does help. I am not a magician, nor a guru. But can I make  
you interested in Native Geometry ?

Yours

*Sam*

Sam K.