

TEACHING AND DEEP ECOLOGY

Abstract

The ecological thinking requires particular awareness of being part of a much larger complex, the **Ecosystem**, which perhaps is a sentient being (or, if you like, a Great Unconscious): the need for good health of this complex is the first value.

The words used to convey concepts are very important: the currently used language is strongly influenced by the dominant anthropocentric paradigm, which deals the environment as if it were something inanimate only useful to our species.

The Earth is not "our environment" or "our house", but it is the body which we belong to: we are one of its tissues, we are like a type of integrated cells in a biological organism, and that entirely depend on its self-regulation ability of keeping in living conditions.

Some examples are explained in order to adapt the language used in school teaching (not ever conscious), to the above mentioned background: you can consider the relationships in an ecosystem as a forest, who continues to live as long as a steady-state situation is kept.

Thus, our world continues to say "man and nature" as two separate things, if not opposed. Today we know that man *is* Nature, is an animal species, he/she fully participates in the flow of mind-energy-matter of the Ecosystem, the Earth, or better yet, the whole Universe, since all the energy that flows through us, as in all other sentient beings, comes from the Sun.

The perception of being part of a much larger complex, the Ecosystem (or Earth) is very important: the first value is the good health of this Organism.

Instead, the current background thought has expressions completely anthropocentric, mechanistic and reductionist. We must begin to convey to students the concepts using different terms.

In fact in the present substrate are in general present:
 - The dualism that separates "mind" from "matter";
 - The physicalism of the metaphors we use to describe and explain mental phenomena: "power", "tension", "energy", "social forces", etc.;
 - The idea that all phenomena, including mental ones, should be studied in quantitative terms.

I think a good proposal is rewriting the ideas transmitted to the students using a language compatible with the ideas of **Deep Ecology**, which leads to the end of economic growth and to the beginning of a transient economic degrowth to reach an acceptable situation.

It would be interesting to re-write some good text on Physics and Natural Sciences using a new language to frame not-reductionist and non-mechanistic ideas (Bateson, Capra, Lorenz, Sheldrake, Prigogine, Jung, and others). The same for a text of Middle School in parts of Natural Sciences-Physics. You can easily explain all this to children, while using the appropriate language: maybe children are less contaminated by the background of current thinking. In essence, the concepts may seem almost the same, but framed in a non-anthropocentric, non-cartesian, non-dualist background.

Foreword

Let's walk in a forest.

What do we see around us? Trees, ferns, soil, mushrooms, squirrels, birds, and then the air, the breath of the wind on the branches, the sun, the sky, the clouds. There are the relations between all components, which are perhaps more significant than individual living

beings.

The living being must breathe, green plants must restore the oxygen absorbed through breathing, everyone must eat, then leaves residues that are resources for other beings. When a living being dies, the material which formed its body is nourishment for other living beings. As an example, the fungi live on decomposing substances, grass and other plants live on the waste products of animals.

The whole complex is essentially similar to itself, it has a non-changing structure, if we consider at least the time that interest us here (millions of years or less).

If we are in a desert, the situation is similar, except that living beings are far fewer. We hear the wind and the sand all around us, life flows slowly, but the situation is alike.

All we have seen is called "*environment*", as if it were our home: the so-called "environmentalists" urge us to keep it clean, as if it were our space, a house.

But the "environment" of whom? man? Today we know that we are a part of the natural world, we are like the cells of an organism. Our constitution, our behavior and our emotions are the same type as those of other mammals. At the cellular level, life is the same in all the Living.

Let's take an example, has a sense to say that the body is the "environment" of nerve cells, or liver cells, or other body tissue?

Yet the relations between us, the fungus that we have just seen, the air we are breathing, the trees around us are well known and necessary. Not only that, but if we extend the discussion and examine larger complex, we will also find the link that exists between us and the tree that was cut down in the forests of Borneo to create the table on which I am writing. There will be less oxygen in the Earth's atmosphere and a bit of pollutant more for gasoline burned from the vehicle that brought me the mail. The Earth, which has the ability to react to small changes, try to keep the situation of its members within vital ranges, but its capacity has its limits. In fact, the total ecosystem behaves like a living being: also my body has the chance to bring the internal temperature within the range of 36-38 degrees, which allows me to live and write these pages, but if something push my temperature outside that range for appreciable time, I cannot bring me back to life situation, and death comes.

This is what happens to the Earth, and to ecosystems that are part of it.

To build a mobile phone in our pockets, a slice of forest in the Congo was knocked down, in order to obtain a mineral that was under it.

The Earth is not "our environment" or "our home", but it is the body to which we belong, we are one of its tissues, we are like a type of integrated cells in a biological organism, and are fully dependent on its ability to regulate the whole in living conditions. The Earth receives energy from the Sun and then returns it to outer space, at a lower temperature.

In essence, ***Ecology is the perception of being part of a much larger complex, the Ecosystem (or the Earth), and good health of this organism must be the first value.***

Words

Let's see how we can adapt the language that is used in teaching, in a frame that has the basic ideas mentioned above as a background.

The concepts are transmitted through the words and the meaning of the words used is very important. Here are some examples:

We say "*man and nature*" as if they were two different things, if not opposed. Today we know that man ***is*** Nature, ***is*** an animal species, ***is*** fully in the flow of mind-energy-matter of

the Ecosystem, or, if you like, of the Earth, or of the entire universe, since all the energy flowing in us, as in all sentient beings, comes from the Sun.

We say "*man and animals*" as if they were two different things; the words *humanity* and *animality* are often used as antithetical. How many times we hear in the media that a criminal "is an animal" "is a beast," or totally absurd similar expressions.

Another example: the use of words such as *instinct* and *intelligence* is completely misleading. The term *civil*, always used with positive connotations, should be avoided because it has the only meaning of "consistent with the principles of the Western culture".

In essence, the background of thought that is transmitted with the use of those terms is usually completely anthropocentric, mechanistic and reductionist.

We must begin to convey concepts to students using different terms and adopt texts that employ them.

If we say that Nature (or a natural entity) is "*the heritage of all mankind*" or is *a resource*, that implies a strongly anthropocentric worldview. So also to save a "natural environment" to be able to transmit it "*to future generations.*" These are all strongly anthropocentric expressions, where the centrality of man is self-evident.

The expressions must be adapted to the idea that any natural entity, and Nature itself, have a value in itself, independent of our species.

Instead of "animals" we can and shall say "sentient beings" without using any term in a negative sense.

More

examples

It is sometimes written that "In ancient times people believed that tides were the breath of the Earth, but now we know they are caused by the gravitational pull of the Moon": we finally discovered the truth! It would be more correct to say that difference is in language, because even today we have not the faintest idea of how the sea water can know where the Moon is passing. Of course, if we use the theory of gravitation, it is easier to deal with these phenomena from a mathematical viewpoint and formulate maybe useful general laws, but with some degree of approximation and not an "absolute truth".

It was believed that the Earth was the center, the Sun was spinning around. Now we have "*discovered that the Earth revolves around the Sun.*" In fact, Copernicus made a change of reference system and nothing more. Taking a Sun-centered reference system instead of Earth-centered, we can formulate and study the solar system in a much more mathematically manageable way and much more useful to other viewpoints. But no point of reference is privileged, the Sun runs at high speed along an arm of the Galaxy ... There is no center, of any kind.

Also to consider physical laws and "universal" constants as unchanged over time even for billions of years (cosmology) is a pure hypothesis, even unlikely, not sure.

Biological evolution? Life is unique, there are no gaps, man is a sentient being among many others, but there is nothing that makes us combine this knowledge with the Darwinian *struggle for life and survival of the fittest*. Furthermore, Lamarck and not Darwin was the first "modern man" to have the idea of the Unity of Life, although the British scientist has written about the evolution in a more comprehensive and documented way.

The traditional division between *prehistory* and *history* has to be deleted. In fact, we use relegate into the so-called "pre-history" a few billion life-years and five thousand human cultures: "history" is four or five thousand years and very few human cultures.

In some television programs you see the so-called prehistoric men/women always ugly, looking for food "to survive" and in perpetual struggle between them, while probably those sentient beings that were humanity, or at least a branch of Primates, were often in collaboration with each other: mixed families between species (or subspecies) were formed giving rise to the different mixtures which have then been the present humanity (especially the *Neanderthal* and *Homo sapiens*, if we consider the territory of present Europe). We must just think on the behaviour, largely peaceful and cooperative, which characterizes orangutans, gorillas and chimpanzees, especially bonobos. They are sometimes fighting, but rarely with fatal consequences for some contender. Instead, the present background idea is that we have become "civilized" only recently.

The current paradigm

While much of what is taught today may also be valid, assumptions or background upon which all our teaching is based are old and framed in the thought of the nineteenth century ("*the magnificent and progressive destiny of mankind*"). The language by which knowledge is transmitted is mechanistic, reductionist, cartesian.

In fact, the current background normally includes:

- The dualism that separates "mind" and "matter";
 - Physicalistic metaphors we use to describe and explain mental phenomena, "power", "energy", "social forces", etc.;
 - The idea that all phenomena, including mental ones, can and should be studied and evaluated in quantitative terms.
- These background ideas are proving increasingly false.

You can convey the same concepts but in a more general framework, with an organismic-holistic (non-anthropocentric) language, quite different. So, in the absence of anything better, it is not strictly necessary to change the current notions.

Some tendency in modern thought

In our schools there is virtually no trace of important current trends, born by a small but growing minority: the mechanistic and anthropocentric background is now always present and there's no debate about it. Let's do some examples:

It is used very often, in the issues related to ecology, the word *environment*, a completely misleading term, which gives the idea that we are dealing with a "not alive" entity.

In fact, we use to call "*the environment*" a complex of:

- Twenty-thirty million species of sentient beings;
- All ecosystems, that can be considered also sentient beings, according to recent scientific and philosophical theories;
- Substances in continuous exchange and motion;
- Relationships between all the elements and entities inside the complex.

There is no "environment": the term is derived from the idea of *man's environment*, that is affected by the very strong anthropocentrism of Western culture: man is the only reference point. Basically we call "the environment" a living-sentient Organism, as if it were a "contour" of some of its cells (our species). In Italy this cultural background is the worst for the strong presence of the Catholic Church, more intransigent than ever to consider

the human species as out from natural world as "the result of a separate-particular creation", "the aim-goal of creation" and similar ideas, today very far from any scientific-philosophical background.

The Earth is not "our environment" or "our home", but it is the body to which we belong, we are one of its tissues, are like a type of integrated cells in a biological organism, and our life depends on its chance of homeostasis, or the ability to correct itself remaining in steady-state conditions.

From modern systems theory:

Beyond a certain degree of complexity of the system, *the emergence of mental phenomena occurs*. The system "chooses" the way after each branching-instability: the following way is very unpredictable, even in principle, on the basis of previous events in the energy-matter world. This is a mental phenomenon. Mechanist-materialist scientists are desperately trying to save their background saying that the system takes the way after bifurcation "by chance".

Since all living beings and ecosystems are highly complex systems, it is correct to attribute to such entities the name of "sentient beings".

Biodiversity

A system is alive and creative only if has a great variety and energy flows through it. Creativity comes from complexity and variety.

Variety is the basis of life: diversity and life are characteristic of an ecosystem, or - as an example - of a termites-family, which is a collective being, and therefore also of humans.

Returning to the forest, there is a flow of matter and energy between living beings each other and with the inorganic world, soil, humus, tiny beings. The forest system is indefinitely maintained in this way without apparent variations, unless there are drastic external changes that make it exit from its ability to self-correct and repair itself. The wood is maintained in an autonomous way, with no external intervention, apart from the need to be supplied with solar energy, which will return to outer space at the end of its processes: it cannot permanently accumulate energy, otherwise it would not be in the steady-state condition. The flow of energy is indispensable, as in all beings, which are "dissipative structures": in these cases *steady state* is far from thermodynamic equilibrium.

When a forest is cut down, we cannot remedy by the "reforestation", although it is better than nothing: no "planting" of trees can ever be a forest or a wood.

On the contrary, a cultivated field with a single crop and without rotation is not able to maintain itself without heavy external inputs of fertilizers, pesticides, various chemicals, much energy coming from very far away (oil products), and so on. Because a field does not have enough internal variety for self-sustaining, must be continually "fed" from the outside. The so-called *increase* in agricultural productivity per hectare is an illusion: if you bring into account all the contributions and the energy consumed, coming from far away, there is no "improvement."

The Earth as a whole is maintained if the degree of Biodiversity is sufficient: it needs only the energy of the Sun, which eventually will return to outer space. Humans are one component of the total system: they can live only if the complex is kept alive.

Biodiversity is of utmost importance to our own lives, it is essential for photosynthesis, for the atmosphere composition, for the supply of all beings, for the atmosphere cycles, for the control of populations of living beings, for the maintenance of climate and food chains, to name only a few essential functions.

The Biodiversity is in decline all over the planet, due to the tumultuous expansion of industrial civilization and consequent consumerism, with strong excess of human population, destruction of ecosystems, replacement of inert matter to living substance.

It is obvious that it is not enough to worry about preserving the "landscape", this term reaffirming that everything we do is for man, but we have to realize in a much more vital and profound way of all connections between any element of the planet. There is a complete mutual dependence between all components. All the living beings and the relationships between them have a value "in itself" and not for mankind. This background is essential in the basic language of each textbook.

An advice

It would be interesting to bring some good text of Physics and Natural Sciences those language changes, useful to frame the concepts in a non-reductionist and non-mechanistic background thought (Bateson, Capra, Lorenz, Sheldrake, Prigogine, Jung, and others). The same for a text of Middle School Physical-Sciences. You can easily explain all this to children, while using the right language: perhaps children are less contaminated by the background of current thinking.

In essence, notions might be almost the same, but framed in a non-anthropocentric, non-cartesian, non-dualistic background.

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