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## Remarks on nature, super-ecology, life, production, position and other negotiations

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### Nature

What "nature" is in any given period and why it is what it is are variables that are wholly dependent on historically shifting relations between humankind and our environment. As such, nature will still be nature with or without people, as deserts and glaciers exemplify. The definitions, ambiguity and oppositions rest, so to speak, with us, constantly engaged as we are in exchanges and negotiations with our surroundings.

Consider the common notions of nature as being either dynamic and changeable, or something permanent that we can penetrate and reveal. Another example is, on the one hand, the negative connotations frequently attributed to the words "artificial" or "unnatural" because these adjectives describe things that do not arise of themselves, but are the result of a foreign will – i.e. culture – and, on the other hand, the notion of emancipation signalled by the mastery over nature. It is also worth noting that a certain distance to nature is often expressed, as though it is something we are in the process of losing in modern times – even if what we feel we are losing was itself the cultural, and thus temporary, processing of surroundings by a particular historical period. That architects showed virtually no interest in formulating programmes for open landscape during the Modernist period has naturally also contributed to the endurance of this romantic tendency of thought.

Similarly, there is a distinct inconsistency as regards the use of "nature" and "landscape" as terms, although this can be seen as an aid in enhancing different positions. For example, is nature our uncultivated surroundings, or can it be characterised as landscape already at that level? And can one say that we cultivate or organise nature, or does that mean that we have moved into the realm of gene technology, since nature can also be the way in which the physical world – plants, animals and humans – functions? Finally, one could of course ask whether all interaction with nature – even the most advanced basic research into the nature of matter – does not always take place on terms that imply culturally determined choices and perspectives.

The crucial point, however, is not that the concepts of nature and culture are so terribly ambivalent and have meanings that are all, in varying degrees, evoked and exposed when the words are used. Rather, the crucial point is to accept these contradictory relations as unavoidable. It is not possible to isolate the essence of the concept of nature. However, this state of affairs contains a certain potential as regards people's reflexive interaction with their surroundings: it may provide us with greater possibilities than we have had before to observe and evaluate our own relationship to that which surrounds us. The architect Alessandro Zaera-Polo expresses this view as follows: "A very powerful myth concerning ecological ideologies that must be exposed is the notion of 'nature' as opposed to 'the artificial'. We must begin developing an approach in which both are interdependent.

'Nature' is completely dependent on 'the artificial' right from the moment we are able to formulate the opposition. 'Nature' cannot exist without the presence of human beings. Just as the human body is not independent of the processes involved in its cultural construction, ecological systems are also culturally mediated products, which vary depending on history and geography – time and space – through continual human modification."

## **Super-ecology**

This type of relativising of a traditional binary opposition is what the American architectural theorist Michael Speaks refers to as a “super-ecological” view, within which both the natural and the artificial are considered as parts of the same incomprehensible, complex ecosystem.

There are other examples of works on architectural theory that express this same view. One of the earliest is Rayner Banham’s *Los Angeles: the City of Four Ecologies*, published in 1979. In this book, Banham describes the city as consisting of a variety of mechanisms or systems that can be natural or manmade – such as car traffic, the characteristic mixture of hilly and flat landscape of Los Angeles, and so on – and that function in accordance with their own principles, which do not necessarily make sense in relation to other external mechanisms and systems. Banham concludes that Los Angeles dismantles the faith of the functionalists in rational, causal connections – between urban and social forms or between the developmental tendencies of culture or nature – because each of these forms patterns that are far more complex than any planner would be able to keep track of or predict.

A relatively recent example of this super-ecological approach can be found in the work of urban theorist Jane Jacobs, particularly in her book *The Nature of Economics*, published in 2000. The purpose of this book, Jacobs writes herself, is to show that it is not possible to separate human beings and what they produce from the rest of nature. In this way, Jacobs questions the traditional use of the term “artificial” – if we were to stop focusing on things and focus instead on the processes that generate things, we would discover that the boundaries between these spheres disappear. It is not “unnatural” to change – instabilities will always be corrected, meaning that development can be viewed as qualitative change – but we must, in the end, remember that what we do to a particular sphere or system we probably also do to ourselves, as we are an integrated part of the complexity of the natural world – even if our ability to reflect on ourselves has a tendency to make us consider ourselves as distinct from our surroundings.

In addition to her attempt to erase the boundary between culture and nature, Jane Jacobs focuses on an important point pertaining to the necessity of considering systems other than one’s own: every system emerges based on a particular organisational logic, which is why only our considering systems other than our own allows us to view ourselves from the outside, so to speak, and in this way to learn about ourselves.

## **Life & production**

With modernity, nature is viewed as unordered chaos, which we can and must conquer and bring order to. Attempts are being made to confront this view, based on the notion of the super-ecological, i.e. the notion that human beings are not in control, but only one among many forms of intelligent life, and one that is not able to identify the essence of things, but must instead test relationships between things. Even if no being can conceive of what lies outside its own environment, beings can encounter the boundaries of their environment.

This idea is closely linked to work by a pair of Chilean researchers in the field of cognition, Humberto Maturana and Francisco Varela. Working with cognitive theory, they have developed a form of systems biology, based on an ambition to define what life is. Life is not DNA, growth or the ability to reproduce, they conclude after having studied a considerable number of organisms right from single-cell algae to human beings. It is instead the principle on which an individual system is organised. This approach reveals systems as circular and self-referring, i.e. they can be defined as the processes involved in realising them, and not as having particular qualities.

This kind of system is autopoietic, i.e. self-generating, which means that it, on the one hand, is organised as a network of processes which produces components *and*, on the other hand, consists of the components that make up the network. Production limits the system that makes production

possible; thus metabolism and setting boundaries place mutual conditions on each other, like two sides of the same entity phenomenon. A system or organism is either autopoietic – meaning that it is living – or not, which means that it is dead.

Even though every system is self-referential or self-ordering, i.e. features a high degree of autonomy, systems are also dependent on the constant exchange of energy with their surroundings in order to stay alive. One consequence of this is that every living system is always “at work”, always displays a high degree of imbalance, of movement and fluctuation. The only product produced by living beings is themselves – there is no distinction between producer and product, as their particular mode of organisation does not allow for any difference between doing, being and knowing. Our entire existence, all our knowledge and all our actions, can be seen as manifestations of our own special way of generating a world. This is a principle that applies equally to the maintenance of the body, to perceptions and to what we might call our set of cultural values.

All living systems share a common type of organisation – autopoietic organisation – but each has its own individual structure. This means that each emerges and develops in its own way as it encounters its environment, i.e. each has its own way of generating a world. All knowledge is action performed by the knower, which means that all knowledge is dependent on the structure of the knower. The phenomenon of explaining and the explained phenomenon belong to the same domain.

Maturana and Varela have observed in all living systems this kind of circularism between a particular way of being and the way in which the world looks; systems do not “gather” information from their environment, but certain vibrations in the environment can bring about a structural change in the system, which is itself defined by the history of the structure. This is true, for instance, of human perception, where seeing a colour or hearing certain sounds corresponds to a particular pattern of activity in the nervous system, as its structure determines it. The particular activity that is initiated in the nervous system under a particular set of circumstances is determined by its individual structure, not by anything inherent in the object that is being observed. The studies by Maturana and Varela show how experience is grounded in the structure of the one who experiences. There is no doubt that a world is being experienced – it is not a tautological system, it *is* dependent on external matter and energy – but the experience is defined or shaped by the doing, knowing and acting that the one who experiences has already engaged in.

In this sense, cognition is not merely a processing of the perception of a given external world, as if the senses create an inner picture that is a faithful reproduction of reality. Rather, our surroundings are only vibrations, some of which our senses convert into frequency patterns that can be processed by the brain. Pictures of distinct objects exist only in our inner world of symbols and ideas. For this reason, argue Maturana and Varela, there is no reflection in the Cartesian or Kantian sense. But neither are we left with complete solipsism, since the surrounding world works as a stimulant. The two worlds that are traditionally presented as polar opposites – the external, physical and natural, and the inner, subjective and cultural – thus condition each other, and the ego arises in an autopoietic and therefore flexible overlapping of these traditionally separated worlds: since we know how we know, we produce ourselves – while we thereby always exclude the possibility of understanding the cognitive acts of others.

## **Position**

An important point in Maturana and Varela’s systems biology is the dependence of observation on the subject, or as Maturana puts it, “Everything that is said is said by someone.” We tend to forget this aspect, since when we observe a change in our surroundings, we often describe it as one out of many possible changes, and thus as a result of a particular influence. In fact, these many possible changes exist only in the imagination of the observer – as implicit comparable observations of many known changes – for when all systems are structurally determined, it is their previous condition, in combination with the encounter with the environment, that determines the subsequent change. All autopoietic systems are entities that consist of many mutually dependent parts, and when one

dimension of the system changes, the entire organism undergoes changes to many dimensions simultaneously. Yet we see only the influence of the environment, and thus attribute the role of primary cause to this influence. In this sense, the past and the present as references to what has taken place and what will take place are not relevant to the structural determination of the organism, but only exist as dimensions for us as communicating observers. Behaviour therefore involves changes that we observers indicate as movements or acts in relation to a given environment.

In this same way, communicating with another human being cannot be merely a question of transferring information. A person says what she says or hears what she hears in accordance with her own structural determination, so it is not necessarily the information that ensures the hearing. Maturana and Varela remind us that we always have a blind spot, and they point to the spot on the retina where the optical nerve is connected, and which makes the eye blind on that very spot. In this same way, every observation assumes a blind spot that we are not even aware of, because the eye always compensates. We do not see that we do not see. The highest degree of wisdom is also the highest degree of ignorance. All one can do in this kind of situation is to try always to move these blind spots, in an effort to catch a glimpse of what had been invisible. This is obviously difficult when we are used to having a fixed reference point to which we can anchor our descriptions in order to confirm and defend their validity.

If we choose to follow this line of thinking, we are in fact forced to call into question the foundation for our understanding of aspects of reality as either natural or cultural constructions. It is, in any case, no longer possible to maintain such a clear separation; as Maturana and Varela view it, the roots of cognition and consciousness are biological, which places them in the “domain of nature”, while what we refer to as the cultural layers – such as memory and experience – are so fundamental to all experience that it is pointless to even speak of distinct layers. What it really comes down to is that “nature” as a pure, untouched and in-balance condition does not exist: we are nature and we are culture, and we cannot speak of anything “out there” independent of us. We certainly experience a world, but as the geographer Bill McKibben puts it very clearly, “the very idea of nature as an ontological category that is distinct from human experience has now reached its historical conclusion.”

## **Negotiations**

With this, the entire traditional distinction between the subjective and the objective world dissolves, as does the notion that the external world is represented in the inner world. This is not even a question of our all sharing the same biological sensory apparatus, but merely interpreting our sensory impressions individually. It is rather that sensory perception itself is modified individually as a result of previous experience, memory and expectations. This makes it no longer possible to separate the physiological aspects of perception and the psychological aspects of interpretation – i.e. what is often referred to as the biological and cultural traits of human nature cannot be separated, because even human development itself takes place in an interplay or a negotiation between inner and external worlds, individuals and societies, nature and culture. At every moment all living things are undergoing change – qualitative change, no less – which can also be referred to as evolution.

In this light, one might ask whether we, as cultural beings with our tools and methods of design and with our increasingly urbanised gaze, are even able to create or see any other nature than the nature that is a human product. We might also ask whether it does not then quickly take on yet another new identity as a type of second nature, since by virtue of its being part of a living system, it can go on to have significance for future changes and development in the continual interplay between inner and external worlds. This might involve the relationship between human nature and non-human nature.

The sociologist Bruno Latour has formulated a number of ideas regarding actors and agents, where both human and non-human subjects or agents mutually test, challenge and define each other. None of these agents is a fixed entity; they are a type of streams or circulating objects that are constantly

in the process of negotiating their stability and boundaries. Latour describes what he terms a “contra-Copernican revolution” when he attempts to dissolve the polarity between the conscious and well-defined subject and the external, neutral world, so as to focus on the “realm in the middle” as a collection of hybrids (or agents or cyborgs) that cannot be categorised as belonging to the one or the other pole, but that play equal roles as both quasi-objects and quasi-subjects.

If the focus is shifted from a clear distinction between the determining subject and the determined object to flowing movement and overlapping layers of hybrids of human and non-human natural processes, and if being, knowing and acting are all expressions of our way of generating a world, as Maturana and Varela have tried to argue, then the product and the process must be coincident. Then it becomes of matter of exchanges and negotiations.