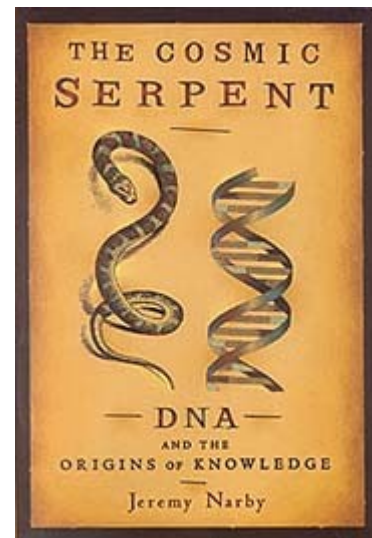


CosmicSerpent

[*The Cosmic Serpent* by Jeremy Narby](#) takes a serious look at how [neurogenetic consciousness](#) informs awareness, knowledge, symbolism and culture. His comparison of the ancient cosmic serpent myths to the genetic situation in every living cell reveals the immortal biomolecular wizard behind the curtain of everyday life. His anthropological study, ayahuasca experience and scientific speculations weave a tale of shamans who bring their consciousness down to molecular levels with sophisticated neurotransmitter potions in order to perceive information contained in the coherent visible light emitted by [DNA](#).

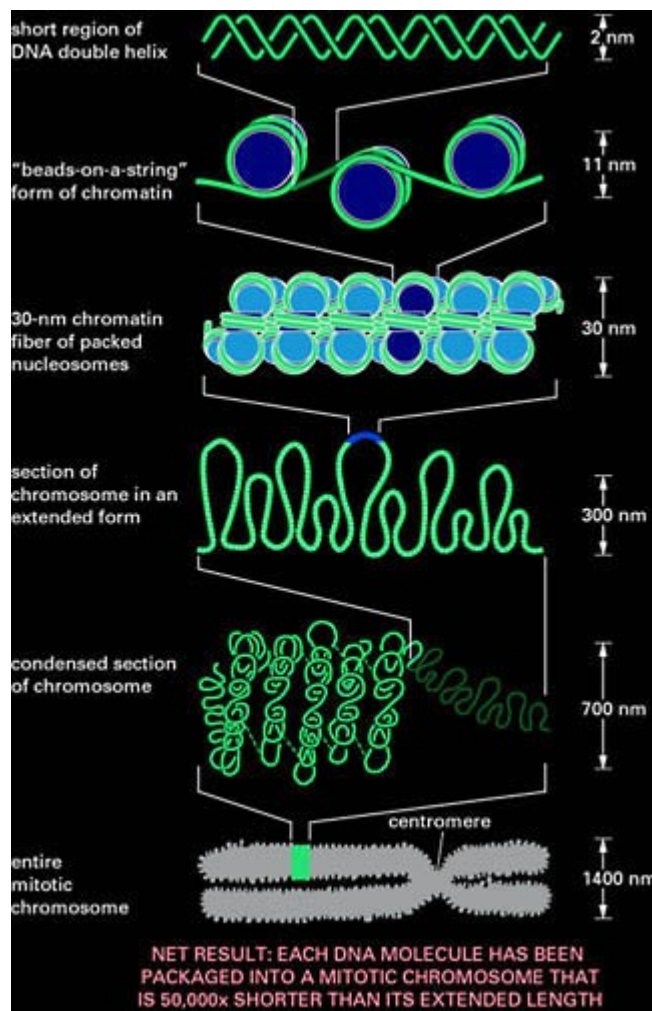


Some excerpts from this important book:

Some biologists describe DNA as an "ancient high biotechnology," containing "over a hundred trillion times as much information by volume as our most sophisticated information storage devices." Could one still speak of technology in these circumstances? Yes, because there is no other word to qualify this duplicable, information-storing molecule. DNA is only ten atoms wide and as such constitutes a sort of ultimate technology: It is organic and so miniturized that it approaches the limits of material existence.

[Shamans](#), meanwhile, claim that the vital principle that animates all living creatures comes

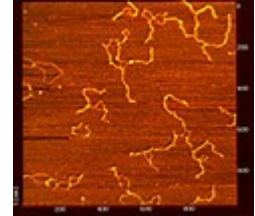
from the cosmos and is *minded*. As [ayahuasquero Pablo Amaringo](#) says: "A plant may not talk, but there is a spirit in it that is conscious, that sees everything, which is the soul of the plant, its essence, what makes it alive." According to Amaringo these spirits are veritable beings, and humans are also filled with them: "Even the hair, the eyes, the ears are full of beings. You see all this when [ayahuasca](#) is strong."



In their visions, shamans take their consciousness down to the molecular level and gain access to information related to DNA, which they call "animate essences" or "spirits." This is where they see double helixes, twisted ladders, and chromosome shapes. This is how shamanic cultures have known for millennia that the vital principle is the same for all living beings, and is shaped like two entwined serpents (or a vine, a

rope, ladder...). DNA is the source of their astonishing botanical and medicinal knowledge, which can be attained only in defocalized and "nonrational" states of consciousness, though its results are empirically verifiable. The myths of these cultures are filled with biological imagery, and the shamans metaphoric explanations correspond quite precisely to the descriptions that biologists are starting to provide.

DNA and the cell-based life it codes for are an extremely sophisticated technology that far surpasses our present-day understanding and that was initially developed elsewhere than on earth—which it radically transformed on its arrival some four billion years ago.



If one stretches out the DNA contained in the nucleus of a human cell, one obtains a two-yard long thread that is only ten atoms wide (and the two ribbons that make up this filament wrap around each other several hundred million times). This thread is a billion times longer than its own width. Relatively speaking, it is as if your little finger stretched from Paris to Los Angeles.

A thread of DNA is much smaller than the visible light humans perceive. Even the most powerful optical microscopes can not reveal it, because DNA is approximately 120 times narrower than the smallest wavelength of visible light.

The nucleus of a cell is equivalent in volume to 2-millionths of a pinhead. The two-yard thread of DNA packs into this minute volume by coiling up endlessly on itself, thereby reconciling *extreme length* and *infinitesimal smallness*, like mythical serpents.

In the early 1980s, thanks to the development of a sophisticated measurement device, a team of scientists demonstrated that the cells of all living beings emit photons at a rate of up to approximately 100 units per second and per square centimeter of surface area. They also showed that DNA was the source of this photon emission.

The wavelength at which DNA emits these photons corresponds exactly to the narrow band of *visible light*: "Its spectral distribution ranges at least from infrared (at about 900 nanometers) to ultraviolet (up to about 200 nanometers)"...DNA emits photons with such regularity that researchers compare the phenomenon to an "ultra-weak laser." (see [History of Biophotonics](#))

Inside the nucleus, DNA coils and uncoils, writhes and wriggles. Scientists often compare the form and movements of this long molecule to those of a snake.

There...is the source of knowledge: [DNA](#), living in



water and emitting photons, like an aquatic dragon spitting fire.



Pregnant by an Anaconda by [Pablo Amaringo](#) from the [Gallery of Usko-Ayar art](#)

The Cosmic Serpent

DNA and the Origins of Knowledge

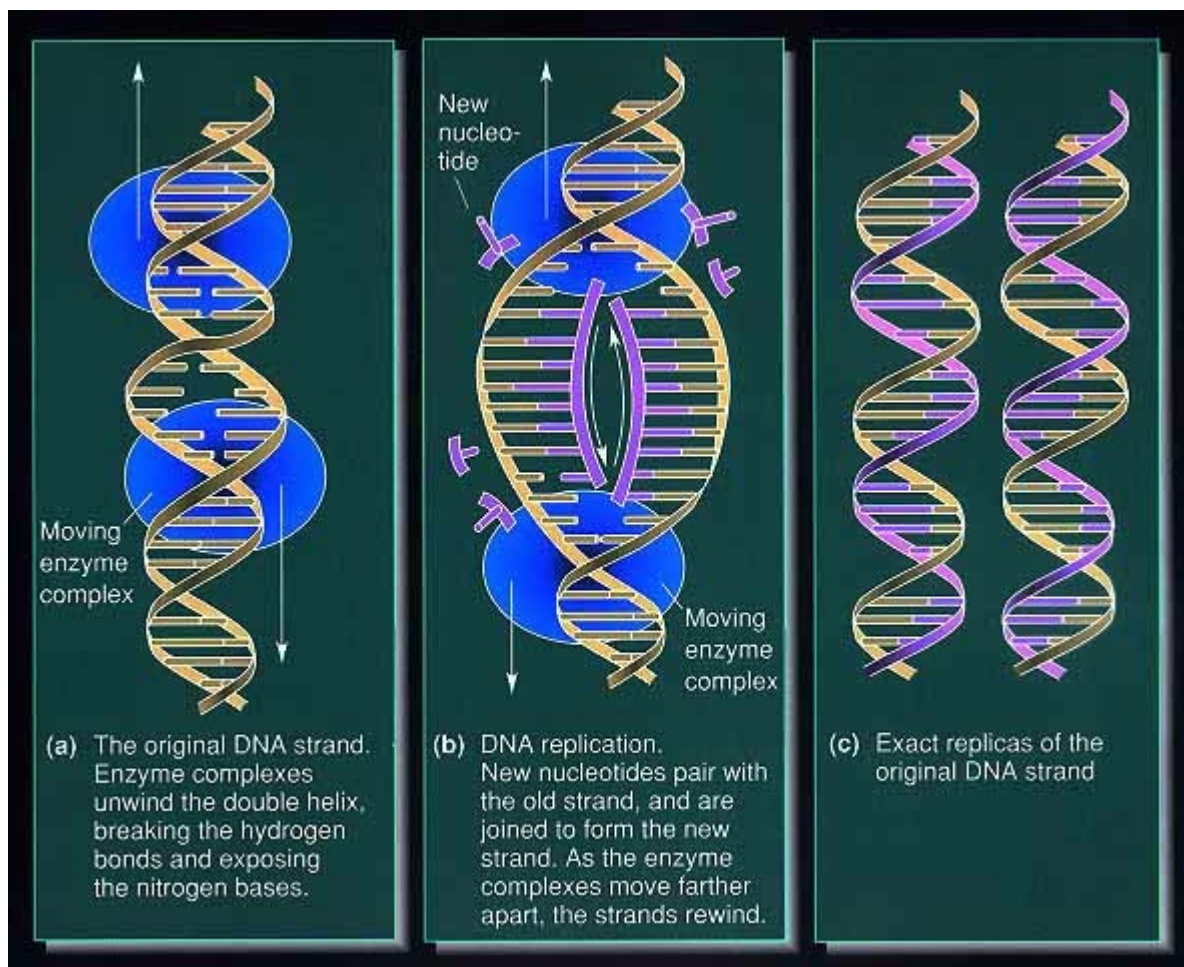
Q&A with Jeremy Narby by Todd Stewart

Could you sum up your book "The Cosmic Serpent, DNA and the Origins of Knowledge"?

Research indicates that shamans access an intelligence, which they say is nature's, and which gives them information that has stunning correspondences with molecular biology.

Your hypothesis of a hidden intelligence contained within the DNA of all living things is interesting. What is this intelligence?

Intelligence comes from the Latin *inter-legere*, to choose between. There seems to be a capacity to make choices operating inside each cell in our body, down to the level of individual proteins and enzymes. [DNA](#) itself is a kind of "text" that functions through a coding system called "genetic code," which is strikingly similar to codes used by human beings. Some enzymes edit the RNA transcript of the DNA text and add new letters to it; any error made during this editing can be fatal to the entire organism; so these enzymes are consistently making the right choices; if they don't, something often goes wrong leading to cancer and other diseases. Cells send one another signals, in the form of proteins and molecules. These signals mean: divide, or don't divide, move, or don't move, kill yourself, or stay alive. Any one cell is listening to hundreds of signals at the same time, and has to integrate them and decide what to do. How this intelligence operates is the question.



DNA has essentially maintained its structure for 3.5 billion years. What role does DNA play in our evolution?

DNA is a single molecule with a double helix structure; it is two complementary versions of the same "text" wrapped around each other; this allows it to unwind and make copies of itself: twins! This twinning mechanism is at the heart of life since it began. Without it, one cell could not become two, and life would not exist. And, from one generation to the next, the DNA text can also be modified, so it allows both constancy and transformation. This means that beings can be the same and not the same. One of the mysteries is what drives the changes in the DNA text in evolution. DNA has apparently been around for billions of years in its current form in virtually all forms of life. The old theory—random accumulation of errors combined with

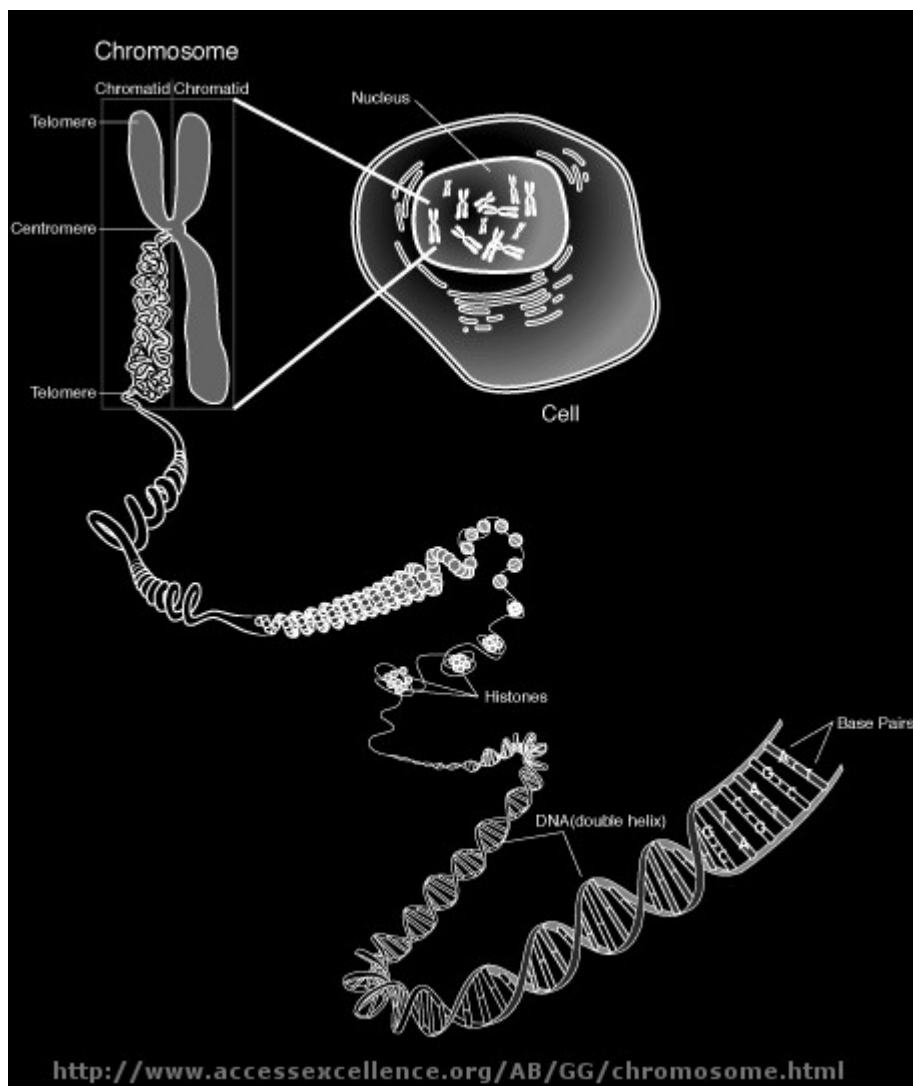
natural selection—does not fully explain the data currently generated by genome sequencing. The question is wide open.

The structure of DNA as we know it is made up of letters and thus has a specific text and language. You could say our bodies are made up of language, yet we assume that speech arises from the mind. How do we access this hidden language?

By studying it. There are several roads to knowledge, including [science](#) and [shamanism](#).

The symbol of the Cosmic Serpent, the snake, is a central theme in your story, and in your research you discover that the snake forms a major part of the symbology across most of the world's traditions and religions. Why is there such a consistent system of natural symbols in the world? Is the world inherently symbolic?

This is the observation that led me to investigate the cosmic serpent. I found the symbol in shamanism all over the world. Why? That's a good question. My hypothesis is that it is connected to the double helix of DNA inside virtually all living beings. And DNA itself is a symbolic [Saussurian](#) code. So, yes, in at least one important way, the living world is inherently symbolic. We are made of living language.



You write of how the ideology of "rational" science, deterministic thought, is and has been quite limiting in its approach to new and alternative scientific theories; it is assumed that "mystery is the enemy." In your book you describe how you had to suspend your judgement, to "defocalize," and in this way gain a deeper insight. Why do you think we are often limited in our rational, linear thought and why are so few willing and able to cross these boundaries?

I don't believe we are. People spend hours each day thinking non-rationally. Our emotional brain treats all the information we receive before our neo-cortex does. Scientists are forever making discoveries as they daydream, take a bath, go for a run, lay in bed, and so on.



Vision of the Snakes

By [Pablo Amaringo](#)
[Gallery of Usko-Ayar Art](#)

What are the correspondences between the Peruvian shamans' findings and microbiology?

Both shamans and molecular biologists agree that there is a hidden unity under the surface of life's diversity; both associate this unity with the double helix shape (or two entwined serpents, a twisted ladder, a spiral staircase, two vines wrapped around each other); both consider that one must deal with this level of reality in order to heal. One can fill a book with correspondences

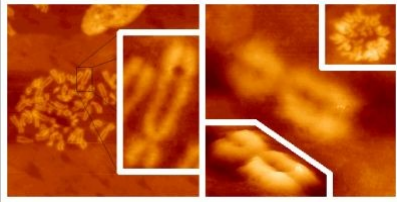
between shamanism and molecular biology.

Do you think there is not only an intelligence based in our DNA but a consciousness as well?

I think we should attend to the words we use. "Consciousness" carries different baggage than "intelligence." Many would define human consciousness as different from, say, animal consciousness, because humans are conscious of being conscious. But how do we know that dolphins don't think about being dolphins? I do not know whether there is a "consciousness" inside our cells; for now, the question seems out of reach; we have a hard enough time understanding our own consciousness—though we use it most of the time. I propose the concept of "intelligence" to describe what proteins and cells do, simply because it makes the data more comprehensible. This concept will require at least a decade or two for biologists to consider and test. Then, we might be able to move along and consider the idea of a "cellular consciousness."

The implications of some of your findings in *The Cosmic Serpent* could be quite large. How do you feel about the book and what it says? Why did you write the book?

I wrote the book because I felt that certain things needed saying. Writing a book is like sending out a message in a bottle: sometimes one gets replies. Judging from the responses, a surprising number of people have got the message loud and clear.




How can shamanism complement modern science?

Most definitions of "science" revolve around the testing of hypotheses. Claude Levi-Strauss showed in his book *The Savage Mind* that human beings have been carefully observing nature and endlessly testing hypotheses for at least ten thousand years. This is how animals and plants

were domesticated. Civilization rests on millennia of Neolithic science. I think the science of shamans can complement modern science by helping make sense of the data it generates. Shamanism is like a reverse camera relative to modern science.

The shamans were very spiritual people. Has any of this affected you? What is spiritual in your life?

I don't use the word "spiritual" to think about my life. I spend my time promoting land titling projects and bilingual education for indigenous people, and thinking about how to move knowledge forward and how to open up understanding between people; I also spend time with my children, and with children in my community (as a soccer coach); and I look after the plants in my garden, without using pesticides and so on. But I do this because I think it needs doing, and because it's all I can do, but not because it's "spiritual." The message I got from shamans was: do what you can for those around you (including plants and animals), but don't make a big deal of it.

Deoxy.org > forum 

Interview Jeremy Narby, part 1 of 4

October 2007 phone interview with Jeremy Narby
By [Izmar Verhage \(www.izmarmusic.com\)](http://www.izmarmusic.com)

October 2007 phone interview with Jeremy Narby
By Izmar Verhage (<http://www.izmarmusic.com>)

I: Alright, so explain to us what ayahuasca is in layman's terms.

J: Ayahuasca is an Amazonian plant mixture that the indigenous people of the Western Amazon concocted centuries ago, if not millennia ago. It is an extremely powerful hallucinogen that tends to unleash all kinds of vivid imagery in the mind, and at the same time constitutes a kind of botanical mystery, in that it is a necessary combination of plants, one of which is a bush that contains a substance called dimethyltryptamine, which is also produced by the central nervous systems of mammals, and in particular by human brains. But this hallucinogenic substance is inactivated by a stomach enzyme called monoamine oxidase. So, you can boil the leaves of the bush and make a tea and drink it, and even though it's full of this dimethyltryptamine, you will not experience any hallucinations or visions.

The people in the Amazon figured out a long time ago that you can combine these leaves with the vine called ayahuasca, which has the same name as the mixture. The bark of this vine contains several substances that inactivate the stomach enzyme, the monoamine oxidase. So they're combining a brain hormone, which is strongly hallucinogenic but orally inactive, with monoamine oxidase inhibitors. This allows the hallucinogenic substances contained in the brew to get through the gut into the blood, and from there up into the brain. So, this is actually a sophisticated designer drug, as one could call it, or plant combination, if you object to the word 'drug'.

What is striking about it when seen like that, is that it is also neurologically compatible. In other words, when you consume ayahuasca, you are not introducing into your brain a substance that is foreign to human chemistry. In fact you are raising the level of a hormone that is already present in the brain. When you take ecstasy for example, the MDMA molecule, it's something that gets into your brain, but that is not part of natural chemistry. As we know, hallucinogenic molecules work like keys that fit into locks. The locks are the receptors on the surface of our brain cells. I think what you get with other, synthetic hallucinogens, is the feeling that your locks have been played around with keys that didn't fit exactly. What is striking with ayahuasca once you've had the experience is that the next day you actually feel better, not worse.

Now, getting away from this kind of scientific understanding, ayahuasca is a very complex thing. I mean, yes, it's a plant brew, it's a shamanic plant brew, it contains hallucinogenic molecules, as we've just discussed, but it's also one of the primary tools for knowing the world in the view of Amazonian indigenous people. From afar you could say: "So what, this bunch of barefoot Indians in the forest they're just hallucinating, and they're crazy enough to believe that hallucinogenic plants are a way of knowing the world," and you can just leave it at that and forget about it. But if you're going to climb down from the pedestal of cultural arrogance and take other cultures seriously, no matter how radically different from our own, on their own terms, what the indigenous people of the Western Amazon say, is that right at the center of how they know about plants, animals, life, the cosmos, you name it, are these shamanic plants.

How do they know anything? Their shamans take these plants, which are not just ayahuasca, but also tobacco and toé and others, and in their visions learn about the essences of life. So one could compare ayahuasca to a microscope. In other words, if you ask a scientist how they know about plants and animals, they'll point you to the biologists, and you'll ask the biologists how they know and they'll point to their microscopes. They say: "This is how we get our knowledge. We work with these tools and we go under the surface of things and we see that all beings are made of cells and that there's a hidden unity under the surface of diversity." Well, that is exactly what Amazonian shamans say. They say: "We take our psychoactive

plants, and then we go under the surface of things, and we see hidden unity below the diversity."

So, ayahuasca is I think very precisely described as a key tool for acquiring knowledge, according to Amazonian epistemology.

I: Did you come across any recreational use among indigenous people?

J: Not really, no. In fact, it's widely considered to be an awe-full (Jeremy's spelling, Izmar) experience. It puts the fear of god in you. Taking serious ayahuasca, or taking ayahuasca seriously, is a scary, somewhat dreadful, albeit ecstatic and life changing experience. I think that most indigenous people, just like anybody else when they actually get to that place in the session where they're going to swallow the brew, have a sense of dread, because you never know just how it's going to happen. You might be confronted with all kinds of demons and fluorescent serpents that scare the pants off you.

I: Getting back to something you said earlier, I find it interesting that you compare ayahuasca to the microscope, as in general it is considered to be a tool for healing.

J: Well, a microscope can be a healing tool. You were asking for a description for a layman. Using the microscope metaphor may be a reduction, as you point out, but it's meant to put the emphasis to somebody who is completely unfamiliar with ayahuasca. The microscope is the basic tool of science, so it has been for the last 350 years. Then there are all kinds of variations on it and disciplines growing out of it. It's the sine qua non of doing inventory science of the living, for all knowledge, including healing knowledge, diagnosis, whatever. I think the analogy is pretty exact with ayahuasca - it's about how you get knowledge. Knowledge about what? Well, about many things, including healing.

To be complete, depending on how much the layman wants to know, one could emphasize the whole purge aspect of it. Before it actually gets into your brain, it gets into your body. It gets into your guts first of all. In the language of the Ashaninca, the indigenous people I lived with, it's called kamarampi, from the word 'kamarank', to vomit. It also contains the word serpent. So, if you ask the Ashaninca 'What is ayahuasca?' in their language the word is serpent vomit. You know, it's a thing that makes you vomit, and see serpents. In fact you can vomit serpents. That's what it is. So it cleans your body effectively, often through both extremities. And meanwhile what they say is that no matter what's going on in your brain and you may be hallucinating this or that, meanwhile the ayahuasca is going to places in your body where you have energy blockages, trauma or illness and bringing healing light, unblocking arteries, things like that. They say that the purge itself cleans the mind, but it also cleans the body.

To be really complete, and not too western... I mean, the point is that westerners are among the least sophisticated people in the world when it comes to knowing how to use plant hallucinogens, for historical reasons. The people in the Amazon who have been using these plants for millennia, and who have not been interrupted, or not too badly, by monotheism and conquistadors and what have you, they have been keeping a deep shamanic tradition going, uninterrupted, in the rainforest for a very long time. To illustrate how they consider ayahuasca, it doesn't come into anybody's mind to drink ayahuasca and to remain silent. In other words, the songs that the ayahuasca shaman sings are fifty percent of the experience.

The songs can heal, the songs help communicate with the entities that the shaman perceives inside your body and around us, the songs can guide our minds as we're having visions, the songs themselves are also tools for knowing.

I: You're talking about what are generally called icaros, right?

J: That's right. And this is where the microscope analogy breaks down. It may be a central tool for knowing the world, but ayahuasca is not a microscope. It is a plant mixture that gives visions, but getting knowledge from ayahuasca visions involves more than just swallowing ayahuasca. You know, it's a profession called shamanism, and that profession centers around music in fact.

I: Yeah, just getting visions seems already a hard task for many.

J: Yes, having visions is a talent. Some people have it naturally, they don't have to do anything and they see a lot of stuff, and other people are just out of luck. It's like being tone-deaf or something. Once again the analogy with music works. People are born with musical talent, but you can also enhance your musical talent by practicing. But some people are born tone-deaf and they'll never play the piano well.

I: On a totally different note, what do you make of the notion that the brain seems to block DMT once it has entered?

J: What do you mean? When you smoke DMT?

Because that's one of the striking things. The difference between DMT as a smoked substance and DMT as something that gets into your brain via ayahuasca, is that with ayahuasca the experience lasts 3 hours, and with DMT it's more like 3 minutes.

I: I meant something else. A common fact is how easily the blood-brain-barrier lets DMT through into the brain. Nevertheless, once it's in there, the brain seems to prevent more DMT from entering it.

J: I don't know about this, so I can't comment on it, I'm sorry.

I: Okay, so this was for the layman. How about another description, this time geared towards people with various psychedelic experiences, perhaps including smoked DMT, but not oral DMT.

J: Let me think about that for a second... Well, I have dabbled with different experiences, including smoking DMT, and taking LSD, and psilocybe mushrooms, and so forth, although I certainly don't claim to have an encyclopedic experience. Moreover, at this point in my life I'm just not really interested in anything other than plants, like ayahuasca, psilocybin and hemp, and also of course wine and tobacco. The thing that is striking about ayahuasca is that the experience is not like a kind of film on another planet, as smoked DMT can be. [Izmar laughs] It's very organic. You have the impression of being touched with an old wise intelligence.

I: Impression...?

J: Well, we are in the realm of hallucinations. You have no material proof of anything that you experience or feel. At least, that's how it is for me. I go into ayahuasca sessions with a question about my life, or about how to write a book, or something like that. It's like being in the presence of a very wise, old master, and you just climbed the mountain, and then suddenly you're imparted with these films about yourself, about the path you're on. Often you come across as being pretty stupid in your little life. You know, when you're in the presence of the master you know you're pretty stupid and you're kind of self-centered and you have your little things. But, as you receive that information, even when it's information that you don't want to hear because it's kind of painful, you know it's real. You really know at the moment, and you know the next day, and you know for the next twelve months that what you saw is real.

It's like going to a really good psychologist or psycho-analyst. You spill your beans, and then this wise psychologist says "Well, listen, you could look at it like this," and you think about it and you say "Yeah, that's right, I hadn't thought about it." And it can be more complicated, and ayahuasca has been called the worst of liars, and you have to learn to make a difference between insights and your own projections... You know, nothing is simple. But, getting back to your question, I think good quality ayahuasca administered by a talented ayahuasquero can take you into a place of organic vision. I think this is a biological hallucinogen. It has the intelligence of life in it, the correctness, the ethics even.

I: What do you think is striking about ayahuasca in comparison to the classic psychedelics, such as LSD?

J: Well... as usual, this is very complex. Low dose LSD is something completely different from high dose LSD. I've had, I guess, relatively high dose LSD experiences that are weird. They're kind of, as Terence McKenna called them, psycho-analytically grating.

I: Psycho-analytically what? [This was a phone interview with not the best of reception]

J: Grating, like a cheese-grater. You know, grate, when you take Parmesan cheese and you grate it...?

I: Ah... that grate.

J: Great.

I: [laughs] Great...

J: Psychoanalytically grating.

I: Yes, taking bits off, and disassembling...

J: Yes. My experience has been: if you take strong LSD with regularity, you suddenly find that you're not on the same wavelength as most people most of the time anymore. And it takes a while to get back to "normal". Meanwhile this other place you're in is more weird than it is organic. You have to get back to a place where you feel like at ease with yourself, and with others and with society and so forth. You've been jolted.

I have found, I mean I don't think that everybody's going to find this, but once again I'm answering your question as in what I find striking about it, I have found that ayahuasca takes

you close to death. That's what aya-huasca means in Quechua. The etymology of ayahuasca is 'vine of the dead', it takes you close to the dead, the spirits, to contemplating your own death, that kind of experience - by no means entertainment. And then it brings you back to life, you feel happy to be alive. You feel a desire to be close with people, help people, you feel a desire to be close to nature. It doesn't push you away from society and people and other beings, but it brings you closer and deeper.

I don't think it's guaranteed that it's always going to do this for all people, but if you read the book 'The Antipodes of the Mind' by Benny Shanon, who has interviewed, classified, and categorized the ayahuasca experiences of several hundred people, these things that I'm talking about are fairly common.

I think it's interesting that the vine-mixture of the Amazonians somehow is more real than the synthetic stuff. I have not taken ketamine, but I've spoken with people who have taken ketamine and who are enthusiastic about it, and they say they go to parallel worlds somewhere out in the cosmos and so forth. But then when you say "So, what's it like? What can you bring back from that world?" they start talking what sounds like gibberish. This doesn't mean they don't go to parallel worlds and that those worlds don't exist in some dimension, but it certainly means that coming back and living down here and making sense down here, downloading something from that level, is really hard, whereas with ayahuasca, to me it's usually easy. It's like this swift organic thing, it takes you over to the other side into this sort of scary realm of visions, entities, plants that talk, dead people, whatever. In indigenous Amazonian terms it is the tool that allows you to get over the species barrier; you can actually talk with plants and animals in your visions. And then you come back the next day, you're back in your body, the plants stopped talking to you, but you've had conversations with them all night. You know they're sentient beings, you know that in normal consciousness there's this barrier between you and the other species, but you've experienced transcending it.

So you may talk a little gibberish and you may go and see your friends in the big city and say you were talking with trees all night and they'll think you're a little bit nuts. But in fact, once you learn to be a bit discreet with what you experienced, still this is not going to take away your experience of having communicated with plants. Next time you go for a walk in the park, you'll look more fondly at the grass you're walking on. That's a good thing.

I: How would you compare ayahuasca with ayahuasca analogues, such as the combination of syrian rue with jurema?

J: I have no experience with it, I have not taken ayahuasca analogues.

I: But the DMT you've smoked, it came from jurema or what?

J: I think that the DMT that I've smoked was synthetic DMT. When I smoked DMT, the next thing I know I was on this sort of Felix the Cat planet. Everything was yellow, there were these sort of little munchkin entities chanting in a sort of merry-go-round. Then after about a minute the light started fading, the colors went from yellow to red to brown, and then it was over!

That's my trip report, and my comment is "So what?" What did I learn from that? Maybe there is a planet somewhere, the Felix the Cat Yellow Planet where everybody's chanting and singing, but, you know, for the moment I don't have much use for it.

I: I do, actually.

J: Oh okay, tell me.

I: For me the crazy entities tend to be metaphorical images of parts of myself. The entities I have seen were actually telling something about me that was very deep. I knew what they were talking about, and I was listening to one of the songs I made, and they were commenting on it. They actually represented one of the deepest parts of my heart, saying all these things that you know deep down inside, but that are very hard to admit and bring into practice in everyday life.

J: Well, that's extremely interesting, and it also casts some light on my Felix the Cat Planet. I hadn't thought of it like that. If that's the case, then one difference between ayahuasca and smoked DMT is that ayahuasca definitely shows you a lot of stuff that is outside of you. It shows you about plants, animals, other people, your life from above, but it can also show things inside you.

I: Yes, perhaps the smoked DMT experience is simply too short to reach such a stage. By the time you've worked through all your inner stuff and you're ready to go deeper, the effect has worn off.

J: Another thing that Benny Shanon says that is interesting, also when trying to get an idea of what ayahuasca is is that in his experience, and in that of many other people, ayahuasca is like a school. Your first session is lesson number one, session number two is lesson number two, etc. Then there are semesters. You note that once you've done 30 sessions and you look back, the first ten sessions were like the first semester, and so on. You do a 120 sessions, like Benny Shanon has done, and you're getting close to your doctorate. The point is, in lesson 89 you don't learn about stuff that you've learned about in the first 88 lessons. It always goes further and deeper. The third semester builds on the first two semesters, etc.

I: Did you ever drink only Banisteriopsis caapi?

J: No.... Actually, the reason I'm in this field at all, is that I'm an anthropologist and activist for the rights of indigenous people, and in particular western Amazonian people. My experience as an anthropologist in the place that I've mainly been working for the last 23 years, is the central jungle area of the Peruvian Amazon, this is Ashaninca, Shipibo, this is like the Bordeaux of ayahuasca. This is ayahuasca which is Banisteriopsis caapi combined Psychotria viridis, and perhaps some additives, maybe a leave or two of toé, datura, maybe some tobacco, maybe some coca, depending on the brewer. There's always Banisteriopsis and Psychotria in this area. And I must say it's by far the ayahuasca I prefer.

I: So you've tried another one?

J: I've been in the lower jungle, where Psychotria doesn't grow. They use Diplopterys cabrerana as the source of DMT. I find that a lot more vomitive, and it's definitely more difficult to prepare. I've had some very deep and visionary ayahuasca produced with Diplopterys cabrerana, but the point is that the indigenous people of the Peruvian Amazon don't prepare just pure Banisteriopsis, to my knowledge. I've heard of this in the Colombian Amazon, but I haven't been there.

[We're both silent and pondering]

J: There's a thing I think that needs pointing out, and once again Benny Shanon does it quite well, and there's no point in not repeating something that seems important and correct. Ayahuasca usage takes you to an understanding that contradicts certain important presuppositions of western academic culture and knowledge. Integrating ayahuasca into a western existence is complicated.

I: Yes, that's true. I was just going to pose some questions around this. It seems like a lot of the hard work in this area is being performed by young, western people who want to have these experiences they've read and heard about. They're usually taking it by themselves, or in groups of people who share similar experience with these things, which is usually quite little. Do you think this is safe, or would you suggest a guide or something else?

J: Well, that's a complicated question for many reasons. I mean, I don't think life is safe. I think the whole obsession with safety in western culture is becoming disgraceful. However, I am for people being fully informed before they make their decision. I am for, what's it called..., safety belts in automobiles. It's better when people don't die when they have car accidents, obviously. It's true, ayahuasca is a power tool. I think it could be compared to a power outboard motor boat, and you go riding on the high seas of your psyche. Yes, it can be dangerous. I have no advice to give anybody, just because I'm not in the game of dishing out advice. I think the world is beyond taking advice.

That has to be made clear. People do what they do and there's no stopping them anyway. You can't tell people to do things and hope they are going to listen to you. Essentially anybody is welcome to do whatever they want, as long as they don't harm other people. However, if people are actually seeking advice and saying "Well look, I don't really know about how to do this, what would you recommend?" what I would recommend is the following.

Make a quest out of it, go to South America. Yes, you're going to have to work and make some money and buy a plane ticket, yes, I think we should pay ayahuasca shamans appropriately, because I think they're more efficient than western psycho-analysts or psychologists, so why shouldn't they deserve at least half of what a western psychologist gets? Yes, half of the experience is the singing of the shaman. I don't know any western shaman that I'd like to take ayahuasca with. I think I'd always prefer to do it with an indigenous practitioner, just because they're more experienced.

The ideal way of doing it is in a place where it's part of the culture, with a practitioner who knows how to brew it properly and who knows how to administer it properly. And then it's not for entertainment and it's good to go into it with a question. That's what my advice would be.

I: But do you think this can go on forever? I mean, all these planes that keep flying...

J: Well, if you want you can take a boat.

I: To me it doesn't feel very likely that this is technically possible, that within the next couple of years just everyone who wants to drink ayahuasca can go to the rainforest.

J: You may be speaking out of Holland where it's legal. Everywhere else it's illegal, even in

Switzerland. So, I wouldn't want to advise anybody to do anything illegal. If the question is "It is legal in Holland to drink ayahuasca, I don't want to get on an airplane to go to South America, and I do want to try ayahuasca, what do you recommend?", and this is another question, what I would recommend at that point is choosing the right shaman, once again. I think it's good to be well-accompanied, it's like this supersonic hallucinogen and you're a passenger. Knowing how to pilot that supersonic hallucinogen is a profession and it takes years to get good at it. Sure, you can take it by yourself, and that's the risk you're taking, but my advice once again to a lay person who's seeking to do ayahuasca for the first time, is do it with a shaman who knows how to prepare it well and who knows how to administer it well.

Do you want to think about cleaning your body? This means not eating a lot of fatty food, a lot of salty food and so forth during the week leading up to the session. That's like, you clean yourself of the fat and salt, just like you would clean your windscreen if you go driving up in the high Alps, just so you can see the view better. Some people go for a drive across Switzerland and they forget to clean their windshields. They still make it across the country, but it's just less interesting.

Yes, it's deep water. I don't think you can tell anybody that ayahuasca is not risky. It *is* risky. Even if it's good ayahuasca and well-administered and you've prepared your body well. Some people are, let's say, more sensitive than others. Even without being borderline schizophrenics, they can be extremely imprinted by the experience. I know of one anthropology student who was studying with the Shipibo. She had a hard time shutting off her visions for eighteen months. Once she got back to Paris, she says that she'd lie down in the late afternoon and she'd be submerged with hallucinogenic imagery again, and it was like a TV set that wouldn't shut off. It completely changed her life. She says she doesn't regret it. After eighteen months she got back to stability, and she decided to study healing once she'd finished her doctorate in anthropology, which she did brilliantly at. She's back in Peru now, she's taking ayahuasca again, she's well, she's a luminous and smart person. But still, eighteen months without being able to turn the TV off is rough.

Another thing, I have a friend of a friend here in Switzerland. This is another kind of thing that can happen. This guy didn't know what ayahuasca was, hadn't heard of it. A friend said "There is this European fellow who lives in Peru, he's going to be here in Switzerland, up in a chalet in the Alps, tomorrow night, and if you want you can come and experience ayahuasca." The guy thought it was something like smoking a joint, and so he went up with his friends and he swallowed this stuff. To cut a long story short, he experienced his death for hours. It completely changed his worldview, he says. He was enraged, because he didn't want his worldview to be changed. He thought it was a scandal that he hadn't been informed of this beforehand. It took him a year to get over his rage. The fellow has since gone on to take ayahuasca again, and moved on, but I think the point is well-taken.

It's not just a neutral thing where you invite somebody along and they experience it and it will take them into a strange place and then the next day things will get back to normal again. It can modify your way of looking at the world. Until you drink it, you can't know how it's going to affect you. You can't know if it's going to take you to a place that you're going to have a hard time getting back from. You are putting your psyche at risk when you take strong hallucinogens, and ayahuasca is one, even if it's biological. Actually advising anybody to do anything is risky. I think the advice is: be aware of the risk, inform yourself, read books and think about it. I think the advice with any hallucinogen is, if you have a little voice in your head telling you "Oh, but today is maybe not the right moment," listen to it.

I: Hmm... In general.

J: Yeah, that's true with LSD. If all your friends are going to take LSD, but a little voice in your head says "Um... I'm not sure if I want to do this", it's old hippie advice, listen to that voice.

I: Well, I don't want to fully disagree, but I know that in my case this voice can also be caused by something else. Sometimes I have this voice saying "Maybe this is not a good day", but there would be another voice going "Yeah... It's never a good day" and then you turn out never using these substances for a long time, while you know they can be beneficial for your life.

J: Well, yes, I see your point of view, but I think when one is in the business of advising people, one should air on the prudent side. So what, you end up spending yours not taking hallucinogens. If that's what your little voice is saying, then that's your decision. And then when you finally get to the point where you can't stand not taking them anymore, then you are ready to take them. But, who am I to say that you should or should not do this? Only you know, so listen to yourself.

Meanwhile about bad trips, I know what you are saying when you say you don't really think they exist, but for me it was pretty clear, when you take some LSD and the next thing you know you're sort of bummed out in a corner having weird thoughts about yourself, and you're panicking and you're thinking about your parents or whatever, and you think somebody has died, you know, it ceases to be an enjoyable experience. And suddenly you're sort of not well at all and in a difficult place. I've been there a bunch of times, I know some other people who have been there a bunch of times, I have learned how to accompany people who are in that kind of place, and, yes, it's true that often the so-called bad trips are the ones that teach you the most about yourself, that's true. And in that sense they're not bad. And I think a lot of people have said this. But still, I think doing away with the concept of bad trip is a mistake, if only because when something like a bad trip occurs, if we don't have the concept, what are we gonna call them?

You know, I had a friend who loved taking psilocybin mushrooms, and one day she had a girlfriend come over and this other guy, and they took, well, too many mushrooms. And the next thing, the two girls, who were about 18 or 19 at this point, had developed a certainty that the guys was the devil and was going to murder them. And then they started hallucinating pools of blood, and all kinds of stuff. So, you know, they had a sort of psychotic reaction or whatever - paranoia, bad hallucinations, it was a bad trip by however you wanna call it.

They came down from it and back from it and so on, but they said that for years after this, whenever they ran into this guy, who was guilty of nothing, except having a sort of a sinister gaze or something, you know, with his pupils all dilated. They said it took them years to be able to feel at ease in this guy's presence again. So it was a deeply traumatic, bad trip.

I: And she was already experienced with mushrooms?

J: She'd taken mushrooms seven or eight times and thought that they were just fantastic. And she would go to Bilbo the Hobbit-world and laugh all night long. After this bad experience she stopped taking mushrooms for fifteen years. But also, not just that, it also messed up this relationship with this other guy, even though it was based on hallucinations. I'm not sure that

that experience, which was just frankly traumatic for her, was something that was particularly full of knowledge for her life.

I: I think if she would have taken with a shaman, and it would've happened when under the influence of ayahuasca...

J: ...and he would've looked after her and accompanied her and she wouldn't have been on that trip... That's the whole point.

I: Yes. She would probably have gotten to the point where she would understand why she got these feelings about this other person.

J: Yes. Getting back to the thing that you were saying about advising people and the risk and not the risk - people of my age, I'm forty-seven, there were millions of us back when we were 17, 18, 19 and so on. We were taking LSD without supervision, without shamans around us, without knowing what we were doing, we did some stupid things. We went to rock festivals under the influence into big crowds, we had paranoia, we made all the mistakes in the book. And there was nobody advising us. So there was no space in the culture, or even the published counterculture, that would really tell you about the risks. So we had to discover them on our own, take the risks, have the weird trips and the difficulties, and learn by making mistakes, and essentially that's what got us to where we are now.

Those are experiences that led me to be able to understand the knowledge of indigenous Amazonian people a lot better when I was an anthropologist, but these psychedelic experiences have also enhanced people working in the computer industry, or in medical research, or all kinds of areas. So the fact is, that the folks who are 45 and older, are part of that generation. If we're going to turn around and say, now that we're getting grey hair "Oh, the young people should not experiment", in other words "The young people should not do what we did," that would just be ridiculous on the face of it.

This is not to say that I want to encourage young people to go out and make all the mistakes I made, and you can actually read things and learn by reading an interview, and thinking "Yeah, maybe it's not a good idea to operate an automobile while under the influence of hallucinogens." That's one of the things about the ayahuasca circle. The rules of the ayahuasca circle is that once you've swallowed the drink, they shortly turn the lights off and then what happens is between the shaman's song and your own brain. Ayahuasca etiquette is you're not supposed to bother your neighbours. And if your neighbour starts moaning or whatever, the shaman is going to look after them.

So this is an experience to be conducted in a quiet, secluded place, in the dark, and the point is not to commune too much with your neighbours. It's each for his or her own, it's a very personal thing, in fact. That's how you do it seriously, you dive into inner space and if you come in it takes you to outer space. So this is not about getting in the car and driving off to a rock festival. It has nothing to do with it.

I: Okay, now about the phrase 'ecodelic'. I don't remember where I first picked it up, but I do remember that it immediately made sense to me, that it means it manifests your ecological awareness. I want to start using it a lot more often, and ayahuasca is definitely an ecodelic. In certain ayahuasca circles, this brings up a certain paradox.

Many people in the west are drinking ayahuasca that is made from Latin American plants, and usually nobody knows where it really came from, how it was harvested. There's hardly any information about it, like with the normal food industry. I see a lot of people here in Amsterdam, or the Netherlands, drinking ayahuasca every now and then, and a lot of them are environmentally conscious. But then they do drink these vines and leaves of which they don't really know where it came from. What do you think of this?

J: It seems to make sense that the more you know where each thing that you consume and ingest comes from the better. However, for example, I like wine from Bordeaux. I like tasting them, I like experiencing them, I like the drunkenness that they bring about. I don't necessarily know the grape varietal of every single bottle of Bordeaux wine that I drink. Nor do I know exactly in what condition the grapes were harvested, or how they were vinified. Finally, do I need to know that or can I just taste the quality on my pallet? Actually, if I had to know everything there is to know about every bottle wine I drink, I wonder if there would be enough room in my head for other knowledge.

I'm joking. But what I mean is: does one really have to be a purist all the time and say "If you don't know what you're ingesting, then you shouldn't ingest it"? Well, I think clearly not.

But, the advice about "Know as much as you can about what you ingest", yes, obviously. It's true with cheese, it's true with wine, it's true with ayahuasca. It's true with chocolate for goodness sake. You know, for example "shade-grown in the Putumayo valley, harvested in 2005 by Don Ignacio and prepared with a little bit of tobacco" and so on and so forth. I think that the first thing to do if you are for example in South America and you go to one of these places where they're going to be serving ayahuasca, is to speak with the person who prepared it and say "Well, what did you put in it, how long did you boil it, where did the plants come from, in what pot did you make it?" And a key question to ask folks is "How much Datura did you put in it?"

There are all kinds of problematic aspects with Datura, because it can enhance the ayahuasca imagery and make the brew more potent. But it can also turn people into willing victims. And ayahuasca certainly takes your defenses down, and if you're in the presence of somebody less than scrupulous, and there is extra Datura in the brew, it makes you extra vulnerable to suggestion and to actually doing what this person wants you to do.

I: Have you heard stories of this during your travels?

J: Well, there's published literature on this stuff. There is a criminal use of Datura in Colombia, it's called burundanga. Datura-extracts are sprayed on people and they become willing victims. People are told to go home and get their money, get their jewelry, bring them back and give them to the person, go down to the bank, empty their bank accounts, and then these people end up 3 or 4 hours later, dazed and confused, they get taken to a hospital and their blood is tested and they find scopolamine in it. That's how they know. It erases their memory completely. People do not remember the incident. But in fact what they did was, they emptied their bank accounts and their homes, and gave the stuff away to criminals. It's like... what's that stuff called... the rapist drug...

I: GHB?

J: GHB.

I: For how long has this been happening?

J: This was published in 1999.

[some pondering on both sides]

J: So, I think it's just basic intelligence to kick the tires on the ayahuasca you drink.

I: ... to what the tires...?

J: Kick the tires. When you buy a second-hand car, you kick the tires, you know.

I: I see...

J: Kicking the tires on ayahuasca is: Who brewed it? How did they brew it? Better yet - show me how you brew it. Did they spend hours quietly singing to the brew and blowing tobacco on it, or did they sort of do a brutish job and charge it with too much datura?

I: How often did you drink ayahuasca?

J: About 30 times.

I: And the people who prepared it would let you look at how they brew it?

J: Yes.

I: There was no problem whatsoever...?

J: Not as far as I'm concerned. But that doesn't mean that you can show up anywhere and say "Brew some ayahuasca for me."

I: Of course not. But it's also not like they're trying to keep some kind of secret, right?

J: Oh, on the contrary. I think it's become clear in the last 20 years to a lot of people in the Amazon that it is important for Westerners to understand ayahuasca. It used to be the sort of secret that we can't reveal. If only because of the conquistadores and the priests. The priests said "This is devil's stuff" so it went kind of underground, and whenever a gringo would come around asking about ayahuasca, often people would say "We don't do that anymore." It was not true, it was just a way of protecting themselves.

Now, as of the 1980's, that kind of Christian pressure has somewhat subsided, in some areas in any case. And as indigenous people have found a political voice, they're defending not just their territories, but also their systems of knowledge. They say "This is how we know the world. We want our knowledge and our ways of knowing to be taken seriously. We consider plants and animals as living beings and we can communicate with them in our visions. We think that science needs to understand this, if we're going to survive. If the Western world continues not taking us seriously, we will die." I've been told this by indigenous shamans. They said "You're an anthropologist and you want to know about ayahuasca, well, good. Go and tell people, go and explain to people in your country it's important for people to

understand this. It's important for our survival that people in your country understand how we know things."

I: Have you heard of tribes that are still more secluded, in the way that they want to keep ayahuasca for themselves?

J: Yeah. The Amazon is a huge place with hundreds of different cultures, and even within one culture it's not like 'the Ashaninca'. Obviously the people who are hiding, you don't hear from them much.

I: That sounds reasonable.

J: I know an Ashaninca healer, I have described him in my latest book. He's opened up a healing center, for plant medicines, not just ayahuasca, all plants. His view is that he's open for business to teach anybody who's part of humanity who wants to learn about it. This is a 21st century Ashaninca shaman. He's an individual, not acting in the name of a tribe or the community or whatever, and that's his point of view. He wants to be consulted. He thinks he's got an important knowledge, he wants that knowledge to survive, he wants to share it, and he wants to be taken seriously. Just like anybody else, just like anybody who's got a website [Jeremy is referring to me, Izmar]. He's got a website.

I: Getting back to the ecodelic effects of ayahuasca - how do you think this is brought about?

J: There we get back to the wise Chinese entity on the top of the mountain I was talking about. I think we're getting pretty close to the mystery of life at this point. Let's look at 4 billion years of evolutionary life, all the plants, all the animals, all their transformations, that we are fully a part of, and that we eat and walk on and so on. I think that life itself does have an intelligence, a mischievous spirit. It loves diversity, it loves to hide, it loves to be double and single at the same time, etcetera. It's fundamentally ambiguous, it doesn't like to be pinned down, and so on. Nevertheless, it's there. How do you know? Because you can feel it, because it's dancing around inside your brain right now. We couldn't have brains wired the way they're wired if what I'm saying right now weren't true.

So when you go inside your brain-mind, enhanced with ayahuasca, what actually happens, how are you actually put in touch with what seems like an independent intelligence, independent from your own? Once again, Benny Shanon and his main informants confirmed that one of the striking things is that it just doesn't feel like the intelligences you're talking with are somehow part of your subconscious. It invariably feels like you're communicating with external or outside intelligences. Somehow it seems to plunge you into the worldwide web which is intelligent, and which is inside you and outside you, and it's in all of life.

I: The matrix. The grid.

J: Something like that. But how it does that... We don't even know how our brain works in normal consciousness. We don't know how we see the table in front of our eyes in fact. We know part of the pathway, but how the brain recreates a three-dimensional color image that seems to be exact according to our other senses, that is probably inside our skull, but it looks like it's outside, how the brain does that is just not known.

I: Are you saying this out of respect towards what science knows about this?

J: No, I'm saying it on the basis of what is knowable now. What we know about how our brain knows is pretty limited.

I: But if you take something like ayahuasca, suddenly all kinds of things related to this...

J: Well, more research is needed, and I think drinking ayahuasca to study how the brain works is a good idea. I don't think it's been done much yet. You're saying "What actually happens in the brain when you get eco-knowledge via ayahuasca?" My point is: We don't even know what happens in the brain when we get any kind of knowledge from the outside world.

I: Maybe not in the brain, but in a general sense, on the emotional plane, I think we know quite a lot about.

J: The emotional plane is a good question, but you note that we're already into something that is pretty non-material, and pretty invisible. Where materialist knowledge stops when it comes to emotions, is kind of like with neuronal activity. If you want to say "Okay, let's not deal with our brains and our central nervous systems, let's just talk about emotions and feelings." You can certainly do that, and I think it's a good idea. Once again, Benny Shanon points out: If somebody plays the piano and plays a Bach sonata, understanding that music is not going to be attained by studying the physics of the piano chords. So, just what goes on in the mind, and what goes on in particular when we hallucinate, is not going to be elucidated by studying the activity of neurons. You can't reduce the mind to the brain. I think that's pretty clear.

Just what is going at the emotional level, I think this is where the knowledge of indigenous people is interesting, because you can say "Perhaps Western knowledge for the moment has not really gone down this path much, it doesn't have much to say about it. What do these other people say about it?" They've been using these tools for a long time. What do they say? I think what Amazonian people say, is that in normal consciousness we have a barrier between us and other species. The ayahuasca, the tobacco, the shamanic plants, allow us to be spirits and go into the world of other spirits, leaving behind the barriers of the human body-mind, and communicating with other species. Not in English, but in the realm of visionary consciousness. So you learn about the point of view of a tree or a jaguar, or an ant, and in your mind you can enter into the mind or the body of an ant and for several hours experience that. What is actually happening is a shifting of perspective. You cease momentarily to have the perspective of somebody locked into a human body. It's like your soul leaves your body - this is what Amazonians say. The soul of the shaman leaves his body and goes and lodges itself in the body of a jaguar for example. And then the shaman's mind wanders around the forest in the body of a jaguar for a bunch of hours, and then comes back, to the shaman's body, which meanwhile has been lying in the darkness all night.

Check out this self-note I wrote over a year ago:

Sunday 25-6-2006 21:35

About 30 minutes ago I was outside on a bench smoking a pipe [no tobacco admixed]. By accurately studying the effects of the cannabinoids from the moment they came up, I came upon a metaphysical theory concerning the phenomenon 'perception', and as well a theory about 'perception in relation to wellbeing'.

When somebody contemplates about a block in his/her development, or an obstacle for

wellbeing, it can occur that it is experienced that the block is not considered a block any longer, because the consciousness in question experiences detailed emotions of a possible future identity without the concerned block. The power of imagination is strong enough to adjust the actual position of the soul within the matrix of infinite dimensional properties. Just like somebody gets goose bumps by solely imagining a person scratching his nails on a blackboard, in the same way the proper fantasy can enable someone to emotionally experience a possible future identity. What will happen later on in reality depends on other elements of life. For example, when somebody is already high on the scale of self-realization, it is more usual that fear is causing the actual block. This as opposed to earlier stages, whereby the state of mind is one of conviction of the block being comprised of the person's financial situation, creativity, physical limitations, or other such more concrete, direct circumstances. These and other factors influence the person's direction - whether he's going to leave his current identity in order to live in the reality in which he expresses the new position of the soul, or not.

Moreover, this theory about the soul is also trying to imply it is actually comprised of a dynamic array of consciousness, ever-changing, featuring the ability to spread itself out over multiple lumps of 3-dimensional matter (read: multiple concentrational areas of roughly the same wavelength of elementary vibrational particles, all in the spectrum of physical matter). An example of this is when you image what it's like to be a certain person, or plant or animal, trying to grasp how it would be to experience such a life. What happens is that you temporarily move, or connect, a part of your soul to the lump of 3-dimensional matter that is not your own body, but that of for example a grizzly bear. He who has the ability to let himself go in this process, actually loses awareness of his own body, and fully experiences the perception and knowledge of the grizzly bear. The intensity and omni-dimensionality of the borrowed awareness depends on the imagination of the person who's making the journey. During this process thought patterns, electrical currents, are emitted from the traveler's body, sometimes actually modifying the perception of reality of other sentient beings (which we now know to be everything in existence, including so-called inert matter such as rocks).

He who spends enough time in the consciousness of another body or imaginary identity is able to realize/bring into being certain elements of this consciousness. For example, when somebody is afraid of the dark, it helps to fantasize about how it would be to be somebody who is not afraid of the dark. This causes someone to realize that it's really time for a change. It is not necessary anymore to be afraid of the dark, because it is known which other views or positions of the soul are available.

I: Have you tried Salvia divinorum? Because what you describe is like the basic theory that I have about what Salvia does.

J: I haven't tried it, no.

I: It seems to do exactly this - the shifting of your consciousness to another form of being. It goes to less sentient heaps of molecules as well, such as a brick in the wall, or a leg of the table. That might be interesting for you.

J: Sure. It's true, I am pre-occupied with... I think it's always important to make the difference between what is known and what is speculation and what shamans say and what scientists say. Soul is not a concept science deals with. The same is true with spirit.

It's true that biological science tends to deal with bio-molecules, until it stops at the level of proteins and DNA-molecules, and simplifying. There is kind of an ontological indeterminacy about spirit. It cannot be proved to exist, nor can it be proved not to exist.

Actually, the intercultural diplomatic jury is out still on spirits and souls. That's okay, I think it's good to live with indeterminacy. It's good when you know that you don't know, and it's good to say "Look, I know this, but I think that from here on it's speculation. We lack the concepts, we haven't thought about it yet." That's why I'm careful to say "Science may not have much to say about this for the moment," but that's why it's interesting to turn to indigenous people, to come up with some other concepts or angles. They do take seriously concepts such as soul and spirit. As I've written about in "The Cosmic Serpent", I think that it is possible that there is a correspondence between what Amazonian shamans call spirits or essences that they see common to all life forms, and what scientists call DNA molecules, which are common to all life forms. But that too is a big question. Just what is a DNA molecule? I mean, reducing DNA to its material aspect, is like reducing Shakespeare to ink on paper. Because DNA molecules are signs. It is a kind of language, it is a chemical language. It's not just a chemical, it's the chemical language of life. It follows a coding system that is an analogy of human coding systems. The genetic code has 64 arbitrary words, including several punctuation marks. And every single cell in the world uses this code. There's a sort of underlying symbolic unity to all of life - that's really true. Actually, shamans have always said so. The whole world is streaming with signs - just look at crime scene investigations, there's DNA molecules covering every single room we inhabit.

I: How long do these DNA molecules stay alive?

J: Bill Clinton's DNA that was contained in his sperm, that was on Monica Lewinsky's dress, survived dry-cleaning.

I: Haha... So DNA is very persistent. But, for example when you have a tree, there's DNA in every cell of the tree, right?

J: Right.

I: So, the table here is made out of wood. Is there still DNA in it?

J: I reckon the answer is yes. And I think that they get DNA out of fossils that are very, very old. Obviously, the older the more degraded. But DNA is surprisingly persistent. Just a biological answer to your question, there was a problem when they first started making telephone poles in the Amazon. Telephone poles are just trees, in fact, trees that have been stripped, and then painted. So when you put them in a really humid and hot area, they start turning into trees again. The bit of the pole that you planted in the ground sprouts roots, and the top of the pole sprouts branches. You can take a tree, cut it down, strip it and paint it, but if you stick it back in the ground again and give it enough water and heat, it'll turn back into a tree. It may just look like a telephone pole, but it's actually wanting to be a tree again.

I: Let's talk about intelligence in nature. I just read your book on this topic, straight before you left to Peru. As I've already told you I like most of it. I enjoyed The Cosmic Serpent a bit more. Anyway, do you think that when ayahuasca triggers these transformative experiences, or when ayahuasca seems to give concrete information to ayahuasqueros, this is a form of intelligence?

J: Can you say that again? I'm pretty sure the answer is yes, but I just want to make sure.

I: The fact that ayahuasca gives concrete information to ayahuasqueros, or when someone gets a transformative experience, could this be mentioned as an example of intelligence in nature?

J: Clearly. The central proposition that shamans make, is that nature is intelligent. Plants and animals are intelligent, and we can communicate with them. Ayahuasca is their number one tool for having this communication. Ayahuasca is considered to be a major plant teacher - no teacher is not intelligent. Ayahuasca is considered to be an intelligent being, and a source of intelligence, among other things about the intelligence in nature. What I try to do in the book "Intelligence in Nature", starting from the premise of indigenous Amazonian people, is to go back towards science and do an anthropology of science instead of an anthropology of indigenous people, and see where scientists now stand when it comes to discussing the intelligence of plants and animals. And I'm not talking about monkeys and dolphins, I'm talking more about bees and amoebas, the smallest, most simple forms of life. These are scientists who are using microscopes and not ayahuasca. The funny thing is, what they say seems to me to be perfectly complementary to, if not the same as, what the shamans are saying. They seem to be looking at the same reality, but just from another angle.

I: Maybe they're just saying the same things, but with different words.

J: Right, and I think that "Intelligence in Nature" compared to "The Cosmic Serpent", is misleadingly simple. Because it is less ambitious in appearance, it simply takes one concept, intelligence in nature, which is a shamanic concept, and traces its current standing in science. It's like finding the smallest common denominator. That may not be a very sexy sounding enterprise on the face of it, but actually the fact is that there is a common denominator, now, between science and the shamans. In fact it would seem that most agree without even realizing it. And it shows us a surprising new view or perspective on life, beyond the sort of mechanical, materialistic theme. It seems that all life forms are intelligent, just like us, in their own way. Amoebas can make correct decisions, like I can make a correct decision. Amoebas can do things that I can't - like move their body around things and absorb them. I can do things an amoeba can't, like write a book. But it doesn't mean that I'm better or that I stand above. Like an amoeba I am made of cells, I have DNA, and I gauge the world around me and make decisions.

So it really is true there is kinship between human beings and other species. This takes us straight to the arbitrary line that western culture has traced, separating human beings from other species. It's really a fundamental part of our culture. I chose in the book to speak with a really soft voice, because I think the subject is so important, and there's no point in screaming about it. But essentially a lot of re-thinking of our cultural presuppositions needs to occur, about the words we use, about our concepts and what's behind them. Even the word 'intelligence', actually on the face of it, is not applicable to other species. If you look at the definitions that have been given to intelligence, they're often in exclusively human terms. By definition you can not apply the word 'intelligence' in English or French or German to species other than human beings.

We have a conceptual void when it comes to describing what other species do and know. Actually, "nature" is a concept that excludes human beings, according to many definitions. So

intelligence in nature, that's a contradiction in terms, because intelligence excludes non-humans and nature excludes humans, by definition. So that indicates that if you're speaking in European languages the words themselves are going to block thinking about this stuff. That's how deep the question goes. In other words, not only are we embedded in rationalism and a Judaeo-Christian heritage, but our European vocabularies don't equip us to be able to even think about the data science is now producing.

I: Unless we give each other a bit more space, to use words in a more general way.

J: I actually think that intelligence is a very good word. I think that people know what it refers to. You know a lack of intelligence when you see it, even though you may not be able to define it very precisely. One can squabble for years about what the correct definition is, but saying that we can't apply it to other species is just arrogant. You can also look at the disgraceful way that people have been shifting the goal-post permanently. The definition of intelligence was that you could handle abstract thoughts. Well, it turns out that bees can handle abstract thoughts, so we had to move the goal-post a little and say that it's about making tools, about making standardized tools. Well, crows make standardized tools, so then we say "Oh, it's about using language", and it turns out that every cell in the world uses a kind of language. So then it's about being aware of being aware, but how do we know that a jaguar isn't aware of that she is a jaguar?

But meanwhile you note that humans are moving the definitions of their own terms around, to be able to cling on to the pedestal that they've built for themselves. It just looks stupid.

These are delicate subjects, and there are no easy solutions. I really want to avoid saying "This is what everybody's got to do or got to think", but I do want to say that my opinion is that anybody who wants to think about this stuff, needs to move forward carefully, with careful consideration. Each word has to be weighed, its etymology needs to be looked at, its cultural baggage. As a western person getting into questions that deal with intelligence in nature, intelligence of plants and animals, the nature of nature, how consciousness works, modification of consciousness, all of these subjects are doubly tricky for somebody coming from a western culture and dealing with them in a western language. It doesn't mean you can't do it, but it does mean you have to be aware of the historical background and so on.

I: That's why I found it striking your book has quite a happy conclusion.

J: Well, you construct a book the way you want to construct it. There are enough alarmists in this world, and enough disillusion-mongering. I think to stand a chance with this delicate subject, requires careful communication. So I wanted to end on the good news. Forget the bad news, the bad news is in the newspapers every day. This book is some good news. The good news, folks, is that scientists and shamans agree on the nature of nature, check it out.

I: In your book you describe how you travel to Japan to meet a researcher. During this meeting, something becomes clear about the difference between the western and oriental definitions of intelligence. What do you precisely think of the Japanese way of looking at the word intelligence?

J: I think the Japanese have a head-start on people coming from a western culture, when it comes to considering intelligence of other species, certainly.

I: And this comes from their language?

J: Yeah, it has to do with their language and their culture. They have the language they have, because they have the culture they have. They're coming out of animist/shintoist culture. They have not had the experience of Judaeo-Christianity. Their culture has never had an arbitrary line that separates humans from other species. On the contrary, they have always presupposed that humans were part of nature, so the questions that they ask of macaque monkeys, or even amoebas, are different questions. Japanese studied monkeys with much greater sophistication than westerners. It took western primatology several decades to catch up.

For example, the Japanese were studying kinship among monkeys, and kinship was supposed to be something specifically human. And western primatologists were saying these Japanese primatologists weren't even doing real science, they were doing anthropomorphism, they were projecting human characteristics on the animal, that's a cardinal sin. This was back in the 1960s. It turns out, actually, if you want to understand a bunch of macaque monkeys, you need to understand their kinship relations, and it took Japanese researchers months of careful, quiet observation, taking the monkeys seriously enough to figure out what the kin relations were, and demonstrating how important the kin relations were for ordering life in the monkey horde. It took 20 or 30 years of denial by western primatologists for them to come around to recognize that not only were the Japanese colleagues correct, but also that this was the way to work with monkeys. The monkeys are not sort of interchangeable, mechanical entities. They're sentient beings like human beings, they have family relations and power games, they commit infanticide, and all kinds of stuff, just like human beings.

I: I want to talk about bacteria, which I heard you talk about during your talk on the LSD symposium. In your book you're saying how they line up in the human mouth every night in a certain order, and in the talk you mention something about how the Ashaninka are conscious about how deeply we are influenced by bacteria. I think this is very fascinating stuff. Can you elaborate on this?

J: I think what the people in the rainforest have known for thousands of years, is that we are entirely part of the chain of life. The chain of life is sentient and communicative like us, down to the bacteria on our teeth in the morning, that form plaque. These are 600 different kinds of bacteria, that speak to each other in a kind of Esperanto, so that they can line up in the correct fashion. They have signals. They seem to know in what order they have to align themselves, both vertically and horizontally, to form a film that is going to coat your teeth. So each individual bacteria needs to know, I stop here, and at this point where I stop there needs to be not-me #569, but if it's not-me #568 then there's a problem. The signalling goes: "I am #23, I am next to number #568, is this clear?" "Yes," comes the answer, this is the molecular Esperanto that they speak.

I: So they're communicating.

J: Yes, they're communicating: "I am here, are you there?" "Yes, I'm here." "Okay." And then they do what they do in a circus, when you get twenty people riding on the back of one guy on a motorcycle. They stack up on each other, in a precise order. And every night as we sleep they get back down to business.

[Then follows more questioning and answering, because it didn't make sense to me, but it does now. However, I'm going to find or compose a good visual aid for conveying this

bacterial business.]

So obviously, understanding bacterial intelligence is not just an esoteric pastime, it's actually very important for hospitals and keeping people healthy. The problem is that bacteria are outsmarting scientists all the time. One of the big problems in medical research now, is that the bacteria are too smart and we don't understand all their tricks. One thing that's clear is that bacteria are not just a bunch of dirty scumbags, they're busy communicating a lot. But they're not talking in English, they're talking in bacterial Esperanto.

I: They do this to adapt, right?

J: They do this to make a living.

I: But they also adapt to new situations very well, right?

J: Bacteria do all kinds of stuff, they exchange genes, they actually appear to decide in certain circumstances to mutate their genomes. They're not just sitting waiting around for Darwinian mutations to occur. When the going gets rough, they actually seem to be able to generate, just like our immune system does, billions of variations that become anti-bodies. That's how the immune system works. Bacteria, when it comes to their own survival and they feel threatened, that's what they start doing. This generates many different kinds of bacteria, some of which are capable of resisting the assault. Each time scientists try to throw a spanner in the works of a given bacterium, they're then faced with this smart reaction, and then what you get is resistant bacteria. This is what happens in tuberculosis for example. So now we have strains of tuberculosis that can not be beaten by science. And two million people are dying every year, it's a serious problem. Understanding how bacteria do things, how they communicate with one another, what their tricks are, understanding bacterial intelligence, is important for human survival.

I: Can you recap some of the things you said during the LSD symposium talk?

J: Well, this is just a fact that scientists who know about it throw around. A human body contains more bacterial cells, mainly in the gut, than actually human cells. There are hundreds of bacteria in a human body that are absolutely necessary for physiological function, like digestion for example. Essentially the human body is a necessary combination of purely human cells and the bacterial cells. It's not only that they're more numerous, they're also prerequisite for our life. If you manage to destroy all the bacterial cells in a human body, then you'd be dead. So, while we walk around in our body, on our two feet, and breathing air through our two nostrils, feeling fully like a human being and certainly not any other kind of animal or whatever, actually it is simply true that we're also a walking bag of bacteria, and thanks to those bacteria you're alive. You can choose to deny it, but that's just the fact of the matter. You can find bacteria on your skin, on your teeth, all over the place. They're outside us, they're inside us, they're more numerous than us, they help us live too.

I: Okay, it's time to wrap up the interview. You just went to Peru with your kids, and you're going there for research in November 2007. What exactly will you be researching?

J: I will be accompanying a medical doctor who is looking for a cure for tuberculosis, to work with an indigenous shaman, who is also a plant expert, taking ayahuasca, and looking for remedies for tuberculosis.

I: Alright, enjoy the trip and good luck with the search.
