Gaia Institute Lectures
Lovelock/Berry
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Excerpts
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TOM BERRY

Thank you, Jim, it's a privilege to be here with Dr. Lovelock and to be able to talk with you a bit about Gaia.

The way in which we speak of the planet Earth as a living reality, a living reality; we all recognize there are living realities on the planet. But the concept of Gaia articulates a certain coherence in the planet, or encompassing the planet, are establishing the planet as a functional unity.

There's some problem about how we would talk about life. If I remember correctly, someone at Amherst said that they'd looked through all the biology reference works and some of them didn't even have an entry under the term 'life'. So that the sense of life is what we might call a given, not something we can analyze or understand adequately--

something like the universe. The universe is given and it is what we call the singularity and our finite intelligences cannot deal with singularities, that is in any adequate way. Such as the point of the beginning of the universe--we have no way of dealing with that. It is given that we accept and then work with it with the evidence that it provides us with. But we cannot adequately deal with it in comprehensive dimensions.

What I was talking with Jim about before we started was the need of a new language. In a certain sense we are entering into such a new world, such a new sequence of issues to deal with. Just the issue of the human finding a way of relating to the planet in a mutually enhancing way. So far, we might say, humans have never since the neolithic perhaps related to the planet in any nearly satisfying or mutually enhancing way. There have been approximations to it, but there has been a problem. The planet has a problem with us; we are the problem children of Gaia.

But what makes our times very fascinating is that after several centuries of what I would call micro-phase thinking, we're beginning to do some macrophase thinking. Just take the sense of the universe. After the time of Newton relatively little attention was given to cosmology, scientific cosmology. There was very little, a person might say, there was La Place did his work but

that was somewhat a reiteration of what Newton had said. There were the developments in thermodynamics, but until the time of Einstein there was no real, comprehensive, significant rethinking of the basic questions of cosmology. It was taken for granted. We lived in the Newtonian world that was that. And you did your research. And scientists wouldn't in a certain sense dare to get involved with interpretive problems, because that was philosophy and that was mysticism or that was romanticism or that was something else. That was speculation; it wasn't the reality of the thing, because you learned the reality of the thing by breaking poles down into their parts and the parts were the reality and the wholes were adventitious.

With that kind of thinking the big problems escaped us, and were considered to be a matter of opinion or philosophy or religion or imagination. Because they were not hard scientific realities of our existence.

But in our times, gratefully, this is changing. We're entering into what I would call macrophase biology, just as we're entering into the macrophase questions of how the human as a species fits into the functioning of the planet Earth. We're even thinking of the human now as a cosmological phenomenon. I would describe the human myself as that being in whom the universe reflects on and celebrates itself in conscious self-awareness.

The human is that being in whom the universe reflects on and celebrates itself in conscious self-awareness.

So, it's not so much that we think about the universe. It's the universe reflecting on itself in us. So what are we doing today? Life is reflecting on itself. And we are discovering ourselves as we discover life, we're discovering the universe. In other words, we are back to the primordial, intuitive functionings of the human mind. Back to the point as Jim mentioned--people have known that the universe was a living organism forever. There was never a time when the humans didn't know this. It just became insignificant or irrelevant in the last couple of centuries, the last few centuries. This had to take place though; it's veryimportant that we went through this period when the human intelligence moved from almost purely intuitive processes to observational, analytical processes. I sometimes suggest that the scientific age has been the greatest meditation on the universe that has ever been carried out by humans. And we have the benefit of this now. Why can Jim do this work? Why can we reexperience the universe, reexperience the Earth as a vital functioning being or reality that we can address, that we can address as a community of interactive beings conscious of each other in different ways.

It's not that trees are not conscious. They are tree-consciousness, we have human consciousness, birds have bird-consciousness, fish have fish consciousness. It's not that we are conscious and the rest of the world is not conscious. It's jsut that there are different modes of consciousness. And we are beginning to be able to learn from and be able to communicate with these other modes of consciousness.

So, we're back to the question of the universe, but we're adding something to that knowledge. Before when Plato talked about the universe, an dhe described how the universe constituted living reality, he talked about how the soul of the universe and then the physical universe being created inside that reality and the two centers coming together constitute the universe as we know it. So that there was the anima, that is the soul of the universe or the vital life-giving principal, and the universe in this sense of an anima mundi--that the universe is a living thing, living being that's come down through western civilization in a very powerful way. And particularly with the Renaissance with the neo-Platonic development at that time was renewed, and the neo-Platonism at Cambridge in the 16th, 17th century (there was a strong renewal of this sense of anima mundi). And so there is another way of dealing with this that's a more intimate

way on the part of the American Indian tribes. There is a ceremony, and I think it would be a wonderful way to add to our baptismal ceremony. Maybe Jim can write it in somewhere. I had it here with me, and I'm not sure that I . . . well, I don't find it here. It was at the meeting in Amherst where we discussed this subject, just before I talked they put a photograph of the planet Earth from space on a screen. And we are looking at that with our perceptions of it. After all our scientific knowledge now we get this beautiful sense of . . . and our first sight of the planet from a position in the universe where the planet can be seen in its unity. And I believe this is to some extent related to Jim's work on the development of the concept of Gaia as a universal thing.

But, how did this affect people? Well, the American Indian in the Omaha tribe had this remarkable ceremony of an infant, and one of the most important things--and this is what this concept will eventually involve in ourselves relating to the concept--because this concept is not just a kind of scientific reorientation. This is a reorientation of emotion; this is the reorientation of sensitivity; this is the reorientation to everything: law and morality, medicine and all the professions. And all institutions will be affected by this concept. Science ouw be, etc. But the Omaha had this ceremony where a child

was born, and the infant would be presented to the universe. And they had this, it was a four-fold sequence where first they would address the stars and the clouds and the phenomenon of the upper regions of the universe, and say, "Hear o ye heavens, a new life has come into your midst. Consenge consenge, smooth its path so that this child, this new life, may pass beyond the first hill." Then they'd address the birds of the air and the flying creatures, "A new life has come into your midst, consenje, consenje, smooth it's path so it may pass beyond the second hill." Then to the trees and the vegetation, to the insects and the beings in the earth, and then finally a kind of glorious summation of the universe to recognize that a new life had come into their midst. It's kind of a glorious thing of celebration That was participated in by the total life community so that this is a consequence of this development of the sensitivity to life.

So, we have this. So we have the Platonic concept carried through our civilization. We also have the Chinese. The Chinese, this has been functionally more effective in the Chinese in all their thinking than in any other higher civilization, because they address their . . . there are just several very famous quotations. There are declarations almost like what's called the western inscription by Chiang Si in the 12th century where he was a minister. And he had

this wonderful inscription on his west wall: Heaven is my father, earth is my mother, all creatures are my companions, and even such a small creature as I find a place in their midst." And then it goes on for a number of descriptions of how the community human and the natural community of beings form this integral community. And so we have that.

So we have these rich things but we still did not have what we are now having through Dr. Lovelock, we still did not have the type of experience that's native to ourselves. These come out of certain traditions and they carry this sensitivity to the planet as a living thing. For the most part, however (and this is something I hope we can get to in the discussion), for the most part they are dealing with the whole universe. They did not articulate out in a developed way the Earth itself, this planet. That's one of the differences of many of these other perceptions. It's the anima mundi, not the anima. The mundi and that word world, it's a very ambiguous word, a multivalent word a person might say because it can mean the universe, can mean the earth, can mean life, can mean a lot of things. Generally the universe is seen as a living being, and that's one of the further things that we need to talk about--the Earth as a living being and the universe as a living reality that needs to be addressed as a living being.

And there is even the concept of the Earth, and I think it's relevant and we were talking about that before, that science now and description of why, no exactly why the universe is as old as it is, but if it took this many years why did life take long after 14 and a half billion years we have life appearing on Earth. Well, it took that long for the universe to create the conditions of life.

That's very interesting, that in the study of cosmology you'll find that it took that long for the elements to be created and the conditions to be established that made life possible. And so, in that sense, a person might say that the cosmic egg concepts that ahs existed in many civilizations, that it seems to have a certain validity that there was what is referred to sometimes as a cooking process that needs to . . . the universe is really the nest of lfie. And the universe itself is that overall system that makes the planet Earth possible and the life process of Earth, the life process in the dynamism of the Earth possible.

So, what I'm trying to articulate here is that we now are heirs to a great diversity of traditions dealing with this subject, but that we have a very special way of approaching it and that as we do this we should feel that we are drawing together the larger meditation of the human community. We have our meditation on the human community,

or on the earth community or on the universe. In other words, the Chinese did their meditation on this, the different peoples have done their meditation on this. This is our meditation on the universe, on the planet Earth. Specifically on the planet Earth, because the planet Earth a person might say is in a certain amount of trouble-- that the human presence is not the benign presence and that the universe outside of certain periods at the end of the paleozoic and the mezosoic when there were great extinctions that there have been few times in the story of the Earth where there was such a challenge as is at the present time, and of course relative to ourselves is a very important job, but it also has to do with the larger destiny of the planet itself.

We can talk about that. Thank you.

PAUL RYAN:

Jim, would like an opportunity to respond to what Tom was speaking about, if you'd like.

JIM LOVELOCK:

Thank you, yes, if that's appropriate.

PAUL RYAN:

We'll give them each an opportunity to respond and then we'll open it up to the general public.

organisms that have grown together in a caligative, in a collective much more powerful than any one of them alone. And so the cells have accumulated to form us and the whole of the biota is a caligative-forming Gaia.

Now I would certainly feel that the universe itself must have caligative properties which are far beyond our comprehension at the moment.

TOM BERRY:

I think that there are some questions that we need to deal with in terms of what might be called creative disintegration and less creative disintegration. That is, the universe when it came into being was the disintegration of unity into multiplicity, the differentiation from some undifferentiated moment, so as the universe by definition is differentiation. So that we do get a universe that is a disintegrating process. So creativity disintegration, you're disintegrating unity once you establish the universe. So that the diversification process requires that, and also the sequence of beings that emerge. Take the supernova explosions, it's the disintegrating process; it's the collapse of stars that enables the conditions of life to come into being. So you have a disintegrating process.

A person has, with the cretion of oxygen, you have a disturbance of an equilibrium status into a threatening and disequilibrium status that establishes new creative possibilities

in the life process. So that we do have some of these analogies, but then the question comes and then what I am not entirely sure of, is whether the type of degradation of the planet, of the life systems of the planet that the human is bringing into being, whether this can be put into that sequence, as establishing the conditions for a new, creative process, so that so far in the natural world this sequence has evolved.

Now, it's true as many have observed, as Dr. Lovelock observes in his book, that technology is a natural theme at the human level. In other words, humans are natural beings, we emerge out of a community of the natural world, and the capacities that we have for technology are given, are natural, are genetically endowed capacities. So that what we do in a certain sense comes from our genetic endowment.

But it's not quite the same as at the pre-human level, because at the human level we are genetically coded toward a further trans-genetic cultural coding that we invent ourselves. We are not clear, it is not entirely clear how much trans-genetic cultural processes take place with the animals. It takes place to some extent. They do need some teaching. They do invent, but the range of their invention and the range of their post-natal training needed for them to carry on their life functions compared with the human is minimal. We don't know just how much is, but from what

we can observe, it's hardly comparable to what takes place in the human. So that the human has an endowment that establishes a new type of volitional and intellectual control over the destinies of the planet that are exercised with human choice. We are established, as I mentioned, we are genetically coded to transgenetic cultural coding. That is, we are genetically determined say to speak. How we speak is culturally developed and handed on by our education. And this is determined in many different ways. We have created many languages. We create our customs, our legal customs, our social structures; whereas in most instances, these are genetically determined and they're not established by choice. or continued by prolonged educational processes. This establishes quite a difference.

Now, this is the real problem of the planet a person might say, at this stage. Certainly the planet has passed through other stages and of a crises but this is a unique crisis that I think is in a very different order, from the crisis that it passed through before. There is this sense that Idyapribsheen ??? has given us of a self-organizing universe. Now if humans were to carry out the full powers that they have, they would not destroy life on Earth, they could very well establish conditions in which many of the major life systems of the planet Earth would be irreversibly negated. There is a rational process that is capable of

misjudgement, which is capable of a certain amount of destruction that is done by choice. And the bets are they say when God created the universe that he's a gambler, because if he let the process take its way to the human, he didn't know what was going to happen to it. But the Earth is a gambler.

The Earth gambled when it brought humans into being. And the story is not finished. At its worst, which we need to think about, the Earth in its human form, it's crated the capacity for a suicidal process. And then in which case a person would define the human being . . . When the Earth decided to commit suicide, it created the human as its instrument, with the most deadly expression of this. And the extent to which something like this was possible. It's not possible in an absolute sense, but there is most likely, although this is the question that we are determining now, the problem is not whether it will be absolute. It's a question of degree as to what extension and how soon the Earth would be able to dispose of an element that became a species, became destructive at this level, that the Earth would certainly dispose of us rather quickly if we disposed too much of the Earth's living forms. So we do have such issues as that to deal with.

But what I would like to bring out is I think the Earth is now confronted with the problem that has some

different characteristics from the problem it's faced before. I'm not sure that we want to get too much involved into this issue, but it's something that we necessarily need to think about. Probably the most important issues we would want to deal with here would be identifying the sense in which the Earth is a living being and then perhaps they take off the place of the human.

PAUL RYAN:

Jim, I'd like to give you an opportunity to respond if you like or we'll go right to the audience.

JIM LOVELOCK:

Only one quick point I would like to have. So far you may have seen the kind of difference between us in that I may have been seen as putting forward to you a cold scientific view of our living Earth, with the humans playing a small part in it. And this is in a way necessary because ecology until today has been largely human ecology, and I often feel I am the shop steward of the nonhuman segment of the biosphere. But I'm still a human, and I have a heart, and I agree with everything that Thomas said. So any difference between us, I think, is more for the sake of argument. I don't think it's for debate. Don't think, please, it's representing any difference in heart between us.

PETER (REYNOLDS)?:

What coherent purpose might there be in the face of this new context and particularly where notions like altruism might fit into that picture, whether altruism within the framework of human purpose and desire to emerge from this nightmarish amalgam we have, whether altruism is reasonable behavior or neolithic hangover.

TOM BERRY:

Let me understand you right. In this context the question is of altruism. My resolution of that is, in terms of the microphase--every time I start talking I get into this type of language because I think it's central to everything. Because in this context a person has to ask, each of us, we articulate the universe in apart--where does our personal being begin and end?

If a person considers a person is present, certainly we are present to the universe from its beginning. In other words, it has taken fourteen billion years for us to come into existence. And so a person can say that we have present to the planet for fourteen billion years.

The atmos in nyand have been there since atoms came into being. So I resolved the altruism and the equiism, altruism issue in terms of the larger and smaller dimensions of our own being, the individual being. So that we are choosing, always choosing, the idea is to always choose--these mutually

articulate each other. And the moral question is to articulate the part because you can't articulate the whole unless the part is articulated, unless the part is articulated in the whole, it becomes alienated from. So to an excessive egoism alienates, an excessive identity absorbs. And that is the moral issue I would say, is to articulate the one in reference to the other. But it's in a question of identity. If it's not articulated properly, then the universe loses and the individual loses if the universe loses.

DEAN MORTON:

In your language isn't altruism almost that continuum in which there is conscious concern for the other? So that it doesn't become a total egoism or a total absorption?

TOM BERRY:

Yes, it's articulating together, but it's -- both have to win for either to win.

JIM LOVELOCK:

There is a kind of parable that comes from Gaia at this point which might be helpful. I don't know. And that is--altruism on a global scale so far as Gaia is concerned, leaving aside human things, always comes from local selfish interest. I can give you a fairly simple example.

Early in the development of Gaia I had a feeling that the cycles of the important elements like sulphur and iodine,

end

simply the way things work, and that things work this way--out of self-interest but not out of selfish interest--you can look at this in, I think, the most bizarre way I think that Dr. Lovelock's example of these aquatic organisms doing us a big favor is kind of a global way of looking at this, but if you look at it in a very up close way, as with the lion and zebra, it's an individual, one-on-one basis, it's a two person zero sum game and the lion wins and the zebra loses. If you look at it in the larger sense, in populations of the two in the ecosystem that they inhabit, the lions are being fed by the zebras for the lions to maintain itself and the lions are reducing the zebra population so that the zebras don't overgraze and extinguish the population. You could say the zebra and the lion, particularly the zebra, is committing a kind of inadvertent altruism, by giving itself up as meat for the lion, which gives you a somewhat different picture from our invented concept of altruism, but one which I think applies more to the systems we're talking about here today.

QUERY: (Berry answers this on p.37)

I'm having a great deal of difficulty distinguishing between what is scientific and what is mythopoeic or religious. I don't understand exactly what is scientific about your theory and I guess part of that has to do with defining for me a bit more clearly what the theory is. And how you

describe to yourself what science is, and then how what you're doing is in some way an aspect of how you see a science and how you see this hypothesis functioning in a science.

The general impression I'm receiving is just that you've developed a new mode of mythopoetic thought that could be placed adjacent to your colleague's statements that are recapitulations of traditional religious ways of looking at the world. And it's very interesting. I'm not saying that because it would be that that it would be invalid, but I think in this day and age if a person calls himself a scientist, they have to define what that is. No scientist today agrees with another scientist on just what a science is and how one goes about establishing one's own activities as a scientist vis a vis the questions of validation and so on.

The other question I have, I'm probably more interested in the second question, I have difficulty with macro explanations because it seems to me that it obscures a great deal that has to do with moral action and responsibility. If I start talking about lions and zebras in this reciprocal relationship and isn't it all wonderful, I could basically justify any activity on the Earth, saying that somehow in some kind of long-range scenario,that they are participating for the welfare of the next generation. Even if

the next generation is 20 thousand years away, I could proably figure out a way to justify apartheid. I could probably figure out a way to justify an enormous number of things that are happening in the most immediate present. Also, I have to give up my notion of tragedy. And that would require on my part, personally, a great deal of self-denial of my basic subjective experiences.

My fear is that that kind of thinking, truly internalized, becomes polyanna, and robs us of the obligation and responsibility to act morally in a political universe that has very immediate problems contained within micro-, micro-, micro-, micro- time frame of 70 to 80 years.

PAUL RYAN:

Should we just assume this question is naive and go on? Jim if you could respond to the science . . .

JIM LOVELOCK:

I think it would be most unfair to assume that such a good question is naive.

PAUL RYAN:

No, he knows it wasn't naive.

JIM LOVELK:

Obviously in a short, introductory talk like this, I couldn't go into hard science on this, but if you

want to take it up outside, I will. It is an attestable hypothesis, which is interesting. It obeys the straight rules of the game in science; it's neither right nor wrong. We're not in the business of proving things right or wrong; we're in the business of generating hypotheses which ask interesting new questions and give a new way to look at the world.

TOM BERRY:

Give me a chance to respond as regards the micro way of looking at things in this perspective. It doesn't solve everything, but we are in a world that is devastated by microphase thinking--in the medical profession and in the legal profession and in the moral teaching, and so forth. Short-sighted views, that this looks good now and then but having no context in which to see what's really happening. The people that built our factories and are leading to the problems of our society. Take the farm problem. The people thought they were doing the world a great favor pouring all kinds of chemicals into the land and producing enormous crops. Well, it might be good for a few years and then a few years later you find it's not going to produce much of anything. So that we have to have context in which to do our thinking, a comprehensive context of what's really happening in this larger pattern. So I think we can't do away with either. You have to face immediate

issues and articulate ways of acting in the face of immediate problems, but to do that sensibly.

QUERY:

We are limited, I find, by our physical senses to looking at individuals, physical individuals, and I don't thik we can understand life that way. We have to take a much broaderpicture of it and then it becomes obvious that everything is alive. It's just that we have to recognize where the boundaries of a particular purpose are so that the entity we're talking about is within the pieces that are active within that purpose.

The third thing goes to evolution, and the criticism of Gaia by saying how can we expect all of these entities to work together? Our understanding of evolution is backwards. Evolution is not from the complex to the simple. It is the differentiation of the whole into the ever more complex interacting entity. So if we look on the planetas alive and always having been alive, and always being unitary, then all species appear as cells in this one organism made pure through its differentiation. So we don't hve to ask the question whether my right hand and my left hand can cooperate and is this altruism? We are always becoming increasingly more sophisticated and it is only our limited view that keeps us from recognizing this. If I say I am a part of humanity and a part of the biosphere and a part of the planet, I would become lsot in the complexity. The only thing I can do is

to say I am the entirety of humanity in one of its idiosyncratic aspects. Then I can begin to deal with it.

JIM LOVELOCK:

There are two questions, I guess, really clear to me. The first one I'd like to deal with quickly, the funding problems. In no way was I complaining about the lack of funding; I was trying to explain that anybody in the university who wanted to work on it would find great difficulty in getting funds, and this is something we might want to address ourselves to--about the nature of science as it is at the moment. Maybe that's why it's in the class of problems that Tom has been talking about. I'm glad that it is funded, as far as I'm concerned. I would hate to work on tainted money.

The third question, about evolution, was one I felt great sympathy with. I disagree with almost nothing, except to stress that when one considers the evolution of life, one must never forget that it's not just the evolution of life, it's the evolution of the whole planet--the rocks, and the air, and soon. And only recently has it become respectable geology to view platectonics as biologically driven. It gives you a measure of how far life actually is intervening in the running of this planet.

TOM BERRY:

I find what you are saying quite acceptable in terms of the emerging of the univese, and I think it coordinates

rather well with Frigogene's idea of the self-organizing aspect of the universe. The universe emerges in such a way that it's, it has that special power that is there, given, and we merely observe it.

QUERY:

Technology has been viewed as a threat to nature, as with Rachel Carson, a certain view that technology is a radical threat, the homeostatic laws, what you see as an ecological law, a spiritual law. And I think that one of the reasons people see it that way, is that we don't create technology only. Technology creates the human environment and if we create greater technology, for example biogenetics, I don't think anybody at this point can say how biogenetics is going to create us and destroy this homeostatic concept that we've been talking about. I think technology is far more radical than a natural view, and the fact that we can have a pathetic fallacy the bacteria built, that they built nuclear power plants something like Three Mile Island 2 thousand years ago, doesn't comfort me to the fact that what we're doing now in technology will have a very radical effect, perhaps in the next seven minutes, on all of us. I think technology needs more discussion than just calling it a natural human instinct.

JIM LOVELOCK:

Well, as I said before in my role as the shop steward for the non-human sector, and if what I say occasionally feels offensive, it's only because I think it's necessary to say it becasue it's kind of been let go by default. The early technologies are very natural. I do agree that what we do consciously is something totally different. And this I think is where Tom comes in.

TOM BERRY:

The question of technology is enormously important, of course, but we do have to say that the natural world has its technologies, and so when we talk about technology, I think one of the important things is to simply say that human technology should not disrupt natural technology. In other words, the cell is an enormous technological accomplishment. It's something more than mechanistic technology such as we engage in, but still the whole hydrological cycle is a fantastic engineering project. And the difficulty is that we try to re-engineer the continent and re-engineer the planet according to very limited perspectives for sometimes very narrow, limited human purposes. So that we need to distinguish what technologies . . . so that the difficulty is when we attempt to technologize or impose a technosphere on the biosphere. In other words, the whole discussion we're

having here today, I think, in what I call macrophase biology, has to do with what I would identify as the five basic spheres interacting with each other. Geosphere, the hydrosphere, the aquasphere . . . start over again. The geosphere, the hydrosphere, the atmosphere

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