Nature vs. Culture in Sustainable Environmental Management

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Dedicated to:

Jan, Tiny & Ilani

"Ek is lief vir julle"

Title:
Nature vs. Culture in Sustainable Environmental Management.

Abstract:
The material of this study includes literature on the historically bound nature of the ideographical nature vs. culture polarity. From this material, general concepts of "nature" and "culture" are formed on the basis of value in the context of environmental management. Then, the existence of a polar dualism (nature vs. culture) is indicated via a transcendental critique of the worldview underlying the construction of this relationship. It is shown that the polarity is asymmetrical, causing a hierarchical organization in the Western ontology. The nature/culture hierarchical polarity is subjected to a less radical deconstruction and a non-dualistic, less reductionist conception of "nature" and "culture" formulated. This enables a foreseeably sustainable environment in terms of quality of life of the human being in totality.

Keywords:
Nature, Culture, Dualism, Sustainability, Environmental Management, Dialectics, Worldview, Mastery, Control, Technological Society.

Titel:
Natuur vs. Kultuur in Volhoubare Omgewingsbestuur.

Opsomming:
Die materiaal van hierdie studie sluit literatuur oor die histories-gebonde aard van die ideografiese natuur vs. kultuur polariteit in. Vanuit hierdie materiaal word basiese konsepsies van "natuur" en "kultuur" gevorm op basis van waarde in die konteks van omgewingsbestuur. Verder word die teenwoordigheid van 'n polêre dualisme (natuur vs. kultuur) aangedui via 'n transendentale kritiek van die wêreldvisie wat die onderbou van die konstruksie van hierdie verband vorm. Daar word gewys dat die polariteit asimmetries is en 'n hiërargiese organisering in die Westerse denke veroorsaak word. Die natuur/kultuur hiërargiese polariteit word blootgestel aan 'n minder radikale dekonstruksie en 'n non-dualistiese, minder reduksionistiese konsepsualisering van "natuur" en "kultuur" word geformuleer. Dit maak 'n voorsienbare volhoubare omgewing, in terme van lewenskwaliteit van die mens in totaliteit, moontlik.

Sleutelwoorde:
Natuur, Kultuur, Dualisme, Volhoubaarheid, Omgewingsbestuur, Dialektiek, Wêreldbeskouing, Oorheersing, Beheer, Tegnologiese samelewing.

Acknowledgement

To the person who has taught me so much of what I know about Philosophy, Prof. Ponti Venter, thank you for being my mentor.

Preface

What if someone offered you a drug that was guaranteed to, within 24 hours, erase all of the fundamental flaws in your character.
The catch is that it would affect you holistically, i.e. that the good/strong aspects of your character would be changed *with* the bad.

It would be a kind of strange rebirth, with the overarching idea that the new person that emerges (although vastly different) will be better than the previous.

Would you take the drug?

Most of us would probably decline the offer. Not because we are averse to improving, but because the improvement is attained through artificial means. Taking the drug would produce an "unnatural" you.

Curiously, this sentiment appears to pertain only to the ailments of mind. Administration of chronic medication for physical misfortunes like high blood pressure will be widely accepted. Taking blood pressure regulatory drugs does not produce "unnatural" effects. The circulatory system derives additional effectiveness from their habitual taking.

How do we decide which interventions are in accordance with nature?

(Why is "natural", more acceptable than "miraculous", "unusual", "artificial", "civil", "supernatural" or "cultural"?)

This mini-dissertation is presented in the format of a scientific article for future publication in a scholarly journal, such as *Acta Academica* or *Koers*.

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Snyman A L
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Van Rensburg C D (red)
1986. *Human rights in South Africa*. 2nd ed. Pretoria: HAUM.

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Index

1. Introduction – the Philosophical Issue underlying Sustainable Development.

The material of this study includes literature on the historically bound nature of the ideographical nature vs. culture polarity. From this material, general concepts of "nature" and "culture" are formed on the basis of value in the context of environmental management. Then, the existence of a polar dualism (nature vs. culture) is indicated via a transcendental critique of the worldview underlying the construction of this relationship. It is shown that the polarity is asymmetrical, causing a hierarchical organization in the Western ontology.

Initially, culture was seen as the ontological ground principle of the existence of the whole universe and the human being (Middle Ages, Renaissance, Modernity). With the rise of Irrationalism, this ontological principle has shifted towards nature.

The practical consequences of dualisms in the context of environmental management are inherently unsustainable. The nature/culture hierarchical polarity is subjected to a less radical deconstruction and a non-dualistic, less reductionist conception of "nature" and "culture" formulated. This enables a foresee-ably sustainable environment in terms of quality of life of the human being in totality.

The main purpose of this study is to accentuate the tension that exists between "nature" and "culture" and to show its effect on the environment. This helps to explain why we desperately hold on to management methods until our hands are bleeding, when in actual fact environmental management is just another supplementary piece of technique.

Binary oppositions that seem to trap our logical minds so easily can be aggressed by deconstruction, and in the case of this study, a less radical form thereof. This implies some attempt at finding the presuppositions that lead to the formation of the reduction, because altering the original presuppositions can lead to the abolition or inversion of the original hierarchy. But, since I do not subscribe to Derrida's ultimately paralyzing views ("outside of the text, nothing exists and inside the text, it is impossible to determine the origin") the method of the study also includes a form of transcendental critique.

Transcendental critique is an attempt to reach the origin (final conditions of existence) because when it is accepted that ground motives are consequential, a point of departure is provided from

which certain assumptions can be made. In fact the "nature-culture" dialectic is such a ground motive which has been governing Modernity as a cultural era, and may extend its influence outside via globalisation.

During this study the major movements in environmental management were identified though a survey of one of the most seminal journals in the field (*Journal of Environmental Management*) as well as internet searches, and the limited number of resources in book format. These resources have further been backed up by historical-philosophical materials expressing the formation of the spirit of "Modernity" and "Post"-"Modernity".

The prominent movements could be divided into two categories:

- The first category comprises movements which has an underlying mechanistic worldview with "reason" in the Archimedes position. In terms of the "nature" vs. "culture" dialectic, "culture" is absolutized to attain a higher hierarchical position in relation to "nature". However, mechanistic thinking tends to partialistic analysis (case studies), producing most valuable technical research, but the value context and philosophical basis is often not worked out. The *Journal of Environmental Management* gives this kind of impression.

- The second category describes all the movements which have a more holistic, organistic worldview, with "nature" in the Archimedes position. This forces the "nature" vs. "culture" dialectic in the direction of absolutized "nature" in relation to "culture". Some of these adopt a more "naturalistic" position (conflictual survivalism approaching the mechanistic viewpoint, for example FIGU, 2001), but mostly they opt for a romanticized, spiritualised idea of nature, in which not much attention is paid to data about local crises. Such approaches are to be found in the very popular works of Capra, but also in some forms of Ecofeminism (Ecofem, 2005; Capra, 1986, 1984).

Interestingly, dualisms seem to be *cultural* motives that should be considered over time. They are part of the intellectual substrate of a culture. It is unlikely that both oppositions will therefore be available in a single school of thought. With this in mind, the most influential of the oppositions are identified (as the mechanistic view leading to technical management forms) and this line followed to reveal the underlying philosophical issues. Currently, literature on the subject is

mostly case studies with limited foundational depth. This paper attempts to remedy the problem somewhat by providing at least an initial exploration of the philosophical issues.

> *The hypothesis of this study is that most current forms of environmental management are based on movements which are trapped in the "nature" vs. "culture" dialectic and that in some influential cases, it takes a capitalist (technicist) form (it is good for, business...)* (1)

Although some movements recognize the existence of a dualism, they follow "substitution techniques" to dissolve the tension and fail as a result. With "substitution techniques" I refer to those techniques that exchange one of the oppositions with another concept. An example of this can be found in Dooyeweerd ("nature" vs. "freedom").

Given the neglect of the more foundational issues in the dominating approaches to the practice of environmental management, its research basis, and even the teaching of programs at university level, it is necessary to focus on this question:

What is the fundamental philosophical substructure of the prevailing approach to environmental management?

A solution lies in a mindset which regards the idea of enmity between mankind and "nature" (and resulting idea of "mastery") as superfluous. The human being is a part/ product of "nature". And although we use "nature" to create "culture", we can never totally destroy "nature". We can damage it until we "create" harsh conditions and destroy our own ability to survive.

2. The idea of "sustainability" – a general overview.

The concept of "sustainability" is very difficult to define. It seems to be internally incoherent because we perceive it to contain two contradictory presuppositions. The first presupposition is an almost Parmenidian idea that "everything remains the same". Therefore, "sustainability" is taken to mean that change must occur very conservatively, or not at all. But, at the same time, we are being bombarded with evidence of vast changes occurring in nature. This may include direct epistemological evidence (e.g. changes in the earth's crust) or interpretations derived from direct evidence (e.g. evolution of biological species). These observations of change may lead to the

second presupposition, Heraclitean in nature – that nothing in nature is "sustainable" or unchanging. "Sustainability" will be seen as dependent upon human intervention and as something unnatural or cultural.

Our ideas about "nature" itself can also either be Parmenidean or Heraclitean in character. We may believe, like Parmenides, that "nature" has some kind of deep order that will "naturally" emerge. Knowledge of this "natural law" will afford us complete control of "nature". And whenever our science fails to correspond to reality, rather than to doubt the "natural law" of our own formulation, we regard our formulation as "not the whole story". At the same time, we may perceive "nature" to be a strange balance between predictability and surprise. This may lead to a more dialectical, or Heraclitean, conceptualization. According to Goldstein *et al.* "nature" is at a position "at the edge of chaos", where the system is in a kind of "suspended animation between stability and instability". These systems are adaptive and respond actively to changes (Goldstein, Poole, Safko, 2002: 483-485). This may cast a dark cloud over our ability to control "nature": it shows that there are inherent limits to our understanding and the predictability of the future.

Forming a coherent conceptualization of "sustainability" necessitates a synthesis whereby, inherent in the idea, is some kind of "acceptable" change accommodated within the parameters of conserving integrity. For humans, this integrity ranges from physiological tolerance levels that make life possible, to quality of life that makes life meaningful. General opinion in the West seems to hold that "nature" must be conserved in such condition that minimum human ecological survival is possible, but at the same time "culture" should be developing to make increasing "quality of life" a possibility. An example would be the Vienna Convention for the Protection of the Ozone Layer, under the auspices of UNEP, which binds its signatories "to take appropriate measures to protect human health and the environment against adverse effects resulting from human activities which modify or are likely to modify the ozone layer ..." (UNEP Ozone Secretariat, 2005).

Since production of "culture" usually necessitates "natural" resources, a "nature" vs. "culture" dialectic has developed in the West. Reducing either "nature" or "culture" does not offer a sustainable situation. Sustainability implies that both dialectical opposites co-exist in harmony. And "quality of life" can only ensue when "natural" and "cultural" needs are met simultaneously.

The "general opinion" of a generation is usually reflected in the popular art of that generation. In the case of the Western "nature" vs. "culture" dialectic, popular science fiction offers a vehicle for some interesting (and perhaps prophetic) insights.

In a newspaper review of a new science fiction novel, "State of Fear" by Michael Crichton, a serious epistemological issue regarding the concept of "sustainability" is accentuated (Mitchell, 2005). The issue regards the scope and limits of the scientific window that forms our view of reality:

- On the one hand environmentalist groups, that consider the scope grand enough to allow the formation of legitimate knowledge, believe that our current trends in unsustainable development will invariably lead to an uninhabitable earth.

- But on the other hand more skeptical groups are saying that the scope of our scientific window is simply too insufficient to accurately witness the large scale homeostatic changes in nature that occur over vast time scales. According to them we are constructing predictive tangents on the statistical graphs of current ecological trends and then use these tangents to extrapolate much too far into the future. The actual fact is that our limited window in time is blinding us to the very large scale feedback loop mechanisms that may be present, rendering our predictions somewhat off target. The implication is that our normative cultural responsibility is much larger and more complex than anticipated.

3. "Sustainability" in the context of Environmental Management.

The problems surrounding the concept of "sustainability" are acutely evident in the context of "sustainable environmental management" (2).

"Nature"(3) is a complex, homeostatic system. When the "natural" equilibrium is disturbed, nature retaliates through feedback loops, until a new stable state is reached. This new state may not be comfortable from Man's perspective, although still perfectly "natural".

It has not eluded my thought that, terminologically, "equilibrium" is a mechanistic, physicalistic term and that a more biological conceptualization, like "homeostasis" would perhaps be more suited to my intent. It would provide a more organismic (holistic) view when "all of nature" is

regarded as being "homeostatic". "Homeostasis" refers to a range of possible change in the region of an entropic balance that allows an organism to maintain itself on a level above the entropic balance (death). Above this looms the question whether the scope of our scientific window of reality is large enough to sustain such a claim in a scientifically safe manner.

I admit to extrapolating something which occurs in individualistic organisms to nature as a whole, in a way that cannot be proved within the realm of science. For the moment, I have to subscribe to this organismic view in a limited sense, because it is more sensitive to the biomass of the whole world than the reductionist, partialistic, mechanistic view that has been leading the pace for the recent centuries since Descartes. The more holistic, organismic view may offer positive insights for the biological sciences, as long as it is not, without question, converted into a social perspective (like Mussolini (1938: 18) has done).

"Environmental management" is Man's attempt at managing the behavior of *Homo sapiens* so that the natural homeostasis is not disturbed to such an extent, that nature becomes uninhabitable. It is grounded on the basic principle of "greatest happiness for the greatest number" (Wilkinson, 1980: 214). Where "happiness" is defined as "utility" and the "greatest number" refers to "biggest population".

3.1 The degeneration of "utility".

This utilitarian principle had its origin in 1780 when Jeremy Bentham wrote his "Introduction to principles of morals and legislation" (published 1789) (Mautner, 1996: 64-65). According to Bentham, an action is good if its overall consequences promote the greatest amount of happiness. Happiness is identified with pleasure and the absence of pain. To measure the overall tendency to promote happiness, Bentham devised a felicific calculus with intensity, duration, likelihood, extent etc. as computational parameters (Mautner, 1996: 64-65).

The calculus simply functioned by adding pleasures and subtracting pains to compute the total amount of happiness over a period of time (Goudzwaard, 1994: 47). According to this kind of calculation, a hypothetical athlete would not be happier with winning an important competition (and tearing a hamstring muscle in the process) than with the second place prize (that did not require the same amount of deleterious strain on his muscle). The unpleasantness of the injury

and resulting rehabilitation and medical costs, outweigh the immediate pleasure of the win. Thus a careful calculation of the full result of pleasures and pains involved makes second place a likely choice.

I am of opinion that, although Bentham's idea of quality of life was seated in a kind of popular hedonism (seeking pleasure and avoiding pain) his point was that a "sustained effort" or "continual perseverance" in action to maximize happiness. The converse of this would probably be an idea analogous to "peak experiences" as defined by Maslow (4). By nature, these peak experiences must be long enough to be profound, but brief enough to be tolerable by our frail bodies. In other words, there is an element of physical necessity which limits the duration of peak experiences.

I think that, for Bentham, the accumulated value of the alternating peak experiences and moments of normal existence must have produced some kind of neutralization on his scale of happiness. In contrast, his idea of sustained happiness, although not capable of high levels of happiness nearly as intense as peak experiences, was not neutralized by depressing moments of normal existence and therefore did produce some positive value on the scale. For Bentham, long term happiness could be achieved. Maslow's moments of mystical happiness could only be received.

The biggest problem with Bentham's conceptualization of quality of life is that the demands of his attempted quantification (felicific calculus) are severe. In order to quantify something, it must be reduced to an abstract form to which a numerical value can be assigned. For Bentham his estimation of happiness was through economical means (Mautner, 1996: 64-65). The inadequacy of this method was noted by one of Bentham's students.

In "Principles of Political Economy" (1848), Mill reflects on the difference between what economics measure and what human beings really valued. He was of opinion that we should sacrifice economic growth for the sake of the environment! In "Utilitarianism" (1861) he proposed that happiness should be assessed not merely by quantity, but also by quality (5) (Mautner, 1996: 352-355).

This means that utilitarianism (refined by Mill), traditionally, didn't imply that only materialistic values were worth pursuing. It is only recently (under the influence of 19th century economic

theory) that the utilitarian principle in the context of environmental management was taken to mean "greatest financial gain" (Wilkinson, 1980: 211-215).

Furthermore it has recently become "rational" to work for maximum personal advantage, while self-centeredness forms the basis of all sensible social behavior. An example of this is the idea that individual financial advantage is automatically transmuted to advantage for everyone in the form of job-creation (Venter, Loubser; 2004: 12).

Our traditions determine our value-judgements. Under Capitalism, positive capital return automatically indicates social desirability (Goudzwaard et al, 1994: 49). The utility goes toward material needs and comforts, a tradition established in the wake of Descartes (Venter, Loubser, 2004: 5).

3.2 Endless "wants"; endless "needs"

In *Discours de la Methode* (Chapter VI, 1637) Descartes declares that it is acceptable for us to use nature to our own advantage:

> "Through this, if we know the power and the behaviour of fire, water, air the stars, the heavens, and of the other bodies which surround us, in the same distinctive way that we know the different crafts of our master craftsmen, **we could use them in the same way for all purposes for which they are fit**, and in this way **make us masters and possessors of nature**. It is not only to invent an unlimited number of techniques, by which we can, **without exertion, use the fruits of the earth and all the possible comforts in it**, but also and especially for the sake of the preservation of health, which is undoubtedly the first among good things and the foundation of all other good things. For even the mind is strongly dependent upon the organs of the body..."

It is worth noting that Descartes' differentiation between "nature" and "mind" already portends a reduced, exploitable "nature" with the aid of human technology. (I will expand on technology as means of exploitation in 5. Nature vs. Environment.) And bearing in mind the utilitarian principle, "nature" is seen as exploitable - in the popularly hedonistic sense - to ensure the "greatest pleasure for the greatest amount of people". This pleasure-structure demands all the

resources and in actual fact makes other forms of happiness (like dignity, love, etc.) difficult or even impossible.

In the current materialistic, capitalistic context, "needs" and "wants" tend to be confused. A drug-addict confuses a "want" with a "need" when a chemical that initially provides recreation, becomes medication, after physiological tolerance develops. And in the case of obesity, a "need" (enough food for biological survival) is confused with a "want" (more food than necessary). Because "wants" are infinite, it follows that the "needs" of an egocentric advantage seeker will also never be satisfied (Venter, Loubser, 2004: 7 cf. Wilkinson; 1980: 55).

Adam Smith classified these "unlimited needs": "Every man is rich or poor according to the degree in which he can afford to enjoy the necessities, conveniences and amusements of life" (Smith, 1950: 32). This classification which has its origins in the capitalist theory of Turgot (cf. Venter, 2002a: 28-31) was augmented by the dialectical materialism of Karl Marx, and is extremely elaborated and expanded in the work of Maslow (1971: 128, 141-146). Thus in Western thought a hierarchy of needs was established over centuries, always starting from the "material" side: 1) "necessities" (understood as food, clothing and lodging) 2) "conveniences", 3) "amusements", to be realized in that order.

Of course, the poor are dependent on the rich to spend on the "amusement" side, in order for them to have work and access the "necessities". Overproduction, on all three levels, leads to overexploitation in the name of "needs" (which are actually the mistaken "wants" of an insatiable society) (Venter, Loubser, 2004:7-8). Furthermore it seems that "amusement" is actually dominating the existing culture of hedonism because "necessities" have also become "amusements" (e.g. the development of coastal properties, detrimental to pristine nature). Even "conveniences" are becoming "amusements" (e.g. the internet, television, etc.), further contributing to overspending on the "amusement" side.

Another contradiction is that a minority is slaving away while the poor, unemployed masses (who are not supposed to be able to afford "leisure") are "leisurely" dying of hunger.

In connection with this Veblen has theorized that the "leisure class" had in effect turned into its opposite and that Marx had to be wrong, since everybody would like to become part of the "leisure class"- that spent their time amusing themselves - and therefore no worker will support a

revolution to communism (cf. Heilbroner, 1955: 171-202). In America this theory seems to hold because the workers were effective enough in negotiations to become rich and to remain conservative. In the rest of the world the learned (supposed "leisure makers") are workaholics and those in desperate need of work has all the "leisure".

Hannah Arendt proposed another way in which freedom to "leisure" could become self defeating: Automation and technical progress will eventually free us from labor, but this becomes problematic in a society in which labor has theoretically been glorified (Arendt, 1958: 4). According to Arendt:

> "It is a society of laborers which is about to be liberated from the fetters of labor, and this society does no longer know of those higher and more meaningful activities for the sake of which this freedom would deserve to be won. Within this society, which is egalitarian because this is labor's way of making men live together, there is no class left, no aristocracy of either a political or spiritual nature from which a restoration of the other capacities of man could start anew. Even presidents, kings and prime ministers think of their offices in terms of a job necessary for the life of society, and among the intellectuals, only solitary individuals are left who consider what they are doing in terms of work and not in terms of making a living. What we are confronted with is the prospect of a society of laborers without labor, that is, without the only activity left to them. Surely, nothing could be worse." (Arendt, 1958: 5.)

The consequence is that a society focused on entertainment and indulgence for the human being, concomitant with a conceptualization of "nature" focused on the sub-rational, will always prioritize the "wants" of the human being and only in afterthought consider the rest of creation's "needs". This must inevitably have a negative effect on the homeostatic balance in "nature". An example of this is our vast expenditure of energy (fossil fuel, uranium, etc.) for human comfort. The fact that we interfere with the homeostatic balance is dangerous since we don't know exactly what is happening on macro level. We don't know precisely what our influence on the balance is. Maybe the fact that radio-active materials take such a long time to break down and that people (who were supposedly in control) have already made big mistakes in the past, as well as the fact that radio-active material can be obtained on the black market, should warn us that we have the ability to disturb the homeostasis on such a long term basis, that life becomes unsustainable even if the equilibrium will eventually be restored.

3.3 Cyclic destruction of earth vs. fateful migration to other planets?!

In contrast to the trend (overproduction leading to overexploitation), evident in economically stronger countries, South Africa is trying to prevent the depletion of resources by protecting the environment through constitutional legislation.

According to section 24 of the South African constitution (108 of 1996), everyone has the right to –

a) an environment that is not harmful to their health or wellbeing, and
b) to protection of the environment, for the sake of current and future generations, through reasonable legislative and other precautions, that –
    - prevent pollution and ecological degradation,
    - promote conservation, and
    - ensure ecologically sustainable development and application of natural resources, whilst promoting equitable economical and social development.

This constitutional human right has forced environmental management to be concerned with maintaining a sustainable balance between economy, ecology and socio-cultural development.

The constitution is laying down norms for quality of life and in the Western tradition an easy interpretation is that this kind of management is scientific and technical and that humans are capable of complete control over nature (Thai-Eng, 1997: 159-161). The arrogance of this delusion is apparent as many negative effects of pretended human mastery are appearing. The decline in natural biodiversity in the light of human interventions that alter the ecology, like the building of dams, is but one example.

Currently, astrophysicists postulate two very probable histories for "nature" as a totality, depending on the amount of matter present in the universe. One possible outcome is that nature, as we know it on earth, will die in a "long, cold whimper as galaxies continue to expand and the last star burns out of fuel." The other prediction is the opposite of "the Big Bang", namely the

"Big Crunch", where "all matter will be smashed back into a vast cataclysmic gravity well" (Hawking, 2001: 95-96). This means that nature itself is long lasting from human perspective, but not eternal. The concept of "sustainability" is trying to make the transitory, last, and thus refers to the amount of generations of humans that can live from nature before one of the two proposed ends.

Of course, all indications are that everything in the universe will still last a few million years longer, forcing the concept of "sustainability" to be more concerned with how many generations of humans can survive the homeostatic changes in nature. Because of these homeostatic changes, mankind will never be able to destroy nature completely, although some more pessimistic thinkers, such as Arendt (6), seem to suggest that (Arendt, 1958: 2-3, 139-140). Mankind is, however, more than capable of creating an apocalypse by misusing nature until conditions are such that human life is impossible. Our hope is seated in environmental management and by implication, in technology.

Surprisingly, it seems as if some people believe that the problem can be corrected by the same erroneous thinking that had caused it in the first place! Apparently, if more technological advances come at a stiff price to the environment, still more of the same technologies may offer a way to save us. I suppose that if this viewpoint is taken to the extreme, it will sound something like this: Technology will save us by making it possible for mankind to migrate to other planets in the solar system! Speculative cosmologists hope that humankind will be able to move from planet to planet while the universe decays (Ward, 1996: 50-52).

This idea is more than mere science-fiction. It implies a deeper shift in our imagination. Our model of earth has changed from a "machine" to a "space ship". This means that earth is seen as a giant life-support system and concepts such as "sustainability" gains importance (Wilkinson, 1980: 208). It may even follow that we will change our formulation of the utilitarian principle from "greatest" to "sufficient".

4. The existence of polarizing effects in the balance between ecology, economy and social development in sustainable environmental management.

In Modernity, nature has become reduced to a mechanistic conception of the physical environment, excluding human rationality. The value of nature has shifted from intrinsic to

instrumental. Our ability to use nature has become a fundamental human right. This right is based (especially for those who popularize human rights) in culture: property is grounded in cultivation for use, Locke argues in his Second Treatise of Civil Government, which is the foundation of our human rights doctrine (Locke, n.d: 130 ff.). Capitalism and the importance of material wealth has caused humans to waste natural resources since "wants" and "needs" tended to be confused (Venter, Loubser, 2004: 7-8), and the economists' doctrine that "wants" are infinite, has become a way of life (Combenale, 1995: 165ff cf. Venter; 2002b: 291-293).

Only recently has it become apparent that natural resources are limited (7). As the human population increases, our hope is fixed on science and technology to alleviate the pressure. The masters of the universe have *created* scarcity and this has caused management to impose itself (Achterhuijs, 1988; 21). Natural science and especially mathematical formulation, is deemed as the only true representation of reality. This ability to transform the physical elements of reality into quantifiable relations gives rise to a generalized and abstract perspective on reality. "Reality" is reduced to "resources", "production factors", "utilities", "poverty", etc. The coherent universe as a life supporting environment itself becomes a scarce object to be "managed".

Although an all encompassing, holistic view is an Archimedean point out of mortal reach, Western Intellectualists have, throughout history, repeatedly accepted that they are in possession of just such an elevated position. For the Rationalists, the Archimedean point was Reason (cf. Dooyeweerd, 1953: (1)12-13). This explains why Kant found himself in a tension: on the one side he believed that all humans were morally autonomous and thus chose their own moral laws. But on the other side he had difficulty with the fact that human beings were "immature" and didn't use their reason. And thirdly, he believed that the accumulation of choices determines the life of the individual as a natural law. Of course, Kant himself was in the Archimedean point and so had a complete overview of history, which other human beings lacked. With the rise of Behaviorism, the techniques of science became the accepted Archimedean point – yet another illusion (Kant, 1992:23-36; Skinner, 1982:11ff)

The problem is that there are as many scientific opinions as the white coat heroes who create them. The reason for the gamut of opinions is that Modernity's scientists (8) function under the ether of an epistemological pretension – that "reason" is a fixed, objective and autonomous ontological ground principle. Irrationalist scientists, whether naturalistic or spiritualistic, don't subscribe to "reason" as ground principle, but are nevertheless under the same pretension: the

mere possibility that they can attain an Archimedean point. Of course, the demands on such an ontological ground principle are onerous.

In the first place, "reason" must provide mortal scientists with nothing less than a COMPLETE OVERVIEW OF THE WHOLE UNIVERSE – past, present and future (Dooyeweerd, 1953: (1)12-13). This is not only the case in the philosophies of Kant, Comte, Marx or Skinner, but also in Einstein, Bohr, Darwin, Dawson, Hawking, and present tendencies to "theories of everything". From this grand perspective the useful regularities of nature are supposed to be clearly accessible. Secondly, as a result of this, complete human control of nature is supposed to be possible. Humankind will sway the forces of nature to anthropocentric advantage (Heidegger; 1938: 85-88).

The assumption inherent in this epistemological pretension is that "reason" has sufficient ontological distance from nature in order to produce a grand overview of nature in its totality. This assumption is flawed. "Reason" can not be autonomous, because it resides in a living subject – human beings. And human beings are ontologically part of nature. We have physical bodies and material needs. Again the "nature" vs. "culture" tension becomes apparent: For modern humanism, "reason" is both "supernatural" and "natural", because humanist thought wants to emphasize the uniqueness of the rational human as "master" of "nature" while still maintaining "nature" as the arché (9).

But we also have a "moral" (10) aspect to our existence, and since white coat heroes are human, this means that the science they practice can never consist of objective observations, unbiased methods, absolutely true results and universal interpretations. This leads to various, often contradictory scientific opinions, making it almost impossible to predict whether Man really does get close to an apocalypse of his own creation. (Refer to arguments on exceeding our epistemological window on reality in section 2. The idea of "sustainability" – a general overview".)

To Malthus, the mechanism of this apocalypse was rapid population increase. In "Essay on the Principle of Population" (1798) he argued that because of our natural tendency towards overpopulation, progress and an increase in general happiness was impossible as population increase exceeds food production (cf. Heilbroner, 1955:64ff).

The debate about population growth has been continued ever since. Charles Darwin used Malthus' theory to formulate a metaphor for the biological context, called the theory of evolution. His ideas about natural selection caused Darwin to be hesitant towards artificial human regulation of the birth and death of individuals. He was afraid of accidentally eliminating the "fittest". While, on the contrary, contemporary naturalists argue that birth control should be compulsory in the developing world (cf. Venter, 1996: 209-220).

If the amount of resources used were any indication, the U.S.A would have been the most overpopulated country in the world. This is an echo of Adam Smith's flawed prediction that overproduction on all three levels (1. "needs", 2. "necessities", 3. "conveniences") will allow the working of the free market to lead us all towards a better life. The question arises whether it is really only "large families" that endanger the environment (Ferguson, 1999).

Concomitant with this is each generation of men's mass desire to make the most of their transient existence on earth. Environmental management drowns these soaring desires. As indicated above, the direction the desires take under competitive consumerism, allows for a depletion of resources by a small fraction of humankind. When uncertain of the end goal of our actions, it becomes difficult to commit to saving for the future whole-heartedly. "Sustainability" thus also means "reaching as much as possible, without becoming self-destructive."

5. Nature vs. Environment

To protect himself from nature, Man has produced another world. A kind of natural-cultural interface, called the "environment" (Arendt, 1958: 2,3,9). In my own mind, the concept of "sustainability" belongs more to the environment, than to nature. "Sustaining" the environment means to keep nature from changing into a state where conditions make human life uncomfortable. The way I read present tendencies, human imagination, especially as expressed by spiritualistic thinkers such as Berdyayev and Hannah Arendt, sees environmental development as moving towards a future free from necessity.

"Necessity" here is understood as a binding natural inevitability. If it is based in the assumption that nature is "incomplete" in some way, it may be perceived as a serious threat to the freedom to pursue a meaningful life.

This conception of "necessity" concurs with that which Hannah Arendt thinks humankind is trying to escape from:

> "For some time now, a great many scientific endeavors have been directed toward making life also "artificial", toward cutting the last tie through which even Man belongs among the children of nature. It is the same desire to escape from imprisonment to the earth that is manifest in the attempt to create life in the test tube, in the desire to mix "frozen germ plasma from people of demonstrated ability under the microscope to produce superior human beings" and "to alter (their) size, shape and function, and the wish to escape the human condition, I suspect, also underlies the hope to extend Man's life-span far beyond the hundred-year limit. This future man,... seems to be possessed by a rebellion against human existence as it has been given, a free gift from nowhere (secularly speaking), which he wishes to exchange, as it were, for something he has made himself" (Arendt, 1958: 2-3).

Arendt is giving an accurate formulation of the tension between "nature" and "culture" in Modern society. Even in Post Modern times the human being continues to regard reduced "nature" as a threat to human nature, human freedom and tries to break free from "nature" through technical "mastery". This must invariably lead to failure, because the human being is part of "nature".

Therefore, a choice to break free from natural necessity implies that one renounces one's very nature. This means that existence as it was previously known will be replaced with something completely different. It may, for example be technologically possible for a human who wishes to escape from the natural necessity of gravity, to live in an artificial environment free from gravitational pull. Eventually this will have an effect on the person's existence. He will exchange normal "forceful" physical movement for effortless floating around in the air. Later, as atrophy diminishes his muscles and his skeleton becomes porous, he will lose the ability for autonomous movement and remain suspended at the mercy of external forces for movement. Eventually the person dies – ultimately renouncing his natural form of existence for something else. Precisely what form of existence he assumes after death is not relevant for the moment. The point is that natural necessity can not be overcome, unless one sacrifices one's nature. Even before the point of death it may be possible to re-engineer our own anatomy and molecular biology to be better suited for micro-gravitational conditions. We may choose to live without legs because without gravity they will be useless and only put additional strain on the circulatory system.

If not prepared to sacrifice one's nature, then natural necessity cannot be overcome. Necessity then becomes an inescapable compulsion. The only freedom lies in our ability to change the form of necessity to some extent: the way in which we use gravity to walk and to fly differs in form.

"Necessity" has historically had many different conceptions. The oldest, known form of "necessity" was logically defined by Aristotle in "Peri hermeneias". According to Aristotle, "necessity" was a "reality that was the way it is, and could not be any different" (11). So it followed that there were two different formulations, positive necessity meaning "something was like it is", as well as negative necessity taken as "something was impossible".

In the 20th century modal logic redefined "necessity" as being dependent on anankaistic propositions, rather than reality. "Necessity" characterized a proposition that was always true, a tautology ("a human is a human") and a statement that was not true, an impossibility ("a human is a non-human") (Kneale, 1962; 548ff). The consequence of this, however, is that we cannot say that even the mechanistic type of natural law (such as the law of gravity) has any necessity in itself.

The tradition of Reformational philosophy, following the anti-reductionist direction of Meinong, Husserl and Comte, "created temporal reality" as expressed as a unity with many different modes of being (modalities), each irreducible to the other, and each with its own laws. These modalities or modes of being include: Arithmetic/Numerical, Spatial, Kinematic, Physical, Biotic, Sensitive/Psychic, Logical, Historical, Lingual, Social, Economic, Aesthetic, Judicial, Moral and Pistic. The modalities are viewed as inherent (natural) to all temporal beings - they cohere and even reflect one another. Modalities are not parts; they are rather ways of being, or aspects, or vantage points from which to look at the whole. This tradition therefore rejects the Greek dualism of "body" vs. "soul", and any forms of naturalism in its Modern reductionist format, or spiritualism of the Hegelian of New Age kind. The advantages of using this tradition as a model, is that it provides a holistic view of nature and culture, and yet gives a refined analytical instrument which accommodates the contributions of the reductionist approaches.

The model (to be found more explicitly in the works of Dooyeweerd and others) is aimed at recognizing diversity without sacrificing unity and coherence. The order of the modalities is therefore constructed in terms of an order of complexity (in vaguely Aristotelian or Comtean

sense), rather than as a hierarchy of values. As can be seen from the list of modalities above, the dualism of reason (culture) versus the irrational (nature), is absent. All beings, even stones, have all the modalities, either as subject or as object. Taljaard (1964: 666-668) explains that since all modalities are "natural", one has to say that the ethical and the aesthetical are "natural". This implies that a reductionist concept of culture is also not acceptable. "Culture" is not simply something "rational": the cultivation of faith differs according to place and the content of a specific faith.

Reality therefore consisted of different aspects (modalities), each of which were subject to their own set of laws. Some of these laws possessed an anankaistic character, meaning that they could not be disobeyed, like the law of gravity. It would, however, be possible for humans to use anankaistic laws within the limits of their knowledge, like using the law of gravity to put man-made satellites into orbit. Other laws were seen as a normative character, affording humans the freedom to choose how they obey them, or not obey them at all. The norm that "I may not kill another human being" may find different qualitative expression in situations of self-defense.

The "cultivation" of the world is stewardship: responsible caring. It means that specific norms will come to the fore in specific situations, but that the coherence with all of "nature" must always be respected. The basic coherence, for the Reformationalists, is found in respecting the world as a gift from God, with love as the unifying commandment. Thus one may cultivate a piece of land for self-sustenance, or for profit, and thus while the norms of economic efficiency will take precedence, the norms of social justice, and the laws of bio-homeostasis, will always have to be taken into account. The planning of neighborhoods must take into the account the naturalness of religion, and therefore of religious space but also has to take account of the serious disturbance of neighborhood peace and bird life by the use of loudspeakers by religious groups.

This type philosophy does not simply write off the whole economic system or technology for a new kind of Romanticism; it rather tries to find meaningful place for them. It will not be popular in a very relativistic "Post-Modern" age, since it still insists on norms and laws, but so do all the bills of rights in present-day democratic constitutions.

5.1 Pragmatism and the emergence of "cultural" necessity.

Western thought still seems to be clinging to the belief in progress of the 18th century Enlightenment, in the form of pragmatism. Pragmatism is fixed on the pursuit of practical success or advantage. And practical success in the 21st century is measured in economic terms. This means that the belief in progress has been rewritten slightly into the belief that economic growth must be unending and limitless. We can hear this echoed by Maurice Strong, secretary-general of UNED and Canada's representative on the Brundtland Commission: "Our commitment to continuous growth in gross national product is built right into the economic system by which modern industrialized societies function. It is based on the assumption that more is better, that the well-being of the societies can only be assured by continuous growth in the material sense..." (Goudzwaard, De Lange, 1994:107).

According to Goudzwaard, *et al.* this plunges us into a prisoner's dilemma (12). Although individuals might want to change the present economic practice, it would be discouraging to adhere to self-imposed economic restraints for the sake of sustainability while others receive all of the advantage by refusing to do the same (Goudzwaard, De Lange, 1994: 92).

We may further think that the belief in progress is a necessary by-product of natural necessity in the form of exponential population dynamics. With an exponential increase in population, there must perforce be an increase in production because we must divide the total production over so many more people. This would have been a valid point if the distribution of resources were equal.

Any deviation from the belief in progress, in the pragmatic form, will be regarded as meaningless, because, in the face of higher intrinsic values, mere rock-bottom ecological survival may not be a human life worth living.

The implication is that the balance between economy, ecology and socio-cultural development, will be hierarchical, favoring economy and to a certain extent socio-cultural development, rather than ecology. It is considered not only impossible to expect developing nations, like South Africa, to adhere to strict environmental legislation, but also inhumane.

Human rights are concerned with equality of access to intrinsic values that make human life worthwhile. In current times, these intrinsic values seem to be very dependent on economic means, i.e. our happiness is dependent on how much money we make. In our relentless pursuit of money, nature has become reduced to a potentiality: earth's only real value is in the form of raw material that can potentially be used to produce artifacts that can be exchanged for money. This means that the value of nature has changed from intrinsic to instrumental. And so, much more importance is given to human rights in terms of the belief in progress, than the constitutional right to a healthy environment.

Examples of this can be seen in developing Third World countries like South Africa. In these countries, developing industries principally answer to two gods. The god of economic viability must be satisfied before the god of environmental legislation can be placated. Most companies need to be ISO 9001/ 14001 accredited to be competitive in the market, as a result of governmental and public pressure. Developing companies that don't comply with the accreditation standards will not fail accreditation as long as they can prove that they have a long term environmental management plan that will reduce emission levels and other environmental damage in the future. The reasoning behind this is that strict enforcement of environmental legislation will cause struggling and developing companies to become insolvent, and that would be a great and absurd evil. The environment can wait a few years until the company has sufficient economic resources to tend to that cause. The fact that economic needs are given higher priority over environmental needs is further justified by the erroneous assumption that we must produce more technology to help save the environment. And thus, we are attempting to solve a problem by the same thinking that has created the problem in the first place.

Another example is the great amount of mines that are no longer productive. These mines are not closed down because the economic implications of proper closure and rehabilitation are too severe. Instead, they are left open as "a going concern" for years after actual mining has ceased (Bajzelj, 2001).

The foremost human right seems to be the right to transform nature into environment. Whether this environment is healthy or not, enters the chain of consideration much later. This sentiment is profound enough to warrant a choice: Rather race into premature oblivion with the whole planet, than live a meaningless life without progress.

In Modernity's techno-scientistic ideology of total control for human advantage, this choice seems perfectly rational. The meaning of life has become equated with a vulgar hedonism, marked by consumerism. And, under capitalism, the greatest instrumental good has become material wealth towards the intrinsic end of wellness (economical means to obtain medical advancements). Humans, as mortal beings, have a deep desire of longevity (past the 100-year limit). This can be indicated by the immense trade in health products - both medical and alternative ("natural") restoratives.

Mass producing large pharmaceutical molecules is a nightmare. It requires expensive catalysts, unstable bio-reactors, severe quality control and expensive and time consuming separation techniques. Sometimes large protein molecules such as insulin or monoclonal antibodies must be produced *in vivo*, implying a vast investment of time and energy for the sake of producing a very small quantity of the active protein at a time. And when you have finally produced the desired chemical, the molecules tend to react with other molecules in the direct environment, necessitating elaborate storage procedures and limited shelf life. (Specific examples of appropriate chemical reactions transcend the scope of this paper and can be found in any good biochemical textbook: WILSON, Keith; WALKER, John (Eds), "Principles and techniques of practical biochemistry." 1975, 4th Edition (1994), Cambridge University Press, U.K - will suffice.)

This implies that mass production in the pharmaceutical industry is more expensive than the development of prototypes, with the initial pharmaceutical research being comparatively the most affordable. I assume that in most other forms of technological production the most cost-intensive step is probably initial research, followed by prototype development. When it comes to the stage were mass production is possible, costs per unit are less even in the wake of changes in infrastructure and personnel redistribution.

Powerful technological advances are only attainable through economic means. The importance of technology is seated in its facilitation of Man's ability to control natural necessity. The concept of "necessity" has thus shifted from its basis in the natural laws, to a new form of cultural necessity – the ability to control nature through technology and the economical means to attain this control. This cultural necessity does not imply that culture, and thus behavior towards nature, cannot be changed. Cultural things, like language, change all the time, but the basic need to communicate is a necessity.

I agree with the way in which the well-known political philosopher, Hannah Arendt, describes the emergence of a cultural necessity.

In "The Human Condition", she illustrates mortal mankind as finding itself to be a wretched, ephemeral race against the back-drop of the eternal sublimity of nature. This realization stirred human endeavor to produce works and words of more permanence than individual human life and through this, gain immortality of an almost divine nature (1958: 8). Human beings, as part of nature, are bound, like all biological organisms, by natural laws, but unlike other organisms, humans can be creative. The human creative ability could not be *ex nihilo*, causing Man to take material from nature (1958: 139-140).

I must add here that "material" means more to me than merely physical building-blocks. Man also takes ideas or examples from natural things that already exit. We've developed sonar after witnessing echolocation in animals, etc.

According to Arendt, this means that creativity is coupled with violent destruction of nature (as it was originally found by Man). This experience of violence is the most elemental manifestation of human strength. It is a kind of pleasurable rebellion against ananke, the erection of a man-made world, after destroying part of god-created nature (1958: 139-140). Once having "created" culture, Man becomes so conditioned to its use, that it becomes part of what defines his very existence. For Arendt, the implication is that cultural laws become just as mandatory as natural laws, and culture just as necessarily binding as nature. Necessity as a result of culture seems more acceptable on the basis of its being man-made. Man becomes the measure of all things (1958: 9).

My main point of critique on Arendt's view, is that it falls into a rigid nature vs. freedom dichotomy. Arend has accepted the Modern, reductionist view of nature. This, concomitant with Modernity's overestimation of human reason, may cause ecologically unsound behavior towards nature.

During the pre-Modern era in the West, Man was seen as part of nature and therefore positioned somewhere inside nature. This is clear form, for example, Thomas Aquinas' views on "nature". After Descartes, this perspective had changed and Man was seen as both part of a reduced,

mechanistic conceptualization of "nature" and at the same time rationally elevated above "nature". As a consequence, Man has become the "master and possessor" of "nature" and this line of thought was followed through by Kant and Marx (Venter, Loubser, 2004: 2-5). From the heights of that throne, the mastery of "nature" leads only to conflict, destruction and exploitation.

According to Venter *et. al.* the exploitation of nature may result from the elevation of the "rational" human being into a supra-natural, egocentric position, while reducing nature to the "sub-rational" (Venter, Loubser, 2004: 1). The inadequacy of "reason" as Archimedean point was indicated in section 4: "The existence of polarizing effects in the balance between ecology, economy and social development in sustainable environmental management".

Furthermore, in a nature vs. freedom dichotomy, Man produces culture as a revolt against the natural laws. But, if this culture also becomes as necessarily binding, the dichotomy only shifts towards culture vs. freedom, and nothing, in terms of freedom, is gained. Although Man has become the "measure" of all things, he is enslaved by the cultural ideologies of his own creation. In recent times, there has been a string of them: Communism, Capitalism, to name but two. And Jean-Jacques Rousseau formulated the nature vs. culture dichotomy so as to postulate that although culture became binding, it also represented real freedom, i.e. individuals were coerced by the "General Will" to be free (Rousseau, 1916: 256-257). But what type of freedom would be possible for individuals within the ultra-democratic totalitarianism?

What is more, according to my opinion, Arendt seems to suggest that it is impossible to reverse the process of "conditioning" that makes culture necessarily binding. We can therefore never return to more "natural" conditions of existence again. It would force the "General Will" into existential crisis.

A second point of critique is that, unlike Arendt, I don't believe culture to be necessarily destructive. An example of this can be found in the Christian conceptualization of the original cultural mandate. In this mandate, tilling the earth (culture) and caring for it (stewardship) is part of one responsibility. Production of culture and earth-keeping can not be seen as two contradictory tasks within a single mandate (cf. Van der Walt, 1999: 25). This means that, as far as development is concerned, constructive as well as destructive possibilities are simultaneously present, and it is up to us to decide which course to take. "Stewardship" is an interesting concept within the Christian tradition, offering some insight as to how we are supposed to develop.

A steward is a representative (imago Dei) and just as God rules over creation his stewards are supposed to rule, in a derived sense, on earth. It is our ultimate purpose on this planet. But this does not give us a license for exploitation (Van der Walt, 1999: 21-25).
Creation is part of God's revelation (or Word) to Mankind, and "Word" presupposes an answer (Goudzwaard, 1975: 56). So our rule or development should be responsible.

A non-dualistic and less reductionistic conceptualization of both nature and culture may offer a more sustainable future. If Mankind should see itself again as that part of nature that opens up inherent natural possibilities, instead of "nature's" elevated ruler, less destruction would ensue (Van der Walt, 1999: 26).

The Reformational tradition offers a conceptualization of reality in which everything exists in modalities (Arithmetic/Numerical, Spatial, Kinematic, Physical, Biotic, Sensitive/Psychic, Logical, Historical, Lingual, Social, Economic, Aesthetic, Judicial, Moral and Pistic). Both "nature" and "culture" are enforced in every modality. This implies that every modality has a normative, as well as a natural law side. The more normative side is not compulsory and can be transgressed within certain limitations. An example of this can be found in Venter (1998: 23-25): A gang of hardened criminals can not escape certain conditions (e.g. "the need for a minimum of organizational structure, some social status relationships – such as leadership, a kind of "legal" structure – such as how the booty is to be divided, some minimal internal morality – such as loyalty amongst themselves vis-à-vis the police", etc. albeit an anti-normative reign of terror) According to Venter (1998: 24) this "demands an expansion of our concept of what is 'natural'" because "we are all subject to minimal conditions of organization, social status, legitimacy, loyalty, signification, efficiency, as well as the emotional and physical laws" and so "mental" laws are encompassed as well.

How does this relate to environmental management?

Let's take a piece of rock. The rock as object functions in the 4 basic modalities (Arithmetic, Spatial, Kinematic and Physical). In addition it also has subject functions in the "higher" modalities (Aesthetic – e.g. a marble statue, Pistic – worship of the statue or pantheistic occult powers in the rock, etc.) The implication is that the object functions (like the specific colour of the rock) cause the human subject to experience the rock in a specific way. And this prevents us

from reaching a Kantian perspective: that reality is totally subjective and therefore objectifiable and exploitable. "Culture" will then not so easily be scientificated. "Nature" as well as "culture" exists in all modalities simultaneously. To objectify (and so reduce) either one, the subject functions need to be violated.

This highlights the erroneous foundation of current forms of environmental management. In these management systems, "nature" is regarded as possessing only the basic 4 modalities, while "culture" is more concerned with the "higher" modalities. "Culture" is absolutized, "nature" is reduced and the bottom line about this is that it has proved to be unsustainable.

6. Reason as ontological ground principle – the rise and consequences of Rationality in sustainable environmental management.

Through picking at the fabric of the physical universe with crude, but effective, experiments, early natural scientists were able to detect patterns and correlations of causality, which they formulated into universal natural laws. Inherent in the conception of "natural law", was an enticement of predictive power. (Refer to section 2: "The idea of Sustainability – a general overview." for issues of regularity and stability in nature, and paragraph 4: "The existence of polarizing effects in the balance between ecology, economy and social development in sustainable environmental management." for arguments surrounding "reason" as Archimedean point.)

In Discours de la Méthode (Chapter VI, 1637) Descartes expresses the possibility of human control over nature: "... if we know the power and the behavior of fire, water, air the stars, the heavens, and of the other bodies which surround us, in the same distinctive way that we know the different crafts of our master craftsmen, we could use them in the same way for all purposes for which they are fit, and in this way make us masters and possessors of nature."

Venter, *et. al.* has distilled a couple of assumptions from Descartes (Venter, Loubser; 2004: 4-5):

1. The belief that human reason can deductively explain "nature" from principles inherent in reason itself. This idea was already present in the Medieval thinkers.
2. The rational human being can take both unqualified control and ownership of "nature" leading to a kind of "atheistic" humanism.

3. Descartes proposes a natural scientific and technological process of predictive control.
4. The main aim of this control is utility in terms of material needs.

The implications being that the rational human being was elevated into a supra-natural, egocentric position, whilst "nature was reduced to the "sub-rational", i.e. concentrated in the sentiments, instincts and senses of humans. Nature has become nothing more than a mechanistic source for exploitation. The tension becomes apparent in Kant (1992: 17-18): Some individual human beings are already "rational" and therefore elevated above reduced "nature", while others are still caught inside "nature". The "rational" few are able to control the "sub-rational" masses and guide them toward "enlightenment".

The concept of "culture" has also suffered a reduction, as one of the components of a multi-facetal "culture" – human reason – was absolutized, at the cost of all the other aspects. This impoverished conception of "culture" was called Rationality, and since the 19th century, by different forms of irrationality (such as "existence", "life" or "natural selection").

With reason as ontological ground principle, science has also gained importance and an almost epi-natural status. The scientist held in his hand the master switches of control over the sub-rational, natural realm.

This natural realm included the human being, after Darwin's "On the Origin of Species" spawned the conception that species did not originate independently, but that they were descended from one another. Human beings were no longer seen as "in contrast" to nature (Venter, 2004: 545).

Such a conception of human beings as nothing more than highly evolved animals, grounded B.F. Skinner's negation of "human dignity" (Venter, 2004: 544):

> "It is the autonomous inner man who is abolished, and that is a step forward. But does man not then become merely a victim or passive observer of what is happening to him? He is indeed controlled by his environment, but one must remember that it is an environment largely of his own making. The evolution of a culture is a gigantic exercise in self-control... A scientific view of man offers exiting possibilities. We have not yet seen what man can make of man" (1982: 210).

This is reminiscent of Hannah Arendt's idea of Mankind creating an environment on human terms (Arendt, 1958: 9, 139-140). But as scientific and technological controls are imposed on "nature" to create "environment", so control is being imposed on ordinary human beings. The attempted control is being exerted by natural scientists, as the active practitioners of science, and therefore more capable than ordinary non-scientists to determine the course of human development.

So, just like Arendt, Skinner surrenders us to a cultural necessity. But herein lies his pretension: What he considers to be cultural influence is in actual fact the concealed authority of technocratic scientists.

Bayertz suggests that the implications of the one-sided, natural scientific conceptualization of the human being may portend complications:

> "Nothing could be more short-sighted at this point than the objection that this scientific penetration and technological control only apply to the natural side of the human being, not to its spiritual side and subjectivity. Hopes of saving the "inner" human being with this kind of dualism have always turned out to be naïve. The human spirit is very much part of this world; it has a natural basis. The subject may not coincide with the body, but neither can it be separated from it. Technological access to the body will therefore not stop there: at some time or another, it will also affect the subject and its spirit (Bayertz, 1996: 86).

7. Human scientists at the helm, perfect. What could go wrong?

The problem is that the ontological ground principle (Archimedean point of reference) has attained a distorted, doubled locus. On the one hand human reason, as the Archimedes point, was seated in an elevated, supra-natural position. On the other, human reason itself was located completely inside nature, as the thinking part of a living, biological organism. Von Hayek recognized this doubled locus in his characterization of the methods for natural and social sciences: Natural sciences are supposed to be analytical. This means that wholes should be objectively broken down into parts. Of course such objectivity can only be attained from a supra-

historical perspective. In the case of social sciences, however, the "objects" of study are human beings, giving rise to more synthetic methods. The social scientist is necessarily part of what he is studying and therefore unable to oversee the whole (Von Hayek, 1952: 39).

So, on the one hand (social sciences) mankind admits that it is not possible to attain sufficient ontological distance to oversee the totality, but on the other (natural sciences) it supposedly is.

Hannah Arendt describes the inadequate, dupli-locational Archimedes point as follows: "The modern astrophysical world view, which began with Galileo, and its challenge to the adequacy of the senses to reveal reality, have left us a universe of whose qualities we know no more than the way they affect our measuring instruments, and – in the words of Eddington – "the former have as much resemblance to the latter as a telephone number has to a subscriber." Instead of objective qualities, in other words, we find instruments, and instead of nature or the universe – in the words of Heisenberg – man encounters only himself" (Arendt, 1958: 261-262).

As natural scientists, we are trying to handle the laws of nature (as if from a position of objective distance) whilst being bound, in our physical bodies, to the very laws as a part of nature. It turns out, that even in the case of natural sciences the supra-natural Archimedes point is nothing but a pretension.

Our inability to exert real control (as a result of the dupli-locational Archimedes point) concomitant with our materialistic culture with technical "mastery" for the sake of total human advantage, has led to several negative, practical implications.

Techno-scientism combined with the present forms of capitalism, as probably the most notable of these movements, treats things as objects that can be dominated and expended. It operates with arrogant ignorance of its own limitations. Where one technological solution fails or produces unwanted side-effects, the problem can always be solved with more and more technology!

This, coupled with the fact that environmental resources are limited, has raised serious sustainability questions. We can never destroy nature completely, but we can create conditions that don't support human life or quality of life.

8. Nature itself as Archimedean point – Post modern rise of Naturalism

The Medieval and Modern ontological idea that the human being was somehow special or different from nature was replaced by evolutionary theory. According to the interpretation of Darwin's metaphor for the evolution of biological species, *Homo sapiens* was just another animal species. Furthermore, the universal extrapolation of the theory postulated abiogenesis as credible. No exogenous input of supernatural origin was needed to explain the origin of the universe or life. Nature has become the arché. And since nature was all that existed, it was also seen as the Archimedean point. (Nature has become explicable by nature alone.)

In the wake of naturalism, environmental management was faced with certain dilemmas. Venter, *e. al.* brings one of them to our attention:

Because human beings are nothing but advanced animals, completely "rational" science (on the basis of its epi-natural status) can and may be used to control humans. A few natural scientists are allowed to play god over non-scientist masses and respect for human rights is not deemed a necessary, physiological requirement for survival (Venter, Loubser, 2004: 4-6). (Refer to arguments surrounding the ideas of Kant; Arendt; Skinner in section 6. Reason as ontological ground principle – the rise and consequences of Rationality in sustainable environmental management.)

According to Maslow, human needs form a hierarchy in which basic physiological needs (D-needs) are fulfilled first, before self-actualizing needs (B-needs) which form the top of the hierarchical order. This means that B-needs cannot be fulfilled in the absence of some of the D-needs (Maslow, 1971: 128,135,140-146).

Naturalism has interpreted the hierarchical order of fulfillment to be equated with the importance of the needs. D-needs are imperative for biological survival, B-needs are nice-to-have's.

In my mind, this presents another unsustainable situation. Human beings are integrated wholes – not just of cells, tissues, organs, functional organ systems – but of modalities or aspects of being/existence. In order to be healthy, human beings require a certain quality of life that makes life worthwhile. This includes B-needs. Naturalism, in full awareness of this requirement, was

fixed on the hope that science and evolution will take care of our bodily needs, and that the spiritual sides to our existence will follow automatically afterwards.

This is an erroneous way of thinking. Can one reason that all a human baby needs, for at least the first couple of years of its life, is food and water, and only later, after the child is past infancy, the higher needs, like love, become important?

A human life is only worthwhile when all the needs are satisfied simultaneously and sustainable environmental conditions have to take human dignity into account.

9. Is there any hope?

In this study it is indicated that the prevailing approach to environmental management, as far as practice and literature is concerned, is a technical, scientific (human) attempt at "mastery" of a severely reduced conceptualization of "nature" combined with a reduced conception of "culture". The aim of "mastery" is economic advantage as instrumental value to the end of hedonistic, anthropocentric "wants" (cf. Section 3.1-2.)

This is grounded in the existence of a tense dualism ("nature" vs. "culture") in Western thought (indicated in section 5) and the effects of this tension on the environment, proves to be unsustainable.

The key to dissolving the "nature" vs. "culture" dialectic lies in repositioning the human being completely inside "nature" and the formation of a conception of "nature" that allows both diversity and coherence without reduction or absolutization. Parallel to this one needs to see that all categories of a more holistic view of "nature" are susceptible to culture. Cities are not only made liveable by fine architecture, libraries, and level streets, but also by the presence of vegetation and other living beings. The question is to allow these to cohere. Such a conceptualization is provided (among others) by the Reformational tradition which recognizes the parallel between nature and culture in terms of a theory of irreducible modalities. "Nature" is supposed to express itself in a wide range of modalities, which includes being social, moral, aesthetic, and also having the physical traits usually associated with "nature". All of these are susceptible for cultivation, in line with the laws and norms which are applicable to all the modes of being, in their coherence. "Stewardship" for the world in this context will mean to take a

caring responsibility which does not only take into account the specific norms of one's focus of cultivation, (for example "good for more profit"), but also for example the aesthetic, social and safety norms.

If both "nature" and "culture" exist in all modalities simultaneously, "culture" cannot simply be scientificated unless subject functions are violated (cf. 5.1). This, more holistic approach, with both "nature" and "culture" existing simultaneously in the full spectrum of modalities in reality, is therefore proposed to alleviate the dualistic tension and improve sustainability.

10. End Notes

(1) This "good for business" attitude is taken by the US Environmental Protection Agency, as the reason why one should develop an environmental management system. (Cf. US Environmental Protection Agency, 2005). It causes a tendency to reduce nature in an economistic way to economic abstractions such as "natural capital stock" (cf.Asafu-Adjaye et al, 2004). Although one should not reject such attempts entirely, one should consider whether exploitation is not simply given another form.

(2) The concept of "sustainability" is presently expanded to cover also the areas of "social development" and "economic development", and rightly so, in the sense that these types of development are important factors necessitating the "management" of the "environment".

(3) For the moment, I am using the concept of "nature" in accordance with our conditioned intuition. But, because this conceptualization is reductionistic, I will expand on it later. (Section 4: "The existence of polarizing effects in the balance between ecology, economy and social development in sustainable environmental management".)

According to the Oxford English Dictionary (OED, 1991: 430-431) "nature" is "the world with all its features and living things; the physical power that produces these; - **Nature** this power personified." In comparison, the Verklarende Handwoordeboek van die Afrikaanse Taal (HAT; 1965: 728-729), defines "nature" as "The whole of Creation; the world in unadulterated form, the world and everything therein that was not created by Man." And also, "the world as autonomously given" (my translation).

While the Penguin Dictionary of Philosophy (PDP, 1996: 372) explains that "natural" and related words, especially "nature" can be used in a variety of senses: "Hume, when discussing in *Treatise of Human Nature* whether virtue and vice are natural, notes that, depending on the sense of the word, the natural can be contrasted with what is *miraculous*, *unusual* or *artificial*. Elsewhere in the same work he contrasts it with *civil* (i.e. originating in social and political institutions or conventions), *mental* (i.e. in our mind, in contrast to physical nature outside ourselves), *supernatural*, etc. Another contrast is that between nature and *culture*. In the Aristotelian tradition, the nature of a thing is internal to it, its essence, but accounts also for its characteristic functioning or development."

The contrast with "civil" is the one which, since the 18th century, indicates the reduced idea of "nature" as the "sub-rational".

It can perhaps be argued that this intuitive reduction of the concept of "nature" has led to the belief in scientific and technocratic control of nature. From Descartes to Skinner, this reduction has caused our ideas of the value of nature to be predominately concerned with instrumentality. And because we regarded nature in this way, it became possible for scientists and technocrats to "control" nature (and therefore also ourselves).

(4) In "The Farther reaches of Human Nature" (1970) A.H. Maslow explains peak experiences as follows:
On p. 105: "The term peak experience is a generalization for the best moments of the human being, for the happiest moments of life, for experiences of ecstasy, rapture, bliss, of the greatest joy. I found such experiences come from profound aesthetic experiences such as creative ecstasies, moments of mature love, perfect sexual experiences, parental love, experiences of natural childbirth, and many others. I use the term peak experiences as a kind of generalized and abstract concept because I discovered that all of these ecstatic experiences had some characteristics in common." Also on p. 38: "The acute emotion must be climactic and momentary and it must give way to a non-ecstatic serenity, calmer happiness, and the intrinsic pleasures of clear, contemplative cognition of the highest goods".
And p. 48: "... peak experiences are transient moments of self-actualization. They are moments of ecstasy which cannot be bought, cannot be guaranteed, cannot even be sought..." "But one can

set up the conditions so that peak experiences are more likely, or one can perversely set up the conditions so that they are less likely."

What makes "peak-experiences so desirable that they can be considered "the best moments of the human being"? What is the sense in having these almost mystical moments of soul-delight? I think it can be (at least partially) explained if we consider the following:

We all have belief systems in our minds. These beliefs are integral to us and therefore we need them to be true, but by their very nature, it is impossible for us to finally prove them. We are left with a life-long and deep-seated desire to see our beliefs validated in reality. (For the sake of simplicity of this argument, I presuppose a conception of reality as "objectively" existing outside of the human subject.)

The practical implication is that we would do anything to "feed" our beliefs. I am of opinion that "peak-experiences" are the precise moments when we feel our deepest beliefs are being validated. It is how we experience "meaning" in life. Consider the following example: Most major religions seem to share the basic belief that the world was originally intrinsically good, but that some event occurred, subsequently rendering the basic nature of the world more dark and chaotic. The different religions then suggest different remedial steps to restore the original state of goodness. Some are of opinion that the original state is to be found somewhere in history, others believe that we can only find it in the present. In the Western tradition it seems to be accepted that we will progress and find this restored world in the future. Let's call this the belief in progress of the West.

One of the ways in which a Western person can validate the belief in progress is when their children have it better than themselves. So they spend their lives working for the sake of providing for their children. When these children eventually do succeed (at achieving an academic qualification, for instance) the parents may have a "peak-experience" and feel that their own lives have some meaning.

Furthermore, interestingly, "peak-experiences" doesn't seem to be something purely individualistic that can be acquired at the cost of others. Although Maslow called them "moments of self-actualization" the self always seems to be augmented by other selves in achieving a "peak-experience" (refer to Maslow's examples: "moments of mature love, perfect

sexual experiences, parental love, experiences of natural childbirth", etc.) In more mystical conceptions of "peak-experiences" the borders of the self becomes permeable, until the self is lost and part of something more absolute. Conceptions of this kind will mean that "peak-experiences" can also not be acquired at the cost of Nature. Does this mean that our Western tradition of managerial control of other humans and of nature is doomed to fail in bringing the managers true happiness? Could the situation be saved if managers were mindful of the freedom needed by employees to set up conditions so that "peak-experiences" are likely?

(5) At this stage the tension between the modern city environment and the rural lifestyle was already being pushed to extremes by the belief in progress. It is evident in the works of Smith, Kant, Marx, the Romantics and follows through to the Neo-Romantic New Age.

(6) In "The Human Condition" (1958: 139) Arendt remarks that: "Material is already a product of human hands which have removed it from its natural location, either killing a life process, as in the case of the tree which must be destroyed in order to provide wood, or interrupting one of nature's slower processes, as in the case of iron, stone, or marble torn out of the womb of the earth. This element of violation and violence is present in all fabrication, and *homo faber*, the creator of the human artifice, has always been a destroyer of nature."

(7) Rapa Nui (Easter Island) serves as an example of a man-induced ecodisaster. Social competition on the island was a major causative factor in the destruction of the indigenous palm forests, resulting in human population collapse. On several other, similar South Pacific Islands, an almost converse situation prevailed. On these islands the humans were more thoughtful and environmental impacts, though vast, were sustainable. If Easter Island can be seen as a model for earth as a whole, the history of the island should be taken as a contemporary warning (Rainbird, 2002).

(8) The history of ideas didn't start in Modernity. The rise of Rationalism can be traced back to the time of Galilei. Irrationalism appeared from the middle of the 19th century while Rationalism was still in motion. Only from the 20th century onwards, a form of fragmented Irrationalism has emerged – known as Post Modernism.

(9) At times, in the contemporary scene, the tension leads to total fragmentation: on the one hand, one finds the strong naturalism of Dawkins and global competitivism, on the other a kind of

mysticism, like Derrida's mysticism of text and the pantheist-spiritualism of some New Age thinkers.

(10) The word "moral" is used in the broadest sense and should be taken to mean "value-driven". Economical values (e.g. "profitability") also determine sustainable development. (Refer to section 3.2 Endless "wants"; endless "needs".)

Another example can found in statistical analysis where extrapolated approximations are made, in which the subject must decide how much to approximate without being dishonest. Furthermore, it can more explicitly be stated that, especially quantificatory approximations are semantically unspecific and thus important deviations are being ignored.

In addition to this, scientific techniques are purpose-driven and the initial purposes of the developer of the technique don't automatically disappear when the technique finds application elsewhere (cf. Stoker, 1970: 191ff).

(11) He developed what became known as the square of opposition, in which "possible" was put over against "impossible" and "contingent" over against "necessary".

(12) "In the philosophical problem of the prisoner's dilemma, each of two prisoners must weigh these choices: if one confesses and implicates the other, who remains silent, the first goes free and the second gets a long prison sentence; if both confess and implicate each other, both get moderate sentences; if both remain silent, both get light sentences on another charge. It is to each prisoner's advantage to talk, but it is to their collective advantage to stay silent, and therein lies the dilemma" (Goudzwaard, De Lange, 1994: 92).

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