Authors note

This text explores our basic assumptions regarding nature and life. Though seldom discussed they are of utmost importance as they influence our decisions on environmental issues. The purpose of this text is to pose questions, stimulate reflection and help deepen the conversation rather than deliver ready-made answers.
To write about different perspectives on nature has been a rich learning process. Thank you, Jan Eksvärd, Swedish Farmers Union, who initiated the project in 2001. Thanks also to all who have contributed with well-informed comments, ideas and points of view as well as a lot of encouragement: Yvonne Gunnarsdotter, Ulrich Nitsch, Daphne Thuvesson, Lars Odén, Lars Paulsson, Lena Jarlöv, Kåre Olsson, Helli Malers, Jan Eksvärd, Anders Tivell, Robert Österbergh and many others.

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Sustainable Development - Process and Perspective

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DIFFERENT PERCEPTIONS MATTER

This article explores some basic assumptions about nature and the relation between these and our understanding of sustainable development. Central questions are “What is nature?”, “What is nature like?” “Who is the human being in relation to nature?”

These questions are of a kind that cannot be answered with either ‘true’ or ‘false’. When talking about different perceptions of nature we are moving in a realm of assumptions about such things that we can’t ‘know’ for sure or be cognizant about.

We need to make assumptions in order to function in everyday life. Without them, we cannot organise the myriad of sense impressions that we encounter into understandable patterns or know which way to direct our attention. All science is based on assumptions. Without assumptions meaningful hypotheses cannot be formulated.

It is important to point out that our making different existential assumptions is not in itself a problem. It is quite natural that there is a diversity of assumptions and interpretations about the very nature of life. This not least in our post-modern, secular and globalised society. However, it becomes problematic when we pretend that these assumptions do not exist so that they can operate invisibly under the surface in our discussions about economy, technology and social issues. The result is that we talk past one another having endless discussions that lead nowhere. This happens because our existential assumptions functions as filters. They restrict or open for possibilities, both in terms of what information we actively look for as well as filtering what we are prepared to take in. This is what makes our existential assumptions so powerful in our lives and in society.

The fact that we seldom recognise or talk about our perceptions of nature and other existential assumptions helps to keep them hidden – not only to others but also to ourselves. The result is that assumptions are not actively explored, questioned, refined or integrated into our everyday life decision making.

Purpose

This report seeks to inspire reflection and dialogue. One purpose is to stimulate the reader to formulate his/her own questions, such as: How do I perceive nature? What is this based on? What underlying assumptions do I make? How did I come to know what I think I know? How is my perception of nature expressed in action? What inner conflicts do I have concerning my perception of nature? The other purpose is for use in workshops and courses to enhance mutual understanding between people with different perceptions as a basis for respecting differences and building a basis for consensus.

METHODOLOGY

The article outlines three different categories of perceptions of nature. These categories have emerged from my own experience of decades of theoretical and practical work on sustainable development. Criteria for selection have been to highlight views which are prominent in the Swedish environmental debate of today. The use of the expression "our" and "we" in the article refers to my interpretation of the Swedish contemporary "mindset". To the extent that it has commonalities with the mindset in other industrialized western societies, this mindset is influencing the global scene considerably, because of these countries dominance in the world.

Although there may exist a chronology between the three perceptions, the article should not be read as a history of environmental ideas. It is more of a contemporary snapshot. Thoughts from former times are discussed to better understand how we think today - not in the sense of explaining how we have come to think what we think but rather to dissect the logic of the thought itself.

The three perceptions are presented below as separate monologues by three imagined persons, each of them fully representing one perception, similar to archetypes. I let them argue, almost agitate, in order to make each perception as explicit as possible.

In the subsequent section, I analyse each of these perceptions one by one. Lastly, I make general comparisons between the three perceptions and discuss cross-cutting themes.

THREE PREDOMINANT PERCEPTIONS OF NATURE

1. Inexhaustible source

Nature? – It is 'out there'… but one can also say that the body with its animalistic instincts is part of nature.

However, the human being is different, in essence, from other animals. Humans are rational and capable of distinguishing between good and bad. We may argue about whether human beings having a soul or not, but for sure if anyone has a soul, it is humans; and if there is a god, then it is in humans that this god is putting his hope. But because we probably have to leave the question of the soul and a god open to speculation, human rationality is the best that we can rely on.

There is no morality in nature. Some people argue that nature is immoral. Just look at the way some creatures suffer, in order to become food for others. But it doesn't have to be seen in this way. It is possible, like Darwin, to see how competition in the long run promotes quality. Only the fittest survive and reproduce. In establishing ethical norms we can choose whether or not we want to be inspired by nature. But one thing is certain: Only humans have the capacity to make decisions based on morality . We may choose to give value to parts of nature, certain animals or plants, but here also it is the human being making an ethical judgement. How could it be any other way?

Historically humanity has made enormous progress. From having lived defenceless and exposed to a wild and capricious nature, we have succeeded in cultivating a large part of the earth for our own purposes. We no longer need to be afraid of wild animals or crop failures. We prolong the hours of daylight with the help of electricity. Our homes are comfortable and we have time for pursuits other than the struggle for survival. We have been able to build cities, major centres of human creativity and social life And, moreover, what we seldom think about is the fact that the whole of the agrarian landscape has been created by humans. The same can be said about forests, at least those that we experience as being hospitable. The nature we love and admire is actually a manmade nature, a cultural landscape.

Nature is robust and lush. It is constantly creating new resources because everything is growing and multiplying Humans themselves are relatively small in comparison with nature as a whole. Nature has an enormous capacity for self-healing and rejuvenation, and, with time, ecosystems recover even after radical interventions. Anyone who has fought against weeds knows how robust and stable nature is!

Science has given us the capacity to lay bare the so-called 'mysteries of life', one by one. By discovering the underlying laws of nature, we have built the foundations of our technological revolution and the immense prosperity that our culture is based on.
Nature continues to be a source of raw materials and to be important for recreation and research. But in relation to the two other factors of production – knowledge and capital – natural resources play only a small part in the modern economy.

We tend to forget that natural resources become 'resources' only through the knowledge of humans. Mineral oil, for example, was not a resource until we had the knowledge about how to make use of it in the industrial revolution. Thus, the more knowledge we have, the more natural resources we get. The oil resources of the world have actually increased thanks to discoveries of new oil fields and new technologies. Doomsday prophecies underestimate the creative power of human beings. History has shown that when one resource is depleted, alternatives come to replace it. In modern agriculture, for instance, land is no longer a scarce resource. A few decades ago, copper was considered scarce, but today it has been replaced by glass fibre optics. Lakes clogged with vegetation can very well be replaced with beautiful, clean swimming pools.

History should teach us that instead of mourning the loss of old technologies, we should be asking ourselves what resources still remain hidden from view. What is waiting for us around the corner? Perhaps it is at the micro-level in the biochemistry of cells and DNA molecules – natures own information resources – that the key resources for the future lie?

2. Fragile perpetuum mobile machine

Today ecosystems are reaching the limits of what they can stand. This is happening at all levels and the symptoms are well-known: climate change; destruction of the ozone layer; depletion of biological diversity; increasing problems with waste accumulation; pollution of air, soil and water and accumulation of poisons in our own bodies. Ecosystems can buffer

environmental change up to a certain threshold but if these thresholds are surpassed, ecosystems that were earlier regarded as stable can suddenly become fragile and collapse. The time needed for recovery can be very long. Sometimes ecosystems do not recover at all, but evolve into something different. The knowledge we have about how nature works clearly points to the need for us to act carefully and with respect.

It is therefore very serious that our economic system has a large blind spot. It does not take nature into account despite it being the basis for our survival and a prerequisite for all human activity.

The chloroplasm (which makes leaves green) can do what humans cannot: transform solar energy into chemically fixed energy while at the same time creating large structured molecules out of smaller, dispersed molecules. This work is a prerequisite for all life on earth.

The real economy must take into consideration nature's work and base itself on the conditions set by the laws of nature: Matter cannot be created nor does it disappear. Nature's way of working is cyclical – everything is recycled and reused. The effects of human activities on the ecocycles must not be so great that rest products, be they solids, liquids or gas, accumulate. Materials mined from the earth's crust must enter recycling systems and be reused again and again. We must also make sure that the necessary physical conditions exist so that nature's recycling systems can function. This means safeguarding the space required for biological diversity and green areas for photosynthesis.

The great challenge today is how humankind shall readjust to the life supporting ecocylces. It is up for discussion what measures are the most important, but because this challenge is so enormous we cannot limit ourselves to a single solution. Change must occur simultaneously in technology, in the economy and in our lifestyles: 1) Technology must be more efficient in its use of low entropy resources and in satisfying real human needs; 2) We need a more sensible economy that does not exclude nature. Today's economy is subsidized by nature and future generations. The work of nature must be appreciated and the long term cost of breaking the ecocycles needs to be made visible. The longer we wait to make the necessary changes the more costly it will be; 3) We also need to focus more on our real human needs rather than the endless desires created by advertisements and the media. This is of particular importance if we take global justice into consideration as well as an expected billion more people living on this planet in ten years time.

It is true that environmental destruction has occurred throughout history. But with the industrial revolution humans are no longer just one ecological actor among others. Because our impact on ecosystems is today of such magnitude, the future of the planet now lies in human hands. By studying nature's way of working and the characteristics of resilient systems (systems that can adapt to outer changes) we can develop a new kind of technology, the art of ecological engineering, where nature shows us the way. To forego these opportunities would be very unwise. Humanity finds itself at a crossroads, either we cut the branch we are sitting on or we take on the role as nature's steward. Support for this stewardship role can also be found in the Bible.

3. One unified body

The human being is not, and has never been, separate from nature. Our bodies consist of matter as old as the universe itself. Our origins go back 15 billion years. Our sun is only one of billions of trillions of other stars. In this unimaginably enormous space we find our small planet Earth. Here, something miraculous is happening. Here, increasingly complex and conscious life forms are being generated. Humankind is the Earth that has become conscious of itself. Comprehending this is as revolutionary as discovering that the earth is round and not flat.

Basic natural science provides enough evidence to show that human beings are an integral part of nature. It is a well-known fact that humans are dependent on a constant exchange of energy and matter from air, water, soil, animals and plants. We know that we are made of the same matter and are dependent on the same kind of energy. What we do affects all other creatures, and they in turn affect us. It is known that we are not very different genetically from our closest relatives among the primates. Scientific studies have shown that the presence of green plants can hasten the process of healing in sick people diagnosed with a wide variety of illnesses. Humans are inter-woven in the web of nature.

Our modern intellect sometimes blocks our immediate direct, here and now, experiences. For this reason we deny what should be self-evident - that we are one with nature. To feel – to really experience – this natural connection requires an open mind. In cultures close to nature the capacity to tune in to animals, plants, rivers and mountains has been an obvious skill required for survival. People in these cultures converse with other beings in the web of life. This ability to converse with nature has survived in a few people in our culture and can of course be awakened again. It is a hidden potential in all of us. Only the notion that we stand apart from nature blocks our senses.

We have grown out of a great mystery: the birth of the universe, the emergence of life and the development of ever higher levels of consciousness. This is happening on the only planet that we know about that can support life. The metaphor of the machine does not help to answer questions about where we come from and where we are going. It does not help us understand who we are. The whole is not just the sum of the parts. The parts are born from the whole in the same way a child is born from its mother.

In the web of life we are constantly relating with one another. How we relate determines who we are. "To become ourselves we must be the other", a wise person once said.[1] At the deepest level, we are all one; you can't know yourself without knowing the web you are a part of. At the heart of things there is no 'particle – me', there is nothing you can point to and say "this is me". At the heart there is the "field – me", a vibrating space united with other creatures, the whole and the great mystery that we are all part of.

Science has now reached a point where it can meet up with the old wisdom of cultures living close to nature. Modern natural science describes living organisms as 'vibrating systems' and quantum physics describes the world as a 'web of floating wholeness'. '[2]

[1] Mead, 1932, cited in Asplund, Johan, Ekosofi.
[2] D. Bohm, cited in Michaeli, Inga, "På jakt efter en världsbild med fördjupad människosyn"

In the web of life we are all equal. Human beings have no natural right to place themselves above, and manipulate nature, not even for long term sustainable self-interests. Intention is more important than results. Because we live in the same field of energy our intentions, thoughts, feelings and ways of relating affect others, even when we try to hide them. Allowing goals to justify the means is only a way of fooling ourselves.

The environmental problems of today signal that we have entered a cul de sac. The only way out of this blind alley is a comprehensive change in how we relate to ourselves and to life. The path leads through the heart, to open ourselves with humbleness to the great mystery of our very existence. Words such as reverence, respect, sacredness and love need to be used again and their true meaning restored. To say that all creatures are equal is not to belittle the human being. Rather we should understand this as an extension of humanism, as a parallel to the abolishment of slavery. Some people object that slavery still continues and that there is much to do in the defence of human rights. However, there is no contradiction here. By extending our humanism we are deepening our understanding and this deeper understanding will also benefit the defence of human rights. Love, respect and reverence are not at risk of being used up when more share them, on the contrary, they grow as more are included.

ANALYSIS

1. Inexhaustible source

The first perception of nature, the inexhaustible source, consists of a cluster of thoughts which at first glance might appear contradictory. However, we will find that they have important similarities when it comes to the understanding of sutsainable development. This perception is held together by the following:

- Humankind and nature are separate
- Humankind is the subject and nature the object.
- Humankind is superior to nature. (Human beeing is God's representative on earth [Christianity, Islam and Judaism], Humans are at the top of the evolutionary ladder [certain interpretations of Darwinist thought] , only humans have the capacity to make value judgments [Western moral philosophy]).
- Nature does not require any special care or protection (it is wild, solid, robust and verdant).
- The satisfaction of human needs is central and nature is a means for this.
- There is nothing sacred in nature.

Part of this perception of nature is reflected in our day to day language. In Swedish we say 'going out in nature', we experience nature as something 'external'. What is inside we seldom name because it is so obvious: the human world.

The relation of subject-object is also part of our everyday thinking. Human beings act, make judgements, and farm the land. Nature is regarded as passive and as the object of our actions and appreciation. Only human beings are considered to be conscious and purposeful beings. This perspective, which emerged during the Enlightment, is deeply entrenched in the Western

way of thinking – indeed, to such an extent that we find it difficult to think that it could possibly be any other way.

In my studies I have not been able to see any major difference between Christianity, Islam and Judaism in terms of their perception of nature and the relation of different perceptions to the notion of sustainable development. In all three religions, humankind is seen as being separate from and superior to nature. Human beings are regarded as God's representative on earth to whom nature has been given as an instrument. There are differences of opinion about how this instrument can and should be used, but these differences seem to be greater *within* the religions than *between* them.[3]

Another conflict occupying much space in the literature is between religious and secular worldviews. Darwin's evolutionary doctrine, in particular, created much debate when first presented and it continues to do so. However, even here these differences can be played down. Just like religions, Darwinism has been cited for very different interpretations of human's rights and responsibilities towards other species and the earth[4].

Historically nature has been regarded as wild, strong, frightening and endlessly vast, especially in the Nordic countries. Selma Lagerlöf (Nobel prize laureate for literature in1909) in her "Tales of Gösta Berling" vividly describes the fear of the wild:

> *In the darkness of the forests unholy animals live, whose jaws are armed with glimmering teeth or sharp beaks, whose feet bear sharp claws, that long to clinch to a throat full of blood and whose eyes are glimmering with the lust to kill … Nature is evil, sly like a sleeping snake, nothing to be trusted.* [5]

A Christian interpretation congruent with this picture is that humans had a task to domesticate and refine nature. This perspective was probably also in line with the daily experiences of farmers struggling against weeds, wild animals, unpredictable weather, and disease. The dichotomy of nature – culture became synonymous with bad – good and spirit – matter. Even if in modern times our fear of nature has been moderated, we still use these concepts in our daily language and these dichotomies still have resonance in our collective subconsciousness.

In the age of industrialisation the image of nature changed. Nature was still regarded as big, strong and robust but the emphasis was not so much on categories such as 'good' and 'bad' as on utility. Nature is seen as a source to draw on and the focus is directed towards how resources can most effectively be used. This perspective is familiar and entrenched in the dominant political ideologies of our time (from left to right). It forms the basis for neo-classical economics and many other social science disciplines. The utility perspective is deeply rooted in our language, in expressions such as 'natural resources' and 'natural capital'.

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[3] For example in Christianity the whole spectra of perspectives exist from humans assigned to tame evil nature to the Christian idea of stewardship.

[4] From the picture of humankind placed at the top of the evoluntionary ladder to Darwin's own words in The Origin of Species: "A web of complicated relationships that develop increasingly higher degrees of complexity". (Thomson, J Arthur at a lecture given at Darwin's jubilium in 1909, cited by Glacken, Clarence J, Västerländsk kultursfär, i antologin: Anders Hjort, Uno Svedin, Himmel Människa Jord)

[5] Lagerlöf, Selma, Gösta Berlings Saga 1891, reprinted in : Naturskyddsföreningens årsbok, Långt borta eller nära – om vårt förhållande till naturen, 2000.

According to this perspective, then, nature is not regarded as sacred. First, Christianity and Western humanism restricted the area of sacredness to humankind. Later, secularization and utilitarian ethics did away with the very concept of sacredness.
Because nature is assumed to be so robust and rich there is a tendency, in this perception, to leave nature *outside* of the focus of interest. The interest is instead directed towards satisfying human needs, with technology and economy as the most important means. For people and organizations who do not feel any need to discuss their perception of nature, this is probably the perception which is slumbering deep in their unconscious. When nature is analyzed, the perception is extremely anthropocentric and the idea of substitution (that scarce resources can be replaced with less scarce resources through technological progress) is central. Below follows an example of this thinking from a reputable, Swedish natural resources economist, Marian Radetzki:

> *There are two central characteristics of a good environment, first that it guarantees human survival and second that it supplies comfort. Survival can, at least, be measured with some degree of objectivity. The degree of comfort resulting from environmental factors is, however, left to subjective judgment and differs most likely from one individual to another. For example some people find silence desirable, whilst others feel uncomfortable without background noise…*
>
> *… Technological progress offers increasing opportunities to establish micro-environments that are better suited to satisfy human needs than natural environments, or to separate humans from defective macro-environments. A somewhat banal example is the swimming pool. It protects swimmers from poisonous jellyfish, undesirable changes in water temperature and pollution. Another example is the shopping mall, making it possible for customers to shop without getting disturbed by rain, noise and exhaust fumes from the streets…*
>
> *… The establishment of new micro-environments specifically suited for humans have an interesting side-effect, in that people as well as economic activities are becoming more concentrated in urban regions and rural areas are becoming depopulated… As time goes by nature's wounds will heal and these sparsely populated rural areas will return to something that is reminiscent of the original natural state …*
>
> > *… Our current generation has very little understanding of these future human environments which can be made possible through technological progress … Nevertheless, future generations might prefer such environments even if they were given the possibility to choose.*[6]

Radetzki's perspective is representative for this perception of nature but few express themselves as explicitly as he does. For this reason his text is a very useful 'school-book example' for analyzing the weaknesses of this perception.

Radetzki makes no secret of his intention that coming generations shall not be able to choose. It is contented by the thought that they might appreciate the artificial environments that he

[6] Radetzki, Marian, Tillväxt och Miljö.

believes will replace the natural ecosystems. This attitude is of course very problematic from an ethical perspective, irrespective of the perception of nature.

A person whose starting point is in the second perception of nature would also add that Radetzki has not reflected upon which resources will be used to build and maintain the artificial environments or upon the more far-reaching consequences that a collapsed ecosystem will have.

A person with a perspective from the third perception of nature would add that Radetzki is disregarding the need humans have for contact with nature for their health, wellbeing and feeling of unity and that his vision denies that we are, at a most basic level, one with nature.

2. Fragile perpetuum mobile machine

The second perception of nature, the fragile *Perpetuum mobile* machine has long existed but has become very clear during the last two decades. This perception is closely connected with the development of the concept of sustainable development, even though, of course, representatives of all three perceptions of nature use the term sustainable development although giving it different meaning.

The *Fragile perpetuum mobile machine* has played a decisive role in the raising importance given to environmental issues that has occurred during recent decades. Initially only represented by marginal groups in society, it has moved into the boardrooms of corporate business and mainstream politics today.

As in the perception *Inexhaustible source,* humans are regarded as subject and nature as object in the *Fragile Perpetuum mobile* machine. Here too, satisfying human needs is the key objective and only human beings are seen as having the capacity to make value judgments.

However, this perception differs in three ways from the *Inexhaustible source*:

- On a material level, humans are linked to and depend on nature.
- Nature is fragile, complex, finite and has ecological limits
- Utility considerations must be understood in the long term and include possibilities for all people.

Advocates of the *Fragile perpetuum mobile machine perception* stress that we are dependent on the flow of materials from nature. We need food, clean water, clean air and the possibility to discard our waste products. If we understand how nature works and respect the absolute limits it sets, nature will continue to provide for us.

This perception of nature is reflected in the 1987 Brundtland Report, in documents from the 1992 Rio Earth Summit, and in many Swedish Government studies on sustainable development. It is also found in Swedish environmental research carried out during the 1990s.

A significant example of the Fragile machine… can be found in the work of the environmental organisation 'The Natural Step' (TNS) and its model of the four "systems conditions". The underlying assumption of this model is that if humans manage the planet well, the planet will support us forever (hence the phrase perpetual motion - *Perpetuum mobile* - in the name). The machine as a metaphor was also used in early TNS illustrations. Nature was depicted as circular tubes whose flow was controlled by a machine which is turn was controlled by men turning different knobs. The focus here is on adjusting the flow of material to an acceptable, sustainable level in order to avoid congestion in the system.

Karl-Henrik Robèrt, founder of the Natural Step, writes in his book "Det Nödvändiga Steget" (The Necessary Step):

> *Consequences of the law of matter's indestructibility, automatically lead to principles of recycling, which is the lowest common denominator (LCD) for all sustainable societies: The garbage and molecular waste, which we allow to leak from society to nature must be in a form that can be processed and refined by nature's recycling system. When a sustainable society is in material balance then the law of matter's indestructibility means: Exactly the same amount of material that we import from nature into society in the form of different resources (food, biofuel, timber, pulp, etc.) must also be returned to nature in a form that can be recycled. The LCD for a sustainable society is in short: The turn-over of materials in society is adapted and integrated into nature's ecocycle, on the conditions put by nature, so that garbage does not accumulate and the amount of molecular waste does not increase in nature*[7].

There are two reasons why it is of special interest to study the ideas of The Natural Step. One is because it is an organisation that in Sweden has been very successful in the world of business and politics. The Natural Step has played a decisive role in getting environmental issues into contexts that had previously not acknowledged these problems. The second is because representatives from The Natural Step have, with the help of researchers from Chalmers University in Gothenburg, made their perspectives more explicit than most other actors in the environmental debate.

The perspective of TNS has been used to develop the consensus report for the Swedish agricultural sector, The Vital Sector – a report on recycling and agriculture (1993). By drawing on the TNS framework, it became possible for representatives from organic and conventional farming to meet and bridge differences of opinion. At the same time, the participants felt that the TNS perspective excluded issues important to their understanding of sustainable development, such as animal ethics, health, food quality, working environment and quality of life for farmers, landscape aesthetics, cultural heritage care, and genetically modified organisms.[8] This example points at a weakness with this perception. Many dimensions that participants thought of as very important were left outside the analysis. What the issues which didn't fit in have in common is that they cannot be dealt with using the 'machine' metaphor.

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[7] Robèrt, Karl-Henrik, Det Nödvändiga Steget.
[8] DNS m fl. *Den livsviktiga näringen en rapport om kretsloppsprincipen och jordbruket.* (This can be ordered from Det Naturliga Steget)

Natural resource management and ecological engineering are the key concepts of this perception. With knowledge and reason humankind will be able to manage nature so that it is not destroyed.

3. One unified body

The perception that I call *One unified body* differs significantly from the other two regarding basic assumptions. The basis for this perception of nature is derived from pulling together ideas from very different traditions and highlighting what they have in common.

The historical roots of this way of understanding the world are found mainly among people in cultures living close to nature. Descriptions of these ways of life are often difficult for Westerners to understand because our languages take certain categories for granted, such as; time, space, ownership, goal, means, use, matter and spirit. The Hopi Indians of North America traditionally, according to Hultman, have no abstract coordinate system of time and space where events take place. Rather their understanding of reality consists of the units 'that which is manifest' and 'that which is non-manifest'. Everything that is or has been apparent to our senses is manifest, a kind of endless and enlarged now, where everything that 'has happened' continues to participate in creating life. Dreams, longings, memories and folktales, i.e. all things that can be referred to as mental processes, belong to what is non-manifest. That which is non-manifest moves towards what we call the future. It is striving to become manifest, like a flower, which lies dormant in the seed, longs to become. The Hopis do not make any distinction between matter and spirit. Everything is life. What we call the soul, Hopis call "what is felt in the heart". This refers not only to the human heart but also to the 'heart' of the plants, animals and things as well.[9]

The Indians of the Central Andes have been noted for the overwhelming biodiversity that is generated through their way of cultivating the land. The basic metaphor is the 'web of life'. Soil is regarded as one form of life. Mountains, rivers, the wind and the stars are all other forms of life – living side by side with animals, plants and humans. These different life forms nourish each other reciprocally so that everything can be recreated. They make no difference between matter and spirit or between what is alive and what is inert.[10] Because they don't have the concept of 'progress' these people do not strive to replace old varieties with new improved ones. Rather the new varieties are seen as new members of the family, who are welcomed to coexist with the old ones. The result is that there are no less than 3000 different potato varieties in the Andes, a fact that has surprised experts. Those representing the Andean worldview say that; "Humans in the Western world have lost the ability to allow nature to nourish them". To be able to have conversations with other creatures who co-habit in the web of life one must 'tune in' to the signals of the others and to follow their recommendations. Humans who make themselves accessible to these subtle conversations will also be nourished and supported.[11]

[9] Hultman, Gunilla, Livets väg – en bok om Hopi-indianerna.
[10] Inert means inactive or phlegmatic. I prefer this word to 'death' when I describe the preception of indigenouspeople. In the human time perspective mountains seem inactive, actually dead. In a longer time perspective we know that mountains are born, grow, age and transform in the same way as anything living, only the process is slow.
[11] Rengifo Vasquez, Grimaldo, Culture and biodiversity in the Andes.

In cultures living close to nature there is nothing that corresponds to our concept of ownership. The land owns the people just as much as the people own the land. The relationship implies a mutual give and take. This goes for the relationship among people as well. In cultures close to nature, wanting everything for oneself, putting oneself above others or demanding too much from nature, is interpreted as being possessed![12]

Common for these cultures close to nature seem to be the perception of life as an absolute unity. One makes no division between spirit and matter, living and inert, profane and sacred.[13]

Some aspects of oriental philosophies also fit into this perception of nature. Taoism also sees life as an absolute unity and strives for harmony. The earth, rivers, wind and mountains are regarded as being alive. Also non-human life is deeply respected because of the understanding that we all are part of the same web of life.

However unlike the cultures close to nature, the great eastern belief systems have been born in civilizations with advanced technologies and organizations, which have expended great amounts of energy to build cities and monuments. This has resulted in environmental destruction such as the deforestation in China as early as 700-200 BC. Such experiences have had a great impact on both Taoism and Buddhism and their playing the role of ecological consciousness in China[14].

The Norwegian philosopher Arne Naess has given one of the Western world's most important philosophical contributions to the perception *One unified body*. He has been inspired by the concept, among others, of Ahimsa, which originates from the Indian religion called Jainism. Ahimsa signifies reverence for the sacredness of all living things. All life has the acknowledged right to realize its own potential.

The basic theme in Naess' philosophy is the understanding that 'everything is connected'. Essentially, we are all one. The problem is that we in the West see ourselves as being separate from each other and from what we call nature. According to Naess and other advocates of deep ecology, the way back is through widening our sense of connectedness (identification in Naess terminology) to include animals, mountains, trees, rivers, and – ultimately – the whole cosmos. This widened identification is possible because we *are* one. According to this perception it is not a matter of taking on a belief, but rather of breaking out of a delusion.

The Brazilian liberation theologian Leonardo Boff comes to similar conclusions, but from a different starting point:

> *Not only the poor and suppressed cry out for liberation but also the water, the forests and the land. They cry because they are constantly attacked. They cry out because their autonomy and real value is not recognized…*
> *[…]*
> *… We need to make ourselves understand how enormously astounding it is that we actually exist … We are now starting to realize that we all belong to one family, which has been scattered all over our Earth. However the sense of belonging to this one family*

[12] Wagner, Ulla, Naturnära folk och samhällen.
[13] Wagner, Ulla, Naturnära folk och samhällen.
[14] Tuan, Yi-fu, Kinesisk miljösyn – ett komparativt perspektiv, i Hjort och Svedin (red) Jord Himmel Människa.

has not been fully understood yet. Our planetary cathedral is not yet filled by one unified, reverential, grateful and fully developed family, but rather a bunch of rebellious, immature and disorderly children. […] The biological development has strengthened our ability to think and to be creative and our brains can today, […] in a moment, change something that earlier would have needed millions of years for evolution to accomplish.

This implies great responsibilities. The Universe and the Earth today experience themselves through us, they see their own unbelievable beauty, hear their own music, share their mystery, think self-consciously, become aware of their inner aspects and love everything with a passion. It is to make this possible that humans have come to exist. Until now we have not fulfilled our duties well, not because we are good or evil but rather because we are immature and not aware of our real task.[15]

Modern physics can also supply inspiration for this perception of nature. According to classical physics everything is built from small autonomous particles. The whole is built up from separate parts, and their interaction follows laws and is predictable.

Modern physics, however, shows that this classical Newtonian physics is only relevant at a certain limited scale. On the sub-atomic level and macro universal level, another picture emerges: there are no smallest pieces of solid matter. An electron can be described both as a wave and as a particle, or as something shifting between these two states. Neither the position nor the movement of sub-atomic particles can be measured without them being affected.[16] ,[17]

Quantum physics supports the thinking that the world is not as simple as the mechanistic worldview would have it. Life cannot be broken down into separate parts. Rather a complex and ever-changing web of relations and dynamic patterns emerges that is continuously undergoing transformation.

As technology confronts us with ever more difficult ethical questions, more and more people are finding the mechanical worldview to be insufficient. In the article ”Holdninger til landbrug og miljø” Anders Borgen relates the following:

A while ago there was a debate regarding the use of human foetuses by the cosmetic industry. An aborted foetus is not regarded as a real human being (that is why it is allowed to be killed) and therefore should not be buried in the same manner as a real person. But what can be done with them? There was nothing forbidding their use making cosmetics. The fact that they consist of human tissue is an advantage for the production of certain kinds of facial creams.

From an environmental point of view there are no arguments against this use – the alternative is to burn them. From a health perspective there are no problems either, on the contrary, it is certainly healthier than the synthetic compounds that are the alternatives. However we are many people, both religious and atheists, who find this

[15] Boff, Leonardo, Cry of the earth, cry of the poor.
[16] Michaeli, Inga, Tankefigurer och kunskap.
[17] Du Nann Winter, Deborah, Ecological Psychology, Healing the Split Between Planet and Self.

unacceptable, unethical, unrespectful and in bad taste, even if we are not able to justify this stand with rational arguments.

And in likeness with the use of foetuses in the cosmetic industry, we are many who take similar stands regarding the use and spread of synthetic substances in nature. It is not acceptable – it simply does not belong there. The same stand forms the basis for many people's position concerning the placing of genetically modified plants in nature.
[…]

I want to make a case that the significant difference lies between whether people are arguing from the basis of what is useful for humans or if their starting point is whether whatever is proposed goes against the order of nature.

[…]

What is natural, however, creates problems in relation to scientific work with ecology, because what is natural cannot be defined scientifically. […] We know it instinctively.

The author shows that there are different perspectives on how we acquire reliable knowledge. The perception *One unified body* recognises direct experience, intuition and heart as the best way to obtain knowledge about the nature of life. The other two perceptions, *The Fragile perpetuum mobile machine* and *The inexhaustible source,* rely on abstract concepts, measurability, repeatability, generalisability and logical deduction.

Today many people are searching to explore the lines of the thinking in this perception *One unified body*. This search is being carried out by both experts in many different fields as well as laypersons. *As* more people put their experiences and thoughts into words, a multitude of images and statements flourish. We should not let ourselves be confused by this diversity. All these variations can rather be seen as attempts to express genuine experiences that are difficult to capture in words.
To sum up, the common features of this perception are the following:

- Existence is one living unity.
- Existence can be understood by the intellect to only a limited extent.
- Life and death, spirit and matter, subject and object are not pairs of opposites but rather complementary constituents of the same reality.
- Relevant knowledge is gained through the heart. By opening our hearts we also open the way to communicate with the other living beings, the planet and cosmos.

DISCUSSION

Philosophy and practical recommendations

From a philosophical point of view, there is little difference between the two first perceptions, while the difference between these and the third perception is enormous. But, paradoxically, the picture is quite different when the comparison is made from a practical-political perspective. Here the conflict is clear between the *Inexhaustible source* (which is associated with exploitation interests) on the one hand and the *Fragile perpetuum mobile machine* and *the One unified body* (both of which are associated with conservation interests) on the other. An interesting parenthesis is that some advocates of *One unified body* espouse a *laissez-faire* attitude when it comes to environmental protection. This is grounded in a way of thinking that 'what happens is supposed to happen' and a trust in the healing capacity of the planetary whole. In such cases, quite surprisingly, the first and the third perspectives lie close to each other.

In other words, the links between perception of nature and political recommendations are often not clear-cut and easily predictable. I will come back to this in the final section.

Are the perceptions mutually exclusive?

Some readers may not feel comfortable with any one of the three perceptions of nature that I have categorised. They would perhaps argue that a mixture of these perceptions fits them better, or object that the categorisation itself is defective.

Of course every categorization has its limitations and this one is no exception. In spite of this I would advise the reader not to rush to find a stand somewhere in between the presented perspectives, to identify with something more smooth, comfortable and less extreme than the presented archetypes. In my experience it can be fruitful to instead look at these different perspectives as part-personalities, which co-exist within us. Different perceptions are activated depending on the situation in which we find ourselves. During a Sunday walk in the forest perhaps one perception is activated, but when the same person is out in the forest measuring a logging area another perception is activated, etc.

The different perspectives within us can, in other words, come into conflict with each other and one purpose of this article is to increase our awareness of the fact that there are different views – both among different people and within each and every one of us. These three perceptions coexist but not on equal conditions because our industrialised society is constructed according to the principles of 'the inexhaustible source'. Despite existing environmental education in schools, the younger generation is socialised to a large extent into this first perception. This takes place, as it does for us adults, in part directly through the media and advertisements, but mainly indirectly as a result of how the economic system works,and which conduct is acceptable, for example, at work.

Another way to perceive the three perspectives of nature without emphasizing conflicting aspects, would be to view them as complementary perspectives on the same reality: *The inexhaustible source* is applicable in situations where our impact on nature is marginal, which

it has been during most of human history on earth The *fragile perpetum mobile* machine focuses on the immediate and urgent task humanity is facing today, to stop 'cutting the branch we are sitting on'. *One unified body* focuses questions on purpose, meaning and the nature of existence/being. What is the meaning with our little planet? What is the purpose of human beings' existence? And not least what is the meaning of the creation of this universe that we know? In other words: What narrative are we taking part in? What is the performance where we are standing on the stage just now?

Basic metaphors

One way of understanding the differences and similarities between the different perspectives is to study their basic metaphors. Metaphors are simplified pictures we use to capture and make sense of a complex reality. Some of the central metaphors found in the three perceptions of nature are: circle, web, ladder, chain, machine and organism. Examining the mental pictures we use more closely may allow us to see how suitable they are for describing the reality we wish to capture.

From organism to machine

The modern Western understanding of reality is based on ideas from the Age of Enlightenment, when the organic, medieval worldview was replaced by the mechanical worldview. The machine replaced the organism as the basic metaphor for understanding nature, people, and society.

Inga Micheali describes the organic worldview from the medieval period as follows: "Nature was seen as a living organism, which was not to be hurt. Everything was connected with everything else in one whole. The characteristics of the parts were determined by the whole, which was created by God. Each class in society had its place. Hierarchy and rank was a natural given. One was born into a network of people, a family, a clan, a community. Each and every one had a specific place and path in life. God held everything together, intervened directly and watched over everything."

The mechanical worldview, on the other hand, Michaeli describes as follows "The world was interpreted as a machine, a clock […] Matter [was seen] as a number of distinct atoms held together by physical forces […] Particles build up patterns and structures that constitute the whole. Movement exists but it is mechanical and can always be predicted. Relationships between particles are only external, and they do not influence each others' characteristics and identity. God was no longer needed to explain how the world works."[18]
The transition from the 'organism' to the 'machine' metaphor was not painless. When Galileo managed to empirically prove Copernicus' theory – that the sun is the centre of our solar system – he was punished as this new knowledge was in conflict with the church's worldview. Descartes later solved this conflict in a more flexible way. He escaped persecution from the church by drawing a line between the spiritual domain of the church and the physical

[18] Michaeli, Inga, Tankefigurer och Kunskap.

domain which could best be understood by science.[19] Henceforth, he argued, the church should no longer hold views or theories on how the physical world was constituted and science should not get involved in subjective spiritual matters such as purpose and meaning. This divide still remains and constitutes today's scientific ideal, where answers are searched in relation to the question 'how?', while the question 'why?' in its deeper sense is not considered relevant for scientific investigation.

Newton approached this conflict between the church and the mechanical worldview by imagining a god who, once he had wound up and started the clock, no longer had much of a role to play. This was a critical step towards the modern secular worldview. As more scholars from other areas built on the insights from Newtonian physics the machine metaphor became more widely spread. Hobbes, for one, argued that everything, including people, feelings, thoughts and ideas are material phenomena that follow natural laws. This statement hardly raises as much attention today as it did during the time of Hobbes.[20]

From machine to whirlpool

In the same way as the organic worldview dominated medieval society so does the mechanical perspective dominate our society today. However, this perspective is increasingly being questioned. Perhaps we are in the midst of a 'paradigm shift', as radical a change as that during the period of enlightenment!

Modern theories of open, dynamic systems in physics and ecology offer metaphors that help us understand life in another way than the 'machine' metaphor does. One simple example of an open system is the whirlpool, which forms when, for example, water is drained from the bathtub. In the whirlpool the parts (molecules of water) are constantly being replaced, but the characteristics of the system (the whirlpool's form) remains as long as the speed of the flow is constant. The whirlpool has a structure, which is not rigid or stable but in a dynamic balance. The stable nature of the system is dependent on a constant flow.[21] In a similar way living systems are dependent on a constant flow of energy and matter in order to retain basic characteristics. As a metaphor the whirlpool expresses the paradox of life: change as the state of being. Life is at the same time fluid and constant.

In a mechanical perspective the whole is the sum of the parts, or a result of the interplay between the parts. A snooker shot, with the balls hitting each other, is an analogy for this perspective. Once you know enough about the balls and the forces affecting them, it is possible to predict chains of events. The economic system is often described in line with this mechanical perspective as the result of the interaction among market actors. Likewise ecosystems are described in the mechanical view as a product of the individuals' interplay.

The whirlpool shows another picture of the whole. The whirlpool cannot be understood by studying the water molecules because these molecules are constantly being replaced. Therefore, the sum of the molecules of water can hardly be defined as the whirlpool. The

[19] Du Nann Winter, Deborah, Ecological Psychology – Healing the Split Between Planet and Self, s 293.
[20] For example, it is characteristic of our culture to describe emotional (and spiritual) states in terms of different levels of concentration of signal substances in the brain.
[21] Michaeli, Inga, Tankefigurer och Kunskap.

whirlpool is the way the water molecules *relate* to each other, the all-embracing form, the whole. The molecules participate in the whirlpool. The whole precedes the parts.

This whirlpool metaphor helps us to understand 'One Unified Body' and gives us a picture for the statement that the 'whole precedes the parts'. This perception goes completely against what we westerners are schooled to think, which can result in it feeling strange for many. To better understand this perception we may need to work at this level of metaphors. Most of us are schooled so our thinking emanates from the machine metaphor which is embedded in the first two perceptions.

Perceptions of nature and action

So, to what extent do our perceptions of nature actually influence our actions? Does one perception of nature lead to a certain way of acting? How important are our perceptions of nature in practice?

A study at the end of the 1990s indicated that Swedes perceive nature in a way that ought to be beneficial to environmentally friendly action, to sustainability. The study showed that many people viewed nature as setting limits for human activity which people have no right to cross. Nature was considered to have a value in its own right and was described as being meaningful and purposeful. Their perception contains elements of anthropomorphism (non-human beings are given human characteristics), animism (everything has a spirit) and teleology (everything has a purpose). However, the same study showed a large gap between peoples' perceptions of nature and their actions and, surprisingly, those most knowledgeable about environmental issues were the ones least prepared to act accordingly. [22] While the author of the study, Nils Uddenberg, argues that the connection between perception of nature and action is weak, Herta Hansson argues that it is non-existent.[23] Hansson's article is a response to a classical article by the historian Lynn White who in Science 1967 argued that Christianity's human-centered worldview, which has dominated the Western tradition, had opened up for the ruthless exploitation of nature.

Disputing Lynn's thesis, Hansson argues that the pre-Christian understanding of a spirited nature did not constitute an obstacle to humankind's manipulation and exploitation of nature. Both pre-Christian magic as well as medieval alchemy were expressions of attempts to manipulate and control nature. According to Hansson, then, religion, worldviews, and perceptions of nature do not have any significance for the way we treat nature. Rather, she sees other forces which direct our practical actions. However, she does not specify which these forces are and how we might, with them in mind, be able to counteract humanity's destructive treatment of nature.

Hansson's argument about animism is interesting, but I draw a partly different conclusion than she does. She argues that animism has not proven itself to be a guarantee against environmental destruction throughout history. But in her argumentation she says nothing

[22] Uddenberg, Nils, Natursyn och Handling.
[23] Hansson, Herta, Animismen, Kristendomen och den Ekologiska krisen.

about the opposite – that is, the possibility that Christianity's objectifying of nature has opened the door to even greater environmental destruction than would otherwise have been the case.

Hansson does, however, point at something that needs to be taken seriously, namely that the introduction of a new religion, ideology or belief system will not solve our environmental problems on its own. To accept the idea that nature is spirited is no guarantee for sound environmental action. However, I do not want to simply leave it at this sad conclusion as Hansson has done, but rather propose a way forward.

My belief is that what we need more than a new religion or ideology is spiritual and sensual here-and-now experiences and skills. Instead of a new intellectual 'spiritual' conviction of one kind or another we need to nurture our feeling of connectedness and to widen the intelligence of our senses. This will require moments of silence and stillness as well as a non-judgemental and non-doing attitude. Working to create such a space means nothing less than creating a new culture. I believe that important steps along the path could be to make ourselves conscious of the existence of different voices that speak within us without condemning any of them. To acknowledge that our actions are in conflict with the consequences of values that we say we hold is also an important step. We need to engage others in a dialogue about our basic assumptions of nature and not let ourselves be frightened or ashamed if we discover that our perception of nature is both contradictory and incoherent.

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Note: Quotations from litterature are translated together with the text from Swedish into English.