



PhD serie No. 31 - 2011

UNIVERSITY OF
NORDLAND

BODØ GRADUATE SCHOOL OF BUSINESS

HANDELSHØGSKOLEN I BODØ • HHB

Thomas Johansen

Paradigms in Environmental Management Research

Outline of an Ecosophical-Hermeneutic Alternative



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Outline of an Ecosophical-Hermeneutic Alternative

Thomas Johansen

Ph.D. dissertation submitted to
Bodø Graduate School of Business
for the degree of Ph.D.

University of Nordland

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Outline of an Ecosophical-Hermeneutic Alternative

1. edition 2011

Ph.D. no. 31 – 2011

ISBN: 978-82-92893-21-0

Print: Trykkeriet UiN

University of Nordland

N-8049 Bodø

Tlf: +47 75 51 72 00

www.uin.no

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To S & G

*Man by his existence gives an answer to a question
which thereby is posed and can never be finally
answered! Charles Taylor (1985).*

*Like all young men I sat out to be a genius,
but mercifully laughter intervened
(Clea Lawrence Durrell)*

Acknowledgements

Being a Ph.D Research Fellow can, as I see it, be seen as an extreme process with great “ups” and deep, sometimes even dreadful, “downs”. Nights and some weekends without almost any sleep, moments filled with anxiety and delusions such as worthlessness, and tension, have characterized my life during the last three years. The comfort and balance to this has been found in the somewhat empty hope of believing that “I can make a change – make the world a better place”. However, I have discovered change, not for society at large, but something much more powerful and important I think: personal transformation.

Writing a Ph.D thesis demands huge amounts of individual work and the corresponding isolation is well known. I am, however, indebted to my excellent professors who enabled me to complete this thesis. Stig Ingebrigtsen and Ove Jakobsen have both very welcomed me warmly at *The Centre for Ecological Economic and Ethics*. The work environment here has suited me perfectly being quiet, focused, deep, as well as supporting critical thinking, and being easy-going and warm.

Professor Jakobsen provided me with enormous spirit in the early phases of the process, and has along the way kept my spirits up. His creativity is astonishing. I feel that Prof. Ingebrigtsen was especially helpful in keeping my research focus sharp. This, I believe, is enormously important for a young and inexperienced researcher; for many reasons. At the same time, however, they both allowed and encouraged me to unfold and develop my own path. Balancing these apparently divergent ideals must be one of the most challenging tasks of managing research communities, not least because this is obviously a crucial criterion for keeping the research-culture creative, learning oriented, vital, healthy, etc., or simply: sustainable.

I must thank all my other colleagues at the Centre: Associate Professor Erik Lundestad and Dagfinn D. Dybvig, Ph.D student Frits Nilsen, Kristin H. Smith, Hin H. Heemstra, Are S. Ingulfsvann, Tomas Lopez and Assistant Professor Øystein Nystad. Three years is too short a time to work with such excellent and admirable people.

I would also like to thank Jan Oddvar Sørnes and Frank Lindberg for giving me the opportunity to be a research fellow at Bodø Graduate School of Business. Your help and faith in me proved essential.

Advisor Peter Glanfield deserves to be mentioned indeed for his speedy and qualitative support during the preparation of the manuscript.

I must also thank our lovely “Mother” of the “HHB-Family”: the staff of The Administration. I cannot and I do not want to start imagining how a bunch of absent-minded scientists could ever avoid fostering a dysfunctional organization in your absence.

I must express huge appreciation to my family. Without the family perspectives in my life, living would most certainly be dreadful. Special thanks again to my extended family: Svein, Gunn, Iris, Marie, Oliver (R.I.P), Sofus (R.I.P) and Willy, for all love and joy. You have helped me calibrate my compass many times and thus made my life easier and more meaningful. Special thanks go also to my mother, Anne Karin, for providing me with ecological insights, especially empathy for all living beings. Thanks to Sverre for supporting her so beautifully and for the joy you bring to me and Iris. Thanks to my sister and my lovely nephew and niece, my father, Ngaw and my little sister Marsha, Wenche, Astor, Dan, Ulrikke Ariel and my good friend Marius.

Last but not least, I must thank my “better half”, Iris, for supporting and believing in my project all the way. Thank you for letting me work with my dissertation weekends, holidays, nights and days. Thank you for your kindness towards me, others and every living creature you meet.

T.J.

UNIVERSITY OF NORDLAND, BODØ

November 2011

Abstract

Environmental impact assessment (EIA) is the most widely practiced environmental management tool in the World and conceived to be a powerful tool for helping decision-makers achieve the goal of *sustainable development*.

The first aim of the dissertation is to develop a conceptual tool (two paradigms) for the purpose of analyzing Environmental Impact Assessments (EIA). This positions the dissertation in a field which includes environmental management, ecological economics, the philosophy of science, environmental philosophy, ecosophy, psychology and ethics. Thus making the research at hand, to a great extent, an interdisciplinary piece of research.

The thesis raises the following research questions: *1. How can an ecosophical-hermeneutical and instrumental-received research paradigm be conceptualized?; 2. What type of information/knowledge do Norwegian EIA-research encompass?; 3. What paradigmatic implications do the findings in this thesis have for EIA-research; ontologically, epistemologically and methodologically?*

The Instrumental-Received Research Paradigm (IRRP) is characterized by objective ontology or a mechanical image of nature and man, in addition to the received image of science and a utilitarian ethic. The Ecosophical-Hermeneutic Research Paradigm (EHRP) is, on the other hand, characterized by holistic ontology, in addition to hermeneutical-phenomenological methodology and a strict humanistic and environmental ethic.

Using these two research paradigms the dissertation discusses six Norwegian EIA cases with regard to ontology (nature and human), perception of science, scientific ideals, ethics and esthetics. The intention of the analysis is to illuminate the paradigmatic presuppositions governing Norwegian EIA-research. Part V of the dissertation discusses the transition from atomistic to holistic EIA-research.

Through applying hermeneutical reflexive methodology, the thesis reveals findings of significance: the manuals on EIA and EIA reports are characterized by an ever increasing *incoherence* (from EIA report on Veslefrikk of 1987 to Goliat, 2009). This incoherence is mainly evident from the gap existing between political intensions/ideals (ontology) anchored within the EHRP on the one hand, and method/practice, ethics and esthetics anchored within the IRRP, on the other hand. Concretely this means that contemporary Norwegian EIA-research can be characterized as much “talk”, or promises about sound ethical and humanistic concerns, and less “walk”, or little actual research and implementation of the norms and values promised; hence then the lack of correspondence (incoherence) between values (ontology) and method/practice.

The kernel message of this dissertation is to make it clear that the reason why humanistic and environmental concerns are absent and left out in the shade can be explained by the epistemological and methodological choices of EIA-researchers. These choices in turn result in consequences for ontology; i.e., studying human and ecological impacts purely from subject-object perspectives, the use of reductionism, producing cause-effect explanations, etcetera, i.e., using method imported from the natural sciences, result in a superficial and quantitative understanding of external social phenomena. The dissertation discusses it being necessary to use the epistemological position of hermeneutics in order to gain a deeper (intuitive and emphatic) understanding (‘Verstehen’) of social and environmental impacts. This method utilizes a subject-subject relationship between the researcher and the study object, the search for meaning, interpretation of subjective data, amongst other things, in order to understand the inner unique experience of subjects and social phenomena.

The thesis suggests several ways forward with regard to how current atomistic EIA-research can be developed into holistic EIA-research. At the ontology level the thesis suggests widening the perspectives from purely instrumental (economic) values to

also including ecological and cultural values. At the epistemological/methodological level the thesis suggests a model for dialogue and cooperation aimed at establishing integrated networks for the internalization of pluralistic values in EIA-research.

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PART I: INTRODUCTION

CHAPTER I: INTRODUCTION TO THE RESEARCH QUESTION

1 The High North

My study was in part inspired by the increased focus on the opportunities for extracting petroleum in the northern areas of the world. U.S.G.S estimated in 2006 that as much as 25 percent of the existing hydrocarbon reserves could be located in the Arctic. Since 2006 this number has been disputed; some have argued that the percentage should be even higher, some say less. Whatever the exact percentage may be, hydrocarbon extraction in “The High North” is a fashion issue in current affairs. Governments and petroleum companies all over the world have turned their attention towards the North and the enormous economical opportunities represented. In Norway the Government has worked out The High North Strategy (2006, 2009) which clearly announces that the North will be the one main political concern over the next decades. The High North Strategy of Norway, *Nye byggesteiner i Nord* states that:

‘...petroleum operations in the north will potentially play a significant role in the further development of the region. ... Experience shows that the petroleum industry generates significant economic growth nationally, regionally and locally. There is currently considerable interest and optimism in our northern counties related to the North as a petroleum province’¹.

¹ The Norwegian Governments High North Strategy (pp.17-18, from Norwegian).
http://www.regjeringen.no/upload/UD/Vedlegg/Nordomr%C3%A5dene/byggesteiner_nord090323_2.pdf

The political objective in the years to come is to take advantage of the energy resources and the economical opportunities represented. The positive economical impacts can increase the standard of living significantly and industrial activities represent new job opportunities for the citizens of the North. Much of the economic growth is expected to spin-off directly or indirectly from the petroleum industry.

On the reverse side of the “medallion”, indigenous people, environmental stakeholders, and the whole environmental movement is, to put it nicely, not quite so optimistic as to future prospects in the High North. The environmental impacts of petroleum activity represent something most Norwegians feel to be of the utmost importance, indeed this stands out as a key issue to understand when these industries approach our “last frontier”. Petroleum activity in arctic environments is a very risky business because of the sensitive and vulnerable ecosystems. Both the Arctic flora and fauna are particularly vulnerable, because the reproduction time in cold areas is much longer compared to southern areas. The melting of the poles is a sign that the Arctic and Antarctic are already severely exposed as a result of human activity. Permanent industrial activity in these areas is therefore highly disputable. The indigenous people of the north, amounting to more than four million also have legitimate reasons for being deeply concerned about planned oil and gas exploration in their territories (see e.g., Einarsson, 2004). Especially since developers’ interests normally prevail wherever and whenever indigenous peoples’ interests and rights clash with development projects (Henriksen, 2006).

The debate in the local media in Northern Norway has even indicated that a petroleum future up here is the only way to move forward if the people of the north are to have a future². The reason behind this claim is the fact that people are moving out of the region and the traditional economies (fishing and agriculture) are experiencing declined interest and activity. These are probably the reasons why the discussions regarding petroleum activity in Northern Norway are somewhat one-

² See e.g., Avisa Nordland 28.12.2010, p.3; and comments in 04.01.2011, p.17.

dimensional - lacking reflection. What many discuss is how to create fiscal regimes that leave as much revenue as possible in the local communities (see e.g., Bråthen et al., 2007; Henriksen, 2010; Henriksen & Sørnes, 2008). Discussions regarding how to live rich qualitative lives in balance with arctic nature remain fairy-tales for most local, national and international politicians and business enterprises. This is despite the fact that the people of the north have been living up here in harmony with nature for more 10000 years.

The High North Strategy states, however, that both economic and social sustainability are important for the future of the North:

‘The primary objective is to increase knowledge, activity and presence in the North and lay the foundation for sustainable economic *and social* development in the years ahead’³.

2 Environmental impact assessments (EIA)

The Prime Minister of Norway, Jens Stoltenberg, stated recently that, in regard to hydrocarbon extraction outside Lofoten, we should all “just relax” because in advance of development we shall conduct *environmental impact assessment (EIA)* which will clarify what is the best thing to do for society and the environment .

The World Bank regards EIA as the most widely practiced environmental management tool in the world (Noble, 2006). It is also a general assumption in society that EIA represents some form of guarantee for sustainability. Noble states that an EIA is:

‘*a powerful tool* to help decision-makers achieve the goal of sustainable development’ (Noble, 2006, p. 3, emphasis added).

Also the Norwegian Planning and Building Act, which is the prevailing legislation for EIA in Norway, stress that activities which may impact society and natural

³ Ibid., p.3, emphasis added.

environments significantly shall go through an EIA process in order to assure that the *demands for sustainability* are fulfilled (cf. § 1-1).

Short history of EIA

During the 1960's, Western Europe and North America experienced an increase in awareness of the relationship between an expanding industrial economy and environmental change. This was an era of environmental idealism, also incorporating a number of environmental challenges. Academic milieus both from the natural sciences and humanities devoted considerable time to environmental research which resulted in several works that today are regarded as classics, for example Rachel Carson's *Silent Spring* (1962), Lynn White's paper on environmental theology (1967), Paul Ehrlich's *The Population Bomb* (1968) and Dennis Meadows's *Limits to Growth* (1972). Whatismore the public showed commitment in the form of demands and pressure put on central governments explicitly to include environmental factors when considering development projects. In the U.S. the National Environmental Policy Act (NEPA) was introduced in 1969 and in it, the term 'Environmental Impact Assessment' occurred for the first time (Noble, 2006).

EIA has gone through an evolutionary process since it was first introduced in the late 1960's and early 1970's, and still it continues to develop as a tool whose purpose is to tackle the alarming imbalance between the goal of economic growth and the unfortunate environmental situation that the human race and all life on this Earth is currently facing.

In the beginning EIA was characterized by random, discontinuous and local observation of the natural environment. During the mid-1970's and until the early 1980's, public hearings and scoping method were developed to broaden the emphasis. During the 1980's and the mid-1990's EIA grew rapidly, largely due to a number of international events, such as the 1987 World Commission on Environment and Development, and the 1992 and 1997 Earth Summits. Through this period the

definition of *environment* was broadened to include not only natural environments, but also social and economic relations. In the 1990's EIA emerged as a system-oriented and multi-dimensional approach, involving both quantitative and qualitative methods. Growing environmental awareness, partly because environmental idealism was revitalized and increased environmental lobbying, EIA was recognized as an important environmental management tool.

Today the situation is characterized by an accelerating demand and pressure from public, business and governments to turn EIA towards the goal of global sustainability and global climate change (see e.g., Burdge, 2008).

Catchwords these days are that EIA should serve as an integrated planning tool for decision-makers, emphasize global environmental effects, empower the public, recognize uncertainties, favor a precautionary principle and contribute towards sustainability (Noble, 2006).

Environmental Impact Assessment did require by law for the first time that proponents of development projects had to ensure society that their project would not adversely affect the environment. Prior to the 1970's development projects were normally just assessed by the use of Cost-Benefit-Analysis (CBA). CBA is still common today, but obvious drawbacks such as the inability to value environmental and human intangibles and limited scope of economical impacts, have given EIA a leading position among environmental management tools.

EIA is mainly conducted for larger project such as infrastructure, extraction of minerals and petroleum hydrocarbons, airports, railways, roads, etc., significantly impacting on nature and culture. Such projects determine therefore the direction a nation or region develops and therefore also determine the sustainability of nations. The *information/knowledge* in EIA is significant because decision-makers base their decision to a large extent on this. In other words, the information in EIA is used to determine which development project society regards as *desirable and undesirable*.

There is no single universally agreed definition of environmental impact assessment, but EIA has been defined as a 'tool', '*methodology*' and a 'regulatory requirement' (Noble, 2006, p. 2). The International Association for Impact Assessment (IAIA) and the UK Institute of Environmental Assessment (IEA), for example, define EIA as:

'The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made' (Noble, 2006, p. 2).

And:

'a comprehensive and systematic process designed to identify, analyze, and evaluate the environmental effects of proposed projects; ... an organized means to gather information used to identify and understand the effects of proposed projects on the *biophysical environment* (air, water, land, plants, and animals) as well as on the *human environment* (culture, health, community sustainability, employment, financial benefits) for those people potentially affected' (Noble, 2006, p. 3, emphasis added).

And:

'... "a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the relevant decision making body before a decision is given on *whether the development should go ahead*"' (Therivel & Morris, 2008, p. 3).

So in other words, EIAs must be understood as a *scientific information base* aiming at analyzing through both quantitative and qualitative methods how a potential project or initiative may impact society and natural ecosystems in a *wide sense*. This scientific information is of vast importance for local communities and environments because it states firmly, and with the power of no less than 'Science', how these are to be affected in the short, medium and long run. It is also crucial because decision-

makers rely on and trust that the information is valid, that is, scientifically true or evident.

During the last year we have witnessed a hefty debate in the media regarding whether or not environmental impact assessment should be conducted to assess potential petroleum fields in Northern Norway. A general feature of this debate has been that opponents of petroleum activity have been negative while proponents have been positive towards impact assessment. The dichotomy here is strange and signalizes a knowledge gap in relation to what an EIA really *is*.

3 Science

The concept of information and knowledge, however, is not a straightforward one. 'Epistemology' is the old branch within philosophy of science dealing with the question "what is scientific knowledge/information"? (see e.g., Taylor, 1997, p. 1). Philosophy of science which can be described as a meta-science or as the science of science, argues that the scientific enterprise depends on 'paradigms' or 'disciplinary matrix' (Kuhn, 1996), 'hard core' (Lakatos, Worrall, & Currie, 1978), or ontology, epistemology and methodology of any research community.

In Kuhn's analysis of the history of science, in *Structure of Scientific Revolutions* (1962/1996), he discovered that even natural scientists who studied the same natural phenomena came up with highly divergent information and explanation; e.g., the example of Ptolemaic and Copernican astronomy can be offered here. Environmental impact assessment gathers information/knowledge through both natural and social studies and the latter must be expected to be even more ambiguous in relation to the criterion of objectivity than the former, because it studies *social phenomena*; meaning that it interprets an already interpreted reality.

The media in Northern Norway have also shown interest for the role science plays in the debate on petroleum development in the North. The newspaper 'Avisa Nordland'

contained a comment on the 'limits of science'⁴ which criticizes science for being value-laden in relation to impact assessment because:

'Its role is really not to produce the foundation for which decisions are based on, but to legitimize a decision which is already taken'⁵.

The criticism is severe and apparently shared by powerful people in Norway because, as the comment illustrates, a spokesman for the Socialist Left Party of Norway, Snorre Valen, stated that his Party was against petroleum development in the Lofoten Islands *regardless* of what information the report produced.

The debate in media actualizes the need for knowledge addressed by this dissertation.

4 Deep- and Shallow Ecology

In light of the recognition that information/knowledge depends on paradigmatic recognition, the thesis endeavor to conceptualize two paradigms which can be used to analyze EIA reports and the Norwegian EIA regime as such. The two paradigms chosen here are inspired by Arne Næss's concept of Deep and Shallow Ecology. We shall briefly mention the gist of these two positions here.

Deep and Shallow Ecology is an example of two movements which 'compete for our attention' (Sessions, 1995, p. 151). The former movement is a so-called *ecocentric* movement holding an ecological worldview. A central general principle of the ecological worldview is *biospheric egalitarianism* putting an equal-sign between all living and non-living creatures in nature; i.e., perceiving nature as an intrinsic value (human, animals, plants, bacteria, etc.).

In relation to environmental *and* cultural degradation Deep Ecology is concerned with designing politics eliminating the *cause* of pollution and resource depletion, that

⁴ Avisa Nordland, 16.04.2010, p.11, author: Stein Sneve.

⁵ Ibid.

is, increasing the quality of life in nature, while at the same time enhancing the *quality of life* for the human race.

The latter movement on the other hand is characterized by *anthropocentric* worldview whose central objective is 'the health and affluence of people in developing countries' (Sessions, 1995, p. 151). A general principle of the shallow worldview is *biospheric hierarchy* placing the human being on top of the pyramid, that is, as *the source of all values* in nature.

In relation to environmental and cultural degradation, Shallow ecology is concerned with the fight against pollution and resource depletion and increasing standard of living, that is to say, a technological and economically optimistic approach.

5 Research question and the structure of the thesis

The term 'Shallow', however, is perhaps unfortunate to use because it indicates negative prejudice, thus leading to the risk that readers misinterpret the research paradigm as being a scapegoat or *Plügenknabe*. Therefore, the thesis chooses to operate with the name 'Instrumental-Received Research Paradigm' (IRRP). This is a term less value-laden and more precise - as we shall see.

For the same reason, i.e. to hinder misinterpretations, the term "Deep" is replaced with the more precise and neutral name Ecosophical-Hermeneutic Research Paradigm (EHRP).

Based on these two divergent movements and their respective worldviews, in addition to what has been said about the philosophy of science, the thesis poses the following problem statement:

1. *How can an Ecosophical-Hermeneutic and an Instrumental-Received Research Paradigm be conceptualized/outlined?*

After the thesis has conceptualized the two research paradigm, it is interesting to use this as basis for a comparative study of EIA reports. The crux of the study is to reveal

what type of information/knowledge EIA reports encompass and thus to describe how various EIA reports relates to these paradigms. The next research question is therefore:

2. What type of information/knowledge does Norwegian EIA-research encompass?

The next natural step to take is to address what implications the findings have for EIA-research; ontologically (values) and methodologically (collection and analysis of data, etcetera):

3. What paradigmatic implications do the findings in this thesis have for EIA-research; ontologically, epistemologically and methodologically?

PART II: THEORETICAL PERSPECTIVES

The purpose of Part II is to answer research question 1:

1. *How can an Ecosophical-Hermeneutic and Instrumental-Received Research Paradigm be conceptualized?*

CHAPTER II: THE PARADIGM CONCEPT AS FRAME OF REFERENCE

1 Introduction to the Paradigm Concept

In this chapter the frame of reference being used to describe and conceptualize the instrumental-received and the ecosophical-hermeneutic research paradigm is presented.

The modified structure which the dissertation applies was originally created for the purpose of evaluating the scientific progress of the physical sciences in a historical perspective. This work was done by the American physicist and historian of science, Thomas S. Kuhn (1962) in his *The Structure of Scientific Revolutions*. Kuhn established his famous paradigm theory, probably one of the greatest scientific achievements after the 1950's (Sharrock & Read, 2002). Kuhn criticizes logical positivism thoroughly especially the aspect of value neutrality and argues that scientific acknowledgement is far more complex than logical positivism claims it to be. Central to Kuhn's work is that scientific acknowledgement depends absolutely on the activities conducted by research communities. In other words scientific recognition (or scientific discovery, results, work, etc.) has a highly *psychological and sociological* side. This wider frame

for scientific acknowledgement Kuhn terms a *paradigm*, a 'disciplinary matrix' and 'an exemplar' (Postscript to Kuhn, 1996).

Kuhn argued that members of different paradigms "live" in different, incommensurable "worlds" and that communication between different members will be extremely difficult (Kuhn, 1996, ch. X). He sees the existence of more than one paradigm at the same time as a sign of weakness which represents a pre-paradigmatic state for the actual scientific discipline. The social sciences he thus believes as being pre-paradigmatic and immature.

Kuhn's paradigm theory was initially established (based on ex-post observations and interpretations) for describing scientific theory development within the natural sciences. He provides profound evidence that concrete scientific data, especially within the field of physics, is highly sociologically and psychologically laden. We must expect that data within the social sciences must be even more socially laden, because of the problems related to the ideal of 'objectivity', that is, the total absent of subjective influences. The paradigm concept has been thoroughly studied and modified, especially by Törnebohm, for the purpose of analyzing other disciplines. For example, J. Bärmark's (1976) analysis of the American psychologist A. Maslow and Ingebrigtsen's and Petterson's (1979) analysis of the marketing field.

EIA-research consists of both natural and social scientific information with a clear emphasis on the former. The paradigm concept will therefore be used to analyze both natural and social scientific information on a descriptive (ex post) level. The main focal point, however, is the social research of different EIA reports and manuals. In other words, the research at hand endeavors to conduct research on research; i.e., *meta-research*.

T. S. Kuhn's analysis was conducted ex post (analysis of the *history* of science), but that does not limit the paradigm theory to be valid purely in relation to descriptive aims. Several other researchers have used the paradigm theory for ex ante

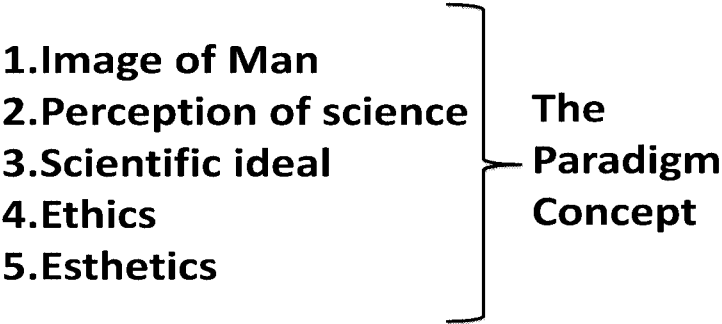
(normative) aims; i.e., *prior to outcomes being revealed* (e.g., Ingebrigtsen & Pettersson, 1979; Lindberg, 2001). Ingebrigtsen and Petterson (1979) state in relation to this that:

‘If values can be traced ex post by others, it is not unrealistic to believe, that these can also be forwarded ex ante by the researcher him/herself’ (Ingebrigtsen & Pettersson, p. 17, from Danish).

This provides clear argument for the possibility of using the paradigm theory for normative purposes as well. For example in relation to providing guidelines with regard to what information an EIA *ought* to address - in order to be a sufficient tool for sustainable development.

In this study the thesis applies J. Bärmarks’ 5 *interrelated* factors which together compose the paradigm concept. The 5 factors are a result of J. Bärmarks’ expansion of Törnebohms’ 4 factors:

Figure 1 The paradigm concept



The structure above is not *the* fixed structure for a paradigm. Sharrock and Read (2002) state that T. S. Kuhn provided more than twenty definitions of the concept in his magnum opus. The important part, however, is that a paradigm tells the

researcher *what to look at, how to look at it, and how to interpret it*. So in other words, a specific paradigm is composed of a specific ontology, epistemology and methodology which are interrelated to one another; e.g. the choice of ontology will influence epistemology, methodology will influence ontology and so on.

Ad 1) This first point represents the point of departure for a paradigm. Therefore all the other levels will be influenced and are results (directly or indirectly) of the worldview. Worldview or metaphysics/ontology⁶ is the study of the peculiar and essential traits of existence; i.e.:

‘the science of Existence inasmuch as it is, especially the study of the necessary and essential traits of existence’ (Lübcke, 1983, p. 294, from Danish).

Formal ontology is the study of existence as such, while material or regional ontology is the study of human beings. From this twofold distinction the following questions arise: what are the necessary and essential traits of nature, or what is the reality of nature, or what nature *is*, and what does it mean to be human, or what is the human nature, or what human/person *is*?

Worldview or metaphysics/ontology is those general, a priori assumptions and hypothesis concerning reality and being, which the researcher does not investigate in the concrete project. In order to reveal these meta assumptions, F. Lindberg argues that it is necessary:

‘... to conduct analysis of lower levels and interpret possible consequences for the higher abstraction levels’ (Lindberg, 2001, p. 16).

The worldview impacts the arrangement and production of research problems within an area and even the boundaries of an area (Ingebrigtsen & Pettersson, 1979). This means that it is actually possible to get a grasp of those meta-level-assumptions that

⁶From Greek; on (to), (the) being, and *logos*, study – the study of being (Lübcke, 1983, p. 323)

researchers have by studying which *problems, research questions and concepts* they use.

In relation to this it may be useful to mention that one of the essentials of Deep Ecology is to ask 'deep questions' ("why's" and "how's"), i.e. to challenge the deepness of our premises for which we base our conclusions on. This is one of the reasons why deep ecology is *deep*. A. Næss says that:

'Why-strings in science inevitably lead us beyond science' (Næss, Drengson, & Glasser, 2005, p. 25).

Ad 2) Perception of science concerns the question what is the nature of science, or what science *is*, that is, the philosophy of science. The branch in philosophy dealing with the nature of knowledge is termed: "epistemology"⁷; i.e. the "definition of knowledge" (Aristotelian) or the 'study of knowledge' (Lübcke, 1983). In Greek philosophy "epistémé" (see footnote) describes certain and secure knowledge in contrast to *doxa* or pseudoscience; naïve assumptions or opinions. In modern times, "episteme" is normally related to what the mind calculates as rational while *doxa* is related to the mere bodily senses or perceptions (Lübcke, 1983, p. 113).

A researcher's epistemological view represents how she/he evaluates their respective science *absolutely* and in relation to other sciences. This implies the evaluation of one's own and different "schools", paradigms and traditions which in turn affects how she/he views own and others' methods, hypothesis and identification of interesting research problems (Ingebrigtsen & Pettersson, 1979).

The classical debate in the philosophy of science and particularly the one concerning epistemology is the question about whether there are *one method* for all the sciences (so called *methodological monism*) or if it is necessary to distinguish between the natural and the social sciences; the latter being the *hermeneutic sciences of man* (see e.g., the first chapter of Taylor, 1985b; 1997).

⁷ From Greek; *Epistémé*; "knowledge", "science"; and *Légo*; "definition" (Lübcke, 1983, pp. 113,278).

What a person or researcher understands as truthful knowledge, however, is closely interrelated with his/her worldview and image of man. For example, in the time before science made its vast breakthroughs and greatly started to dominate social life, during the 17th century, it was common knowledge to regard certain virtues as “goods”. This was possible because the distinction between scientific facts and ethical values, which is common sense today, was not so obvious. For example Aristotle often talked about “the good society” and “the good life” (see e.g. DesJardins, 2006, p. 25).

Ad 3) This level encompasses, concretely, scientific ideal in relation to methods, models and theories. Scientific ideals are “ideal” because they represent superior techniques or ways to produce the “relevant” knowledge; it is conceived “relevant” because it is compatible with the higher meta-level (epistemology and ontology); or, in other words, compatible with the realization of some ideal social and natural state.

Scientific ideals refer to the researchers’ normative assumptions regarding how science should progress (Ingebrigtsen & Pettersson, 1979). Kuhn claimed that researchers who are in the fortunate position of having a scientific ideal are at the stage of ‘normal science’, that is, follow ‘an exemplar’ towards the aggregation of scientific knowledge or towards scientific revolutions.

The natural sciences, especially physics, have traditionally served the role as scientific ideal and exemplar throughout the history of science (Lübcke, 1983). The ideals of Logical Empiricism and the ‘received image of science’ are maybe the most influential ideals within the whole scientific endeavor. Its trust in pure observable “objective” facts also holds up a significant position within the various social sciences. The French philosopher August Comtè (1853), for example, encapsulated this well in saying:

'All good intellects have repeated, since Bacon's time, that there can be no real knowledge but that which is based on observed facts' (Easterby-Smith, Lowe, & Thorpe, 2002, p. 28).

Ad 4) The ethical dimension of research is important, because researchers have a special role in society, both with regard to individuals and collectives. In Chinese there is a saying expressing this role and it goes something like this: "Once our teacher, always our father".

J. Bärmark (1976) divides ethics into two categories: internal and external. Internal ethics concerns honesty in relation to references, citations etc., while external ethics concerns researchers' responsibility towards society and nature (societal and biophysical impacts of scientific results). The external ethic of EIA's must be devoted special attention because of the potential adverse ex ante effects (both intended-unintended and expected-unexpected) which decisions may have on natural eco-systems, cultural systems and individuals in both the short and long term.

Ad 5) Esthetics concerns the researchers' attitude towards presentation or scientific styles of empirical research. For example the literary style versus the mathematical/statistical style.

2 Limitations

It is of course an unfortunate abstraction to divide the paradigm concept into partial sizes, when in fact one of the essentials is precisely that of unity and coherence. A partial structure may easily lead the focus away from the relations and the whole. There is, however, one fair reason for doing this. This is for general pedagogical-analytical reasons - such as making the process of interpretation, that is, making sense of the empirical texts, more clear-cut. The partial structure allows us to develop individual criteria for each factor which can be further used as reference knots in the work of making sense of the empirical texts.

3 On incommensurability

Kuhn originally thought that scientific progress occurs as changes of worldview or scientific revolutions. Kuhn makes then a distinction from Popper's 'logical-critical view' by defending his own 'psychology of research' position (see Kuhn's paper in the preface to Lakatos & Musgrave, 1999). Kuhn's psychology of research interprets theoretical-conceptual development as something extraordinary, as a breakdown ('Extraordinary Science' as compared to 'Normal Science'), reaching very deep into the psychic sphere of a researcher. In corollary with this he argues and indeed demonstrates that different camps of theories/paradigms, and thus also researchers' perceptions are incommensurable. This belief is closely related with his view of a scientific community as a 'closed system', also a major demarcation between Kuhn and Popper (see e.g. J. W. N. Watkins paper in Lakatos & Musgrave, 1999).

The hypothesis of incommensurability is valuable because, amongst other things, it offers explanation value in relation to understanding communication problems, especially in academia, but also in politics and probably in society as such. The belief, however, that different camps are unable to reach an adequate understanding and consensus must not be taken for granted, in that it speaks directly in favor of anti-dialogical morals/praxis.

Popper's view of a research community as being open and reflexive represents a more optimistic and rational perspective on scientific progress. S. Toulmin describes this point well by comparing the Newtonian to the Einsteinian system of thought. If Kuhn's mechanistic view of discovery as a 'conversion of experience' was correct, physicists switching from a classical to a relativistic position could not be aware of the fact. This is due to the Kuhnian 'deepness' of the change. On the contrary, Toulmin shows, relativists 'were able to say, after the event, *why* they had changed their own personal position' (Lakatos & Musgrave, 1999, p. 44). The 'why' in the previous sentence contains the fact that relativists' were able to give reasons for why they changed position. In other words the change was perfectly *normal* and

happened for perfectly good reasons. In this sense, therefore, the structure of the scientific revolution in physics was not a mechanistic, cause-effect transition, but a purposeful learning process resulting Einsteinians' now being able to 'see' Nature *both* in accordance with the classical and the new view.

Toulmin's analysis is, however, *ex post* of the scientific revolution in physics and it seems rational that he is right when he states that a relativist with an already experience and knowledge of both positions (classical and relativist), that is, a scientist for whom the revolution is *history*, can 'see' nature in both ways. It is, however, a complete other thing to assume that the same scientists could 'see' nature in the two ways in *advance*, that is, *ex ante* to the revolutions; i.e., to see the future and to understand how history will look like. At least in this pre-revolutionary stage Kuhn's hypothesis of incommensurability seems highly plausible.

The two, ideal-typical, paradigms employed in this study will probably meet the same problems, but we can also hope that comparison to some extent is possible; i.e., through information and insight into each position we bring forth a descriptive account of them both and subsequently we may be able, or this process may have the potential of helping us to see things in two ways. The question of commensurability, however, is difficult. The situation remains especially difficult in relation to where and how our comparison should begin: based on the one or the other paradigm. This seems especially ambiguous with respect to determining the meaning of concepts in the light of the two radically different views. Some advantage, however, must be expected from the upcoming analysis because it endeavors to say something about the implicit and tacit assumptions of the respective concepts and hypotheses underlying the two paradigms. Whether this technique succeeds or not, is to the reader to decide.

4 Implication for further conceptualization

On the basis of the paradigm concept which constitutes the frame of reference for this thesis the following sub-research question to RQ 1 can be formulated:

How can ontology, perception of science, scientific ideal, ethics and esthetics be interpreted in light of the two paradigms?

CHAPTER III: CONCEPTUALIZING THE INSTRUMENTAL-RECEIVED RESEARCH PARADIGM

1 Introduction

This chapter endeavors to illuminate the sub-research question to RQ 1 in the light of an instrumental-received research paradigm:

How can ontology, perception of science, scientific ideal, ethics and esthetics be interpreted in light of an Instrumental-Received Research Paradigm?

2 Ontology of nature

It is of course a rough generalization to outline *one* paradigm and especially *one* worldview and image of man, commensurable for this paradigm. However, this thesis argues that it is possible to outline *some* conditions which apply in general and be relevant in relation to the problem statement. These general conditions, it is argued, have in turn implicit or explicit consequences for the lower meta-levels of the frame of reference.

The point of departure for conducting scientific research about how a project may impact nature and culture, that is, to assess the potential negative or positive impacts of a development initiative, the researcher must have a clearly defined idea and concept concerning what nature and man *is* in order to be able in the first place to study "it". Such ideas and concepts constitute part of what Kuhn (postscript to Kuhn, 1996, p. 182) termed the 'worldview', or what Lakatos referred to as the 'hard core' of a research program (Lakatos, et al., 1978, p. 48) , that is, 'symbolic generalization' which are fundamental 'laws' or 'definitions' seldom tested or disputed by the research community (Gilje & Grimen, 1993, p. 88, from Norwegian). The purpose of this section is to discuss what nature *is* or the ontology of nature in light of an Instrumental-received tradition with inspiration from Shallow Ecology and to outline some criteria that can be used to analyze the empirical material.

Even though the ontological assumptions prerequisite for a theory are not always mentioned and may often even be unknown to the researcher, a theory always postulates some kind of a priori assumption. Hence the Kierkegaardian notion that a system can never start immediately and without any postulations:

‘The system begins with the immediate and is therefore assumption free and thus absolute. ... How does the system begin with the immediate? Does it begin with it immediately? The answer to this question must be an unqualified no’ (Kierkegaard & Næss, 1994, p. 100, from Danish).

It is possible to get a hint of the worldview presupposed by Shallow Ecology through studying A. Næss description of the Shallow Ecology Movement⁸:

‘The shallow ecology movement is concerned with fighting pollution and resource depletion. Its central objective is the health and affluence of people in the developed countries’ (Næss, et al., 2005, p. 7).

From Næss’ description here, an obvious dualism between human beings and nature can be deduced. To draw a demarcation line between man and nature is to assume a worldview in which man is subscribed significantly more worth or value than natural “resources”. This is in accordance with Jakobsen et al. who states that a dualistic/anthropocentric (human centered) worldview implies that:

‘nature is at disposal for human beings’ (Jakobsen, Jaminon, & Nystad, 2008, p. 67).

This also accords with F. Capra’s view:

‘Shallow ecology is anthropocentric, or human-centered. It views humans as above or outside of nature, as the source of all value, and ascribes only instrumental, or “use”, value to nature’ (Capra, 1996, p. 7).

⁸ First published as the: *The Shallow and the Deep, Long-Range Ecology Movement: A Summary*, in: *Inquiry: An Interdisciplinary Journal of Philosophy*, 16, (1973) pp. 95-100.

Further, the Stanford Encyclopedia of Philosophy describes anthropocentric theories as follows:

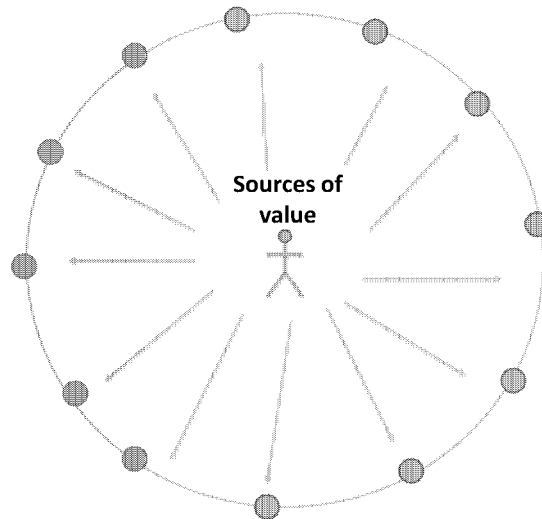
‘...they assign intrinsic value to human beings alone (i.e., what we might call anthropocentric in a *strong* sense) or they assign a significantly greater amount of intrinsic value to human beings than to any nonhuman things such that the protection or promotion of human interests or well-being at the expense of nonhuman things turns out to be nearly always justified (i.e., what we might call anthropocentric in a *weak* sense). For example, Aristotle (*Politics*, Bk. 1, Ch. 8) maintains that “nature has made all things specifically for the sake of man” and that the value of nonhuman things in nature is merely *instrumental*. Generally, anthropocentric positions find it problematic to articulate what is wrong with the cruel treatment of nonhuman animals, except to the extent that such treatment may lead to bad consequences for human beings⁹.

A. Næss refers to G. Tyler Miller when he outlines some of the consequences of anthropocentrism, or of the beliefs that (1) humans are the source of all value and (2) nature exists only for our use. The consequences are: (a) that our primary purpose is to produce and consume. Success is based on material wealth. (b) Production and consumption must rise endlessly because we have a right to an ever increasing material level of living (Næss, et al., 2005).

Fig. 2 is an illustration of the dualistic-anthropocentric worldview.

⁹ Stanford Encyclopedia of Philosophy, emphasis added: <http://plato.stanford.edu/entries/ethics-environmental/>

Figure 2 The anthropocentric idea



So far the discussion regarding the ontology of nature in the light of Shallow Ecology can be said to feature a dualistic-anthropocentric understanding. Further some of the historical roots of this interpretation of nature as a piece of machinery will shortly be discussed. The purpose of this is to illustrate the genesis and the growth of the idea of dualism.

Objective ontology - historical roots

The ontological tradition of dualism has ancient roots in '*atomism*' originating from Leucippus, Democritus and Epicurus. Atom¹⁰ means "indivisible" element of something (Lübcke, 1983, p. 37). Democritus (ca. 460-380/70 B.C.) endeavored to give a rational description of reality by referring to the *theory of atoms*: The only reality is atoms and the empty space. Atoms are massive, compact elements which cannot be divided and whose properties are eternal, unchangeable and invisible. From this Demokrit concluded that all phenomena which we experience can be explained through simple theories, atoms and empty space. In this perspective

¹⁰ Atom from Greek *atomos*; "indivisible" (Lübcke, 1983, p. 37)

nothing happens randomly, every eventuality just form links in the long chain of cause and effects. Demokrit explains both cosmos and the soul in the light of the atom theory¹¹.

Epicurus (ca. 341-271 B.C.) was greatly inspired by the studies of Demokrit. In line with his major source of inspiration he explained that body and soul are made up of atoms, and that all functions of the human being are results of isolated atom-processes, like that of a machine. Human beings, however, have a small portion of free-will which we should use to increase our own 'happiness' (gr. *hedone*) and therefore deprive the ultimate evil which is 'pain'. This was the ultimate goal for a human being: to maximize happiness and minimize pain (Lübcke, 1983, p. 113; Næss, 2001, p. 227).

In Democritus and Epicurus we see the outline of a worldview based on dualism: separation between nature, as a total mechanistic and deterministic affair, and human nature as characterized by similar traits, but equipped with a small portion of free-will which should be used to seek happiness and avoid pain in the material world. Dualism has a relatively long history in modern philosophy. Its strongest roots, however, are from the early ages of modern natural science. Two figures are of special importance in relation to metaphysics based on dualism: Galileo Galilei (1564-1642) and René Descartes (1596-1650). Galileo and Descartes were of vast importance for the establishment of *objective ontology* and it can therefore be fruitful to mention their philosophies.

Galileo Galilei was an Italian mathematician, physicist, astronomer and philosopher, and is regarded as one of the founders of classical physics. His physical and astronomical investigation brought him quickly in opposition to the teachings of Aristotle and the Scholastics. Galileo believed that the true method in natural sciences unites mathematics and empirical observation. This belief led him to formulate his famous statement:

¹¹ Stanford Encyclopedia of Philosophy: <http://plato.stanford.edu/entries/democritus/>

“The book of nature is written in the language of mathematics”.

His research method is anchored on measurable data, mathematical hypothesis reflecting legitimate relations between phenomena and experimental testing of hypothesis (Lübcke, 1983).

Galileo divided the properties of nature into *primary and secondary qualities* or properties. Secondary qualities are non-measurable and subjective qualities (so called sensual qualities) such as color, sound, smell, taste and felt heat. Subjective qualities are not ascribed to the *substance* or the “matter”; they only applied to things in so far as they are objects of experience and should therefore be totally neglected by the physical description of nature. The “real” physical description of the world should describe what is objectively real, that is, the primary properties, in contrast to the things only appearing real from our subjective experience (Lübcke, 1983).

Galileo did not doubt that nature is made up of firm, quantifiable relations (structures, invariances). The only way to get into contact with them is through establishing mathematical relations between one or two variables. These hypotheses are subsequently tested through empirical observation: hypothetical-deduction (Næss, 2001).

The man who brought forward the mechanistic, materialistic view of nature to a significant extent and whose ambition was to establish a universal philosophical system based on the substance view, was René Descartes.

The French mathematician and philosopher René Descartes (1596-1650) is normally regarded as the father of modern philosophy and hence also the originator of modern metaphysics¹². In France, Descartes’ philosophy still dominates at the universities (Næss, 2001).

¹² Stanford Encyclopedia of Philosophy: <http://plato.stanford.edu/entries/descartes-works/>

The main point in the Cartesian metaphysical system is *dualism* (Lübcke, 1983, pp. 82-87). The meaning of dualism is a distinction between the human mind as a self-conscious substance, i.e., a “thinking thing” (*res cogitans*), and everything else (nature) including our body, as material substances, i.e., “external things” (*res extensa*). The soul is different from the material world, because it can itself acknowledge that it exists (“*Cogito ergo sum*”):

‘... there is a vast difference between mind and body, in respect that body, from its nature, is always divisible, and that mind is entirely indivisible’¹³.

This implies that the human soul (mind) and the human body belong to *two* different worlds each having different properties. The Cartesian professor Arnold Geulincx (1625-69) stated about the duality between mind and body that:

‘I am a spectator of the production of changes and movements in my body, but I am not the actor, the real causal agent, in spite of my interior acts of will. ... Body and soul are like two clocks, neither of which acts on the other but which keep perfect time because God constantly synchronizes their movement’ (Copleston, 1994, pp. 177-178).

In Descartes’ own words:

‘I rightly conclude that my essence consists only in my being a thinking thing [or substance whose whole essence or nature is merely thinking]. And although I may, or rather, as I will shortly say, although I certainly do possess a body with which I am very close conjoined; nevertheless, because, on the one hand, I have a clear and distinct idea of myself, in as far as I am only a thinking an unextended thing, and as, on the other hand, I possess a distinct idea of body, in as far as it is only an extended and unthinking thing, it is certain that I

¹³ From Descartes’ (2008/1637). *Meditations on the First Philosophy, VI. On the Existence of Material Things, and of the Real Distinction between the mind and Body*, p.139.

[that is, my mind, by which I am when I am] am entirely and truly distinct from my body, and may exist without it'¹⁴.

From *cogito ergo sum* Descartes derives the following natural philosophy¹⁵: Our perceptions are not in our command and must therefore belong to something different from our cognition, something which extends in space. This being said, we should ascribe to the *substance* (nature) only those properties which we can firmly and *distinctly* understand without any doubt. Descartes said that only divisibility and motion are such properties. Other subjective properties such as color, smell, sound, etc., we can imagine as being absent properties. In Descartes we find a similar distinction between primary and secondary qualities as we find in Galileo's worldview. In order to understand what reality *is* then, we should limit our research purely to studying the primary qualities (Næss, 2001, p. 401).

To further demonstrate the limitations of the senses, Descartes proceeds with what is known as the *Wax Argument*¹⁶. He considers a piece of wax; his senses inform him that it has certain characteristics, such as shape, texture, size, color, smell, felt heat and so forth. When he brings the wax towards a flame, these characteristics change completely. However, it seems that it is still the same thing: it is still a piece of wax, even though the data of the senses inform him that all of its characteristics are different. Therefore, in order to properly grasp the nature of the wax, he cannot use the senses. He must use his mind.

Mechanistic philosophy views the reality of nature as a large piece of clockwork which is devoid of meaning and life. Organic life (microorganisms, plants, animals, the human body, etc.) is understood as machines whose properties can be perfectly described through the language of mathematics. Nature is built up by eternal and

¹⁴ Ibid., p.133

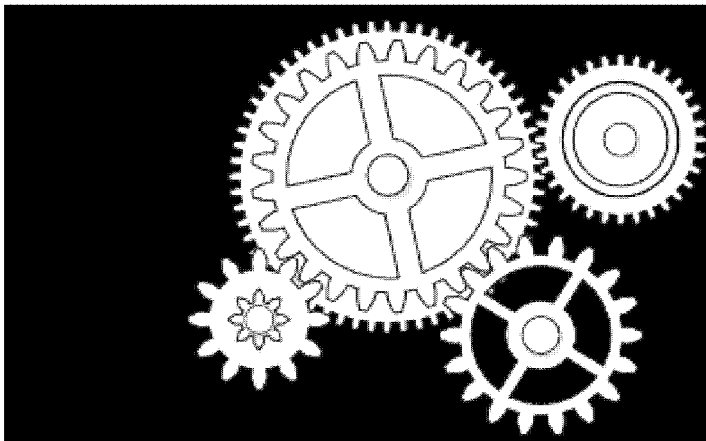
¹⁵ Ultra short description

¹⁶ From Descartes' (2008/1637). *Meditation II*, On the nature of the human mind, p. 86.

unchangeable atoms which are externally related to one another. F. Capra has described the Cartesian worldview as such:

‘To Descartes the material universe was a machine and nothing but a machine. There was no purpose, life, or spirituality in matter. Nature worked according to mechanical laws, and everything in the material world could be explained in terms of the arrangement and movement of its parts. (...) Descartes gave scientific thought its general framework – the view of nature as a perfect machine, governed by exact mathematical laws’ (Capra, 1982, p. 60).

Figure 3 Nature as machinery



In sum, objective ontology interprets nature as being constituted by objective, lifeless atoms whose qualities are the primary ones -length, breadth, tallness, etc. -, and which are externally and causally related to one another. In other words, nature is perceived as a 3D space, eternal in time and space, consisting of gears which are externally and causally related and put into motion by the forces of gravity, and devoid of inner life and subjective qualities. Objective ontology can now be summarized as followed:

- Dualism; demarcation line between Man (Mind) and Nature (Body).

- Distinction between primary (objective) and secondary (subjective) qualities: only the former applies to things-in-themselves.
- Mechanistic: these properties are *externally and causally related*.

3 Ontology of man and his motivation

The implications of objective formal ontology had implications for regional ontology, that is, the perception of the human nature as well - as we saw with Descartes dualism of mind and body. The result was an objective (primary qualities) model-of-man with a dominant focus on those objective (intersubjective) sides of life (e.g. material, utility, happiness). This image of man was accepted as the objective image of man and it has been absorbed by a wide range of scientific disciplines, e.g., behavioristic (mainstream) psychology, economics, politics.

One of the earliest and maybe most influential behaviorists was John B. Watson (1878-1958) (Raaheim & Helstrup, 1975). His goal was to make the discipline of psychology more scientific. He argued that psychologists who studied human consciousness worked with subjective and vague data which did not meet the demand for scientific validity. Watson believed that the only rigid and logical responsible form of functionalism was objective studies (pure observation) of behavior; i.e. behaviorism (Raaheim & Helstrup, 1975). Behaviorism's main function is to determine causal relationships (Stimulus-Response) between external stimulus and internal responses. Crucial underlying information for behaviorism was Descartes ontological argument that consciousness neither could be observed nor logically explained (Raaheim & Helstrup, 1975, p. 38).

Behaviorism's emphasis on the objective sides of human life (visual, auditory, tactile, kinetically) fits in well with Galileo's and Descartes' unbendable will to promote the primary (physical) and undermine the secondary qualities (experience) of life. Ingebrigtsen & Pettersson (1979) argue that behaviorism implies that human beings

are regarded as plain things who 'behave consequently and rationally in relation to what they want' (p. 39).

The moral behavior of this objective-mechanistic model of man was assumed to be motivated by an *objective rationality*, i.e., a rationality cleansed of subjective qualities. Lübcke et al. (1983) defines this type of rationality 'instrumental rationality' and refers to it as:

'**pure reason**, i.e. an ability to understand, which is cleansed of sensory impressions' (p. 136, from Danish) and that '*the right and justice action* is that which compared with other alternatives produces the greatest amount of positive (non-ethical) values. This means that the ethical value of an action depends on its ability to increase the amount of positive values of a non-ethical art, e.g., happiness, richness, beauty, knowledge, etc.' (p. 440, from Danish, emphasis added).

The ethical tradition which is compatible with the objective image of man is utilitarianism. Utilitarianism is an anthropocentric ethical theory (see e.g., DesJardins, 2006) concerned with the instrumental consequences of human actions. There are two traditions within utilitarianism: egoistic and altruistic. Egoistic utilitarianism is an extreme tradition explaining human behavior as motivated from purely egoistic motives; i.e. individualistic egoism. Altruistic utilitarianism explains human behavior as motivated from altruistic motives; i.e. striving to maximize happiness for the group; i.e. collective egoism (Thommessen, Egeland, & Wetlesen, 1996). This way of thinking and reasoning, the authors' states, enjoys the hegemonic position in modern ethics.

Shallow Ecology is occupied with the satisfaction of a segment or group (nation, the developed countries) of people as we have seen earlier in this chapter. The moral idea behind this type of reasoning then lies close to altruistic utilitarianism (Thommessen, et al., 1996). This tradition is oriented towards solutions supporting

‘the best overall consequences for everyone concerned’ (Rachels, 2003, p. 92), or the ‘greatest amount of happiness for the greatest amount’ (Thommesen, et al., 1996, p. 171). Becker states that the philosophical tradition underlying this principle is that it goes one step further and describes human beings as ‘not only self-related, but (...) systematically related to the community’ (Ingebrigtsen & Jakobsen, 2009, p. 2780).

The famous sentence, “*The greatest amount of happiness for the greatest amount of people*”, was formulated by the famous utilitarian figure, Jeremy Bentham (1748-1832). Happiness is here understood as the ultimate premise in relation to the question of what is morally right. The utilitarian interpretation of “happiness” is hedonistic, from the Greek word *hedoné*, “pleasure”. Central utilitarian criteria are therefore the production of pleasure and the avoidance of pain. J. Bentham stated that humans are ruled and determined by these two ‘sovereign masters’ and that they: ‘...govern us in all we do, in all we say, in all we think...’¹⁷

C. Taylor (1985) has termed evaluations concerned with the outcomes of our action: ‘weak evaluations’. Weak evaluations are not concerned with the motivation behind outcomes. Taylor states that:

‘In weak evaluation, for something to be judged as good it is sufficient that it be desired’ (Taylor, 1985a, p. 18).

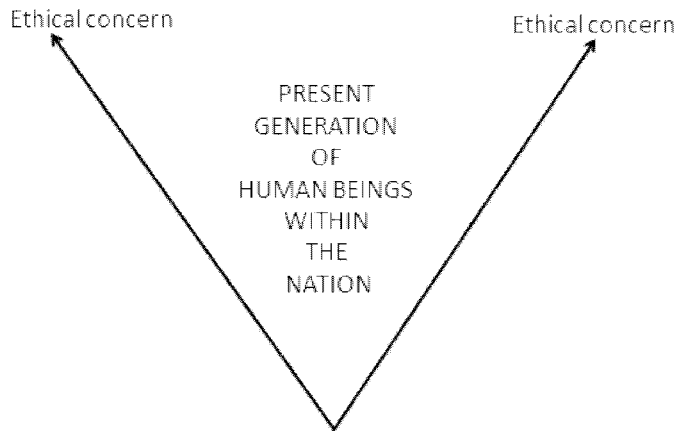
The primary goal of utilitarian ethics is that acts are considered moral, if the outcome increases utility for most people. Taylor states in relation to this:

‘The bent of utilitarianism has been to do away with the qualitative distinction of worth on the grounds that they represent confused perceptions of the real bases of our preferences which are quantitative. The hope has been that once we have done away with strong evaluation, we will be able to calculate. ... Utilitarians are certainly right from their own standpoint in rejecting strong

¹⁷ Stanford Encyclopedia of Philosophy: <http://plato.stanford.edu/entries/utilitarianism-history/>

evaluation, for doing away with this is a necessary condition for reducing practical reason to calculation' (Taylor, 1985a, p. 17).

Figure 4 The moral dimension of Shallow Ecology



The behavior of this objective model of man thus is assumed to be mechanistically and deterministically programmed in accord with the objective of maximizing happiness or utility and minimizing pain.

Objective regional ontology can now be summarized using following criteria:

- * Objective: the primary qualities constitute the real human nature.
- * Social reality exists outside the human being, that is, outside the subject.
- * Deterministic: human behavior is best understood through the concept of instrumental rationality.
- * Value-monism; maximize happiness ~ minimize pain.

4 Perception of science

This section attempts to describe some of the epistemological consequences inextricably related to objective ontology. Epistemologies¹⁸ constitute the a priori assumptions (or meta theories) concerning what the nature of science¹⁹ or what certain knowledge *is*. This means the *theory of knowledge* which a scientific theory holds as absolute. The crux of theories of knowledge is to outline what science *is* and thus also what pseudoscience is. Central here is the debate surrounding *validity*, that is, the problem of what makes knowledge valid.

It is reasonable to suggest a relationship between ontology and epistemology. The paradigm theory, for example, confirms such relationships. Also the Canadian philosopher C. Taylors argues in favor of an intimate relationship between ‘the nature of the human agent’ or ‘anthropological beliefs’ and ‘modern science’. In his case he analyzes the connection between epistemology and the concept of ‘freedom’ concluding:

‘And so the epistemological tradition is also intricate in a certain notion of freedom, and the dignity attaching to us in virtue of this. The theory of knowledge partly draws its strength from this connection. But, reciprocally, the ideal of freedom has also drawn strength from its sensed connection with the construal of knowledge seemingly favored by modern science’ (Taylor, 1997, p. 7).

The perception of science or ‘true knowledge’ in social science must necessary build on some meta-theories concerning what human nature *is*, that is, to assume or postulate a certain fundamental understanding or interpretation (meta-understanding/interpretation) of what the human nature *is*; hence the close relationship between meta-theories/‘worldview’s (cf. Kuhn) or ‘hard-core’ (cf.

¹⁸ From the Greek word: “*episteme*”: “*knowledge*” and “*logos*”: “*the study of*”; i.e. the study/philosophy of knowledge or philosophy of science (Lübcke, 1983, p. 113).

¹⁹ From Latin: *scientia*; “*certain knowledge*” (Glare, 1982).

Lakatos) and the understanding of knowledge. Traditionally, however, the line of argumentation has gone the other way around as Taylor puts it:

‘We might say that it is an ontological issue which has been argued ever since the seventeenth century in terms of epistemological consideration...’ (Taylor, 1985b, p. 17).

DesJardins (2006) provides an illuminating example of how the epistemological construal has encouraged objective ontologies:

‘Because all these primary qualities can be fully described in mathematical terms, the real world turns out to be the world of mathematical physics and mechanics. Real trees, for example, have no color. They merely reflect light waves. If our eyes were constituted differently, they would appear differently. ... Therefore, description of natural objects that refer to secondary qualities such as color, weight, and taste are scientifically irrelevant. They are not really true, rational, or objective’ (DesJardins, 2006, p. 213).

The consequences for a theory of knowledge ultimately regarding the real nature of humans as objective and rational must necessary be a theory or philosophy of knowledge that is best able to *explain* objective phenomena (body and mind) while at the same time sweeping away vague speculations and sensory projections (cf. e.g., Descartes’ “The Wax Argument”).

The philosophical movement that has delved most extensively into the philosophy of knowledge is logical positivism/empiricism as proclaimed by The Vienna Circle (1924-1936). The central figures in this movement are Moritz Schlick (1882-1936), Rudolf Carnap (1891-1970), Otto Neurath (1882-1945) and Carl Gustav Hempel (1905-1997). The publications of the circle can be found in The Berlin Circle Journals: *Erkenntnis* (1930-1937), *Schriften zur Wissenschaftlichen Weltauffassung* (1929-1937) and in *International Encyclopedia of Unified Science* (1934-1963).

The aim of logical positivism was to establish a *Unified Science*, applicable for the study of both nature and man. The tradition has been a direction in which methods drawn from the natural sciences, especially physics or *The real Science*, have been worshipped²⁰. Hempel illustrates this well by stating:

‘... general laws have quite analogous functions in history and in the natural sciences, that they form an indispensable instrument of historical research, and that they even constitute the common basis of various procedures which are often considered as characteristic of the social in contradistinction to the natural sciences’ (Hempel, 1942, p. 35).

The dominant position of the physical sciences was emphasized as early as the 17th century by the genius Descartes. In his *The Principles of Philosophy* he writes:

‘Thus, all philosophy is like a tree, of which metaphysics is the root, physics the trunk, and all the other sciences the branches that grow out of this trunk...’ (Descartes, 1637/2008, p. 156).

This willingness to use the physical sciences as an ideal for other sciences is also accounted for in C. Taylor’s *Overcoming epistemology* in which he writes that:

‘In practice, epistemologists took their cue from what they identified as the successful sciences of their days, all the way from Descartes’s infatuation with mathematics to the contemporary vogue for reduction to physics’ (Taylor, 1997, p. 2).

In this quest, the positivistic interpretation of what science/knowledge *is* has been enormously successful and powerful. The positivistic/empirical interpretation of what science is has not only been influential within physics and the other natural sciences but *also* ‘immensely influential in social science’ (Taylor, 1997, p. 1).

²⁰ (for beautiful illustrations see Capra, 1982, 1996).

Easterby-Smith et al. states that an implication of applying the positivistic interpretation of knowledge within social science is that:

‘... the social world exists externally. And that its properties should be measured through objective methods, rather than being interfered subjectively through sensation, reflection or intuition’ (Easterby-Smith, Thorpe, & Lowe, 2002, p. 28).

The authors further argue that this illustrates the close connection between ontology, the social world being ‘external and objective’ and epistemology, that knowledge is only significant if based on pure ‘observation of this external reality’. They warrant their claims by referring to the French philosopher and “*Father of positivism*”, August Comte (1798-1857), who stated that:

‘All good intellects have repeated, since Bacon’s time, that there can be no real knowledge but that which is based on observed facts’ (Easterby-Smith, Thorpe, et al., 2002, p. 28).

The positivistic theory or modern way of inquiring knowledge about social reality involves scoping it from an observational-objective perspective, that is, to see the world through quantitative lenses devoid of subjective and phenomenological aspects. This way of looking at the world involves the traditional *subject-object* relationship, in which the subject (or researcher) is *detached* from the study object. C. Taylor states that knowing theories based on ‘mechanistic activities’ involves scanning the world in the same way as computers scan numbers:

‘...passive reception of impressions from the external world. ... This construal, valid for Locke, applies just as much to the latest artificial-intelligence models of thinking. It is one of the mainsprings of the epistemological tradition. ... The epistemological construal is, then, an understanding of knowledge that fits well with modern mechanistic science. This is one of its greatest strengths,

and certainly it contributes to the present vogue of computer based models of the mind.’ (Taylor, 1997, p. 4).

The example provided earlier by DesJardins is a good illustration of the passiveness which Taylor discusses here.

The crux of the positivistic/modern theory of knowledge is that the researcher (subject) must be *distanced or detached* from the study object, that is, a subject-object relationship. This implies that researchers must play the role as a *spectator* in order to enable pure observation of the external social world and subsequently to meet the criteria of objectivity, that is, to describe or explain the “object” objectively.

Maslow has termed this way of knowing ‘spectator knowledge’ and, with reference to Martin Buber, he also terms it ‘I-It knowledge’, and states that it encompasses “knowing the external physical world” (Maslow, 1966, p. 49). He describes ‘spectator knowledge’ as follows:

‘It means looking at something that is not you, not human, not personal, something independent of you the perceiver. It is something to which you are a stranger, a bystander, a member of the audience. You the observer are, then, really alien to it, uncomprehending and without sympathy and identification, without any starting point of tacit knowledge that you might already have’ (ibid.).

The perception of science or epistemology which is compatible with objective ontology thus is characterized by the following criteria:

- * “Subject-object” knowledge; i.e., “I-It”-knowledge.
- * Certain/true scientific knowledge is deduced from detached *observation of the physical world*.

5 Scientific ideals

The scientific ideals a researcher and his/her research community strive to live up to, are intimately related to his/their perception of science and worldview. In other words, the scientific ideal of the IRRP endeavors to generate as precise I-It knowledge as possible. As we have seen the perception of science which is compatible with objective ontology is the dualistic subject-object tradition from the epistemological construal of the 17th century; i.e., natural science. Further we saw that the philosophical movement that has delved into this tradition and shaped modern scientific thought immensely is logical positivism/empiricism.

Although logical empiricism in its original form is 'dead', e.g., the belief that the principle of verification constitutes "The" demarcation criterion, many features of the tradition and its enormous influence still remains with us as we have seen. Therefore, it needs to be made clear that the present discussion of the scientific ideals of the IRRP attempts to outline what normally goes under the *received image of science*²¹ and not to provide an account into the originally form of Logical Positivism. In order to understand the received image, a short discussion of logical empiricism and critical rationalism (Sir K. Popper) does, however, follow, because the influence of both is crucial in relation to contemporary scientific thought.

In the Vienna Circle, where the logical positivistic tradition was born, one was motivated to discover the objective truth of reality, those truths which were universal and indisputable, and not to mess with metaphysical speculations. P. Frank, for example, has termed the Vienna Circle '*antimetaphysical*' (Gilje & Grimen, 1993, p. 48, from Norwegian). The elimination of metaphysics was of cardinal importance for the member of the Circle and to a significant extent it continues to be a hallmark of what goes under 'the received image of science'. This is simply because if we believe in a pre-analytic/-empirical reality or in synthetic a priori sentences, the

²¹ For a comprehensive and well reputed account of the subject see F. Suppes' (ed.) (1979) *The Structures of Scientific Theories*, 2nd ed.

whole criterion of objectivity becomes threatened; i.e., we no longer have a firm foundation on which to build our unprejudiced analytic/empirical descriptive science; because our objective facts and data are meant to represent the secure starting point of science. The argument against metaphysics and pre-analytic visions is clearly articulated by the young Ayer:

‘One way of attacking a metaphysician who claimed to have knowledge of a reality which transcended the phenomenal world would be to enquire from what premises his propositions were deduced. Must he not begin, as other men do, with the evidence of his senses? And if so what valid process of reasoning can possibly lead him to the conception of a transcendent reality?’ (Ayer, 1952, p. 33).

Kant, probably the finest intellectual of the 18th century, delivered a significant account against a pure empiricist and rationalistic image of knowledge in his *Critique of Pure Reason*; but for the moment we shall not enter this debate. Rather we should just notice that logical empiricists (and also modern science/received view) distinguish between meaningful analytical or “positive” sentences and meaningless synthetic/metaphysical sentences.

The aim of the logical positivists was to assert that all sciences are fundamentally alike (Unified Science) and that theories ought to be developed on the basis of experience (induction) (cf. Hempel’s statement above concerning the function of laws in history). Furthermore, theories and hypothesis ought to be testable in relation to empirical data (verification), and all scientific results ought to be explainable in mathematical and logical terms (universal language). Again we can include a statement from Hempel that illustrates our point here:

‘Any explanation of scientific character is amenable to objective checks’ (Hempel, 1942, p. 38).

The criterion for determining whether a sentence is 'meaningful' or 'meaningless' is thus a matter of whether or not our claims/propositions are analytic or empirically verifiable. This implies that scientific theories must be testable in the light of observation and experience. Logical positivism emphasizes the need to evaluate empirical knowledge in relation to a certain fundament and to the criteria of truth (cf. an analogy to Descartes' fundamentalism). The criterion of truth refers to the correspondence between observational-statements and experience. Observational-statements (or protocol-sentences) represent reductions of complex statements which can be directly verified through observation or experience. In other words, a complex statement about the world is verifiable and meaningful if it can be proved through observations (see e.g., Gilje & Grimen, 1993, p. 55).

For example, claiming that "human impacts of petroleum activity are positive" can be reduced into "petroleum activity in the High North will increase BNP per capita in the three northern regions by approximately 10 to 30 percent or whatever". This latter claim is quite easy to verify for an experienced economist. That BNP represents an objective measure for "positive human impacts" is an important pre-assumption for this observation claim. Or, for example the statement "there is an economic depression in Norway" can be verified through observations such as: "there has been a prolonged recession of 5 % in GDP".

The intensions of the logical positivists were to build an exact and unambiguous theory of science. The honesty and integrity of the Vienna Circle is remarkable and beyond dispute, because its members criticized their own theory right up until the grave. The main problem is that the principle of verification is at the bottom an *illogical* principle - in the sense that it prerequisites induction: the meaning of a sentence/proposition/claim is determined by *particular* instances. Blaug explains this well:

'This is the famous *problem of induction*. ... which has worried philosophers ever since the time of David Hume. ... induction from particular instances to a universal law requires an illogical leap in thought, an extra element that may well lead from true premises to false conclusions' (Blaug, 1992, p. 13).

This was a problem for the members of the Vienna Circle, because they held logical *deduction* as the ideal: from the universal to the particular. The movement also experienced problems in relation to the assumption that natural and social science can be treated similarly, that the certain point of departure for theoretical development is sense-data, and their image of a universal language.

The correct process of reasoning or inference (deduction as opposed to induction), that is, how we can decide whether or not a hypothesis/belief represents 'scientific knowledge', is through the *rules of logical deduction*: from the general to the particular; our conclusions must be deduced from our premises; which also in fact are (pre-) hypothesis (e.g., all Greeks are men, Socrates was a Greek, therefore Socrates is a man). Thus we can define knowledge as valid, when it is deduced from "known" premises (Russell, 2011).

Popper's critical rationalism criticizes logical positivism for believing that the growth of knowledge happens as a cumulative process precisely because it is logically erroneous to use verification as a criterion of truth, as shown above. Popper therefore argues that instead of endeavoring to secure verification of hypothesis, science ought to construct tests endeavoring *falsification* of hypotheses (Popper, 2002). In this sense science is based on critical-rational research. Science is thus the method of testing, ex post, our theories and hypothesis through deducing empirical and testable consequences from our hypothesis, and subsequently to control these in relation to particular facts/data; i.e., the traditional hypothetical-deductive method. Blaug explains efficiently the principle of falsification and Popper demarcation criterion:

'In short, you can never demonstrate that anything is materially true but you can demonstrate that some things are materially false ... science is that body of synthetic propositions about the real world that can, at least in principle, be falsified by empirical observation' (Blaug, 1992, pp. 13-14).

Popper encounters, however, a problem in his attempts to build a theory of science on a deductive foundation. His demand that theories and hypotheses ought to be falsifiable, assumes that our basic empirical observations (particulars) are true. Implicitly this means that if we do not demand that knowledge of particulars ought to be falsifiable, science is not based on a scientific foundation, but rather on induction. Popper therefore demands that some knowledge of particulars ought to be sufficiently true for a given period and time, i.e., a researcher must agree that some "truths" or observation statements are true; i.e., so called 'known premises'. Such agreed-upon truths can in turn help us falsify our theories. This process of attempting to falsify our hypothesis through repeated observations, which can in principle never verify our theories in the strict sense, helps us to refine and adjust our theories so that we in turn can *approach* an objective knowledge of the world (Popper, 2002).

Thus the central trait of logical empiricism, critical rationalism and consequently the received or conventional image of science can be captured in the criterion of "objectivity" and value-neutrality; or as Chalmers puts it:

"science is derived from the facts" ... Science is to be based on what we can see, hear and touch rather than on personal opinions or speculative imaginings. If observation of the world is carried out in a careful, unprejudiced way then the facts established in this way will constitute a secure, objective basis for science' (Chalmers, 1999, p. 1).

When scientists talk about objectivity or 'unprejudiced observation' in science, they mean that data or facts about reality ought to be *interpersonal*; i.e., independent of

observer/interpreter. Thus science proceeds from facts or data given by observation which are 'objective' in the sense that they are interpersonal. Logical positivism was in fact a reaction to and a fear of pure subjectivism (Gilje & Grimen, 1993). The aim of science is thus to render *highly probable* 'mechanistic explanation' or cause-effect relations or hypothesis/ natural "laws"; i.e., *descriptive knowledge*.

An interesting discovery is that positive theories and models, i.e., descriptive knowledge, will never concern themselves with normative, 'purpose-explanations', that is, how things ought to be. This is because objective-positivistic knowledge-generation is oriented towards describing and explaining the interpersonal facts of nature and culture. In other words positivistic science is pragmatic science, that is, a means to further other ends (not an end in itself). This is in accordance with Lübcke who draws some of the implications for science of the pragmatic position:

'science is merely an intellectual tool for systematizing our experiences with the aim of increasing our commercial choices' (Lübcke, 1983, p. 214, from Danish).

This claim is reasonable because objective (value-free, spectator) knowledge can only produce knowledge about what we *can* do and not about what we ought to do; i.e., precisely value-free knowledge. Gilje and Grimen illustrate this point well by referring to the American sociologist G.A Lundberg's example of the implication of value-neutral research:

'it is not the job for a chemist who develops high-power explosives to let himself be influenced in his work by consideration as to whether his product will be used to blow cathedral up in the air or to build tunnels through the mountains' (Gilje & Grimen, 1993, from Norwegian).

Ingebrigtsen and Pettersson (1979) argue that the consequences of descriptive knowledge are that practical life is never a function of theoretical concept and

theories, and that positivism thus never serves normative purposes, that is, how life in practice *ought* to be.

It makes sensational reading to see the similarities between the positivistic ideal of objectivity and the early writings of René Descartes' (the father of analytic reasoning), the "*radical doubt*" of the 17th century. The following quotation is taken from his *Discourse on Method* (1637):

'The first thing was never to accept anything for true which I did not clearly know to be such; that is to say, carefully to avoid precipitancy and prejudice, and to comprise nothing more in my judgment than what was presented to my mind so clearly and distinctly as to exclude all ground of doubt. The second, to divide each of the difficulties under examination into as many parts as possible, and as might be necessary for its adequate solution'(Descartes, 1637/2008, p. 15).

A more modern interpretation of analytic philosophy/method is provided by Lübcke:

'1...a skeptic or downright hostile attitude towards metaphysical system-construction ...2. then there is the perception that the traditional philosophical problems can only be (dis)re-solved through a clarification of the meaning of the concepts which are central in the problem statement. ...3. Philosophy is not systematically beyond what concerns *method*. The philosophical problems can thus be treated *partial* and without an eye for the comprehensive *whole*. 4. Finally, analytic philosophy is characterized by a basic empirical attitude' (Lübcke, 1983, p. 16, from Danish, emphasis added).

Within psychology, the analytic method has for example influenced researchers to explain complex feelings and behaviors from muscle reactions in the eye-region. Another example of reductionism in psychology is the belief that mind and body are separated and should therefore not be studied together; hence the dualistic worldview (Hothersall, 2004). The utter consequence of analytical reasoning within

psychology is probably the culmination of G. T Fechner's psychology school of 'psychophysics' and J.S. Mill's concept of 'mental-chemistry' (Egidius, 2008, p. 412; Lauridsen, 1977, p. 25) and Skinner's strict behaviouristic image of psychology.

Summing up what has been said so far about the image of science in this chapter, the received view is that science proceeds from fact or data given by observation, and that these facts are objective in the sense that they are interpersonal (Logical positivism) or taken for granted in the sense that they are assumed true for the time being (Popper). Observations and facts (or so-called "observations statements") are independent of theories and can therefore function as yardsticks for judging the qualities of competing theories. The scientific method is always some kind of hypothetico-deductive explanations. The scientific explanations are always some kind of nomological-deductive explanations. A clear distinction between synthetic and analytic a priori sentences. No difference exists between the social sciences and the natural sciences.

The scientific ideal of the received image of science can now be summarized by way of the following criteria:

- * Interpersonal
- * Observation of data or facts
- * Evidence-based
- * Cause-effect explanations
- * Verification

6 Ethics

The internal and external ethical dimension of the Instrumental-Received Research Paradigm (IRRP) is closely related to the scientific ideal described above. Internal ethics concerns norms and rules for how research is conducted. These were described paralleled with the 'ideal' above.

The external ethic of the received view of science is rather downsized, that is, a lack of responsibility towards individuals, society and nature. This claim makes sense precisely because of the objective and value-free point of departure taken by the paradigm. Ingebrigtsen and Pettersson state that this objectivity:

'...has led to a lack of interest towards decisions with potential damaging social and individual effects, "side effects". The belief that scientific objectivity disclaims scientists of any responsibility and subjective evaluations (values), is probably the reason behind this (Ingebrigtsen & Pettersson, 1979, p. 43, from Danish).

The ideal of objectivity enables science to develop information which can be used to describe the relation between means and ends. Science can generate knowledge about whether given means are appropriate in relation to a given end. Subsequently, science can reveal or calculate probabilities between means and ends. Science is thus equipped with a critical potential with regard to means-ends evaluations. Indirectly, this implies that science is also able to provide a *critical evaluation* of actual *ends*. Furthermore it can also assess the indirect impacts of realizing ends: that is, what an end 'costs' us. In other words science *tells us not what to do, but what we can do*. Science cannot reveal the quality of fundamental ends, values and ideals in the light of our actions, for example, helping children in the poor world, but can shed light on the relation between means and ends and the costs of realizing ends (Gilje & Grimen, 1993).

The external ethic of the received view, that is, responsibility towards society and nature, will probably be evaluated in terms of instrumental (economical), material means. This is because of the ability to conduct mean-end evaluations. An instrumental rationality necessarily means the absence of any real ethical evaluations; i.e., whether something is bad/good. Pure instrumental, ends-means-reductions, are considered “objective” because they lack any real ethical evaluation. But at the same time, instrumental utility evaluations are evaluation, they represent value judgements originating from the human mind. So in other words, what the “received-researcher” understands as objective is his/her interpretation of the concept in light of his worldview. This connection between ontology and ethics point in the direction that the paradigm theory holding water. It also supports the claim that human beings are hermeneutical beings, i.e., interpretative and learning animals whose understanding depends on pre-understanding and prejudices (this ontology is outlined in the next chapter).

The connection between ontology and ethics is perhaps better explained by remembering that objective ontology (primary qualities) eliminates subjective “speculation” about what the good~bad and right~wrong *is* beyond instrumental evaluations. This is because, as A. Næss nicely illustrates:

‘Chemistry, physics, and the science of ecology acknowledge only change, *not value change* (Næss & Rothenberg, 2001, p. 24).

In objective ontology nature has little worth *in itself*, and therefore it makes sense to exclude any ethical or esthetical evaluation towards it. Ethical evaluations within the received tradition are subsequently interpreted as subjective “projection”, that is, “image of the surface”, about the world (Næss, et al., 2005). Moral questioning is also considered to be metaphysical speculation which the modern researcher does not want to “mess with”.

The ethics of received image of science can be summarized as followed:

- * Internal: Objectivity, reliability, validity, etc.
- * External: Non-existent; i.e.,
 - o Purely instrumental, i.e., end-mean reductions.

7 Esthetics

In the beginning of M. Blaug's book *The Methodology of Economics*, the following is stated about the methodologist:

‘Exposed as a bore, the methodologist cannot take refuge behind a cloak of modesty. On the contrary, he stands forth ready by his own claim to give advice to all and sundry, to criticize the works of others, which, whether valuable or not, at least attempts to be constructive; he sets himself up as the final interpreter of the past and dictator of future efforts’ (Blaug, 1980, p. vi).

With this I think Blaug places emphasis on and criticizes the important role a trained methodologist plays in science and modern societies. The obvious reason for this criticism is the dominant role which quantitative and objective methods play today.

A. Næss comments that the scientific worldview whose characteristic is the objective perception of nature, that is, the description of how natural objects are in themselves (“Dinge an sich”) has eliminated, amongst other things, all individual differences of sense qualities. Næss follows up his comment with the following statement:

‘What then remains? Perhaps merely an abstract structure of some kind – in any case recent development in physics seems to indicate just this. There does not appear to be neither world nor nature remaining, merely several common reference points suitable for mathematical description’ (Næss, 1999, p. 43, from Norwegian).

Again we see the interrelatedness between worldview and science. Næss' argument is also compatible with the Galilean postulation "Nature is written in the language of mathematics".

A researcher's esthetics concerns his/her choice of method and writing styles. Within the logical positivistic tradition it is common to make a distinction between 'cognitive meaningful claims' and 'cognitive meaningless claims'. This distinction is also by far valid for the received view as interpreted here. The content of the distinction is the following:

Cognitive meaningful claims

- * Analytical claims in logics and mathematics
- * Synthetically, verifiable claims in the social sciences

Cognitive meaningless claims

- * Metaphysical claims
- * Theological claims
- * Normative (moral) claims
- * Pseudoscientific claims

The received researcher must therefore be anticipated to have a loving relationship towards quantitative writing styles; i.e. mathematics and statistics. This fits in intimately with the sharp emphasis on the objective sides of social and natural life.

8 Summary of criteria constituting the Instrumental-Received Research Paradigm

Table 1 Criteria for the Instrumental-Received Research Paradigm

	INSTRUMENTAL-RECEIVED RESEARCH PARADIGM (IRRP)
Regional Ontology	<ul style="list-style-type: none"> * OBJECTIVE: THE PRIMARY PROPERTIES CONSTITUTE THE REAL HUMAN NATURE * VALUE MONISM * SOCIAL REALITY THUS EXISTS <u>OUTSIDE</u> THE HUMAN BEING, THAT IS, EXTERNALLY TO THE SUBJECT. * DETERMINISTIC: HUMAN BEHAVIOR IS BEST UNDERSTOOD THROUGH THE CONCEPT OF INSTRUMENTAL RATIONALITY.
Perception of science	<ul style="list-style-type: none"> * SUBJECT-OBJECT KNOWLEDGE. * CERTAIN/TRUE SCIENTIFIC KNOWLEDGE IS DEDUCED FROM <i>OBSERVATION OF OBJECTIVE DATA.</i>
Scientific ideal	<ul style="list-style-type: none"> * INTERPERSONAL/ OBJECTIVITY * OBSERVATION OF DATA OR FACTS * EVIDENCE BASED * CAUSE-EFFECT EXPLANATIONS * VERIFICATION
Ethics	<ul style="list-style-type: none"> * INTERNAL: OBJECTIVITY, RELIABILITY, VALIDITY, ETC. * EXTERNAL: INSTRUMENTAL
Esthetics	<ul style="list-style-type: none"> * QUANTITATIVE: A LOVE FOR HARD FACTS; MATHEMATICS/STATISTICS; ANALYTICAL CLAIMS; SYNTHETICALLY VERIFIABLE CLAIMS.

9 Some examples of ‘normal science’, ‘puzzle-solving’ and growth of knowledge within neoclassical economics and where traces of an Instrumental-Received Research Paradigm do occur

Neo-classical economics is what we commonly understand as mainstream economics and thus represents the dominant research paradigm within the science of economics²².

Alfred Marshall (1842-1924) is commonly regarded as the father of neoclassical economics as Ekelund and Hébert clearly state in their article:

‘When we refer to neoclassical economics today, we usually mean the collection of tools of economic knowledge available to (and invented by) Marshall, channeled and directed into uses dictated by Marshall’s view of economic science. To be sure, not every contemporary neoclassical economist follows Marshall’s path. Some “high-brow” theorists prefer to adopt Cournot’s view of economics as rational mechanics. Other maintains the connection to the real world is unimportant in theoretical research. But the bulk of the profession walks in Marshall’s footsteps’ (Jr. Ekelund & Hébert, 2002, p. 198).

From Marshall we can trace the ontology of neoclassical economics which seems remarkably similar to the image of man discussed in this chapter. In Book I, Ch. V of his *The Principles of Economics* (1898), he explains how neoclassical economics perceives human nature within the science of economics:

‘They deal with man as he is. But being concerned chiefly with those aspects of life in which the action of motive is so regular that it can be predicted, and the estimate of the motor-forces can be verified by results, they have established their work on a scientific basis’ (Marshall, 1898, p. 89).

²² See e.g., E. Roy Weintrub’s article on the subject in *The Concise Encyclopedia of Economics*, <http://www.econlib.org/library/Enc1/NeoclassicalEconomics.html>

Neoclassical economics endeavored to achieve the status of a *science* or more correctly as an exact and mathematical and quantitative science - as clearly articulated by Marshall in the quotation above. For that purpose it was necessary to adopt a deterministic image of man whose behavior and motivation is predictable, objective and possible to verify through solid empirical evidence. What the neoclassicists did was to adopt the utilitarian theory of value/human motivation proclaimed by J. S. Mill. Marshall is thinking on the 'mechanics of utility' when he discusses the 'motor-forces' of the self in the quotation above. When these grips had been taken, Marshall made 'economics an engine of scientific discovery' (Jr. Ekelund & Hébert, 2002, p. 212).

Before Marshall, Jevons (1835-1882), who Marshall read thoroughly (ibid., p. 207), explains in his *Theory of political economy*, the intricate connection between the a priori assumption about the 'economic-man' discussed above, 'normal science' and the method of neoclassical economics:

'value depends entirely upon utility. ... we have only to trace out carefully the natural laws of the variations of utility, as depending upon the quantity of commodity in our possession, in order to arrive at a satisfactory theory of exchange. ... Many persons seem to think that the physical sciences form the proper sphere of mathematical method, and that the moral sciences demand some other method, - I know not what. ... To me it seems that our science must be mathematical, simply because it deals with quantities. Wherever the things treated are capable of being greater or less, there the laws and relations must be mathematical in nature.' (Jevons, 1888, pp. 1-3).

The 'general utility' of consumer goods and services of whatever kind within the neoclassical economic paradigm, which Jevons is longing for, Marshall completed with his 'The Marshallian Cross'. 'The Marshallian Cross' or 'standard market model diagram' explains that the price or the value of a commodity depends on production costs (supply) and willingness to pay (demand) (Sandmo, 2006).

Today neoclassical economics occupies the hegemonic position within *natural resource economics and environmental management* literature. Puzzle-solving within the field is mainly concerned with the *pricing* of natural and human capital. An enormous amount of researchers spend their time solving problems with regard to the price or utility of natural ecosystems, biodiversity, experience of well-being, etc., etc. DeFries and Pagiola (2005) point this out precisely:

‘Economic valuation attempts to answer these questions. It is based on the fact that human beings derive benefits (or “utility”) from the use of ecosystem services either directly or indirectly, whether currently or in the future, and that they are willing to “trade” or exchange something for maintaining these services. As utility cannot be measured directly, economic valuation techniques are based on observation of market and nonmarket exchange processes’ (Hassan, Scholes, & Ash, 2005, p. 54).

Economic valuation can be defined as the attempt to assign quantitative values to the goods and services provided by ecosystems. The economic value of any good or service is generally measured in terms of what we are willing to pay for the commodity, less what it costs to supply it (Kumar & Kumar, 2008). This is what neoclassical or mainstream economists’ commonly refer to as ‘market value’. From this point of departure, i.e., that values are quantifiable, mainstream economists puzzles with problems concerning ‘what’ parts of natural ecosystems that matters/society are willing to pay for, and ‘how’ much market-value these parts are worth. (It seem plausible to characterize this point of departure, i.e., that all values are quantifiable, as candidate for a ‘law’, ‘definition’ or a ‘hard core’ which is seldom tested or disputed by members of the neoclassical paradigm; cf. section 2 in this chapter).

‘Total Economic Value’ (TEV) also called ‘Environmental Costs’ (EC) is a concept widely used by neoclassical economists. These frameworks typically disaggregate

utilitarian values of ecosystems into *direct* and *indirect use values* and *non-use values* (see e.g., Hassan, et al., 2005; Perman, Ma, McGilvray, & Common, 2003). The first being 'direct use value' (DUV) and refers to values used directly or indirectly by humans. Direct use value includes *consumptive values* such as harvesting of food products, timber, fuel, medicines, recreation, enjoyment, water sports, spiritual and social utilities and so on. The second, 'indirect use values' (IUV), is derived from *ecosystem services*, such as natural water filtration functions of wetlands, the protection function of forests and mountains, carbon sequestration and so on. 'Non-use values' (NUV) are typically 'option values' (OV) referring to the value of preserving environmental goods and services for use sometimes in the *future*. And last, 'non-use values' can refer to the value people may gain from knowing that a resource exists, even if they never use that resource directly. This kind of value is usually referred to as '*existence values*' or 'passive value'. 'Total economic value' or the 'environmental costs' typically involves adding the different utilitarian values into a total sum. For example as such (from Perman, et al., 2003):

$$TEV/EC = DUV + IUV + OP + NUV$$

Neoclassical economists' possess a broad arsenal of *methodological* approaches for measuring utilitarian values of natural ecosystem services (Braden & Kolstad, 1991; Dixon, 1994; Field, 2001; A. M. Freeman, 1993; A. M. Freeman & Resources for the Future, 1979; Global Biodiversity Assessment, Heywood, & Watson, 1995; Hufschmidt, 1983; Johansson, 1994; Kumar & Kumar, 2008; Markandya, Pearce, & OECD, 1989; May & Motta, 1996; Mitchell, Carson, & Resources for the Future, 1989; Navrud, 1992; Norwood & Lusk 2011; Pearce & Centre for Social and Economic Research on the Global Development, 1993; Pearce & Moran, 1994; Perman, et al., 2003; Torres, Hanley, & Riera, 2011; Willis & Corkindale, 1995).

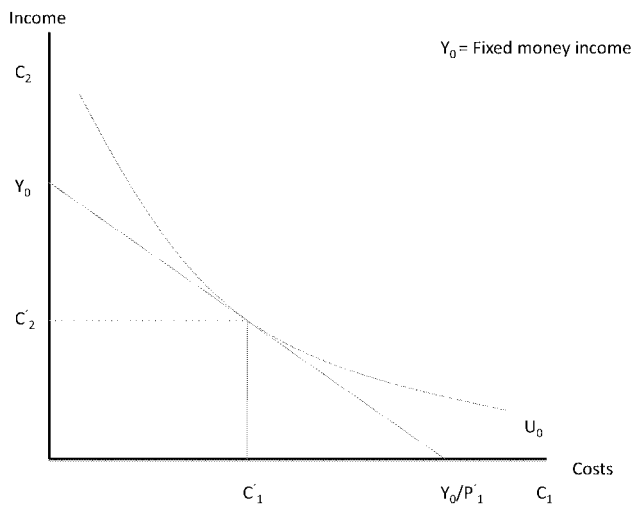
The valuation methods can, however, typically be divided into two groups of methods: 1) '*Stated Preference Methods*' and 2) '*Revealed Preference Method*'. '*Stated preference*' involves asking people directly to respond to hypothetical markets or situations concerning their willingness to pay or willingness to accept compensation. Stated preference methods are normally divided into '*Contingent Valuation*' (CV) and '*Choice modeling*' (Hassan, et al., 2005). '*Revealed preference*' involves deducing values indirectly from behavior in actual or hypothetical/surrogate markets. This group of methods includes for example: '*the travel costs method*', maybe best known as the '*Hotelling rule*', and it involves inferring environmental values from the costs travelers spend in order to experience the service; the '*cost of illness, human capital*' method, involving tracing impacts that affect health (e.g., air or water pollution); the '*replacement costs*' method, involving the identification of costs of replacing the lost good or service (Hassan, et al., 2005; Perman, et al., 2003).

Common for these two groups of methods, we see, is the attempt to attach utilitarian preferences or instrumental (economic) values on nature and culture, or, in other words, to convert/juxtapose environmental and cultural values into the '*willingness to pay*'. Consequently neoclassical economists can explain and communicate a) individual social behavior/lifestyle, i.e., consumption of goods and services differing in accord to individual income budgets, and b) efficient resource utilization at system (segment, market, nation) level as the aggregation of different individual demands, through the language of mathematics. Consequently this dynamic of the market or of demand, supply and prices can be manipulated and controlled, i.e., desired behavior/lifestyle can be forced by businesses and authorities through price regulation and other mechanisms affecting the budget of consumers and producers (e.g., rents, tax, expenditures, advertisement, etc.). The example below (fig. 5) illustrates how neoclassical economists interpret this behavior. A utility-maximizing consumer will choose C_1 and C_2 as to maximize $U = U(C_1, C_2)$ (Perman, et al., 2003).

Conclusion

Based on the discussion in the last section of chapter III, it is reasonable to conclude that neoclassical economics is to a significant degree compatible with the instrumental-received research paradigm outlined in this chapter. The reasons for this claim can be found in the assumption that all *values are quantifiable*, or utilitarianism governing the paradigm, which probably enjoys status as a part of the 'hard core' of the paradigm. The second pillar of this paradigm is the view of mathematics as the true scientific method. Together these two pillars, or the combination of an objective-instrumental image of man and an analytical-mathematical image of science, govern the neoclassical economic paradigm. The latter is especially evident from the clear analytical-reductionistic approach of the paradigm. This is evident from the fact that the various methods, described above, for settling market/preference value on nature, apply nomological-deductive explanations. The postulate 'all values are quantifiable' works as the rigid/nomological hypothesis/sentence. Thus the endeavor of neoclassical economists is to puzzle about the problem about *how much* people are willing to pay for natural and cultural goods and services.

Figure 5 Utility maximization subject to a budget constraint



Source 1 (example from Perman, et al., 2003, p. 404)

CHAPTER IV: CONCEPTUALIZING THE ECOSOPHICAL-HERMENEUTIC RESEARCH PARADIGM

1 Introduction

This chapter endeavor to illuminate the sub-research question to RQ 1 in light of an ecosophical and hermeneutic tradition:

How are ontology, perception of science, scientific ideal, ethics and esthetics interpreted in light of an Ecosophical-Hermeneutic Research Paradigm?

2 Ontology of nature

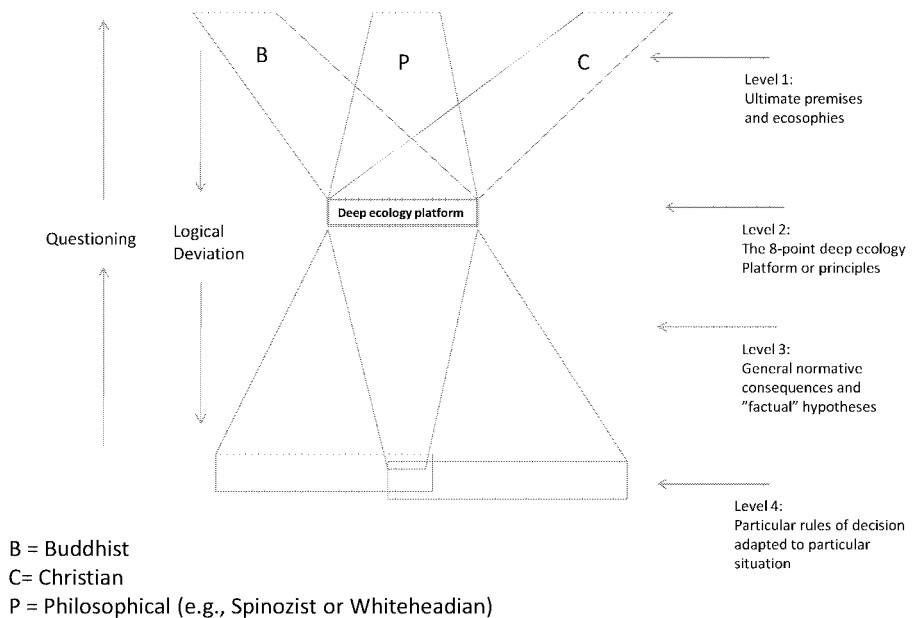
First it should be said that Deep Ecology as a movement does not outline or prerequisite one specific worldview which all members must accept and hold as ultimate premises. Instead Deep Ecology “jumps” over this disputed area and lands on the so-called “Eight Point Deep Ecology Platform” (Næss, 1986). The platform was worked out by A. Næss, G. Session, B. Devall and A. Drengson during the late 70’s and the early 80’s (Næss, et al., 2005, pp. 617-618) and can be considered to be the Deep Ecology Movement’s manifest or program. As a longer name for the Eight Points Næss suggests the following formulation:

‘a set of fairly general and abstract statements that seem to be accepted by nearly all supporters of the deep ecology movement’ (Næss, et al., 2005, p. 58).

The eight points represent fundamental principles, from ethical norms to practical policies. Deep ecology is therefore better explained as a *total view* rather than a consistent philosophical (e.g., like Cartesian, Whiteheadian and Spinozian) or religious system (e.g., Buddhism, Christian) with many levels and ultimate premises. Instead supporters live in different cultures, have different religions or philosophies (see The Apron Diagram in Fig. 6). This enables environmentalists to mobilize their

views and concerns in a more efficient way. The platform emphasizes how we can establish harmonic interplay between natural ecosystems and cultural systems. By focusing on these common principles many of the traditional areas of dispute, for example between Christians and non-believers (Atheists) are undermined. Instead different people can agree and join forces for something practical. The rich manifold of fundamental views represents a value in itself says Næss. This is because deep ecology holds diversity both biologically and culturally as a strong value in itself and as a necessary prerequisite for sustainable, green societies.

Figure 6 The Apron Diagram (Næss, et al., 2005, p. 76).



In the following, however, the study endeavors to outline some general criteria of the Deep Ecology worldview/ontology. We shall see that the discussion develops quite comprehensively when we come to regional or human ontology and the motivation of man, and that the discussion moves from traditional deep-ecology texts to include an account of critical philosophy originating from 18th century

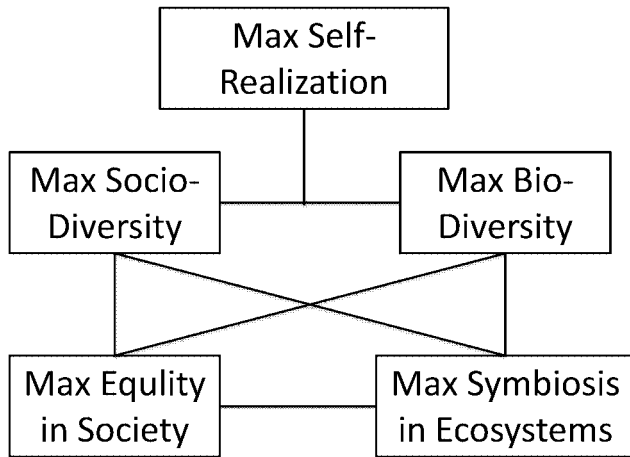
German philosophy (e.g., Kant and Hegel) in order to deduce compatible regional ontology criteria.

The starting point, however, involves the three first normative principles of the deep ecology platform. The platform is presented in many articles and books, but maybe the most comprehensive description of the Eight Points can be found in Næss (1986) *The Deep Ecology Movement: Some Philosophical Aspects*, and supplemented in Næss (1993) *The Deep Ecology "Eight Points" Revisited* in G. Sessions (Sessions, 1995). The first three sound as follows (Næss, et al., 2005, p. 37):

1. 'The well-being and flourishing of human and non-human life on Earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the non-human world for (narrow) human purposes'.
2. 'Richness and diversity of life-forms contribute to the realization of these values and are values in themselves'.
3. 'Human beings have no right to reduce this richness and diversity except to satisfy vital needs'.

Point one indicates a clear demarcation between Deep and Shallow Ecology. In this point the principle of biospheric egalitarianism is presented. This implies that Deep Ecology does not provide ranking between species or living and non-living creatures in nature. In other words the deep ecology worldview assumes an *ecocentric or life-centric* understanding of reality. This in turn implies that all life in nature is understood to be in possession of an equal amount of intrinsic value because "everything hangs together". The Deep Ecology worldview can therefore be seen as monistic, holistic and organic instead of dualistic, atomistic and mechanical.

Figure 7 The gist of Næss "Ecosophy-T"



*Monism*²³ claims that reality consists of the existence of one single substance (Lübcke, 1983, p. 95). In other words the "body-mind" and the "person-world" dualisms are invalidated and instead considered as one unity; i.e. the Unity of Life. This leads to the important notions that the deep ecology worldview is a totally holistic and organic view of life. This means that (1) every part is connected to the whole and the parts cannot be understood without reference to the whole, and (2) the essence of life is that it develops for itself, as an organism with intrinsic value. This second point is expressed in the platform under point one, two and three. Defenders of monism are to be found going back to Ancient Greece (e.g., Thales, Anaximander, Anaximenes, Heraclitus), through the Middle Ages (e.g., Spinoza, Leibniz) and to modern times (e.g., Heidegger, Whitehead, Næss).

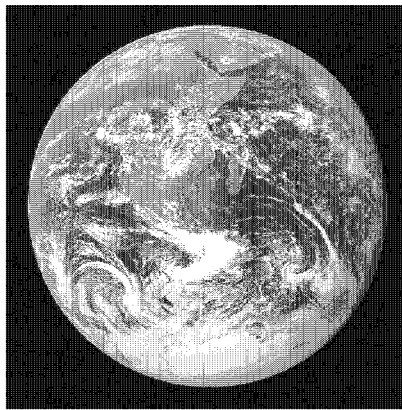
*Holism*²⁴ is the study that "wholes" (e.g. systems; physical, biological, cultural, economical) are more than the mere sum of observable parts and that the

²³ From Greek: *monos*, "single" (Lübcke, 1983, p. 94).

²⁴ From Gr.: *holos*; "whole", "entire", "complete in all its parts" (Liddell, Scott, Glare, & Thompson, 1996, p. 1218).

constituent parts cannot properly be described without reference to their respective place and function within the whole (Lübcke, 1983, p. 191). A holistic perspective on reality implies that all living and non-living creatures in the whole biosphere are interrelated and therefore mutually depend on one another and the whole. In the end, this reasoning concludes that all life is inevitably one whole or one unit; i.e. a monistic view. When NASA successfully pictured the Earth from space, it had a vast impact on peoples' perception of Gaia. Here we could see our planet as one Whole, all life connected and vigorously alive (see Fig. 8).

Figure 8 Earth as seen from Apollo 17 (source: Wikipedia)



L. Holbæk-Hanssen argues that the “parts” in reality are

‘Synthesized in the “whole”. This “whole” represents more than the sum of the elements, the pattern of interrelations represent the essence’ (Holbæk-Hanssen, 2009, p. 16, translation from Norwegian).

Both process-philosophers - such as A. Næss and A. N. Whitehead -, ecologists - such as Baskin and Costanza - and natural scientists such as J. Lovelock emphasize *relations* instead of atoms as the essence of life. This means that natural objects such as human beings, animals, plants, mountains, etc. are not “things-in-environment” (“Ding an sich, das”) but knots in the web of life. On ‘relation’ A. Næss wrote that:

'The deep ecology movement rejects the "human-in-environment" image in favor of the relational, total-field image: organisms as knots in the biospherical net or field of intrinsic relations. An intrinsic relation between two things A and B is such that the relation belongs to the definitions or basic constitution of A and B, so that without the relation, A and B are no longer the same thing. The total-field model dissolves not only the human-in-environment concept, but every concept thing-in-milieu - except when we speak at a superficial preliminary level' (Næss, et al., 2005, p. 7).

This metaphysical presupposition, that the "Ding an sich" view is overthrown in favor of the total relational, field-image, is nicely described by DesJardins:

'In the spirit of Deep Ecology, we might begin by taking a hint from scientific ecology. If we think of ecosystems as energy circuits through which solar and chemical energy flow, we might begin to think of individual organisms as less permanent and less real than the chemical and biological processes themselves. Individual organisms come and go, but the process goes on as long as environmental conditions permit. An individual organism can be thought of as the location at which these chemical processes occur. ... Another way of approaching this conclusion is to consider what it means to say that an individual organism is alive. Minimally, an individual organism is alive only if certain chemical and biological processes are occurring. When these processes cease to occur, the organism ceases to live. Thus the processes are necessary for the existence of the organism. On the other hand, when the processes do occur, life exists. Thus the processes are sufficient for life. Because chemical and biological processes are both necessary and sufficient for the existence of life, we have some reasons for saying that the processes are at least as real as, if not more real than, individual living organisms' (DesJardins, 2006, pp. 210-211).

Deep Ecology is thus a *process philosophy* rather than a substance philosophy because it postulates that reality is something alive where all parts are interconnected; i.e., the doctrine of interrelations. This corresponds closely with the hallmark of process philosophy:

‘what a thing is consists of what it does’²⁵.

The guiding idea in process philosophy is that:

‘natural existence consists in and is best understood in terms of processes rather than things – of modes of change rather than fixed stabilities. For processists, change of every sort – physical, organic, psychological – are the pervasive and predominant features of the real’²⁶.

The main metaphysical presupposition of process philosophy involves Time and Change. This implies that temporality, activity and change are the ultimate factors for our understanding of reality. Reality itself is a vast macro-process embracing a diversified manifold of micro-processes fostering novelty, innovation, and the emergence of new processes is an inherent feature of the cosmic scene; cf. e.g. the Gaia Theory. In other words, nature evolves towards more complex processes over time. Or according to A. Næss’ *Ecosophy T*, towards ‘max Self-realization’; i.e. ‘maximum diversity’ which in turn prerequisites ‘maximum symbiosis’ and ‘maximum complexity’ in the biosphere (cf. fig. 7); *if it is not victim of external subjection or exploitation (e.g., meteor, self destructing animals (humans?), polluting industries, etc.)*.

The ontology characteristic for the ecosophical position of deep ecology can now be described using the following criteria:

- * Monism (“Everything hangs together”): nature and man, that is, *life*, is One Unity; i.e. an eco-centric perspective on reality.

²⁵ Stanford Encyclopedia of Philosophy: <http://plato.stanford.edu/entries/process-philosophy/>

²⁶ Ibid.

- * Holism: the reality of nature involves integrated *wholes* which cannot be reduced to the sum of each part; e.g., both primary, secondary and tertiary qualities are real qualities of reality.
- * Organism: The trait of the reality of nature is best understood as *intrinsic relations* instead of isolated atoms.
- * The reality of nature is a self-developing and meaning-carrying system.

3 Ontology of man and his motivation

Let it be said at once, the Deep Ecology worldview is mystical and spiritual. This is, of course, a burden for the human mind, because it inevitably implies that we can never fully understand Gaia nor the human nature (aspirations, desires, goals, etc.). At the same time, the fact that we live a life in a world which we can never fully understand represents enormous opportunities. This is because “opportunities” (possibilism) is in fact “all” we have. The very fact that we have received life is a total mystery for the human mind, and so it will probably remain for eternity. The evolution of the human organism is the most mysterious and fascinating process on this Earth. Here we have to do with an organism which is able to be aware of its own existence and choose, literary, the life it wants. (This is the topic to be discussed more closely in this section). A. Næss emphasizes this in the beginning of his book *Ecology, Community and Lifestyles* (1989):

‘Humankind is the first species on earth with the intellectual capacity to limit its numbers consciously and live in an enduring, dynamic equilibrium with other forms of life. Human beings can perceive and care for the diversity of their surroundings’ (Næss & Rothenberg, 2001, p. 23).

According to Deep Ecology, the enormous potential of the human organism is its ability to be self-conscious and aware of its conditions. No other organism on this Earth has developed the ability to reflect more finely than the human organism. The ongoing discussion will look into the philosophical argumentation behind this

metaphysical standpoint. Readers may find this discussion vague and “unscientific” - as discussions on ontology usually are. Despite this most readers will probably intuitively know that what is being said is trivial and obvious. The validity of ontological arguments is also not a matter of methodology. Therefore anyone who feels that the discussion is unscientific, because it does not follow the rigid rules of logic or whatever, has misunderstood the whole point of reflecting upon ontology, and thus also philosophy and has maybe also lost contact with a central part of what it means to be human.

The ontology position perceiving humans as *subjects* equipped with a free-will and a self-reflective-critical reason, i.e., secondary qualities (felt heat, color, etc.), has its latest origins from existentialist/humanistic philosophy/psychology. The existential/humanistic perception of human nature, i.e., *subjective ontology*, represents a radically different (incommensurable) anthropological belief than objective ontology - humans as deterministic objects. Some of the most influential thinkers in the existential-humanistic tradition are Kant, Hegel, Kierkegaard, Husserl, Heidegger, Jasper, Dilthey, Gadamer, Sartre, Merleau-Ponty, Marcel, Maslow and Rogers. This chapter is not an introduction to the classical existentialists. Instead the study is an attempt to outline the essence of humanistic/existentialist ontology through the readings of “histories of philosophy”, “dictionaries”/“lexicons of philosophy” and other contemporary existentialist philosophers (especially Taylor) and humanistic psychologists (especially Maslow). The aim of this section is to develop some concrete criteria which can be used for further analysis of the empirical material (EIA reports). So with this short introduction let us get into the business of *subjectivism*; i.e., the ontology tradition imaging humans as *subjects* instead of objects.

Before getting started, however, there is a problematic condition which needs to be addressed. The concern is to what extent are subjectivistic philosophy and deep ecology compatible? There exists a notorious impreciseness here, because

subjectivism has 'subjects' as point of departure ('Cogito ergo sum') and draws a clear distinction between subjects (*res cogitans*) and nature (*re extensa*), i.e., a dualistic position, while Deep Ecology, on the other hand, takes a monistic point of departure, viewing mind and nature as one unity. How these two apparently divergent philosophies can be united is thus a serious theoretical and conceptual problem which the presented thesis does not attempt to solve.

Hans Skjervheim, the Norwegian philosopher's pioneering study, *Objectivism and the Study of Man* (1959) discusses 'two divergent philosophical directions'; i.e., objectivism and subjectivism, stating that:

'The key term for subjectivists is "intentionality", *meinend Gerichtetsein*²⁷ (the intention of being directed towards something)... It belongs to the nature of a subject to be *directed towards* something, to be *about* something (Skjervheim, 1959/2000, p. 25, from Norwegian).

The concept of 'intentionality' originates from Franz Brentano and his student Edmund Husserl. The former provided the following distinction between physical objects and *psychical phenomena*:

'... the distinctive feature of psychical phenomena, in contradistinction to physical, is an inherent *having-of* or a *directedness-towards* an object' (Russell, 2006, p. 79).

Skjervheim argues that a basic trait of human nature is to exist as *subjects in a world*, that is, being creatures directed towards objects and subjects. The crux of what it means to be a human organism is thus our 'intentionality' - consciously 'directed' towards something. The content of intentionality is *experience* - the psychical *phenomena*.

Intentionality is a characteristic quality for the human organism. It makes sense to elaborate on the concept of intentionality through Martin Buber's *Ich und du*

²⁷ German for "intentioned directedness".

philosophy (1923/1967). Here he explains that human beings have the capacity to *meet* the other (subjects, animals, plants, etc., etc.) in a way which *immerses* the “I” and the “Thou”. Buber does in fact state that if we do not meet ‘the other’ in an *I-Thou* way we do not live or experience reality as a human being ought to/have the potential/capacity to experience it:

‘He who takes his stand in relation shares in a reality, that is, in a being that neither merely belongs to him nor merely lies outside him. All reality is an activity in which I share without being able to appropriate for myself. Where there is no sharing, there is no reality. Where there is self-appropriation, there is no reality. The more direct the contact with the *Thou*, the fuller is the sharing’ (Buber & Smith, 1986, p. 67).

The gist of Buber’s *Ich und du* philosophy is that an ‘I’ only really becomes a whole human being when he *meets* (*Begegnung*) the other as a ‘Thou, that is, as a *closeness* (*Gegenwart*) which cannot be reduced into a collection of properties/elements (Buber & Simonsen, 2003, p. IX).

Buber’s concept of a *close meeting* and the existential presupposition of ‘man-in-the-world’, represent keys for understanding the spirit or *Einfühlung* of Deep Ecology.

‘The spirit, the human reality, is not within the ‘I’, but between the ‘I’ and ‘Thou’. First in this ‘between’ is the human way of being constituted’ (Lübcke, 1983, p. 63).

A. Næss emphasizes this and warns us of the dangers of designing cultural patterns depriving ourselves of this closeness:

‘As far as I can understand we have, or we are about to eliminate vast sources of *meaningfulness* in technocratic societies. We do not understand any more what it means for our well-being that things are always telling us *something*, that we are on the same channel as them, and answering them’ (Næss, 1999, p. 361, from Norwegian, emphasis added).

Taylor shares by far the alarming message stressed by Næss:

‘... the relation to the earth as raw material is therefore experienced as empty and alienating, but the recovery of a valid relation to the earth is the *hardest thing* once lost; and there is no relation to the absolute where we are caught in the web of meanings which have gone dead for us. ... and what must arise is an identity crisis of frightening proportions’ (Taylor, 1985b, p. 50, emphasis added).

C. Taylors’ description of ‘intentionality’, though the essence and the implications of displacing intentionality is the same as Buber’s interpretation, is somewhat less metaphorical and mystical:

‘Our reflections on the condition of intentionality show that these include our being “first and mostly” *agents* in the world. But this also ruins the conception of the agent as one whose ideal could be total disengagement. This turns out to be an impossibility, one that it would be destructive to attempt’ (Taylor, 1997, p. 12, emphasis added).

It is therefore more correct to understand the “human-animal” as a *subject* or *agent* with value priorities, interests, aspirations, feelings, etc., i.e., directedness (intentionality) instead as deterministic object, because: *things always mean something for someone*. Gilje and Grimen underline this point when they state:

‘A characteristic feature of human beings, in contrast to (other) animals, is that they assign to their own action and other phenomena *meaning*’ (Gilje & Grimen, 1993, p. 145, from Norwegian, emphasis added).

A central metaphysical belief in existentialism is thus that “things” or objects are never simply “things-in-themselves”, Dinge an sich, because a precondition for the very existence of these “things”, as they occur to the human organism, is the existence of a subject which is able to be aware and experience the “things”. Thus things are not things in themselves; they always means something for someone, that

is, humans are inevitably moved by the world around them. This is, says Heidegger, the *foundation* for our ability to *feel* (Heidegger, 2007).

Typically human is thus to *experience* reality. This implies that we ascribe reality subjective (secondary) and phenomenological (tertiary) qualities (see e.g., Næss & Rothenberg, 2001) (cf. the tradition of 17th century philosophers' willingness to distinguish between primary and secondary qualities). Subjective sensory qualities (color, smell, felt heat, etc.) are characterized by them being dependent on who is experiencing them. In other words, the one and same natural object, or milieu, reveals itself differently or manifests itself *differently* depending on who experiences them. Phenomenological qualities refer to *spontaneous experience* of something and the spontaneous act itself. Tertiary qualities are for example "noble", "base", "beautiful", "joyful", "majestic", "fantastic", "good", "bad", "horrible", etc., etc. Subjective and tertiary qualities are thus important because they bring *life* into "things".

The claim that the objective, "Dinge an sich" description of reality is inadequate and that subjective-phenomenological description is more adequate, can be illustrated by imagining the opposite. This would imply that we reduce from our description of reality (social or natural) all sense qualities and spontaneous experiences (as was discussed in the previous chapter). What we are left with then is simply physical atoms/substances or:

'merely several common reference points suitable for mathematical description' (Næss & Rothenberg, 2001, p. 48).

Næss states that pure objective descriptions are characterized by that them being completely independent with regard to who perceives them:

'so the things in themselves cannot have color, nor shape' (Næss & Rothenberg, 2001, p. 48).

Corollary to this, Whitehead argues, 'nature is a dull affair' (Whitehead, 1967, p. 54).

Næss and Whitehead here refer to the reality of nature. The consequence of reducing our social realm into a purely objective description must be expected as even more fatal. This would literally mean the elimination of a subject's senses, norms and values, feelings, personal history, and thoughts/hopes for the future, just to mention a few important aspects.

The perception that reality is a symbiosis of objective, subjective and phenomenological description provides the crux of Næss's concept of *gestalt ontology* (see e.g., Næss & Rothenberg, 2001). Næss argues in relation to this that "joyfulness" is not just "projections" of joy being felt by an observer, but instead a spontaneous experience (real experience) of something real:

'Joyfulness is on a par with tallness and specific weight, when we only talk about pure realness' (Næss, et al., 2005, p. lxxviii).

Subjective/existential-phenomenological ontology holds true that such subjective and phenomenological experiences of the world are as real as pure length, weight and tallness. This is so because a human being is a being amongst other beings. This means that man is always interrelated with the world through his intentionality. In fact, the crux of existential ontology is that man is never "a self-enclosed ego" as the objectivist claims, but always a "man-in-the-world". This is central in Heidegger's atheistic existential philosophy:

'Man is a being who is set towards the realization of his possibilities, not as an isolated ego, but as a being who is necessarily interrelated with the world of things and the world of persons. ...Two main paths lie open to him. He can acquiesce in his membership of "the one" to the extent of becoming absorbed or immersed in the crowd-consciousness, thus gaining assurance at the expense of personal responsibility and resolute self-direction. This is "unauthentic" existence. Or he can, within limits at least, assume personal

responsibility for his destiny, freely choosing his own possibilities, above all his destiny to death. This is “authentic” existence’ (Copleston, 2003, p. 180).

The “man-in-the-world” doctrine simply means that human beings are not mechanistic things which objective ontology claims, but rather *agents* in constant change, that is, subjects with interests, needs, values etc. which are constantly being reflected, criticized and thought through (evaluated). In other words, the human agent is able to reflect and evaluate his/her own desires, behavior, and values, that is, his/her own *Existenz*. This leads to the important trait of existential ontology that man is in possession of *free will* meaning that human nature is ultimately *indeterministic*. More about this follows below.

This implies that, what distinguishes us from other biological life, is the human ability to *choose* a responsible life; that is, we can “choose-to-choose”, hence Sartre’s statement: “I am my choices”. In light of this reasoning, that a human is essentially an organism along the same lines as other organisms, bearing in mind the fact that we are free to choose how to live and develop, human freedom reveals itself as an enormous possibility. Human freedom enables us both as individual persons and as a human species to build our own road and choose our own path in the biosphere.

This is in accordance with Sartre’s notions: “*Existence precedes essence*” which means that human nature is not bound to some specific essence taking choices for him/her or determining (delimiting) him/her in some way, but rather that man is free to choose his own path (inauthentic or authentic) as an:

‘existential, free-subject which exceeds (transcends) his own objectiveness’
(Lübcke, 1983, p. 144, from Danish).

C. Taylor has elaborated more on the human agent’s capacity for evaluation and freedom in his: “*What is human agency?*” (1985a) and “*What is wrong with Negative Liberty?*” (1985b). He begins his analysis by referring to H. Frankfurt when he describes the difference between animals and human desires:

‘But what is distinctly human is the power to evaluate our desires, to regard some as desirable and others as undesirable. This is why “no animal other than man ... appears to have the capacity for reflective self-evaluation...’ (Taylor, 1985a, pp. 15-16).

Taylor draws another place, in the paper *What’s wrong with negative liberty*, a demarcation line between what we can call “desirable desires”, so-called ‘first-order desires and “desire-worthy desires”, so-called ‘second-order desires’ (Taylor, 1985b, p. 220). He comes up with the following definition of the two types of desires:

‘When we reflect on this kind of significance, we come up against what I have called elsewhere the fact of strong evaluation, the fact that we human subjects are not only subjects of first-order desires, but of second-order desires, desires about desires. We experience our desires and purposes as qualitatively discriminated, as higher or lower, noble or base, integrated or fragmented, significant or trivial, good and bad’ (Taylor, 1985b, p. 220).

The definition here is in accordance with the existential image of man as an agent in possession of self-reflective, critical reason which constitutes him as a “Being” (das Sein) of “beings” (die Seienden) to use Heidegger’s words.

‘Weak evaluations’ discussed previously in Chapter III are concerned with outcomes of our desires, whilst strong evaluation is concerned with the quality of our motivation, that is, ‘the qualitative *worth* of different desires’ (Taylor, 1985a, p. 16). Strong evaluation is therefore constituted by a “desire” component plus a real “evaluation” component. This ability to evaluate values as either authentic or inauthentic is the key to experience ‘positive freedom’ or ‘to fulfill the desires of your own true self’ (Taylor, 1985b, p. 216). ‘Positive freedom’ focuses on who or what exercises control, and is thus an inner capacity enabling subjects to conduct life, that is, to conduct ourselves through our own choices and decision. Positive freedom can thus be perceived as a “goal in life’ which human beings have the *potential capacity*

of reaching through 'exercise' (Taylor) or the 'Project' (Sartre). This means that a human is understood as an organism or a process which develops and evolves, beginning with birth and ending with death; i.e. the concrete life. The central question here is then *how* a person develops? How a person develops her/his abilities to be aware and conscious about herself/himself, others and everything else in nature. Taylor describes this capacity as such:

'...for the capacities relevant to freedom must involve some self-awareness, self-understanding, moral discrimination and self-control, otherwise their exercise could not amount to freedom in the sense of self-direction; and this being so, we can fail to be free because these internal conditions are not realized' (Taylor, 1985b, p. 215).

Subjective ontology²⁸ as described here can be summarized as follows: 1) Human beings are *subjects*, i.e., beings with intentionality, i.e., an organism which interprets and makes sense of his/her world and experiences his world. 2) Consequently, human beings are open to/aware of the world and themselves, and thus able to choose for themselves, i.e., as beings with a *free will*, i.e., an *indeterministic* nature.

A human beings' existence, life-world or *lebenswelt*, in light of this ontology, is thus a highly active (reflecting, feeling, sensing, *experiencing*, etc.) process.

The discussion has so far outlined subjective ontology of man as a subject/agent with intentionality, inner values/needs, i.e., an *embodied-ego*, whose personality and identity (Existenz) is created through his own personal choices. The further literature review of the human nature will put emphasis on the value/need-dimension of human nature. This is important to shed light on because human behavior and products are always meant to satisfy some certain needs/values, or in other words, there are always some meaning/intentions behind behaviour. For this purpose the

²⁸ Occasionally the terms 'subjective', 'existential' and 'holistic' ontology are used interchangeably depending on context: in general 'subjective' is applied because it represents the classical term; when discussing classical existentialist philosophy, however, 'existential' is more suited; 'holistic' (the 'whole' human) when discussing more recent psychology such as personality theories.

study applies Maslow's conceptual framework of personality and motivation from *humanistic psychology* because these schools share by far subjective ontology, and in fact, originate from subjectivism/existential philosophy (see e.g., Jørgensen & Nafstad, 2005; Lauridsen, 1977; Maslow, 1968; Rogers, 1995). A central topic which will be devoted special attention is what it means to choose a responsible life in light of Deep Ecology.

The image of man which has been described here must be characterized as humanistic because it is concerned with the intrinsic nature of human beings, that is, what distinguishes the human organism from other organisms. 'Humanistic' or 'existential psychology' ('The third force') is a direction within psychology which takes subjective ontology as its point of departure. This is emphasized by P. Lauridsen in his description of humanistic psychology:

'In general these psychologists are referred to as "humanistic" because they dissociated themselves from the purely naturalistic empirical perception, for which a human being is first and foremost a biological and social determinate product ... A person is, according to these psychologists, qualitatively and categorically different from other phenomena in this world (both living creatures and dead things) by being a psychosomatic unity and whole, which is aware of his own existence and self and relates hereto and chooses' (Lauridsen, 1977, pp. 21-22, from Danish).

Lauridsen's interpretation of the humanistic image of man as qualitative and 'categorical different' is in accordance with K. Raaheims' 'Basic-thesis' which, according to him, is the fundamental point of departure for existential psychology:

'a) Every individual is *unique* in its inner life, in their own way to experience the world, as well as in their reactions. b) Individuals cannot be understood as a "gathering place" for functions and elements, and can thus not be fully

explained in a physical, chemical or neuro-physiological conceptual framework' (Raaheim & Helstrup, 1975, p. 67, from Norwegian).

Based on this short argumentation it should be fair to claim that the humanistic-existential school of psychology is compatible with subjective ontology. Consequently the study draws knowledge from this paradigm about general human needs and values as we now shall elaborate on.

The first organized study program in humanistic psychology was developed in Berlin by Wilhelm Dilthey (1833-1911) in 1882. Dilthey developed a "Science of man" or study program in "humanities" (geisteswissenschaftlich) (see e.g., Dilthey & Betanzos, 1988). The study program contained a graduate degree in "Verstehende Psychologie" (Understanding Psychology) the main concern of which was the *interpretation* of subjects instead of the 'explanation of objects'. Dilthey formulated his demarcation as such: "Die Natur erklären wir, das Seelenleben verstehen wir", which can be translated : "Nature we explain, the human soul we understand" (see Lauridsen, 1977, p. 21).

The gist of humanistic-existential psychology is first and foremost the image of man as a *subject* which has been discussed in this chapter, and as illustrated by the quotations from Lauridsen and Raanheim. The second characteristic trait which is a consequence of the first, that is, the holistic point of departure, is that humanistic psychology endeavors to understand the *whole* human nature, that is, the *whole* personality. A person is thus understood as one whole unity, as a *gestalt* which is different and more than the mere sum of each parts. The third characteristic is that, consequently, a personality cannot be studied through reductionistic-analytical methods, because then the picture of the whole personality is lost. More about the methodological implication of subjective ontology will be presented in the next section of this chapter. Here and now the literature review will focus on the second point.

A.H. Maslow (1908-1970) was probably the most central figure within *The Third Force*. The reasons for this is that he was, of course, one of the founders, together with Charlotte Bühler, of the “Association for Humanistic Psychology” and the “Journal of Humanistic Psychology”.

Humanistic psychology or “The Third Force” was a reaction to and an alternative to the other two mainstream psychology school, Behaviorism and Psychoanalysis, which dominated American universities before the 50’s. After Maslow’s death the humanistic tradition has taken the character of an ideological-religious movement instead of a scientific discipline. This is probably because Maslow signaled in the preface to the second edition of his *Toward a Psychology of Being* (1968), that “The Third Force” could be understood as a transition phase to an even higher ‘Fourth psychology’:

‘I should say also that I consider Humanistic, Third Force Psychology to be transitional, a preparation for a still “higher” Fourth Psychology, transpersonal, transhuman, centered in the cosmos rather than in human needs and interest, going beyond humanness, identity, self-actualization, and the like’ (Maslow, 1968, pp. iii-iv).

Humanistic science is often criticized for being pseudoscience because the rigid criteria of objective science, as we discussed in the previous chapter, are often abolished in favor of generating knowledge centered on understanding and helping existential *subjects*, that is, not purely descriptive science, but science which suggests action and implies consequences (more about the epistemological and methodological consequences of subjective ontology in the next sections of this chapter). The theory which this study uses, partly however, for the analysis of human needs and values is Maslow’s main work: *Motivation and Personality* (1954). Central here is the ‘Need Hierarchy’. *Motivation and Personality* is Maslow’s *magnum opus* and it gave him an international reputation and status as “one of the greats”.

Lauridsen concludes therefore that the scientific quality of *Motivation and Personality* 'can hardly be doubted' (Lauridsen, 1977, p. 408, from Danish).

The 'need hierarchy' consist of 5 qualitative different groups of need: *physiological, safety, love and belongingness, esteem and self-actualization* (Maslow, 1970)²⁹. Maslow originally structured his motivation theory as a hierarchical structure/pyramid. In the preface to his later work, *Toward a psychology of being*, however, he "philosophizes" on the human capacity to transcend own needs and interests (cf. quotation above). This conclusion seems more reasonable or plausible in the light of subjective ontology whose main message is free will and thus the human ability to choose-to-choose (cf. earlier discussion in this chapter). An existential or need *profile* rather than a hierarchy thus seems more adequate to explain human motivation and personality, that is, a dynamic personality theory which is constantly being reflected upon, revised and adjusted as the person matures and grows (as a hermeneutic circle – hence 'hermeneutic ontology'. This weakness is discussed by Ingebrigtsen and Pettersson:

'The choice for the existentialist (Kierkegaard, Camus, Sartre) is *not* related and evaluated ad hoc according to the specific needs (physiological-, safety-, esteem- and need for self-actualization), but is the choice of an actual existence. The choice of an actual existence is due to the existentialists' perception, that existence precedes essence. ... When actual existence is the continuous choice an individual conducts in relation to a total perception of himself, the needs must be understood as partially equal instead of hierarchical' (Ingebrigtsen & Pettersson, 1979, p. 76, from Danish, emphasis added).

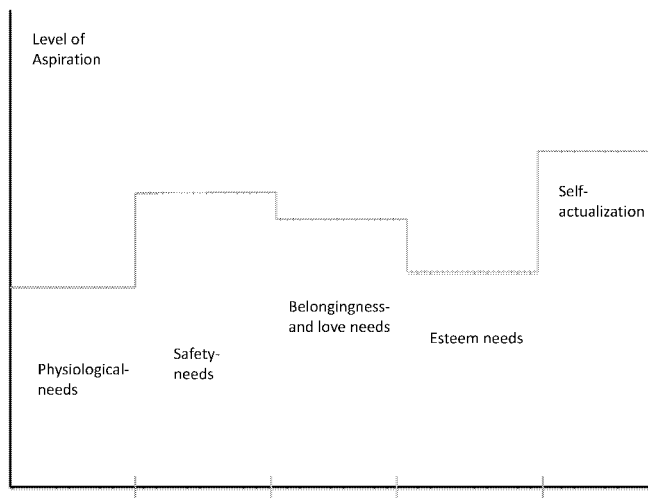
On the basis of this argumentation Ingebrigtsen and Pettersson converts Maslow's motivation hierarchy into a motivation or need-profile (see fig. 9).

²⁹ See Chapter 4: "A theory of human motivation".

As emphasized by (Næss, et al., 2005) in the Deep Ecology Platform (see point 3 above), it is important to demarcate strictly between 'vital-needs' and 'preferences'. This point is typically recapitulated by members of the deep ecology movement with slogans such as: "Simple in means, rich in ends" (see e.g., Devall, 1990). Characteristic for "deep ecology -personalities/lifestyles" is that a person realizes his inner capacity/freedom through choosing a responsible, rich qualitative/immaterial life exposing other living and non-living creatures to as little damage as possible, neither treating other human beings nor natural objects merely as means - *except* for the satisfaction of vital needs. A central part of the 'exercise'/'project' of maturing one's personality in this direction is what Næss describes as identification with all that lives:

'The ecosophical outlook is developed through an identification so deep that one's *own self* is no longer adequately delimited by the personal ego or the organism. One experiences oneself to be a genuine part of all life. Each living being is understood as a goal in itself, in *principle* on an equal footing with one's own ego' (Næss & Rothenberg, 2001, p. 174).

Figure 9 Conceptualization of the Human "Existenz" (motivation and personality).



Source: From Ingebrigtsen and Pettersson (1979, p.77).

The transcendence of self here discussed by Næss and Rothenberg bears a striking resemblance to what Maslow signaled the “higher” Fourth Psychology (cf. quotation above). Maslow in fact discusses the concept of “The Enlarged Self” in his book not published until after his death: *Farther reaches of the human nature* (1971). Here he argues that the distinction between *self* and *not self* has been broken down (or transcended) in self-actualized persons:

‘There is now less differentiation between the world and the person because he has incorporated into himself part of the world and defines himself thereby’ (Maslow, 1971, p. 312).

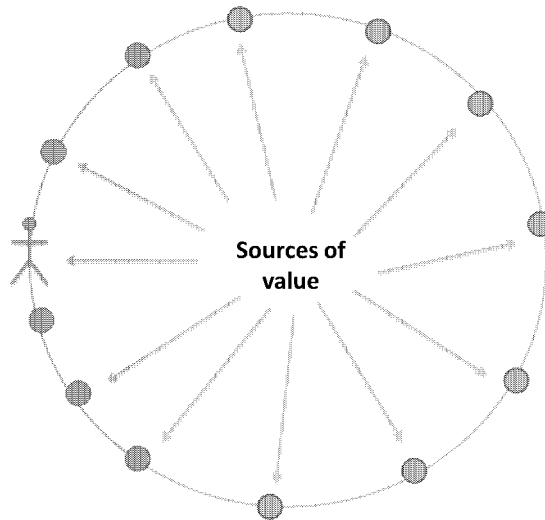
It is important to mention that the responsibility towards all life which Næss and Maslow emphasize here, is not of the kind where the person manipulates himself to do what is right simply because it is the right thing to do: similar to Kohlberg’s lowest moral stages where the “child” acts properly in fear of being punished; moral is thus not an intrinsic value but obedience and punishment oriented (see Duska & Whelan, 1975, pp. 45-46). The *care* –“*Sorge*” is the fundamental structure of man for Heidegger - for life in the mature person is *intuitive* (Næss & Rothenberg, 2001). Næss provided us with the following description of “intuitive care”:

‘Care flows naturally if the “self” is widened and deepened so that protection of free Nature is felt and conceived as protection of ourselves. . . . Just as we need no morals to make us breathe . . . [so] if your “self” in the wide sense embraces another being, you need no moral exhortation to show care. . . . You care for yourself without feeling any moral pressure to do it. . . . If reality is like it is experienced by the ecological self, our behavior naturally and beautifully follows norms of strict environmental ethics’ (Capra, 1996, p. 12).

Deep ecology lifestyles are thus compatible with non-anthropocentric/ecocentric (earth centered) ethical theories, i.e., a biospheric moral standing. Albert Schweitzer wrote that biospheric ethics had contributed to a ‘*reverence for life*’. (DesJardins,

2006, p. 131). Biospheric moral standing means that everything on this Earth has a value in itself and therefore also has an objective interest or a 'prima facie' to use the words of Christopher Stone (Ariansen, 1992, p. 181) (see fig. 10).

Figure 10 illustration of earth-centered ethics.



That something has value for its own sake means, in other words, that it has a value in itself which is independent from the instrumental values human beings ascribe to it. The opposite of intrinsic value is instrumental or economic value:

'... when we treat an object that has a value in itself and of its own as though it has value only in relation to us' (DesJardins, 2006, p. 129).

Aldo Leopold was one of the first to articulate an ecocentric ethic. In his *A Sand County Almanac, and sketches here and there* ([1949], 1989) he writes about the fabulous manifold and how nature evolves in a manner which is ethically beautiful. In his Almanac he presents the classic concept of a 'land ethic' where he states that:

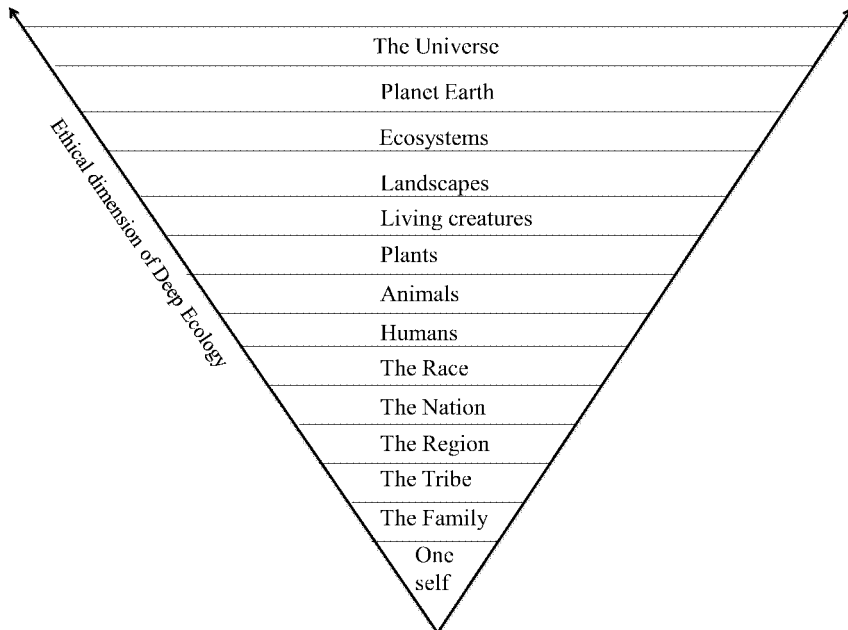
'A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise' (Leopold, 1989, pp. 224-225).

Ecocentric ethics and the "reverence of life" involve, Næss argue, that Immanuel Kant's categorical imperative: "You shall never use a human being merely as mean" must be expanded into:

'You shall never use *a living being* merely as mean' (Næss, 1999, p. 335, emphasis added).

The good life then, according to subjective ontology and ecocentric ethics, is to live a *deep* moral-responsible life, where all living and non-living creatures are perceived and *experienced* (through our inner intentionality; i.e., feelings, reason, thoughts, etc.) as high intrinsic values (see fig. 11). Human beings relate to their world in an 'I-Thou' way, that is, perceiving "the other" as "subjects" (both humans and nature) not objects devoid of value and meaning, but as intrinsically valuable, fascinating and part of oneself.

Figure 11 Illustration of the ethical dimension of Deep Ecology



Source 2 From (Ariansen, 1992, p. 183).

Finally the ontology of man (subjective ontology) within the Ecosophical-Hermeneutic Research Paradigm (EHRP) can be outlined using the following criteria:

- * Primary, secondary and tertiary qualities are real qualities of the human nature.
- * Intentionality; i.e., human-in-the-world; i.e., "Ich und du" relationship.
- * Humans as Creators of Meaning/Values
- * Value pluralism
- * Indeterministic; subjects have a high degree of free-will

The human being as a deep moral human being is of course not a description of the average man (Das Man) in the street. The deep moral person is a *potential Being*, that is, the "best" (authentic) image of man from an existential-, ecosophical perspective. It is thus difficult, perhaps even impossible, to state what a human

being *is*, because “the problem” is that we are not a thing or a static state. Human beings are better understood as personal ‘worlds’ or ‘beings’ in a world or being. The feature of the human nature which thus reveals itself is that we are fundamentally *freedom*. We can define ourselves either as moral, immoral beings or alive or dead. The alternative to an authentic image of man is, however, an inauthentic perception. Being aware of the dangers that follow the latter alternative, a responsible researcher ought to construct his/her theories on the authentic image of man, that is, he/she must choose a moral theory of the human nature, because, as Isaac Bashevis humorously and paradoxically formulated in his Noble prize lecture (1978):

‘We *must* believe in free-will - we have no choice!’ (Buber & Simonsen, 2003, p. xxxv).

The rest of this chapter will endeavor to outline a perception of science compatible with subjective ontology. Or in other words, to make the Ecosophical-Hermeneutic research paradigm complete. The gist of this discussion is that *what* a researcher looks at, that is, how she/he “sees” the world, that is, her/his worldview, will have implications for *how* she/he looks at it, that is, how she/he conducts research. This in turn will impact how she/he *interprets* data (cf. ch. II).

4 Perception of science

'To man the world is twofold, in accordance with his twofold attitude. The attitude of man is twofold, in accordance with the twofold nature of the primary words which he speaks. The primary words are not isolated words, but combined words. The one primary word is the combination I-Thou. The other primary word is the combination I-It; wherein, without a change in the primary word, one of the words He and She can replace It. Hence the I of man is also twofold. For the I of the primary word I-Thou is a different I from that of the primary word I-It' (Martin Buber (1878-1965), "Ich und Du").

As illustrated previously in the literature review, and as M. Buber is emphasizing in the quotation above, theories of knowledge (epistemology) stand in an intimate relationship with theories of human nature (ontology). This means that a theory of knowledge always hold an a priori interpretation of what it is studying (for example humans as either objects or subjects as we have explored in the last two chapters). This is probably the reason why philosophy of science or knowledge is so undermined in the day-to-day research of social scientists because problem identification of this kind, that is, what human nature *is*, is regarded as either too speculative, controversial or simply uninteresting; the reason for the latter is probably because science is regarded as a *descriptive* activity. C. Taylor has reflected upon the matter:

'We don't need to unpack these ideas any further to see that the epistemological tradition is connected with some of the most important moral and spiritual ideas of our civilization – and also with some of the most controversial and questionable. To challenge them is sooner or later to run up

against the force of this tradition, which stands with them in a complex relation of mutual support' (Taylor, 1997, p. 8).

This section endeavors to outline some central epistemological consequences of subjective ontology and thus "challenge" some moral and spiritual ideas. The consequences for a theory of knowledge which ultimately regards human nature as an existential-hermeneutical being, that is, an anthropological belief that the "source of vigor" lies within the subject, must necessarily be a theory or philosophy of knowledge that is best able to *understand* the mental horizon of the subject concerned (in accord with Dilthey's and Lauridsen's view – see previous subchapter).

C. Taylor stresses that subjective ontology, especially the point of intentionality ("Ich und du"- relation), he uses, however, the terms 'experience' (from Kant) and clearing (*Lichtung*; from Heidegger), has not been accounted for in mainstream (logical positivism) theories of science. Taylor states:

'They all start from the intuition that this central phenomenon of experience, or the clearing, is not made intelligible on the epistemological construal, in either its empiricist or rationalist variants' (Taylor, 1997, p. 9).

Further Taylor examine the problem of building a theory of knowledge lacking the important metaphysical presupposition that man is always a being-in-the-world:

'Plainly we couldn't have experience of the world at all if we had to start with a swirl of uninterpreted data. Indeed, there would be no "data", because even this minimal description depends on our distinguishing what is given by some objective sources from what we merely supply ourselves' (Taylor, 1997, p. 11).

The alternative to the mainstream, received theory of knowledge, which Taylor here so strongly yearns for, is a philosophy of knowledge which is metaphysically active, that is, a theory which takes the human quality of intentionality (or experience or clearing), i.e., subjective ontology, seriously, and makes science ultimately an endeavor directed at understanding and interpreting subjects. Or to put it in another

way, a *Science of Man* which perceives human beings as subjects, agents or self-defining animals instead of objects, i.e., a science endeavoring to *make clear, make sense of language, text or text-analogue*. The alternative philosophy of science/knowledge specialized for the interpretation and understanding of subjects or text and text-analogue (behavior, products), that is, The Science of Man, is *Hermeneutics* (see e.g. Taylor, 1985b).

The hermeneutical-phenomenological tradition is often said to origin from German philosophy. Central names are here: G.W.F. Hegel, Dilthey, Edmund Husserl, Karl Jasper, Martin Heidegger, Gadamer, Habermas and the French philosopher Ricoeur.

The classic difference between positivistic (natural) science and hermeneutical (social) science, originating from Giambattista Vico, is that the former studies the part of reality which is not a product of man, that is, nature (*res exstensa*), while the latter is occupied with the part of reality created by man, that is, history and culture (*res cogitans*). J. G. Droysen elaborated on Vico much later and argued that natural science is about *explaining* the external world and that the science of man is about *understanding* the internal world of subjects; similar to Dilthey as we have seen (Krogh, 1996).

Skjervheim illustrated the difference between objectivism and subjectivism by arguing that the former implied that the researcher played the role of *spectator* and the latter a *participant* (in Skjervheim, 2002). The spectator role is the traditional, mainstream-positivistic, *subject-object* relationship which discussed in Chapter III. The latter, participant, closeness to the study “object” is the hermeneutical *subject-subject* relationship which will be discussed here. In this relationship, says Skjervheim, ‘the other’ or the study “object” is not a ‘factum’ or ‘a pure physical object’ (Skjervheim, 2002, p. 21) which exists exterior and independently for the researcher, thus enabling him to study the “thing” as an audience watches a football match from the stands, but as a *subject* with values, meanings, opinions, problems, hopes, feelings, in other words *Existenz* or a subject.

The distinction between these two fundamental different ways, moods or attitudes can also be described as 'dualistic' and 'monistic' respectively. 'Dualistic' because the knower is not a part of the known. 'Monistic' because the knower is a part of the known. The monistic position is anchored in subjective (hermeneutic) ontology postulating that when a researcher, that is, a being, meets the other being, two worlds or beings-in-the-world (In-der-Welt-sein) (Heidegger) or *mental horizons* (Gadamer) *meet*. In this *meeting* the individual mental horizon represent the *marginal being* of a being, that is, the *pre-understanding* (Gadamer) or the *meanings-relations* (Heidegger) synonymous with the *world* or *lifeworld* (Husserl) of the subject, that is, the meanings, values, feelings constituting his *personal* world (see e.g., Lübcke, 1982). Therefore, in order for the researcher to *know* anything about his study "object", he/she must get access to the others' mental horizon. This necessarily means that he/she has to, in varying degrees of course, be able to *enter* the others' world and see it from within. Parallel to this the researcher also expands his own horizon, that is, his pre-understanding is supplemented with 'new understanding', and thus his/her world. In other words, in order for the researcher to understand his object of study, he must understand himself. Gadamer has beautifully described this concept of two horizons approaching each other, as a *melting of horizons* (Horizontverschmelzung), and it means that two, apparently, autonomous horizons merge together.

An example illustrating that adequate knowledge about the other necessary prerequisite that researchers are able to, in varying degrees, enter into the lifeworld of the other and to *experience* (conceptually, emotionally) his world on the basis of his horizon, are the lessons to be taken from Synanon. The principle here is that only a (cured) drug addict or alcoholic can fully understand, communicate with, help, and cure another drug addict or alcoholic (example from Maslow, 1966). This is maybe an extreme case, but principle similar cases can be found everywhere. For example, within the academia, it is a well-known fact that it is difficult to communicate with academics from other departments, schools and paradigms. It is

also a well-known fact that the application of business management principles (e.g., cost-benefit analysis) in questions concerning the development of social care services and natural ecosystems has brutal consequences for the people and creatures involved. This point is often emphasized in media debates by professionals and laymen representing the cultural and natural sides of society. Their general messages are that the *language* and the concepts economists use are faraway irrelevant and “non-humanitarian”. Communication is perceived as impossible.

The intimate relationship (emphasized in the examples above) between researcher and study-object which is a necessary precondition for the generation of subjective and phenomenological knowledge, is beautifully examined by M. Buber. Buber’s concept of primary word ‘I-Thou’ and ‘I-It’ means that the world appears for the human organism in two radical different ways. One can stand upon, e.g., another person as a Thou, as a closeness, or one can stand upon the other as an It, an object (Buber & Simonsen, 2003, p. VII). As we have seen, the general metaphysical trait of subjective ontology is *monism*. This implies that the objective distinction between researcher and what he/she studies, that is, the subject-object or ‘I-It’ relationship is, in principle, abolished in favor of the subject-subject or ‘I-Thou’ relationship. In a monistic perspective *relations* are the primary traits of the reality. The ‘I-Thou’ way of relating to the world implies that a person stands in an intrinsic *relationship* to a ‘Thou’ (in a Deep Ecology sense, ‘person’ must here be interpreted into meaning *all* living and non-living creatures, e.g., animals, plants, insects, mountains etc.) and that this relationship constitutes what it does mean to be a human. In other words:

‘an ‘I’ first becomes an ‘I’ in its relationship to a ‘Thou’. It is not an ‘I’ in itself’ (Lübcke, 1983, p. 63).

Martin Buber (1878-1965) is most famous for revitalizing the *dialogical principle*. The ‘I-Thou’ relationship is characterized by openness, reciprocity, and a deep sense of personal involvement. The dialogue between the ‘I’ and the ‘Thou’ is not thus simply a phonetic dialogue, but more a spiritual *meeting* or an emotional experience where

the 'I' is constituted by his attitude towards the 'Thou'. Hermeneutical research has therefore inevitably a dialogical character; that is, the relation between researcher and the study object (subject, language, text, or text-analogue) is highly intimate and interactional. A dialogical relationship is thus necessary in order to reveal the truth because the very concept of truth is systemic dependent, or in other words, it requires consensus between different viewpoints.

A.H. Maslow terms 'I-Thou' knowledge for 'experiential', 'love-', 'identification knowledge' and 'Being-Cognition' (Maslow, 1966, p. 52). Further he states about the 'I-Thou' attitude:

'More sensitive observers are able to incorporate more of the world into the self, i.e., they are able to identify and empathize with wider and wider and more and more inclusive circles of living and nonliving things. As a matter of fact, this may turn out to be a distinguishing mark of the highly matured personality. ... love for the object seems likely to enhance experiential knowledge of the object, with lack of love diminishing experiential knowledge of the object, although it may very well increase spectator knowledge of that same object' (Maslow, 1966, pp. 50-51).

As we have seen the Deep Ecology Man finds his meaning of life through a deep relationship, characterized by active and positive feelings, towards all natural living and non-living creatures in Nature. This is compatible with the 'I-Thou'-relationship which can be described as follows:

'The I confronts its Thou not a something to be studied, measured, or manipulated, but as a unique presence responding to the I in its individuality' (Audi, 1999, p. 104).

This way of relating to the world is radically different from the traditional subject-object relationship and consequently this in turn has impacts for how we interpret

what good science *is*, such as choice of method, relevant research problems, etc. Ingebrigtsen and Pettersson argue that:

‘Only in ‘I-It’ relations would one regard those traditional analytical techniques to be applicable: one chooses to stand outside and observe’ (Ingebrigtsen & Pettersson, 1979, p. 81, from Danish).

A holistic perception of human personality and motivation necessarily implies that no isolated method could be regarded as more appropriate than another. The choice of method must be a logical consequence of worldview, image of man, problem statement, etc. In this relation the positivistic-analytical method will be included in addition to hermeneutics and phenomenology. A central point in Deep Ecology formal ontology is that a pure objective description of nature and man is superficial and highly reductive as discussed previously in this chapter. However, this does not mean that the positivistic-analytical tradition is discarded, it only means that its applicability must be evaluated in relation to the problem statement; that is, the relevance of the analytical method must be “analyzed” in relation to what one is studying. This is because logical positivism, that is, precise and impartial observation of objective data suitable for descriptive claims and generalizations, is perceived as an epistemology which can throw light on the mysteries of life. This also means that objective-physical knowledge about the world or the “It” is not invalidated, rather we are aware that it is abstract/reductive. In other words, our understanding of science, and the unity of life as such, takes on a hermeneutical character; we endeavor to see *parts* in relation to complex *wholes*, and vice versa. Following this line of reasoning it is questionable whether it is necessary to keep a sharp demarcation line between metaphysical speculations and science and subsequently between science and pseudoscience - as is commonplace today.

Let it be said at once, the Deep Ecology perspective totally undermines that the positivistic-analytical tradition is the only concise and proper way to study, not just social phenomena, but also nature. The most obvious reason for this claim is the

acceptance, by Deep Ecology, that nature is inadequately described singly through primary qualities; i.e., those qualities which do not depend on who is observing them; i.e., intersubjective qualities; i.e., typically length, breadth, tallness, etc. Secondary and tertiary descriptions of nature stand on an equal footing with primary description as we have seen. In other words, in the natural sciences, subjective and phenomenological descriptions of nature must play a fundamental role; in fact it does so also today but this is not acknowledged because that would break-down the hard-core of the logical positivistic theory of knowledge (see. e.g., Polanyi, 1962). In other words subjective-phenomenological experiences such as “the skies are so blue”, “the horizon so red”, “the fields are so green”, “the smell is so fresh”, “the birds sing so beautifully”, “the view from up here is amazing” and “this little Arctic cloudberry tastes so fantastic”, are all *real descriptions* of the concrete nature of reality.

A central point in Deep Ecology is to feel joy and develop feelings for all that lives. An obvious example of joy and positive feelings towards nature is to see children playing outdoors and climbing trees. Do we really have to provide, in the traditional sense, objective and verifiable evidences for why we feel joy and experience freedom when going hiking in the mountains, or in the forest or rowing our boat across the lake? DesJardins states that ethical attitudes and behavior are the:

‘... real appeal of monism. Because I can do only one thing, ethics should give specific and unequivocal advice’ (DesJardins, 2006, p. 264).

Again we see that a system based on monism and not dualism undermines or actually totally eliminates the sharp border between metaphysics or ethics and science or objective knowledge. Aristotle reminds us that ethics involves practical reasoning through which we judge not what superficially constitutes the truth but rather what we should do.

Subjective ontology necessitates the use of methods able to capture complex wholes. This implies that hermeneutics and phenomenology must be an essential part of a researchers' toolkit in addition to quantitative techniques. In fact, I claim that a hermeneutic frame of reference is needed in order to synthesize all other individual methods; that is, to describe individual methods in relation to one another and in relation to the whole problem statement. The gist of hermeneutics is to capture wholeness and totality, at the same time not losing focus on details and parts. Phenomenology seeks to capture spontaneous experience (the secondary and tertiary qualities). Hermeneutics synthesizes objective, subjective and phenomenological knowledge into holistic knowledge.

The crux of the discussion in this subchapter is that scientific work is *interpretative work*. By this is meant that science reveals the truth about the human nature through interpreting social phenomena. This should not come as a shock when we remember that human beings are fundamentally interpretative animals making sense of their surroundings. Perception of science within the Ecosophical-Hermeneutic Research Paradigm can now be summarized as followed:

- * Monism: subject and study-“object” are parts of the same reality.
- * Certain scientific knowledge has its genesis in *interpretation*.

5 Scientific ideal

A researcher's scientific ideal is intimately related with his worldview and perception of science. In other words, what you think you look at will impact how you think you best should look at it and subsequently how you think you ought best to interpret it and vice versa. Thus, the researcher's scientific ideal is to promote and strengthen her/his worldview (consistency and coherence assumed); that is, her/his *lifestyle* or meaning in life.

P. Lauridsen argues that Dilthey's humanistic psychology necessitated the need for new methods that could generate new knowledge aimed at helping the psychologist to understand the lifeworld (*lebenswelt*) of a person. He writes:

'Here must be used other methods and these can be summarized in two categories: hermeneutic and phenomenology. Hermeneutic methods are methods for interpretation and phenomenological methods are methods for the description of consciousness phenomena as directly and immediately as possible. These methods are not intended to produce causal relationships and reach an objective description through the use of controlled observation, measurements and experiments, rather they intend to pave the way to a *meaningful understanding* of the above-mentioned facts, which differs from the empirical science objective facts by being subjective, that is not independent of the observer, but interpreted or described in accordance with his/her reference system or framework of understanding' (Lauridsen, 1977, p. 21, from Danish, emphasis added).

Lauridsen here provides evidence for the tight relationship between ontology and methodology. When man is perceived as "a creator of meaning", that is, a subjectivistic view, the researcher needs to reveal these meaning codes through understanding his mental horizon ('reference system', 'framework for understanding') and his spontaneous experiences of this world.

The central trait of hermeneutics is monism; that is, a subject-subject relationship between knower and known. This implies that knowledge about the other, whether it is a subject or an object, lies hidden *in between* the researcher (the 'I') and his study object (the 'Thou'); i.e., knowledge about the study object, that is, understanding, prerequisites a *mutual* interaction between knower and known; it is not something which can be attained through remote and passive sensing. Obviously fundamental objectivism as an ideal goes out of the picture in that knowledge creation is a result of a *meeting* between (at least) two beings-in-the-world or subjects with different meaning-codes, feelings, pathologies, etc. (though it is more common in social science that the meeting is between a researcher and a text or text analogue – but as Wittgenstein puts it:

*'Und eine Sprache vorstellen heißt, sich eine Lebensform vorstellen'*³⁰
(Wittgenstein, 2009, p. 11).

Subjectivism inevitably implies that the criteria of universalizability also become irrelevant and even impossible criteria because different subjects will always experience things differently. It is therefore necessary to change the focus from intersubjective data to *intersubjective meanings* of the social reality, that is, what the subject evaluates as meaningful and meaningless; e.g., states of intrinsic quality, states of anxiety, loneliness, etc. (Taylor, 1985b, p. 31). A central ideal within hermeneutics is therefore *'to understand the other more adequately than he understands himself'* (Lübcke, 1982, p. 31). And thus to reveal, both to oneself and the other, what makes sense in his life, what he ascribes as meaningful and meaningless, that is, 'intersubjective meanings'. Consequently the researcher can stop here; i.e., after he has revealed the meaning-codes for that particular subject/being. Or he could and he ought to move on and reflect upon these in the light of normative values (what ought to be) because ultimately the goal of social science is to understand individuals and societies and make them as healthy as

³⁰ Philosophische Untersuchungen §19.

possible; e.g., helping persons (children) to grow/mature into responsible and civil persons. This latter point is in accordance with the views of Ingebrigtsen and Pettersson (1979) who argue that the scientific ideal of a paradigm ought to promote a certain lifestyle. Hermeneutical science is thus normative science, that is, value-laden and *teleological*, that is, directed towards a goal; which is ever increased *understanding of the meaning of life*.

From this short discussion we can outline at least two ideals within hermeneutics. First, scientific knowledge should generate information helping us (and others) to understand, that is, to *reveal meaning* behind human activities and products. The second ideal is a consequence of the first, namely a theory's ability to predict or come up with prognosis inevitably shifts from objective and general to *specific and local knowledge*; e.g., relevant for a specific group/individual in society in a specific period/era/situation.

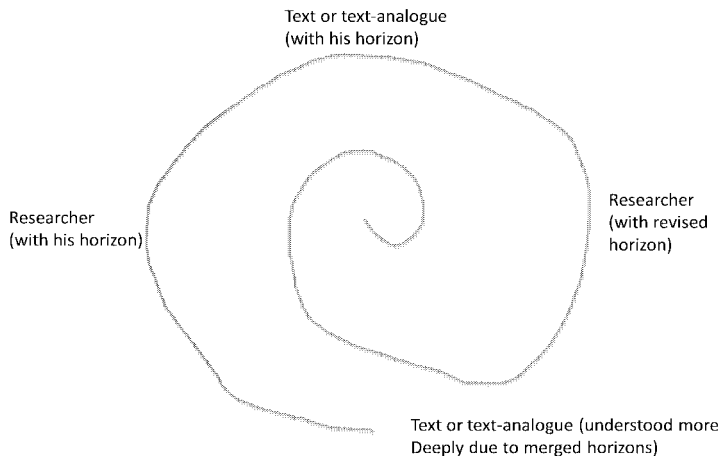
The process of revealing the meaning codes of social phenomena, however, is *interpretation*. This is supported by C. Taylor stating that:

'Interpretation, in the sense relevant to hermeneutics, is an attempt *to make clear, to make sense of*, an object of study. ... The interpretation aims to bring to light an underlying coherence or sense' (Taylor, 1985b, p. 15, emphasis added).

The process of interpretation is a *hermeneutical circle* (see fig. 12) where the *parts* are seen in relation to the *whole* and vice versa, and one owns *pre-understanding, prejudices* or *historicity*, that is, *horizon*, is seen in relation to the others (text, action) pre-understanding, historicity and horizon. This means that the hermeneutical-phenomenological researcher interprets the social phenomenon (text, speech, activity, etc.) through interpreting the parts (words, sentences, physical parts) and the whole, in relation to his own personal history, including of course his literature review, and the others history/pre-understanding and in the utmost case the whole

world history. This is how a hermeneutical researcher can attain a better understanding of the other person than the other himself possesses.

Figure 12 The hermeneutical circle, inspired by (Alvesson & Sköldbberg, 2000).



This implies then that no method alone can be regarded as more sufficient or more applicable than another. The use of quantitative methods can and will always play an important role, but mathematical and statistical preciseness (knowledge about the parts) in isolation is of little relevance when the aim is to reveal meaning-phenomena (knowledge about the whole). The reason behind this claim is the old but nonetheless important fact that objective/atomistic studies of complex structures (of e.g., persons, cultural systems, and natural ecosystems) are merely *abstractions* of the concrete reality. This point has been emphasized most thoroughly by the British mathematician/philosopher Alfred N. Whitehead (1861-1947). It is important, however, to clearly emphasize that general (exact) knowledge as developed successfully through the analytical-mathematical method, is not a waste of time. To claim something in this direction should be diagnosed as a disillusioned thought. The production of general knowledge illustrates the genius of modern societies. However, if we fall into the trap of believing that objective knowledge is the only real

knowledge, we must certainly end up in what Whitehead has termed *the fallacy of misplaced concreteness*:

‘the accidental error of mistaking the abstract for the concrete’ (Whitehead, 1967, p. 51).

Whitehead further discusses the fallacy of the classical abstraction of dualism; i.e. the splitting of reality into two separate realities (body and nature as a material substance on the one hand and a rational (objective-calculative) mind on the other hand):

‘These sensations (discussion of the ‘imaginary’³¹ senses of humans) are projected by the mind so as to clothe appropriate bodies in external nature. Thus the bodies are perceived as possessing qualities which in reality do not belong to them, qualities which in fact are purely the offspring of the mind. Thus nature gets credit which should in truth be reserved for ourselves: the rose for its scent: the nightingale for his song: and the sun for his radiance. The poets are entirely mistaken. They should address their lyrics to themselves, and should turn them into odes of self-congratulation on the excellency of the human mind. Nature is a dull affair, soundless, scentless, colourless; merely the hurrying of material, endlessly, meaninglessly’ (Whitehead, 1967, p. 54).

Whitehead is here joking of course but effectively he describes objective ontology and the epistemological consequences of that position. The scientific worldview eliminates subjective sensation (color, smell, sound, felt heat and so forth) and spontaneous experiences (joy, beauty and so forth); that is, ethics and esthetics.

Therefore the ‘parts’ must be studied not in isolation but in relation to the ‘whole’. The crux of hermeneutic studies is to capture complexities and wholes. For example, a researcher who is asked to assess the impacts of petroleum activity, finds it

³¹ Descartes used the term ‘imagination’ when he explained the bodily perception of reality.

necessary to study details, for example produced water's effect on cod fish, arctic algae, noise, geographical occupation, revenues for the municipality, quantity of work ours, etc, etc. But this partial physical knowledge does not provide any personal-subjective knowledge about what it *means*. A hermeneutical-phenomenological study will ask these deeper research questions and *reflect* upon the meaning-dimension for the stakeholders involved, that is, supplementing physical facts, 'brute' data, with psychic phenomena.

The inclusion of values in social *and* natural science is in fact an unavoidable condition as already discussed. Thomas Kuhn (Kuhn, 1996) and Michael Polanyi (Polanyi, 1962) have illustrated this convincingly.

Hermeneutics, then, ought not to vainly attempt to escape values, but rather cherish them. This is in fact common practice even amongst natural scientists that through their studies develop strict environmental attitudes (see e.g., Ehrlich & Ehrlich, 1991; Næss, 1999, p. 23). The best way to internalize social and moral values in the physical sciences is obviously through *cooperation* with social scientists; i.e., trans-disciplinarily approaches. The consequences then, of objective studies, of, e.g., petroleum effects on microorganism, fowls, fish, etc., etc., is that this type of activity is often (at least in "The High North") *irresponsible* human activity which ought to be avoided as far as possible; i.e., in order to defend petroleum activity there must exist some *vital* needs which are best served, that is, gratified, through having access to some petroleum. Such ethical, vital needs can for example be the health and well-being of humans and nature, that is, *intrinsic values*; e.g., health and well-being needs that are best secured through having personnel and equipments in emergency (e.g., ambulance transportation); food supplies; education; humanitarian targets, extraordinary esthetical experiences, etc. The crux of hermeneutical studies is thus that natural and social science emerge into *life sciences* or *normative science*. This is also the reason behind Næss' claim *science without ethics is blind, ethics without science is empty*.

The scientific ideal of hermeneutics can then be summarized as follows:

- * Develop (holistic) understanding
- * Reveal meaning/values
- * Local/personal knowledge
- * Interpretation of subjective/unique data

6 Ethics

The ethics of a paradigm will be closely interrelated with the respective scientific ideal and worldview. As we have seen earlier, internal ethics regards those norms and rules which science follows. We also saw that the internal ethic of modern science is determined by the criteria of intersubjectivity. The validity or internal ethics of hermeneutical arguments are challenging to evaluate, and it will be completely impossible to generate traditional objective knowledge; i.e., knowledge which is independent of the observer. The only way this issue can be approached is through a thorough reflection of a researcher paradigm (ontology, epistemology and methodology).

Hermeneutic validity can more satisfactorily be understood as *common consensus* between research and the study “object”. For example, the meaning content of the text, behavior or product is no longer hidden, but understood. Researcher and study object can reach a Socratic consensus through a thorough dialogue concerning the deepness of the premises on which we base conclusions: i.e., an *argumentative-communicative rationality*. An argumentative-communicative rationality flows naturally when the other is perceived as a ‘Thou’ and not a stupid ‘It’ or ignorant thing. This is the crux of Popper’s *critical attitude* which stresses that we ought to ‘overthrow’ our solutions rather than ‘defend’ them (Popper, 2002, p. xix), because then we can ask deeper questions about the premises. Consensus is, however, not reachable unless one reflects on one’s pre-understandings, horizon or frame of reference. Consensus thus happens as a hermeneutical circle which means that

validity is only achievable through 'more of the same', that is, more dialogue. This is in accordance with Taylor's interpretation of hermeneutical validity:

'Ultimately, a good explanation is one which makes sense of the behavior; but then to appreciate a good explanation, one has to agree on what makes good sense; what makes good sense is a function of one's readings; and these in turn are based on the kind of sense one understands' (Taylor, 1985b, p. 24).

This is how we can understand that the concepts such as "the good life" and "the good society" are relative in time and space (e.g., western interpretation vs. indigenous peoples' interpretation).

The external ethic of a theory/model based on the hermeneutical ideal are two sides of the same matter. This is true for at least two reasons. First, the whole point of hermeneutical research is to regard the study phenomenon as a subject (with values, feelings, desires) and not as an object (pre-defined mechanism). A hermeneutical study always has, in some sense, a *humanitarian point of departure*. Secondly, without establishing a mutual relationship, let us call it a *friendship*, between researcher and study object understanding will never be thorough and deep. This means that in order to reveal the meaning codes (mental horizon) of our study object, that is, to actually obtain any knowledge, we must place ourselves so to speak, in the position of the other, that is, in an 'I-Thou' attitude. Without *trust* between researcher and study object, there can be no openness and without openness there can be no access to the other's *lebenswelt*.

Summarized the internal and external ethics are characterized by the following criteria:

- * Internal ethic: argumentative-communicative validity
- * External ethic: Humanitarian.

7 Esthetics

The esthetical dimension of a paradigm does not directly concern what we traditionally associate with esthetics, that is, art, beauty etc. It concerns how individual scientists prefer to present their work. As a rule, however, the holistic perspective on knowledge abolishes the belief in one rightly presentation form. The important part is that there exists a compatible, coherent link between choice of method and presentation style. A classic fallacy here places the emphasis on the quantitative aspect of a qualitative research study.

Hermeneutical-phenomenological researchers have the freedom to use a wide spectrum of presentation styles. For example the *Trumpeter Journal of Ecosophy* frequently invites researchers to hand in papers in poetic and metaphoric form. Qualitative presentation styles such as novels, essays, narratives, but also scenery art, music, paintings are much more suitable for the study of subjects than numbers and diagrams. This is because qualitative styles are far better at communicating subjective meaning codes such as existential needs, problems, values, etc. Geertz's (2000) method of studying cultures through 'thick descriptions' offers perhaps the best example here. But also, for example, several of Ibsen's plays are examples of this, and not least E. Munch's *Scream* (see e.g., Grelland, 2007). Quantitative styles can, however, be suitable for the description of "hard" social details, bearing in mind that the relevance of applying statistics must be clearly defended in relation to the phenomena one is studying; that is, one must defend why it is suitable to postulate an objective ontology.

The presentation styles suitable for the hermeneutical ideal can be summarized using the following criteria:

- * First and foremost qualitative presentation styles, but quantitative styles can be preferable in some situations.

8 Some examples of ‘normal science’, ‘puzzle-solving’ and growth of knowledge within fields where traces of an ecosophical-hermeneutical research paradigm do occur.

First of all, an ideal-typical ecosophical-hermeneutic research paradigm does not currently operate as a strict empirical research paradigm in the traditional sense, i.e., there are few, if any, great empirical scientific achievements, ‘exemplars’ of normal science, to my knowledge, fitting entirely a hypothetic ecosophical-hermeneutic alternative. Such a paradigm thus constitutes an *alternative* (normative) research paradigm (cf. discussion of the ex ante, normative use of the paradigm concept in chapter II). However, as this sub-chapter will show, there exist traces of empirical research, normal science and accumulation of knowledge related to or in the periphery of the alternative paradigm.

Ecological Economics

During the last thirty years it is reasonable to claim that we have witnessed an explosive intrusion of ‘new paradigms’ into the Science of Economics. The driving forces behind this scientific “revolution” or these innovations are largely the recognition that our current global environmental and psychological problems (anomalies), such as climate change, loss of biological diversity, pathologies such as stress, identity crises, and so forth, cannot be solved through decision-making philosophies anchored in short term, utility maximization criteria. Some novelties that have occurred since the beginning of the 80s are: ‘ecological economics’ (Costanza, 1991; Daly & Cobb Jr., 1994), ‘eco-management’ (Welford, 1995), ‘environmental management’ (Hopfenbeck, 1993; Spedding, 1996; Welford & Gouldson, 1993), ‘corporate social responsibility’ (Carroll, 1991; Fredrick, 1986; Freeman, 1984), ‘third revolution’ (Rugina, 1991), ‘stakeholder capitalism’ (Freeman, 2002), ‘circulation economics’ (Ingebrigtsen & Jakobsen, 2007) and ‘deep economics’ (McKibben, 2007).

In 1988, one year after *Our Common future*, the International Society for Ecological Economics (ISEE) was established. The next year the first issue of the journal *Ecological Economics* was published. In 1991 Robert Costanza edited the major influential book with the apposite sub-title: *Ecological Economics – The Science and Management of Sustainability*. The book elaborated on the overall goal of the ISEE which is to extend and integrate:

‘... the study and management of “nature’s household” (ecology) and “humankind’s household” (economics). Ecological Economics studies the ecology of humans and the economy of nature, the web of interconnections uniting the economic subsystem to the global ecosystem of which it is a part. It is this larger system that must be the object of study if we are adequately to address the critical issues that now face humanity’ (Costanza, 1991, p. v).

Costanza’s and the ISEE definition of ecological economics, as an interdisciplinary, holistic approach studying the mutual relationships between nature, culture and economy, signalizes strong intentions of establishing a scientific research paradigm within the science of economics anchored on ‘hard cores’ compatible with the Ecosophical-hermeneutic Research Paradigm as outlined above (e.g., the monistic-holistic view of man and nature, extension of values beyond pure utility). Daly and Farley agree with this:

‘In other words, ecological economics calls for a “paradigm shift” in the sense of philosopher Thomas Kuhn ... a change in preanalytic vision’ (Daly & Farley, 2004, p. 23).

The extension of values or preanalytic change in ecological economics is transparent from how it understands ‘efficient resource utilization’ and economic growth or GNP. We remember from the discussion of the neoclassical paradigm within economics that production and consumption levels were defined and settled mainly on the basis of utilitarian criterias (willingness to pay and production costs). Daly and Farley

(2004), for example, argue that the concept of GDP, the growth maxim and the 'ends' of economics should be replaced by more accurate and reflective targets such as 'qualitative development' and practical ecological wisdom (virtues), instead of utilitarian means. Their main thesis is that ecological economics needs a strategy for integrating ecology and economics, that is, the 'Steady-State Subsystem' (Daly & Farley, 2004, p. 51). The main idea of the 'steady-state' strategy is that population and capital stock is not growing and that human/economic systems are balanced with the total ecological system:

'It says that the scale of the human sub-system defined by the boundary has an optimum, and that the throughput by which the ecosystem maintains and replenishes the economic subsystem must be ecologically sustainable' (Daly & Farley, 2004, p. 54).

Ingebrigtsen and Jakobsen also argue that a paradigm shift is strongly needed in the science of economics. In their view it is necessary to supplement and change neoclassical economics along four paradigmatic dimensions: 1) from mechanical to organic ontology; 2) from linearity to circular value-chain; 3) from competition to cooperation; and 4) from value monism to value pluralism (chapter 3 in Ingebrigtsen & Jakobsen, 2007).

Together these statements and perspectives point in the direction of a scientific paradigm within economics compatible with the ecosophical-hermeneutic paradigm. Especially plausible is the claim if we include the two latter authors' viewpoint on the epistemological and methodological implications of the new paradigm; i.e., how researchers ought to comprehend, synthesize and understand the interdisciplinary approach to economics:

'To understand and comprehend the complexity of this interdisciplinary field of economics, we argue that a holistic and hermeneutic frame of reference is needed. ... Our presentations are in accordance with the hermeneutic

tradition, in which totality is implicit in the parts and all the parts are represented in the whole. This reciprocal action results in a hermeneutic circle, in which the partial description and understanding must be seen in relation to a holistic description and understanding and the holistic description and understanding represent more than the sum of the individual parts' (Ingebrigtsen & Jakobsen, 2007, p. 3).

Especially in the most recent writings of the two latter economists they urge the emerging need to adopt a hermeneutic research paradigm inspired by deep ecology within the science of economics. In their paper (2009) *Moral development of the economic actor* they outline the ontology and the ethics or the 'hard core' of an alternative research paradigm which they rightly term *Neo-ecological economics*. On the image or ontology of the economic actor, the 'cosmic man', characteristic for neo-ecological economics they state:

'an economic agent solving problems based upon a sense of being part of the whole of life. In our opinion, the economic agent as interpreted through the metaphor "cosmic man" is more able to define, understand and solve the most urgent ecological and societal challenges of today (Ingebrigtsen & Jakobsen, 2009, p. 2783).

There is also an increasing emphasis in scientific literature addressing sustainability-issues in light of perspectives such 'complexity', 'network-approaches', 'non-reductionistic-methods' and interdisciplinarity (Bhaskar, Frank, Høyer, Næss, & Parker, 2010; Ehrenfeld, 2008; Taylor, 2001). Ehrenfeld (2008), for example, argues that the reductionistic method has disabled us to see new possible ways of living and instead we tend to solve sustainability issues through "new means same ends". This accord well with the enlarged view of values characterizing the alternative paradigm proclaimed in this chapter. Ehrenfeld uses causal loop diagrams from system dynamics to illustrate how the reductionistic method is centered on "quick fixes" of

symptomatic effects instead of fundamentally changing the causes creating the problems in the first place (see tab. 8).

Table 2 'Examples of unsustainable practices' (Ehrenfeld, 2008, p. 18).

Problem symptom	Symptomatic Solution	Negative Side Effects	Fundamental Solution
Global Warming	CO2 trading	R&D slips; irresponsibility	Renewable energy
Material use growth	Ecoefficiency	Ecosystem collapse	Industrial restructuring
Maldistribution	Tak policy	Irresponsibility; gated cities	Cultural change
Dissatisfactio; alienation	Commodity consumption	Addiction; loss of competence	Self-development

Conclusion

The examples discussed here represent traces of empirical research which is more or less compatible with an alternative ecosophical-hermeneutic research paradigm. This is evident because, first, ecological economics, neo-ecological economics and other interdisciplinary/non-reductive fields, emphasize the need to internalize a broader spectrum of values, new ends (e.g., ecological, utilitarian and existential values) and methods in economics and environmental management research.

PART III: METHODOLOGY

CHAPTER V: HERMENEUTIC REFLEXIVE METHODOLOGY

1 Introduction

The philosophy of science position applied by the thesis is hermeneutics and not logical positivism or empiricism. This is because the writer's own paradigm is compatible, in essence, with the EHRP. From the roots of the hermeneutical epistemology follow a number of inextricable ontology implications which the author can indeed agree upon (e.g., the perception of man as a self-defining animal – cf. chapter IV).

The commensurability is mainly because hermeneutical science endeavors at understanding subjects or text or text-analogue instead of, as in the case of positivism, explaining objects, and because the assumption of value-neutral research is a highly unrealistic or difficult/impossible assumption to practice, especially within the science of man. Hermeneutic method is also a preferable method when the empirical data is in text-form, because it provides a frame for interpretation and validity check of these through emphasizing *consistency* as we shall see. The primary objective of hermeneutic reflection is to reveal information and knowledge about these texts which is not explicit articulated; e.g., knowledge in relation to ontology and epistemology.

2 Hermeneutic Reflection: the art of sense-making

Simple, double and triple hermeneutics

Simple hermeneutics concerns individuals' interpretation of themselves and their own subjective or intersubjective social reality or mental horizon and thus their meaning dimension; i.e., the meaning they assign to their world (Alvesson & Sköldberg, 2000).

Double hermeneutics is what interpretative social scientists are engaged in when they attempt to understand and develop knowledge about social phenomena. In this endeavor the interpreter strives to make sense of text or text-analogue which is already interpreted by interpretive beings (in contrast to natural scientists who most certainly interpret but interpret a non-interpreted reality) (Alvesson & Sköldberg, 2000, p. 144). Gilje and Grimen have a similar understanding of double hermeneutics:

'Social scientists must therefore often interpret and understand something already *consisting of* interpretations, i.e., social actors' interpretation and understanding of themselves, others and of the physical world. *Social researchers must, in other words, conduct themselves in relation to a world which is already interpreted by the social actors themselves*' (Gilje & Grimen, 1993, p. 145. from Norwegian).

From a hermeneutical perspective *empirical data* encompasses meaningful phenomena expressed through behavior (processes), results (products), expressions, articulations (i.e., literary, meaningful expressions) or text all originating from the self-defining animal (cf. Gilje & Grimen, 1993; Taylor, 1985b). This perception of data is radically different from the positivistic understanding of data as objective/physical externalities.

The empirical data of this thesis, the various manuals and EIA reports, are massive amounts of *text*. The texts in the manuals are the product of individuals'

interpretations of how social and natural consequences ought to be assessed. The texts of the EIA reports are the product of individuals' interpretation of social and environmental consequences of an initiative. These interpretations must further be interpreted again, hence the double hermeneutics, but this time, by the social researcher; i.e., the writer of this thesis. This implies that social scientists have a crucial role in the process of interpretation, serving the role as co-creator of the empirical data; hence the unrealistic nature of the principle of value-neutrality. This is because this is historically and culturally *situated*; i.e., I-Thou relation to the text.

In corollary, social science is always culturally and historically influenced, or includes a political-ideological dimension. Alvesson and Sköldbberg state that this political dimension of social science encompasses:

'... the critical interpretation of unconscious processes, ideologies, power relations, and other expressions of dominance that entail the privileging of certain interests over others, within the forms of understanding which appear to be spontaneously generated' (Alvesson & Sköldbberg, 2000, p. 144).

This third layer is in Alvesson and Sköldbberg termed *triple hermeneutics*. Triple hermeneutics attempts to reveal the ontology of a theory or the underlying, often hidden, dimension of social behavior or products. Alvesson and Sköldbberg state that this is a criterion for 'good research', but they also stress that 'researchers should also avoid pandering to established thinking and dominant interests' (Alvesson & Sköldbberg, 2000, p. 144). The paradigm discussions in chapter III and IV have strived towards this ideal of keeping the discussion "objective" and the arguments "value-neutral".

In relation to the hermeneutical interpretation of 'understanding', that is, 'understanding' in light of ontology, triple hermeneutics endeavors to reveal the whole mental horizon, that is background knowledge and what Gadamer termed *pre-understanding* of social phenomena (text, behavior, products, etc.) (cf. chapter IV).

In relation to the paradigm theory the triple hermeneutic aims at revealing the *values* or the *worldview* (ontology) underlying normal science. Triple hermeneutic analysis thus serves an important role for the analyses of this study because it attempts to reveal the ontology underlying manuals and reports; i.e., a meta-analysis.

3 A hermeneutic reflexive apparatus

In the process of interpreting and understanding the text (empirical data), the horizon of the text interrelates with the horizon of the reader. This means, as we have already discussed, that the reader 'sees' the text in his own personal/subjective way. For the purpose of not being too unnecessarily subjective, the writer of the thesis applies theories and concept that are accepted in different research communities. The conceptualization of the two paradigms constitutes his professional/theoretical horizon which is a significant *part* of the total horizon. The reflective apparatus of this study are presented in Tab.3. The criteria outlined here represent parts of the horizon of the reader (the author of this thesis).

The process of interpreting the empirical data has thus swung between reading text and comparing it with the conceptual criteria mentioned in Tab. 3, in other words, *making sense or clearance of texts* (cf. Taylor, 1985b). The *meaning* of the texts has thus been created through a dialectic relationship, as we have touched upon earlier in this chapter, between reader and text, that is, a dialogue between reader and text. The dialogue is similar to any other dialogue between self-interpreting subjects: a text reveals its meaning through, first and foremost, carefully reading the parts and the whole, and secondly through pondering questions upon the text and searching for answers to tentative claims. C. Taylor writes about this latter point of sense-making:

'We have to be able to make for our interpretations claims of the order: the meaning confusedly present in this text or text-analogue is clearly expressed here' (Taylor, 1985b, p. 16).

Through this process of falsifying our claims the in-/coherence of the text can be made clear. Or as C. Taylor puts it:

'A successful interpretation is one which makes clear the meaning originally present in a confused, fragmentary, cloudy form. But how does one know that this interpretation is correct? Presumably because it makes sense of the original text: what is strange, mystifying, puzzling, contradictory is no longer so, is accounted for (Taylor, 1985b, p. 15).

The process of making sense or clear or revealing the meaning of cloudy expressions is thus a hermeneutical circle. If one stops and is unable to make sense of the text or text-analogue, what is required is more of the same; i.e., more reading, more answering, more claiming and "knocking at the text" (see Fig. 13). Then the validity of hermeneutical analysis was also partly explained: 'This 'making sense of' is the proffering of an interpretation' (Taylor, 1985b, p. 27). The crux of hermeneutical validity is to ensure *consistency* between the parts and the wholes, so that the final interpretation of the text is one harmonic whole: there are no illogical relations between the parts and the whole. Gilje and Grimen have termed this '*the holistic criterion*' (Gilje & Grimen, 1993, p. 158, from Norwegian); C. Taylor speaks of it as the 'coherence' of interpretation (Taylor, 1985b); and Gadamer explained the meaning so famously:

All details' harmony with the whole is the criterion of correct understanding.

Figure 13 Hermeneutical circle

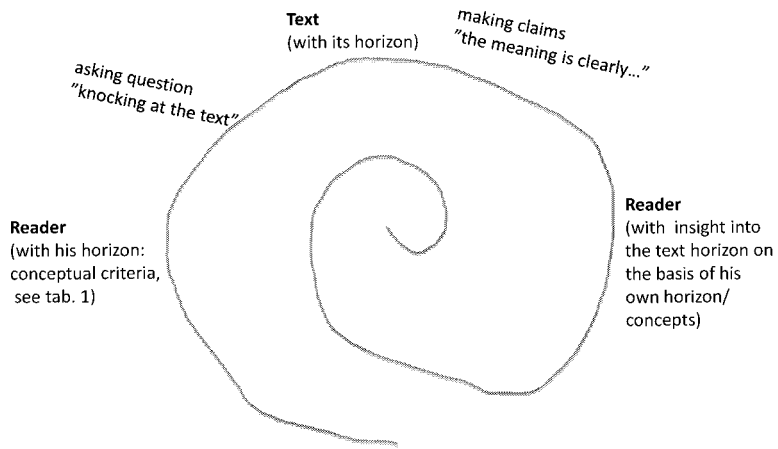


Table 3 Outline of the Ecosophical-Hermeneutic and Instrumental-Received Research Paradigm (“My professional horizon”).

	INSTRUMENTAL-RECEIVED RESEARCH PARADIGM (IRRP)	ECOSOPHICAL-HERMENEUTIC RESEARCH PARADIGM (EHRP)
REGIONAL ONTOLOGY	<ul style="list-style-type: none"> * OBJECTIVE: THE PRIMARY PROPERTIES CONSTITUTE THE REAL HUMAN NATURE * VALUE MONISM * SOCIAL REALITY THUS EXISTS <u>OUTSIDE</u> THE HUMAN BEING, THAT IS, EXTERNALLY TO THE SUBJECT. * DETERMINISTIC: HUMAN BEHAVIOR IS BEST UNDERSTOOD THROUGH THE CONCEPT OF INSTRUMENTAL RATIONALITY. 	<ul style="list-style-type: none"> * SUBJECTIVE (HOLISTIC): THE SECONDARY PROPERTIES DEFINES THE HUMAN NATURE * INTENTIONALITY * MAN: ‘A CREATOR OF MEANING’ * VALUE PLURALISM * INDETERMINISTIC; SUBJECTS HAVE A HIGH DEGREE OF FREEWILL
PERCEPTION OF SCIENCE	<ul style="list-style-type: none"> * SUBJECT-OBJECT KNOWLEDGE. * CERTAIN/TRUE SCIENTIFIC KNOWLEDGE IS DEDUCED FROM <i>OBSERVATION OF OBJECTIVE DATA.</i> 	<ul style="list-style-type: none"> * SUBJECT-SUBJECT KNOWLEDGE. * CERTAIN SCIENTIFIC KNOWLEDGE HAS ITS GENESIS IN INTERPRETATIONS.
SCIENTIFIC IDEAL	<ul style="list-style-type: none"> * INTERPERSONAL/ OBJECTIVITY * OBSERVATION OF DATA OR FACTS * EVIDENCE BASED * CAUSE-EFFECT EXPLANATIONS * VERIFICATION 	<ul style="list-style-type: none"> * DEVELOP A HOLISTIC UNDERSTANDING NOT CAUSAL RELATIONS * REVEAL (INTER-)SUBJECTIVE MEANING/VALUES * LOCAL/PERSONAL KNOWLEDGE * INTERPRETATION OF SUBJECTIVE DATA
ETHICS	<ul style="list-style-type: none"> * INTERNAL: OBJECTIVITY, RELIABILITY, VALIDITY, ETC. * EXTERNAL: INSTRUMENTAL 	<ul style="list-style-type: none"> * INTERNAL ETHIC: ARGUMENTATIVE-COMMUNICATIVE VALIDITY * EXTERNAL ETHIC: STRICT ENVIRONMENTAL AND HUMANITARIAN ETHIC.
ESTHETICS	<ul style="list-style-type: none"> * QUANTITATIVE: A LOVE FOR HARD FACTS; MATHEMATICS/STATISTICS; ANALYTICAL CLAIMS; SYNTHETICALLY VERIFIABLE CLAIMS. 	<ul style="list-style-type: none"> * QUALITATIVE: ARTICULATING AND EXPRESSING <i>MEANING</i>

PART IV: EMPIRICAL DATA

- LINKING THE PARADIGM DISCUSSION TO NORWEGIAN EIA CASES

The purpose of Part IV of the dissertation is to illuminate research question 2:

What type of information/knowledge does Norwegian EIA-research encompass?

CHAPTER VI THE CASE OF THE EARLIEST NORWEGIAN EIA MANUAL (T-746) OF 1990

1 Introduction

Since the Norwegian Parliament adopted the first general legislation on EIA in 1990, as part of the Planning and Building Act (PBA), several Manuals on EIA have seen the light of day. The first manual, T-746ⁱ, was worked out by the Norwegian Ministry of the Environment pursuant with the PBA of 1990. In 1994 the T-746 manual was revised into the more comprehensive T-1015ⁱⁱ manual. In 1997 the PBA was revised again and thus also the corresponding manual, T-1177ⁱⁱⁱ. In 2000 several developments have occurred. Most important, however, is the establishment of the *'Instruction for Official Studies and Reports' (UI)*^{iv}. The instruction placed emphasis on EIA in relation to 'duty and content', 'assessments process' and 'demand and evaluation'³². The document serves the function of being an overall EIA body. The concrete work with the individual areas, i.e., environmental, social, economic

³² (Ministry of Government Administration and Reform, 2007, pp. 3-5).

impacts etc., are, however, not addressed in this document. In 2009 the PBA was revised again due to new EU standards and revision of the Biodiversity Act in 2009.

The focal case here is the earliest manual on EIA of 1990 – T-746. The chapter interprets the text of the manual in light of the hermeneutic reflective apparatus outlined in tab. 3, chapter V.

2 Ontology of nature

In this sub-chapter the thesis studies which ontology of nature the manual uses as a point of departure. By this is meant how the T-746 manual interprets what the reality of nature *is*.

In Appendix 4 (attached to this chapter), *List of questions regarding the potential consequences of an initiative on environment, natural resources and society* (from Norwegian), the T-746 manual questions the link between the initiative and nature:

‘Will areas of *special value* for the life of animals and plants be affected... and other especially valuable natural areas ... such as protected and protection-worthy natural areas, and natural landscape such as biotopes’³³.

Further the manual addresses ecological dimensions such as:

‘reproductive conditions’, ‘conditions for life’ and the ‘succession of species’³⁴.

Here the T-746 also reveals an understanding of nature as an *organic process* which evolves and adapts for its own sake. The understanding that nature and man are interrelated that is, a monistic ontology, is comprehensively illustrated by the statement:

‘releases of health damaging emissions into soil and earth’³⁵.

³³ (Norwegian Ministry of the Environment, 1990, p. 64, emphasis added).

³⁴ (ibid.)

³⁵ (ibid.).

These statements reveal an ontology anchored in a Deep Ecology/process worldview, that is, a monistic, holistic and organic interpretation of nature. The manual interprets nature as a living system of integrated wholes whose parts mutually depend on one another and the whole; that is, *everything hangs together*. This is evident from the holistic description which the manual provides when it discusses how changes due to the initiative is interrelated with nature; i.e. intrinsic relations. This is also evident from the *ecocentric* evaluation of plants and animals, i.e., assigning the life of animals and plants a value for their own sake; i.e., non-anthropocentric values.

The conclusion must be that the ontology of the T-746 manual on EIA dating from 1990 interprets nature as a holistic system where all the parts are interconnected which together constitutes more than the mere sum of each individual part; i.e., a monistic and organic interpretation.

Conclusion: holistic-organic ontology

3 Ontology of man

The appendix of the T-746 encompasses a sub-chapter on '*Societal impacts*' which is further divided into five categories. These are:

- 1) Business and employment
- 2) Development and construction of houses
- 3) Economic conditions
- 4) Social and welfare-related conditions
- 5) Outdoor recreation and activity

These five categories capture a wide spectrum of social-, existential conditions ranging all the way from more material related values/needs, represented by the three former categories, to more immaterial values/needs, represented by the two latter categories. The expressions here can therefore, with good reason, be interpreted as evidence for a subjective ontology. This claim makes sense based on the following articulations in the manual (p.66):

'Will the initiative ... affect social networks and the care services/needs?'

'Will the initiative ... affect health conditions?'

'Will the initiative ... affect different actors' opportunities to exercise different forms of outdoor *life* or outdoor activities in the local environment?'

'Will the initiative affect different population's opportunities to experience wild animals and nature?'

It makes sense to interpret these questions as expressions for an understanding of the human nature as *subjects* with an '*I-Thou*' attitude (or intentionality) towards both other subjects (two former expressions) and nature (two latter expressions). The image of man can thus be classified as subjectivistic.

Conclusion: subjective ontology.

4 Perception of science

How is the perception of science in the T-746 manual; or which theory of knowledge does the research question of the manual postulate/presuppose? This is the question we discuss in the following sub-chapter.

The research questions which the manual addresses in relation to environmental natural resources and society is clearly designed to reveal the *objective and external social world*. The question is thus of a typical 'I-It' or subject-object character. We shall here present some examples of this for every category.

In relation to the first and third category, 'business and employment impacts' and 'economic impacts', the manual addresses the following questions (p.65-66):

'Will the initiative affect the demand for work?'

'Will the initiative affect the demand for goods and services?'

'Will the initiative have impacts for other industries? (... structural, market related, change productivity).'

'Will the initiative have any regional/national economic impacts?'

'Will the initiative have any effects on the local economy?'

The questions here are designed to gather information about an intricate and complex phenomenon, 'business and employment' and 'economy', through *simply* studying the surface of the concepts. This is evident because the questions focus only on easily observable aspects demanding little interpretation in their own; that is, they are most certainly *quantifiable*. Subjective aspects such as value, needs, desires and phenomenological experiences of work, such as feelings of mastery, the feeling of doing something purposeful, etc., etc., are left in the shadow. This is a bit strange bearing in mind the discussion regarding ontology above.

Knowledge about the second category, 'development and construction of houses', approaches the topic from a similar 'I-It', spectator perspective (p.66):

'Will the initiative affect current development patterns and plans/guidelines for the future?'

'Will the initiative affect the scope and localization of houses?'

'Will the initiative lead to an increase in the need for infrastructure such as roads, water-supplies, etc.'

'Will the initiative be easily operated through collective transportation or does it lead to an increase in private transportation?'

Moreover, the questions here are designed to gather knowledge about this important phenomenon from a purely superficial, objective perspective. These questions are of course important and ought to be assessed in relation to any development project, but, at least from a hermeneutical perspective, this is not enough to *understand* how the project will impact the people concerned, or more correctly, the *inner cultural impacts*. This point perhaps becomes clearer if we envisage the research questions concerning 'social and welfare related impacts'.

The questions concerning the forth category are:

'Will the initiative have effects on municipalities and local communities?'

'Will the initiative lead to changes in settling-patterns, demography and communication which can affect social networks and the care services?'

'Will existing buildings, business activities, houses or outdoor areas be affected by the initiative?'

'Will the initiative cause changes in living conditions or environment?'

'Will the initiative cause re-localization of people or the loss of other businesses?'

‘Will the initiative cause a change in demand or supply of public and private goods and services?’

‘Will the initiative cause a potential increase of conflicts between different cultures or stakeholders?’

‘Will the initiative cause impacts for the Sami culture?’

‘Will the initiative affect the health of the employees, user groups or others?’

‘Will the initiative affect the opportunities to exercise cultural or recreation activities?’

‘Will the initiative have any other effects of a social or welfare-related character? Should a description be included of how the initiative can be facilitated so that social and welfare conditions are best looked after.’

The long and comprehensive list of research questions here are indeed important in relation to assessing the social and welfare conditions of development projects. The theory of knowledge which these questions postulate, however, is the logical positivistic, subject-object relationship which satisfies itself with merely *auditing the external social world*. The question lacks to assess phenomena of an *introspective* art, that is, aimed at revealing subjective meaning and phenomenological experiences (e.g., in relation to health, welfare, environment, etc., etc.). The procedure of treating different categories *partially* instead of seeing economic-, social- and environmental impacts together as a whole is probably due to the reductionistic perspective resulting from precise I-It observation.

The final fifth category, ‘outdoor-life and recreation’, is assessed using the following questions:

‘Will the initiative affect different populations’ opportunities to exercise different types of outdoor-life or recreation activities in the local environment, or reduce the accessibility to natural areas, swimming sites, etc.?’

'Will the initiative affect the populations' opportunities to experience wild animals or nature?'

Will the initiative affect the opportunity to exercise outdoor recreation activities?'

The manual does here postulate an understanding of "outdoor-life" as something which simply is "out there" and not "in there", so to speak. This means that the quality of outdoor life is in principle the same whether it is exercised in Central Park, NY or Saltfjellet, Norway; i.e., a *mechanical "quality"*. The point is that traditional, especially Norwegian, outdoor-life is so much more than merely having the access to physical areas where we can for example go off hiking. Outdoor-life happens "twice" as much *inside us*. Through traditional outdoor-life we experience something inside us which we find meaningful and of enormous value. These inner values must to a significantly greater degree be incorporated into environmental management if we are to base development on eco-friendliness and philanthropic values. In order to reveal these values, however, we must start by studying different phenomena not solely through using objective techniques but also through subjective and phenomenological methods. The first thing we can do in this respect is to change the manuals so that proponents can start asking the right questions, apply interpretative methods and so.

Analogous to the focus on objective social impacts, the natural science part also concerns factual knowledge. The appendix (attached) lists major ecological impacts which a proponent of an initiative is required to assess:

'type of emissions, including dust, sot, strong smells, large amount of steam, etc.>'; regarding water: '... increase in acidification ... biological and chemical substances' ...; regarding climate: '... CO², methane, nitrous, CFC?'³⁶

³⁶ (ibid., , p. 63).

Knowledge about physical and chemical effects of an initiative is highly sophisticated and important information which can help us in decision-making processes. But without subjective evaluations it makes little sense. Natural science in relation to environmental impacts assessments should therefore, from a hermeneutical perspective, function rather like lighthouses, signaling what the consequences of our activities *can* be, so that we in turn can decide what we *ought* to do. This is also the intention of the manual, but when subjective and phenomenological impacts are left out of the discussion/assessments, it makes little sense to discuss the physical impacts without discussing what these *mean*. Maybe the idea is that subjective evaluations are a political matter, which they must indeed be to a certain extent (e.g., the establishment of general norms and rules), but the actual meaning dimension of the activity, that is, how work is experienced spontaneously, etc., can only be revealed through personal inquiries. Syntheses of this kind, that is, objective, subjective and phenomenological impacts, represent the crux of hermeneutical studies and are what the manual lacks.

The discussion above reveals a clear perception of science compatible with the logical positivistic-analytical tradition. It thus seems that the most important criteria for developing truthful and scientific knowledge according to the T-746 manual is through the assessment of objective and value neutral facts about a fragmented part of the economy, society and ecology. This is not consistent with the ontologies of the manual.

Conclusion: The received perception of science.

5 Scientific ideal

As stressed several times the components of a paradigm are tightly interrelated – rather like a woven Turkish carpet. The scientific ideal includes the normative assumption a researcher/research community has towards how science should be practiced and progress. This may involve for instance following “an exemplar” or walking in the footsteps of one’s master or supervising professor.

The empirical data discussed above revealed a logical positivistic theory of knowledge. The scientific ideal of this position we remember from Chapter III is the naturalistic ideal. The trait of this ideal, objectivism, is exactly what we observe in T-746. Social, economic and environmental impacts (which in itself are ambiguous and extremely complex) are reduced to less confusable concepts, for example, “increased demand for goods and service”, “expected years-of-labor”, ‘construction of houses, emissions of CO², heat exposure, increased/decreased moisture etc., etc., etc. These impacts are of course important enough, but when focus turns exclusively towards the quantitative aspects of society instead of focusing on the ‘wholeness’ of what it means to be ‘human’, crucial information is neglected and left in the shadows.

Corollary impacts are assessed from a reductionistic perspective which means that the interrelatedness between the impacts disappears. The awareness of this weakness is probably compensated through adding more and more questions about the objective, physical reality instead of turning inward to discover the psychic reality.

Analytical social and ecological impacts such as those mentioned above are typically general or impartial and ought to be “value neutral”. The analytical method is thus compatible with the ontological pre-assumption that nature is a commodity for human use, an assumption which must also originate from the analytical methods: the abstract, pure use-value picture of nature must be the work of the analytical method. Other intrinsic values of nature or humans are quickly regarded as far-

fetched, religious or ideological in the light of the analytical method. Attempting at reducing intrinsic values into simpler objective parts and value neutral truths, that is, *facts*, is vainly. The major problem is that when, for example, the intrinsic value of nature is reduced into facts about all the parts which all the ecologists, poets, etc., in the whole world are able to chart down, for example, ecological facts about trees, birds, animals, mushrooms, berries, crops, grasshoppers, wind streams, the reflection on the water, the midnight sun, landscape silhouettes, etc.³⁷, the *relation* between these facts and what it actually *means*, is neglected. This is because scientific information based on the mainstream analytical methods is detached from values/feelings. If our relation to nature were to be defined on the basis of isolated facts about nature, the whole *meaning* of the experience, i.e., our *feeling* towards nature, would also disappear. The statements *Science without ethics is blind and ethics without science is empty* or in other words 'Scientific information: has little relevance except in relation to evaluation' (Næss, 1999, p. 22), describes this point well.

Conclusion: naturalistic ideal.

6 Ethics

The ethical dimension of research is important because researchers have a special role in society both with regard to individuals, collectives and the environment. The research question we work with in this subchapter is: how is the internal and external ethic of the T-746 manual?

The internal and external ethical dimension is closely related to the scientific ideal described above. Internal ethics concerns norms and rules for how research is conducted. The manual thus interprets internal ethics in accordance with the naturalistic ideal.

³⁷ This is for example endeavored in 'Ecosystem and Human Well-being' Vol. 1, Chapter 2: *Analytical Approaches for Assessing Ecosystem Condition and Human Well-being*, p. 37 (Hassan, et al., 2005).

The external ethic, that is, the inbuilt responsibility of a theory or model remains rather absent in this manual. This is due to the objective ideal emphasizing precisely *value-neutrality*, and thus people and places being perceived as things or objects. The whole purpose of ethics is to neither treat subjects nor objects merely as objects or means but as sources of meaning.

Conclusion: instrumental-utilitarian ethic.

7 Esthetics

Esthetics concerns the researchers' attitude towards presentation styles of scientific work. For example, literary styles contra mathematical/statistical styles.

The T-746 does not state directly how impacts ought to be presented in an EIA document. The fact that it does not say anything about esthetics could, however, imply that it assumes a certain language or style. This claim is plausible in light of the following statement:

'It must be emphasized that the disclosure in the message and possible consequential assessments ought to be decision relevant' in relation to 'those areas where impacts may become significant'³⁸ (from Norwegian).

These 'areas' are those mentioned under ontology and the research questions emphasized under the perception of science (see also appendix). This point in the direction of a pluralistic presentation styles. The fact that the manual does not state explicitly the need to include narratives or qualitative styles, however, point in direction of quantitative styles.

It is also an objective assumption to believe that impacts for various stakes (e.g., economic, psychological, ecological) can be presented in a universal language 'relevant' for decisions. The subjectivistic traditions centre on relativity; what is relevant depends on the affected subject, and not on some universal stimulus. This

³⁸ (Norwegian Ministry of the Environment 1990, p. 63).

together with the general reductionistic ideal of the manual points clearly in direction of quantitative-statistical styles.

Conclusion: Quantitative-descriptive presentation style.

Appendix to chapter VI

'APPENDIX 4' OF THE T-746 MANUAL OF 1990, pages 63-66.

'CHECKLIST FOR AN INITIATIVE'S CONSEQUENCES ON ENVIRONMENT, NATURAL RESOURCES AND SOCIETY

The type of consequences needing to be emphasized in an assessment and other potential impacts will depend on the individual initiative. In this appendix a checklist is presented which may be helpful with respect to recognizing *which impacts need to be studied*. The question list must be adapted to the individual initiative and will not be exhaustive for all types of initiatives.

It has to be stressed that the information in an assessment and the impacts has to be decision relevant. They must shed light on the effects of the initiative to the extent necessary in order to decide whether and on what conditions realization is possible. This means that any requirement for environmental impact assessment does not automatically bring with them extensive studies concerning all potential impacts, but for those areas where the effects can be significant.

THE INITIATIVES' CONSEQUENCES FOR THE ENVIRONMENT

Air:

- Will the initiative result in increased air pollution?
- Will the initiative lead to harmful air emissions?

For both questions the proponent is asked to specify the type of emissions, including dust, soot, heavy smells, large amounts of steam etc.

Water:

- Will the initiative result in increased acidification (eutrophication) of water bodies?

Proponents are asked to assess the changes in the load of organic matter and nutrients.

- Will the initiative lead to hazardous emissions into groundwater or surface water?

Consider both biological and chemical substance.

- Will the initiative cause major releases of cooling water, discharge of oily water, etc.?

- Will the initiative affect the drinking water supply?

Climate:

- Will the initiative lead to an increase in emissions of greenhouse gases such as CO₂, methane, nitrous oxide and CFC?

- Will the initiative affect local climate conditions (cold-air-streams, temperature changes etc.)?

- Will the initiative cause emissions that can provide more fog than before?

Noise and radiation level:

- Will the initiative result in increased noise or vibration?

Consider both increased continual stress levels and the possibility of periods of severe pressure.

- Will the initiative result in increased emissions or annoying light? Consider different types of radiation and the rapid use of or intensity of light.

Plant and animal life / genetic resources:

- Will the areas of particular value to animal and plant life be affected (or registered protection worthy areas important for particular animal or plant life)?

Proponents are asked to specify which natural elements will be affected or lost and what importance they have in a local, regional and possibly national and international context. It is also necessary to look at areas and relationships that go beyond the actual influential area.

- Will the initiative affect the reproductive conditions of wild game or fish?
- Will the initiative affect the hunting or fishing conditions?
- Will the initiative result in changes in the environment that may affect the living conditions of species of plants and / or animals in a fundamental way?
- Will the initiative result in emissions to air or water that may affect the genes of species?
- Will the initiative affect the genome of species directly?

Particularly valuable natural environments:

- Will the initiative affect or influence protected, protection worthy or other particular important natural environments?

See also the questions regarding flora and fauna.

Natural and cultural landscapes:

- Will the initiative lead to the loss of whole landscapes or landscape elements?

Factors considered in this context include line draw, biotopes, waterways and boundary zones.

- Will the initiative represent a large-scale intervention which will affect the physical environment of the surrounding area to a significant extent?
- Will the initiative change the historical content of the landscape?

Cultural heritage:

- Will cultural heritage and cultural landscapes be in danger of being lost as a result of the initiative?

- Will special protection worthy cultural heritage, cultural environments or cultural landscapes be affected by the initiative and thus be in need of special protection?

Other conditions:

- Will the initiative lead to the emission of hazardous substances into the soil?

- Will the initiative result in the production or waste which is difficult to destroy or store properly?

- Will the initiative result in so large amounts of waste that it leads to deposition problems that requires some specific treatment, etc.?

- Will the initiative result in increased risk of explosions, accidental releases of toxic gases

etc?

- Will the initiative change the stability of either the soil or the snow (e.g., deterioration of

masses, erosion with effects on both land and in rivers, landslides or avalanches)?

INITIATIVE CONSEQUENCES OF NATURAL RESOURCES

Land resources:

- Will the initiative lead to changes in the agricultural resource base or operating conditions of agriculture?

Matters that are considered in this context are those related to the conservation of soil, and changes due to competing land use, water facilities, groundwater lowering, pollution etc.

- Will the project lead to changes in the reindeer husbandry operations basis?

Water, including groundwater:

- Does the initiative hinder current or future use of water resources?

Cf. the general questions concerning water pollution.

Minerals and masses:

- Does the initiative hinder current or future use of known occurrences?

Marine resources:

- Does the initiative involve the use of marine resources to such an extent that it causes major consequences for the environment?

AN INITIATIVE'S SOCIETAL CONSEQUENCES

The assessments of social and societal consequences of EIA required initiatives will include various levels: regional and local. Larger initiatives may also have consequences at a national level. The main issues an impacts assessment will be concerned with are the following.

Business and employment:

- Will the initiative affect the demand for labor?

The proponent is asked to describe both what kind of labor that is demanded and the effects it causes on the labor market both during the development and the operation phase.

- Will the initiative affect the demand for goods and services?

Here goods and services are noted down during development and operation

- Will the initiative have impacts for other industries?

Here the kind of impacts one is talking about (structural, market related, change productivity) are noted down.

Development and construction of houses

- Will the initiative affect current development patterns and plans/guidelines for the future?

- Will the initiative affect the scope and localization of houses?

- Will the initiative lead to an increase in the need for infrastructure such as roads, water-supplies, etc.
- Will the initiative be easily operated through collective transportation or does it lead to an increase in private transportation?
Economic effects
- Will the initiative have any regional/national economic impacts?
- Will the initiative have any effects on the local economy?
One is here thinking of both changes in revenues and expenses for the municipality as a consequences of the initiative and from potential governmental transactions. In addition come consequences in relation to the municipality's administration, planning- and development capacity.
Social and welfare related conditions
- Will the initiative have effects on municipalities and local communities?
- Will the initiative lead to changes in settling-patterns, demography and communication which can affect social networks and the care services?
- Will existing buildings, business activities, houses or outdoor-areas be affected by the initiative?
- Will the initiative cause changes in living conditions or environment?
- Will the initiative cause re-localization of people or the loss of other businesses?
- Will the initiative cause a change in demand or supply of public and private goods and services?
- Will the initiative cause a potential increase of conflicts between different cultures or stakeholders?
- Will the initiative have impacts on the Sami culture?
- Will the initiative affect the health of the employees, user groups or others?
- Will the initiative affect the opportunities to exercise cultural or recreation

activities?
- Will the initiative have any other effects of social or welfare-related character? Should include a description of how the initiative can be facilitated so that social and welfare conditions are best looked after.
Outdoor-life and recreation:
- Will the initiative affect different populations' opportunities to exercise different types of outdoor-life or recreation activities in the local environment, or reduce accessibility to nature areas, swimming sites, etc.?'
- Will the initiative affect the population's opportunities to experience wild animals or nature?'
- Will the initiative affect the opportunity to exercise outdoor recreation activities?'

CHAPTER VII: THE CASE OF LATEST NORWEGIAN EIA MANUALS AFTER 2000

1 Introduction

In this chapter the *latest* Norwegian manuals on EIA will be discussed in relation to the hermeneutic-reflective apparatus outlined in Tab.3, Chapter V (analogous to the discussion in Chapter VI).

The main official document in Norway relating to the development of an EIA report is the '*Instruction for Official Studies and Reports*' (UI)^v. The 'Instruction' was laid down by The Royal Decree of the 24th of June 2005. The purpose of 'The Instruction' is stated in the preface:

'The purpose of these instructions is to ensure the proper preparation and administration of all work relating to official reforms, amendments to regulations and other measures. They shall contribute to ensuring cooperation and coordination in administrative procedures, the high quality of the studies and an effective process of communication between the body submitting the matter and consultative bodies'³⁹.

The UI document is thus an overall controlling document for the conductance of an EIA and shall especially ensure that all relevant stakeholders are included actively in the EIA *process*, and that the actual research within an EIA is of *high quality*. The UI document is directed towards the ministries and at their underlying responsibilities.

This implies that work with the actual assessment of impacts is not directly addressed in the 'Instructions', rather it transfers this responsibility to the affected Ministry. This is probably because each ministry knows their field best and is

³⁹ UI, 2005, preface.

http://www.regjeringen.no/upload/FAD/Vedlegg/Statsforvaltning/Utretningsinstruksen_eng.pdf

therefore most adequately able to outline relevant impact in relation to *their* stakes. An immediate question, however, to the procedural outlined here, is how the criteria of cooperation and coordination of different impacts are achieved when ministries or stakeholders are preparing their individual concerns in isolation?

This chapter discusses the content of the individual manuals on EIA as they are worked out by the responsible Ministries of State. In total these include in all six manuals (see Tab. 4), the following reflective study has selected three of these. The manuals chosen here are (1) “Environmental Impact Assessments” (2000) for the Ministry of the Environment, “Health and Well-being in EIA” (2001) for the Ministry of Health and Care Services (2001) and “Social Economic Analysis” (2005) for the Ministry of Finance. These three policy papers are chosen specifically because together they address both the ecological, cultural/social and economic sides/impacts of an initiative, and because this information is crucial in order to answer the research question.

Table 4 Norwegian Manuals on EIA

Ministry of the Environment	<i>Environmental impact assessments</i> ^{vi} (2000)
Ministry of Children, Equality and Social Inclusion	<i>Assessment of impacts for social inclusion</i> (1999) ^{vii}
Ministry of Local Government and Regional Development	<i>Guidelines for local governmental EIA</i> (1998) ^{viii}
Ministry of Health and Care Services	<i>Health and Well-Being in EIA</i> (2001) ^{ix}
Ministry of Trade and Industry	<i>Impact assessment for Business</i> (2000) ^x
Ministry of Finance	<i>Social Economic Analysis</i> (2005) ^{xi}

2 The paradigm governing the manual on EIA after The Royal Norwegian Ministry of the Environment

Ontology of nature

This sub-chapter endeavors to illuminate the ontology of nature of the manual developed by The Royal Norwegian Ministry of the Environment (from now on referred to as “ME”).

In the introduction of the manual it is stated that:

‘... whether a case could have significant consequences for the environment, the responsible authority should consider whether the case comes into conflict with key environmental policy objectives’⁴⁰ (from Norwegian).

The manual further refers to Governmental Report No. 26 from 2006, *The Government’s Environmental Policy and the State of the Environment in Norway*, as one of the key bodies for environmental policy. In the preface of this report it is also stated:

‘The report... is the Government’s most important document for a comprehensive presentation of their environmental policy’^{41xii} (from Norwegian).

So what is the ontology of nature, that is, how does this report interpret what nature is? One answer can be found in Chapter 6: *Conservation of biodiversity and outdoor-life*. The statement here speaks for itself:

‘Biodiversity, the variability among living organisms, can be divided into ecosystem, species and genetic diversity (see the Convention on Biological Diversity). For *management purposes*, it is essential to take into account the *dynamic interactions between different components of natural systems*. There

⁴⁰ T-1349, introduction, <http://www.regjeringen.no/nb/dep/md/dok/veiledninger/2001/t-1349-miljoutredninger-etter-utrednings.html?id=87742>

⁴¹ St.meld. nr. 26 (2006-2007) *Regjeringens miljøpolitikk og rikets miljøtilstand*.

is now growing awareness of the importance of ecosystem services, which cover the whole range of goods and services supplied by biodiversity. They include provisioning services (e.g. food, fibres, medicines), regulating services (e.g. climate regulation, water regulation), cultural services (e.g. spiritual benefits, education, aesthetic value) and supporting services that maintain the conditions for life on earth (e.g. soil formation, pollination, primary production)⁴².

The statement here articulates ontologies compatible with Deep-Ecology and subjectivism. This is made evident from at least two cases. The first is the recognition that human beings and ecosystems are fundamentally *One Unity*, i.e. a *monistic view*. The second case is the recognition that the trait of natural ecosystems is best understood and explained in terms of *relations* not atoms.

Conclusion: Holistic-organic and subjective ontology.

Ontology of man

This subchapter elaborates more on the ontology of man of the manual on EIA for the ME.

The image of man in this manual can be revealed from the *research questions* addressed in the appendix of the manual.

Appendix I (attached to this chapter) of the manual contains a checklist consisting of two chapters. Each chapter addresses 8 and 10 research questions respectively. The first chapter addresses problems in relation to *environmental- and health damaging pollution*. The 8 questions are exclusively of a physical-objective art; that is, nature is perceived as a constellation of physical atoms, that is, they are designed to evaluate all environmental impacts on a purely physical-objective scale such as: a) water quality, b) releases of phosphorus and nitrogen, c) oil, d) CO₂, SO₂, etc (see Appendix

⁴² White Paper Nr. 26 (2006-2007): *The Government's Environmental Policy and the State of the Environment in Norway*, p. 70, box 6.1, from Norwegian, emphasis added.

1). These 8 questions strongly indicate both formal and regional objective ontologies, since it signals that man is only concerned with the physical-chemical environmental effects of an initiative, because values of a non-physical art, i.e. subjective meaning codes/values, such as esthetical, ethical and religious experiences are totally ignored. The image of man traceable in the checklist is thus that of an instrumental actor needing to be controlled through external forces, that is, man is not perceived as a morally responsible being whose quality of life depends on meaningful experiences of the world.

An attempt to evaluate environmental impacts, that is, meaningful ecological values solely through changes in physical and chemical conditions, must indeed postulate a clear ontology of man which is reductionistic and compatible with the IRRP. "Subjective-impacts" are left behind in the first chapter of the manual.

Objective/physical effects, i.e. atomistic knowledge, are of course relevant and important, but when this constitutes the only information about environmental impacts, the picture of the whole is lost, that is, how human beings are affected as *subjects*, that is, what environmental degradation actually *means* for the 'mental horizon': the *lebenswelt* of a human being; i.e., the *psychic "effects"*.

Chapter 2 of the appendix bears evidence of a quite different ontology of man, that is, man as a moral-meaning-oriented being, that is, man as a subject. Here problems in relation to whether a project will conflict with valuable areas, the use of these and biodiversity are addressed:

2.4. Will the initiative have significant consequences for, or for sites close to, critical habitat for protected or endangered species?

2.5. Will the initiative lead to the spread of organisms that do not naturally belong in, and / or may harm the local habitats / ecosystems?

2.6. Will the initiative affect the harvest and other uses of living resources so that species or populations are cut off or threatened?

2.7. Will the initiative have significant consequences for valuable areas for fishing, hunting, or recreation, or impede the general traffic or access to such areas?

The ten questions (see appendix to Ch. VII) are here designed to cover how ethical and esthetical values or meaning codes could potentially be affected or relate to the project. Here both values in relation to biodiversity, esthetics and cultural experiences of nature are addressed. The intuitive concern for ecological values here is probably due to the fact that the manual postulate a subjective ontology as point of departure.

Chapter 2 of the appendix is thus an attempt to supplement the pure physical-objective values, addressed in Chapter 1, with subjective and phenomenological values. The conclusion must therefore be that the manual also interprets the ontology of man in accordance with the subjective ontology.

Conclusion: Subjective ontology.

Perception of science

The research question asked here is: *how is the perception of science in the manual on EIA after ME?* This question is most important because it sheds light on how environmental impacts are studied. In the previous sub-chapter we saw that the *problem identification* of the manual centered on objective, subjective and phenomenological data. This sub-chapter endeavors to illuminate which epistemological theory the manual applies and thus promotes for proponents for studying social-environmental phenomena (objective, subjective and phenomenological impacts).

In the chapter: “What should an environmental assessment contain?”⁴³ the following informative statement is made:

‘The consequences of a case should be *numerical* as far as possible. *Qualitative* descriptions and arguments will be a temporary necessity. It should, therefore, in each case be considered which consequences that should be quantified, how this should be done, and what consequences should be handled by means of qualitative assessments’⁴⁴.

From the quotations above it is evident that the manual recognizes the need to include *both* quantitative and qualitative methods. The need to use both quantitative, objective, ‘I-It’ and qualitative, subjective, ‘I-Thou’ means of inquiring data and knowledge is compatible with hermeneutic epistemology.

The manual, however, seemingly from the quotation above, puts more emphasis on the need to quantify environmental impacts. From a subjectivistic point of view, hermeneutic-phenomenological description or qualitative impacts obtained through participatory studies are equally important as physical-quantitative impacts.

The research questions addressed in Chapter 2 of the appendix of the manual (see Appendix 1), are typically *interpretative* questions whose purpose is to reveal meaning and build holistic understanding of the impacts which an initiative may impose. This inevitably means that the researcher ought to be involved or close to the study phenomenon. Therefore the need for qualitative methods seems rather more reasonable than what the manual recognizes.

⁴³ (The Norwegian Ministry of the Environment, 2000, p. 2).

⁴⁴ *Ibid.*, from Norwegian.

This in addition to the fact that the manual does not recognize the need to *synthesize* quantitative and qualitative knowledge, that is, to study the ‘parts’ in relation to the ‘whole’, but instead promotes that the majority of knowledge ought to be of a quantitative nature and that qualitative data ought to serve the function as mere supplements, points in the direction of a dominating positivistic perception of science. The reason why the manual does not put considerable emphasis on the need to synthesize knowledge about the ‘part’ in relation to the ‘whole’ is probably because of the *objectivistic ideal*. This means that subject and phenomenological knowledge do not meet the rigid criteria of objectivity. The result of not synthesizing factual knowledge with ethical and phenomenological knowledge is *blind science*, that is, a whole lot of data, “facts”, which do not help us understand what we *ought* to do.

It is therefore plausible to conclude that the perception of science in the manual is the positivistic, subject-object theory of knowledge.

Conclusion: The received perception of science.

Scientific ideal

The total absence of guidelines and procedures for synthesizing facts and values in a hermeneutical manner represents evidence of a positivistic-reductive ideal. The hermeneutical alternative implies that analytical statements are synthesized into a holistic picture which encompasses both value priorities and phenomenological/experience values; i.e., intrinsic values. The general lack of information regarding how to synthesize quantitative and qualitative information signals ignorance towards hermeneutical methods.

This is also a reasonable claim because of the dominant focus placed on quantitative methods and the general lack of any type of system for gathering *personal* knowledge.

Maybe the strongest evidence for claiming that the scientific ideal of the manual is not the hermeneutical ideal is the total absence of any *normative* predicaments, that is, a system for regulating ecological footprints. Normative predicaments or *systems* are characterized by fundamental norms and values. For example statements such as “a project *should* this and that, a project *should not* this and that.”

Conclusion: Naturalistic ideal.

Ethics

The consequence of an objective knowledge theory and the general unwillingness to both include values and to synthesize them with facts, both signalize a reactive attitude towards external responsibility. An instrumental attitude towards environmental responsibility is also directly expressed in the manual. The manual here discusses the content of “What an environmental assessment ought to include”:

‘An account of how the environmental impacts of a case can be *remedied*’⁴⁵.

The reason why the manual finds it necessary to substitute the degradation of environmental values with remedies (e.g., of an environmental, cultural or economic art) is probably because impacts are predominantly studied through objective-physical methods or “lenses”, thus leaving any value evaluation behind. The consequence of this in turn, is a pure material-physical perception of what nature *is* (ontology) which in turn leads to the perception that natural resources are *substitutable* (as the quotation strongly signalizes).

Conclusion: instrumental-utilitarian ethic.

⁴⁵ Ibid., from Norwegian, emphasis added.

Esthetics – Presentation styles

As discussed in the perception of science the manual emphasizes the need to include both quantitative-statistical figures and qualitative descriptions. This invites proponents to include a wide range of presentation styles; e.g., statistical patterns and thick descriptive narratives.

Conclusion: Pluralism in choice of esthetics.

3 The paradigm governing the manual on Health and Well-being after The Royal Norwegian Ministry of Health and Care Services (MHCS).

The following manual is obviously of extreme importance in relation to research on human-existential conditions/impacts of large scale national development projects. The sub-chapter attempts to reflect upon the manual in the light of the hermeneutic reflective apparatus presented in Tab.3, Chapter V. The meta- or paradigm analysis directs attention at those *a priori* presuppositions which the manual takes as point of departure, that is, the ontological, epistemological and methodological fundament.

Ontology of man

The ontology of man of the manual developed by the MHCS can be interpreted from how it interprets the concept of 'health':

'Health and well-being represent the *frame for life and welfare*' and 'are amongst *those factors we value the most in our existence*. ... Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. ... Health is the ability to master everyday demands. ...individuals' and groups' ability for responsibility, participation, solidarity, mastery and *control over one's own life and situation*' (Ståvi, 2001, pp. 11,14,15, emphasis added).

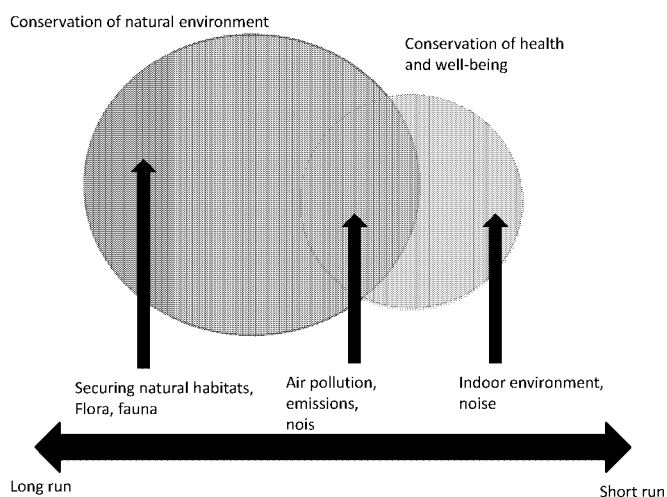
Here we find evidence of an ontology of man in accordance with subjective ontology. This means that 'man' is perceived as a hermeneutical being with existential meta-needs (e.g., responsibility towards others) and a free will (the need to master one's own unique, indeterministic destiny). This is especially evident from the orientation on the *inner and ethical life of a subject* here expressed through "self-control", "mental and social well-being", "solidarity" and "responsibility". These are all features surpassing objective ontology.

Further the manual emphasizes the relationship between conservation of natural environments and health by launching a model (Fig. 14) describing how human

health and wellbeing are both physically and psychologically dependent on /interrelated with 'nature:

'conservation of natural environments is ultimately all about our future health, and that securing flora and fauna is thus about securing our health. ... In addition to the usefulness future generations will have of access to pure air, pure water, and original biological diversity etc., many today will enjoy – and through that experience well-being – handing over our natural heritage to future generations' (Ståvi, 2001, p. 12)⁴⁶

Figure 14 Environmental conservation and health is ultimately one thing (Ståvi, 2001, p. 12).



The manual here provides precise descriptions of subjective, monistic ontology, that is, man as a being-in-the-world and not as a self-enclosed ego. The quotation is also evidence of the enormous potential/capacities latent in human beings to learn and develop and expand their mental horizon and thus experience higher states of

⁴⁶ (Ståvi, 2001, p. 12, ch. 1.1, from Norwegian)

meaning. The description here is also truly in tune with the interpretation of man as an ecocentric actor, that is, human or “my” health ultimately depends on nature’s or “your” health, not only today, but also with reference to future generations.

Further the manual states about the concept of ‘health’ and ‘well-being’:

‘The absence of noise, local air pollution, radiation, toxic gases, and accidents in addition to access to clean water are important prerequisites for a good health and well-being. *Also our experience of the physical environment, that is, esthetical relations, affect us...* The prerequisites which are important for the social environment and the population’s activities encompass organized and unorganized, formal and informal, networks between human beings and places where networks can prosper and grow’ (Ståvi, 2001, p. 9, from Norwegian, emphasis added).

Here the empirical material provides evidence of subjective ontology. This is evident because the quotation interprets that human health and well-being is ultimately constituted through the ‘I-Thou’ attitude/relationship between both man and man and man and nature.

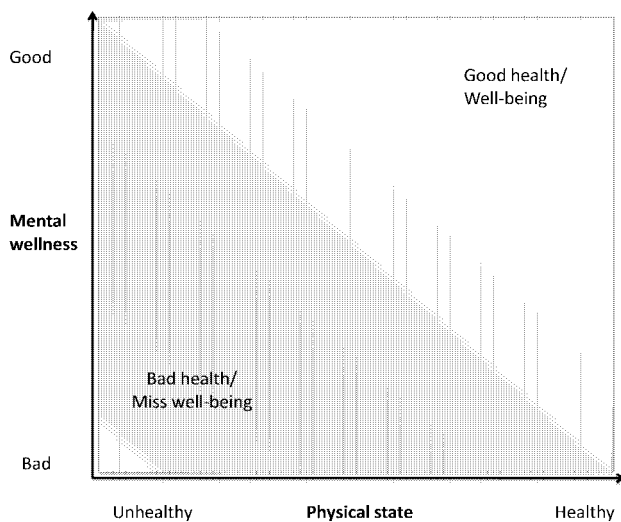
The last example which we shall interpret is a ‘two-dimensional’ model from the manual whose purpose is to illuminate the complexities associated with health and well-being. The model illustrates that ‘good’ and ‘bad’ health and well-being depend, “paradoxically”, on both objective (physical) and subjective (psychological) qualities (see fig. 15):

‘A health concept of this kind elucidates the apparent paradox that a human being can have good health objectively speaking, but still experience low quality of life or miss-well-being’ (Ståvi, 2001, p. 16, from Norwegian).

The conclusion must be that the manual holds a subjectivistic ontology of man, that is, man as a *subject* whose health and well-being depends on both material (physical) and immaterial (psychic) conditions. The reasoning we see here points in the direction of the Maslowian interpretation of human needs/values (cf. Chapter III).

Conclusion: Subjective ontology.

Figure 15 The two-dimensional health model (Ståvi, 2001, p. 16, from Norwegian).



Perception of science

Now after the ontology has been revealed we turn to the question of how the manual interprets what *scientific* knowledge *is*. The reflection here aims at elucidating how the MHCS interprets that an EIA ought to go on and conduct the *Science of Man*, that is, how to produce knowledge about human health and well-being impacts.

The manual states in relation to the concept of 'well-being' that it is much more complex and 'diversified' than the concept of 'health and corollary:

'Health and well-being is often *fragmentary* and *partially inadequately illuminated* in various types of decision making assessments' (Ståvi, 2001, p. 7, from Norwegian, emphasis added).

Here the manual emphasizes the ambiguities related to social research on phenomena such as health and well-being. This is probably because the concept has a fundamentally *subjective* nature. In light of this reasoning the manual alarms the reader about an important epistemological consequence:

'The word "well-being" has not been "*academized*" to an equal extent. "Well-being" must be perceived to be even more diversified than the concept of "health", at the same time as the large *individual differences* make an *objective* definition extremely difficult. There is therefore in this context not made an attempt to provide any clear-cut definition of the concept of well-being. When well-being is still included in this report it is to assure an expanded understanding of the concept of health as the basis for the factors that *ought* to be considered in this type of impact assessments.' (Ståvi, 2001, p. 11, from Norwegian, emphasis added).

The recognition here that an objective definition of well-being is extremely difficult and probably impossible, accords with the hermeneutical theory of knowledge. This is because hermeneutics postulates that well-being or the 'meaning-horizon' of a

subject is system dependent, that is, it depends on his pre-understanding and personal horizon and *lebenswelt*. From a hermeneutical perspective it is therefore a fallacy on its own to attempt to provide a “clear-cut” definition of well-being. This is because a pluralistic perception of the concept is rather closer to the truth than any clear cut definition can ever be.

The result, however, despite the fact that the manual recognizes the severely limitations of ‘objectifying’ the concept of ‘well-being’, is precisely to fall into the trap that one has warned oneself so fretfully against; that is, to produce fragmentary/reductionistic knowledge. This claim is evident from the statement made by the authors in the summary of the manual:

‘The essentials of an impact assessments will be to examine the *external factors* that provide the basis for social environment and activity’ (Ståvi, 2001, p. 9, emphasis added, from Norwegian).

The statement here points in the direction of an interpretation of science compatible with the objectivistic definition of science. From the statement it is clear that the manual perceives that the only way to generate certain scientific knowledge about ‘health’ and ‘well-being’ is through detached observation of the external social world, that is, objective studies, that is, ‘I-It’ knowledge. This is despite the fact that the manual recognizes the subjective and immaterial nature of the concept, and the problems related to “academizing” the concept.

The reason why the manual perceives that the only way to inquire knowledge about the phenomenon is through ‘external factors’, is probably due to the enormous influence the positivistic tradition has had during the last 50-70 years (cf. discussion in Chapter III and IV). The fact that the manual recognizes the severely limitations of objectifying the concept of ‘well-being’ is, however, probably because of the subjectivistic ontology which the manual takes as point of departure.

The manual does in fact discuss that since 'health' is such a complex phenomenon, it is very difficult to *conceptualize* it and therefore also to study it in a scientific way. The manual then concludes that since scientists are not able to generate *holistic* knowledge about the concept:

'We therefore depend on others in society, both private and public, taking into account the health and well-being in the exercise of their responsibilities' (Ståvi, 2001, p. 15, from Norwegian).

It is strange that a manual with professional competence in health and well-being studies cannot present methods and guidelines on how to produce adequate scientific knowledge about health and well-being. Instead the manual puts fate in the hands of manager's own intuition, which may be excellent; but still it is rarely wise, not to mention responsible, to manage a project without being prepared. And on the other hand, is it not the case that knowledge about the concept ought to be constitutive for which projects we regard desirable/not-desirable? i.e., the projects contributing to meaningful/meaningless development?

The claim that the perception of science of the manual is in the logical positivistic tradition is utterly reasonable from the last empirical evidence and from the discussion of the scientific ideal in the next section. The claim that the ontology is anchored in the existential tradition also becomes clearer now. Why should the manual otherwise promote a humanistic culture perceiving human health and well-being as constituted by an ongoing process between social actors whose *mutual trust* represents the driving value; that is a true 'I-Thou' meeting. From a subjective-hermeneutical perspective, well-being is system dependent and knowledge about this system is only possible when under open and free conditions, that is, in an 'I-Thou' meeting. First then is it possible to enter the other's world and make sense of it; that is, to understand what the other feels meaningful and not meaningful; that is, to understand how the concept of health and well-being is interpreted by the unique person. This method of inquiry or attitude is exactly what the manual promotes in

the quotation above. Maslow also argues that the most adequate role of a therapist is to develop an authentic friendship with the client. This is because, amongst other needs/values, health and well-being prerequisite the gratification, to various degrees (depending on one's profile cf. Chapter III), of the need for social contact and friendship. It is this simple one may say. It is also tempting to draw the obvious conclusion that projects which contribute to meaning and well-being focus strongly on *social relations*, that is, on fostering friendships.

Conclusion: The received perception of science.

Scientific ideal

In this part the study presents empirical data of the concrete methods, models and theories which the manual recommends for the study of (man) the phenomena of 'health' and 'well-being'.

In the summary of the manual the following statement is made:

'Regarding documentation of *every single factor* that influences health and well-being, it is stated how the current situation can be documented and how the possible consequences can be analyzed and evaluated, *irrespective* of the type of plan and action. ... It is a fundamental principle that the documentation is well structured, and makes a *clear distinction between facts and judgments*, so that the material is *verifiable*' (Ståvi, 2001, p. 8, from Norwegian, emphasis added).

The empirical data presented here can hardly be interpreted otherwise than in the direction of meaning that the scientific ideal governing the manual is the logical empirical ideal. This is because the manual emphasizes the need to produce objective, universal, that is, truth claims which can be applied independently of context and history; and verifiable data about single external factors which are 'complex cause-effect relations' (Ståvi, 2001, p. 8). These criteria represent the gist of the naturalistic ideal (cf. Chapter III).

In Chapter 9, *Assembly – Overall assessment of the possible impacts for health and well-being*, the manual launches a mathematical model/formula which describes the *total health threat picture* (see Fig. 16) both in the short, medium and long term (Ståvi, 2001, p. 101). This is a typical model built up around the positivistic philosophy of knowledge. The manual also stress the difficulties of converting consequences into ‘prices’:

‘The main reason for this is because there exists a vast empirical knowledge gap for estimating the costs of most health and well-being effects’ (Ståvi, 2001, p. 102) .

The examples illustrate that health and well-being impacts ought to be described *objectively* through the language of mathematics.

Figure 16 Example from the manual on Health and well-being: ‘Total-health-threat-picture’ (Ståvi, 2001, p. 101, from Norwegian).

$$\Sigma((AxO)^k+(AxO)^m+(AxO)^l+(AxO)^a)-(NxO)$$

- A= Significance
- N= utility
- O= Scope/volume
- k= Short term
- m= Medium temr
- l= Long term; diffuse effect
- a= effects during development phase

The manual here interprets that subjects should be studied as *objects* whose nature can be understood through observing an *external social world*; that is, spectator knowledge. This type of knowledge can only be mere *superficial knowledge* about

the 'parts' that constitute health and well-being, such as material conditions (e.g., physical freedom to move around, absence of poisonous gasses, economic conditions, facilities, number of head per department, structure of demography, etc. etc.). Consider for example the research questions the manual asks in the process of producing knowledge about the phenomena 'social network':

'How plausible is it that the initiative will lead to changes in living environments so that the moving frequency will be changed?; Which spatial changes does the initiative lead to and how does this affect the accessibility of the people to meet? Will the use of these areas be affected by noise, pollution, etc.?' (Ståvi, 2001, p. 73, from Norwegian).

Material conditions are of course important and to a certain degree vital for human health and well-being, but they are far from the 'whole'. The "factors" that build health and well-being from a hermeneutical perspective, are the *inner social values*, the immaterial values, such as (the quality of the *relation* between the "heads" in the department, the *processes* behind the economic salary, spiritual freedom to not do what is against one's will, etc. etc.) What is lacking from a hermeneutical perspective, in other words, is *subjective* and *phenomenological* knowledge aimed at revealing the *meaning dimension* and *spontaneous experience*. A hermeneutical approach will use knowledge about external conditions as supplementary information. The corollaries of focusing only on the external sides lead to a remote, *superficial* and cold description of social networks.

Conclusion: There can be no dispute regarding the conclusion that the current scientific ideal of the manual is the naturalistic/scientific ideal.

Ethics

The internal ethic of the manual is that associated with the scientific ideal of the manual.

The external ethic has not been illustrated and discussed directly, but the careful reader will probably already have comprehended the situation. This is mainly due to the intimate relationship between the components of a paradigm.

The external ethic is rendered adequately transparent by the following statement:

‘It is a *fundamental principle* to ensure that documentation is properly structured and that *fact and evaluation are distinguished* from one and another, so that the material is verifiable’ (Ståvi, 2001, p. 8, from Norwegian).

The method for assessing health and well-being impacts emphasizes the need to make a sharp distinction between ‘facts’ and ‘judgments’, limit the studies to ‘external factors’, ensure verifiability, etc. (cf. scientific ideal). In other words the methods and models promoted are purely scientific and thus objective and superficial, that is, *subjects and objects are treated like things/objects* and the ethics thus remains objective or value-neutral; i.e., non-existing.

Conclusion: instrumental-utilitarian ethic.

Esthetics

Esthetics is an important part of scientific activity because it represents the *medium* between the scientist and the community (layman) so to speak. In other words, the knowledge (expressible and tacit) of a social phenomenon obtained by the researcher through careful and painstaking studies is brought forward to decision-makers and others through esthetics.

As a consequence of the dominating focus on objective health and well-being components, statistics encompass the preferable presentation style of the manual. The manual provides several examples regarding how statistics can be used to analyze the social impacts. The example shown below are all taken from the manual addressing different social phenomena such as demography, unemployment rates, social care rates, social problems, crime rates, etc.:

Figure 17 Relative age composition (Stávi, 2001, p. 45)

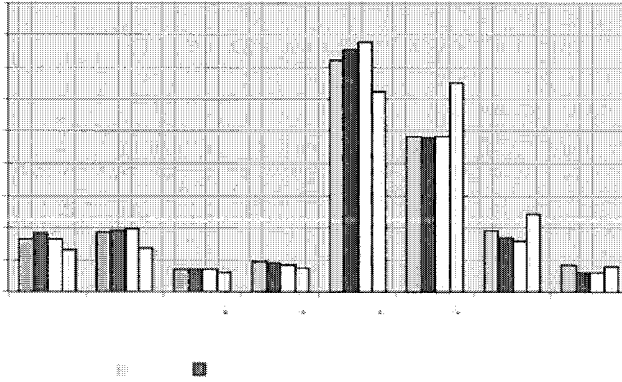


Figure 18 Estimated demographic development with and without project (Stávi, 2001, p. 48).

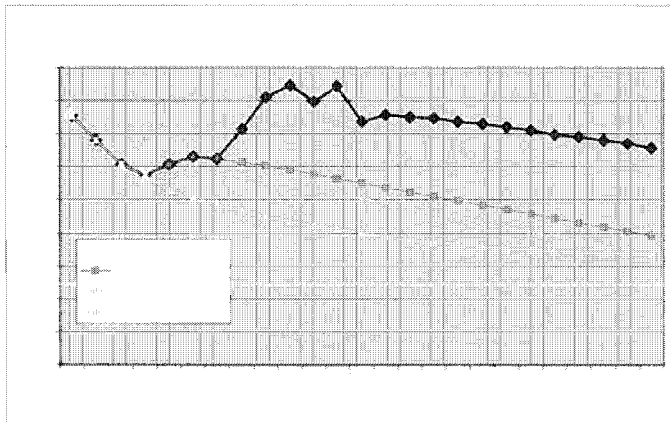


Figure 19 'Illustration of problems amongst youngsters' (Ståvi, 2001, p. 49)

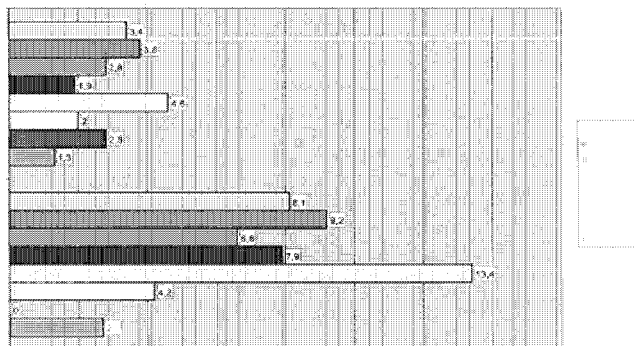


Figure 20 'Index for social problems' (Ståvi, 2001, p. 50).



Figure 21 'Drug related problems' (Ståvi, 2001, p. 80).

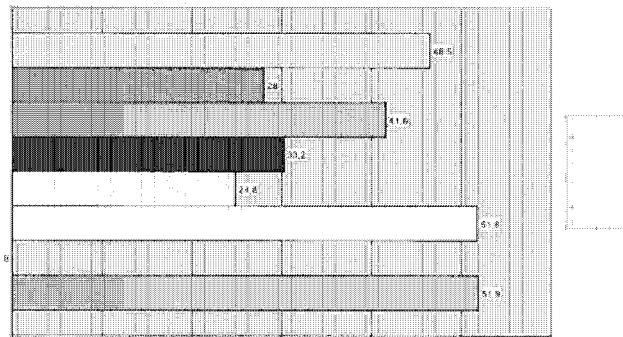
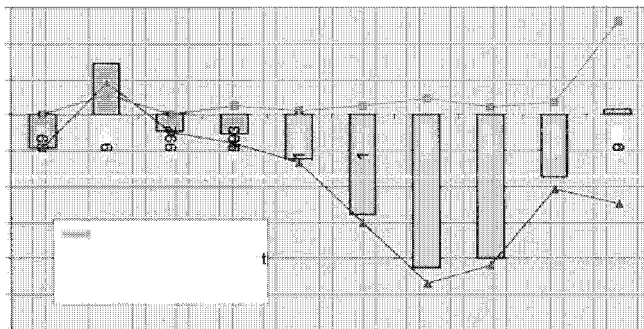


Figure 22 'Movement balance between regions' (Ståvi, 2001, p. 41)



From a hermeneutical perspective the hard data presented here constitutes knowledge of the 'parts', i.e. the superficial social conditions. This becomes clear remembering the discussion in the manual concerning ontology which stressed the problems of objective studies due to the individual or subjective nature of the concept of health and well-being. Through these figures the manual ends up in the fallacies of fragmentation which it so fretfully warned itself of. Hermeneutics can

help us understand the problems of partial analytical (fragmentary) knowledge, that is, to synthesize objective, subjective and phenomenological knowledge into *holistic knowledge*.

4 The paradigm governing the manual on Social Economic Analysis after The Royal Norwegian Ministry of Finance.

In this sub-chapter the thesis discusses the *a priori* assumption underlying the Manual on Social Economic Analysis (now MSEA) for The Ministry of Finance. The MSEA is perhaps the most important manual of all the manuals mentioned in Tab. 4 above. This is because the economic aspects of a project contribute to the actual realization of the project (cf. the Instruction). Therefore the image of man and science prevailing here is probably constitutive and defining for the whole project both in theory and practice!

Ontology of man

In Chapter 2.1 the manual states the purpose of a MSEA:

*'The main purpose of economic analysis is to identify, highlight and systematize the consequences of actions and reforms before a decision is made. These include, amongst other things, costs in relation to the official budgets, revenue and cost changes for private households and private industry in addition to effects on the environment, health and safety'*⁴⁷.

As indicated here, the manual on SEA endeavors to cover all economic, social and environmental impacts of a project. This is probably why it is considered so important.

The Ministry of Finance does not express which image of man, or nature for that matter, the MSEA takes as point of departure. In order to reveal the ontology it is therefore necessary to deduce this from methods and theories applied by the manual.

The manual launches three main socio-economic-analysis-models which can be applied in order to determine whether or not a project is *socio-economic beneficial*.

⁴⁷ (Norwegian Ministry of Finance, 2005, p. 8, from Norwegian).

These are: 'Cost-benefit analysis' (CBA), 'cost-efficiency analysis' (CEA) and 'cost-effect analysis' (CIA) ⁴⁸.

On CBA the manual states:

'In a cost-benefit analysis all effects are valued in Norwegian Kroner as far as possible. The Krone values are then used to weigh the importance of the different effects in one another. If one summarizes the estimated value of all effects of a project and the sum is positive, the project is classified as *socio-economically beneficial*'⁴⁹.

In a CBA all costs and benefits are measured in monetary units and the most economic rational alternative is chosen. In the CEA, however, the alternative is fixed; the question then is how to reach the given alternative in the most cost efficient way. The CIA builds on the assumption that different means may have different effects and we can thus not simply choose the alternative with the lowest costs.

The three analyses clearly prerequisite that all sides of a project, that is, norms and values, needs, experiences, feelings, etc., etc., are converted into monetary values. This *fundamental principle* is also highlighted in the manual:

'The main principle ... is that the Krone-value of a positive effect ought to be equal to what the population *is willing to pay for it*. That a project is socio-economically beneficial therefore means that *the population is willing to pay at least as much as the project costs*'⁵⁰.

The gist of the models is then, an attempt to develop a model which can produce a purely instrumental, almost "physical", picture of the situation where all positive and negative effects are given a minimum or maximum price. This is of course a strong abstraction of the persons within the population because it removes any sense of

⁴⁸ Ibid., p.10

⁴⁹ Ibid., p.9

⁵⁰ Ibid.

subjective evaluation. It is also an even stronger abstraction to assume that *all* subjects in the whole society behave in this manner. From a hermeneutical perspective a person who prefers egocentric utility above everything, i.e. a person whose motivation and personality is best understood through instrumental rationality, is an immature being who has not had the time, support or capacity to develop himself (such as a young child for instance). The manual also recognizes these problems:

‘it is not obvious that the monetary size captures welfare effects as a *whole*. The analysis *purely measures money*, that is, the willingness to pay and not welfare. The benefits of a project will *vary from person to person* and there are no professionally accepted methods to measure and compare the benefits between people ... The results of the analysis must be *interpreted* with discretion and conclusions must be based on *ethical and political evaluations*’⁵¹.

It is strange, when reading this, for many reasons, why mainstream economists do not make more of an effort to develop models and theories capturing the ethical and political sides of the economic actor when they themselves recognize the need and value of such approaches. Instead they apparently go on with their abstract analyses which are so far from actual social life. It must be boring for a devoted economist to know that his analyses do not accord to social life/reality and that politicians must evaluate whether his professional work is of value or a waste of time. The economists should rather have been a physicist. The most severe problem, however, is the *irresponsible* attitude of these models/researchers. Busy politicians rarely have, I assume, the time, skills nor the right to evaluate the work of external, “value-neutral” professional parties because this would be an attack on free democracy.

The various three models here postulate objective regional ontology, whose personality and motivation is characterized by instrumental rationality. This is

⁵¹ Ibid.

evident from the three models because it juxtaposes economic, social and ecological values into pure instrumental values; that is, all values are converted into prices.

Conclusion: objective ontology.

Perception of Science

In this sub-chapter the thesis discusses the epistemology positioning of the MSEA.

The methods applied in the manual on Social Economic Analysis (SEA) - cost-benefit analysis (CBA), cost-efficient analysis (CEA) and cost-effect analysis (CIA) – offer an attempt to measure the costs versus the benefits of the various alternatives. The process of establishing correct benefits and costs is an issue involving advanced mathematics (see Fig. 23) and the inclusion of several highly debatable assumptions; one assumption obviously being that man behaves as an economic rational actor.

The manual provides a simple example of how the *present value* of a project can be determined (box 2.6). The example here illustrates clearly how a theory based on objective ontology is perceived as true or scientific knowledge. The example considers socio-economic impacts of transforming an area into a national park. The total willingness to pay is estimated at 100 million Norwegian Kroner, while direct costs of construction are 50 million NOK. Additional costs to be included are related to those already making a living in this area. The total economic value of these economies (hunting and gathering activities) is 20 millions. The example then concludes with the following calculation: $100-50-20 = 30$, which means that the present value amounts to 30 million Kroner. The project should then be initiated.

Figure 23 Equation for estimating the present value (social economic surplus) of any project (p.18).

$$NNV_0 = -I_0 + \sum_{t=1}^n \frac{U_t}{(1+k)^t} \quad D_t = \frac{1}{(1+k)^t}$$

So which perception of science can we draw from this example? First it must be said that the example is a brilliant illustration of how the objective-instrumental ontology of man works in practice. The illustration culminates when the example speedily states that those working with traditional economies in the area can find something else to do because they generate only 20 percent of the total willingness to pay. Secondly, the epistemological position here is truly characterized by an 'I-It' relation between the researcher (subject) and study objects (both man and nature). The models here represent attempts to stand outside the actual project, that is, both the humans involved (those working in the area *and* those who are "willing" to pay) and the environment, and conduct experiments in which both man and nature are perceived as "rolling bronze balls". The result of this is an extremely simplistic picture of the total picture, that is, of the economic, social and environment consequences.

From a hermeneutical point of view, the process of deciding whether or not to construct a national park should have been approached otherwise. Firstly the economist should have recognized that here we are dealing with subjects not an object. The consequence of this "flash of awareness" is to develop a mutual dialogue between all stakeholders which ought to be based on communicative-argumentative rationality.

The manual, however, includes one chapter which discusses '*Methods for systematizing non-price effect*'⁵². Here it is stated:

⁵² (Norwegian Ministry of Finance, 2005, p. 29, chapter 4.5, from Norwegian).

‘Through the carrying out of a socio-economic analysis, all effects ought to be valued. Nevertheless, those responsible for the project will be left with effects that are neither professionally nor ethically possible to express in money’⁵³.

As a solution to these “non-priced-values” the manual offers the following model (see Fig. 24)⁵⁴: 1) *Determine significance* of the ‘actual environment, area or object’ by building a *qualitative description* ranging from ‘low’ to ‘high’ significance. The next step 2) is to determine the *scope*, that is, to what extent the initiative will impact the environment or the object. Here also a qualitative scale should be developed ranging from ‘little’ to ‘large’ positive and negative scope. The last step 3) is to determine the *consequences* found through evaluating the significant-factor in relation to the scope-factor. The result is a 3x7 matrix ranging from a very positive value (++++) to a very negative value (----). The last part of the decision-making model is to count “+” against “-” in order to determine the “best” and “worst” alternative.

What can we then say about the perception of science this model builds on? The content of the model can include everything from objective quantifications to subjective and phenomenological interpretation (e.g. narratives, poems, etc.); i.e., quantitative and qualitative methods. Finally the model endeavors to juxtapose the different knowledge (objective, subjective and phenomenological) into “plusses” and “minuses”; that is, to turn qualitative knowledge into quantitative knowledge. The result of this is an *objectification of subjective and phenomenological data/knowledge* which is doomed to fail because qualitative data cannot be transferred into quantitative data; i.e., it cannot be made universal or general. How can, for example, data of subjective and phenomenological character, such as “I like this job because I feel that I am mastering it well”, be transferred into single objective factors? The holistic alternative must endeavor *consensus* between effects rather than weighting objective “+” and “-”.

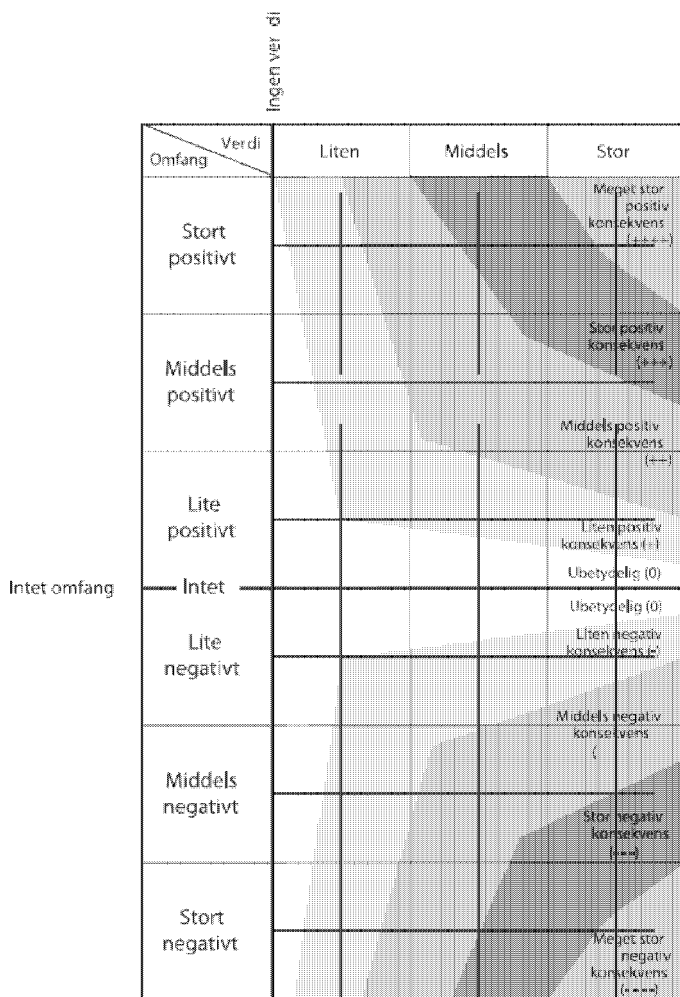
⁵³ (ibid.).

⁵⁴ (ibid., , pp. 29-31).

The conclusion must be that the perception of science in the MSEA is in general logical positivism; i.e., subject-object tradition.

Conclusion: The received perception of science.

Figure 24 'Consequence matrix' (p.30).



Scientific ideal

The scientific ideal is clear from the discussion on the perception of science. The different tools for analysis (CBA, CIA, and so on) are purely quantitative/mathematical models suitable for studying the external social world synonymous to the objects we study in the natural sciences. The science of social economics is therefore without dispute the naturalistic ideal used by the physical sciences. This is in accordance with the economists H. Daly and J. B. Cobb Jr. who state that:

‘Outside the physical sciences no field of study has more fully achieved the ideal form of academic discipline than economics’ (Daly & Cobb Jr., 1994, p. 25).

Daly and Cobb term the tendency to convert all values into monetary means as “money fetishism” (1994, p. 37).

N. Georgescu-Roegen phrased it nicely writing:

‘It is beyond dispute that the sin of standard economics is the fallacy of misplaced concreteness’ (Georgescu-Roegen, 1971, p. 320).

Conclusion: Naturalistic ideal.

Ethics

The manual on social economic analysis (SEA) by no means assumes any ethical responsibilities beyond the purely instrumental, meaning that it does not endeavor to internalize intrinsic values in the suggested methods and models; the CBA, CEA, CEA (cf. perception of science). The external ethic is thus non-existent. All these models endeavor to juxtapose intrinsic social and ecological values into expressed prices, that is, instrumental (economic) values. This was illustrated in the overview of ontology and the perception of science in which the manual also recognized the “money fetishism”. A footnote in the manual literary articulates the point:

'... the interpretation of value used in this manual, is thus a numerical value expressing willingness to pay'⁵⁵.

The use of *anti-ethical models* in this manual is unfortunate. This is very worrying bearing in mind the vast potential consequences which EIA-research can bring for nature and society; for example in relation to decision about whether to initiate a large global project or minor local developments. To exercise the principle of value-neutrality in social research can thus be compared with playing Russian roulette. This is because an anti-ethical model or theory endeavors to describe the effects of a project for all concerned stakeholders *without* speaking, without having a *dialogue*, without listening, without sensing, without *meeting*, without *knowing* and understanding stakeholders as *subjects*. Næss provides the following illustrative example of applying a utilitarian ethic when deciding whether or not to build a highway:

'When 100,000 people can travel a little faster, thus increasing their happiness from level + 1 to + 2, what weight can be given to a small number of elderly people seeing their homes being torn down which results in lasting despair or resentment, representing level ÷ 9 or ÷ 10? Maybe the problem is approached, greatly simplified, through something like: ÷ 10 times 20 is ÷ 200, the transition from + 1 to + 2 for 100 000 gives + 100,000. This number minus 200 gives + 99 800. The highway thus provides increased happiness! It should be built!' (Næss, 1999, p. 42).

This example is similar to the one presented under the perception of science. The reason why the manual promotes research that is ethical blind is probably because the internal ethic of the positivistic ideal strives to develop *value-neutral knowledge*, assuming that any external ethical evaluation is unnecessary or "already taken care of" through the use of objective methods.

⁵⁵ (Norwegian Ministry of Finance, 2005, p. 29).

The reason for these economic models finding it necessary to simplify human nature is probably because neoclassical economics have strived so hard to live up to the classical scientific ideal of the natural sciences - in fact N. Georgescu-Roegen calls neo-classical economics 'a sister science of physics' (Georgescu-Roegen, 1976, p. 4) - thus rejecting any ethical or metaphysical speculation. Or to quote C. Taylor:

'It seems easier and safer to cut all the nonsense off at the start by declaring all self-realization views to be metaphysical hog-wash' (Taylor, 1985b, p. 214).

Economists have simply been overrun by the "Real Scientists", the physicists, who demanded that if a discipline were to be regarded as a scientific discipline it needed to be "objective". Subsequently the long-believed ultimate goal of scientific work was to explain the Natural Laws that govern nature, sociology or economics for which Galileo's and Newton's Laws served as ideals. In order for the science of economics to fit this rigid mechanical recipe for science, it was necessary to make the abstraction or *assumption* that human nature is purely rational.

Conclusion: instrumental-utilitarian ethic.

Esthetics

Fig. 25 is an example taken from the manual on SEA illustrating how the social-economic benefits of a project ought to be presented. The figure illustrates the relationship between costs and benefits over a period of four years for two projects. The presentation style is purely mathematical because all values (ecological, social and economic) are converted into prices/utility. The table clearly presents that project "A" has the highest yearly utility/benefits. The benefits of this type of presentation styles are that they leave little doubt as to which alternative is the most beneficial; i.e., it is very easy for politicians to make a decision. The fallacy on the other hand concerns it being *extremely superficial*. Fig. 26 below is another presentation style typical for social economic analyses based on the manual. Here we see a 'decision tree' which calculates different present value relative to

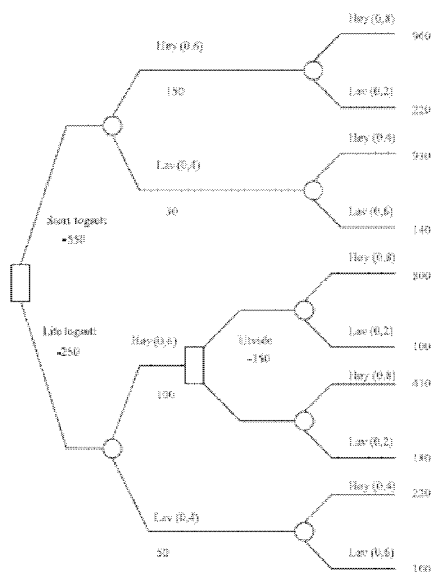
uncertainties/risks in how individual preferences may develop. Again instead of conducting a dialogue with the parties, the model seeks to explain mechanistic behavior.

Figure 25 Example taken from the manual on Social Economic Analysis (p.19)

Projekt A	
Investeringsutgift (I_0)	10
Årlig nytte (N)	2,9
Projekt B	
Investeringsutgift (I_0)	5
Årlig nytte (N)	1,5

Beregning av lønnsomheten i de to prosjektene:							
År	0	1	2	3	4	NNV	NNB
Disk.faktor	1	0,96	0,92	0,89	0,85		
Projekt A							
Kost/nytte	-10	2,9	2,9	2,9	2,9		
Nåverdi	-10	2,79	2,68	2,58	2,48	0,53	0,053
Projekt B							
Kost/nytte	-5	1,5	1,5	1,5	1,5		
Nåverdi	-5	1,44	1,39	1,33	1,28	0,44	0,089

Figure 26 Decision tree (p.85).



This subchapter illuminated the urgent need to use a broader spectrum of presentation styles in order to capture the holistic picture of ecological, social and economic impacts.

Conclusion: Quantitative-statistical presentation styles.

Appendix to chapter VII

'APPENDIX I' to the Manual on EIA, T-1349, after the ME (2001).

1. Will the initiative contribute to environmental or health pollution?

1.1. Will the initiative lead to significant impacts on water quality in inland or marine areas, so that the ability to maintain species, ecosystems, human health and well-being is reduced?

1.2. Will the initiative lead to a significant increase in emissions of the nutrients phosphorus and nitrogen to inland or marine areas?

1.3. Will the initiative lead to significant discharges of oil?

1.4. Will the initiative lead to significant emissions and use of chemicals, affecting health or the environment?

1.5. Will the initiative lead to the finalization of significant amounts of waste or to the emergence of significant quantities of hazardous waste?

1.6. Will the initiative lead to a substantial increase in emissions of greenhouse gases, or to the production and consumption of ozone depleting substances?

1.7. Will the initiative lead to substantially increased emissions of sulfur dioxide, nitrogen oxides, volatile organic compounds and ammonia; so that nature's critical levels are exceeded?

1.8. Will the initiative contribute to substantially increase local air pollution?

1.9. Will the initiative contribute to a significant increase in noise?

2. Will the initiative lead to infringement of valuable land and the use thereof, or affect biodiversity?

2.1. Will the initiative cause significant interference, close routing or other influences that cause cultural heritage to be lost, damaged or have reduced quality?

2.2. Will the initiative affect the landscape significantly, including cultural and historical landscape features and aesthetic qualities, in rural areas and / or in the towns and villages?

2.3. Will the initiative have significant consequences for, or for areas close to national parks, conservation areas, nature reserves, protected waterways, natural monuments, sites proposed for protection, intervention-free areas, or endangered or vulnerable / challenging habitats?

2.4. Will the initiative have significant consequences for, or for sites close to, critical habitats for protected or endangered species?

2.5. Will the initiative lead to the spread of organisms that do not naturally belong in, and / or may harm the local habitats / ecosystems?

2.6. Will the initiative affect the harvest and other uses of living resources so that species or populations are cut off or threatened?

2.7. Will the initiative have significant consequences for valuable areas for fishing, hunting, or recreation, or impede the general traffic or access to such areas?

2.8. Will the initiative have significant implications for areas close to homes, schools and kindergartens, and thus affect the access to free play and aims to establish a coherent green structure?

2.9. Will the initiative have significant implications for other existing national plans regarding environmental protection, national land use policy, national codes and regulations, county plans and county sub-plans, or conflict with the goals of aesthetics and accessibility for the public?

2.10. Will the initiative have significant implications for areas with high potential for food production or of major importance for the reindeer?

CHAPTER VIII THE CASE OF VESLEFRIKK FROM 1987

1 Introduction

In this chapter the thesis discusses the case of the Environmental Impacts Assessment of Veslefrikk, conducted in the late 80's, in the light of the hermeneutic-reflective apparatus outlined in Tab. 3, Chapter V.

The Veslefrikk project is an oil-field located in the south-east of block 30/3, approximately 145 km. west of Bergen. The main oil reservoir is located 3000 meters below sea-level. Shareholders in the project are Det Norske (50%), Unocal Norge (22,5%), Norsk Hydro (10%), Deminex Norge (15%) and Svenska Petroleum Exploration (2,5%).

2 Ontology of man

Evidence of regional ontology can be deduced from Chapter 5, *Deliveries of goods and services*, of the EIA report. Chapter 5 represents the *main social dimension* of the assessment and places emphasis on the following categories:

- 5.1) Total investments on the Norwegian Continental Shelf (NCS)
- 5.2) Impacts for Norwegian businesses
- 5.3) Contract- and purchase-philosophy
- 5.4) Local impacts

Category 5.1 studies the total investment profile of the NCS in monetary units and the corollary effect of investing in the Veslefrikk project (see fig. 32).

Category 5.2 illuminates that the development phase of the Veslefrikk project will cost approximately 3.4 billion Norwegian Kroner which Norwegian supply industry can compete for.

Category 5.3 encompasses qualification criteria with regard to efficiency and quality which potential suppliers must satisfy.

Category 5.4 emphasizes the economic effects in the local regions and states that:

‘Economic effects come in the form of increased order/volume and increased workload associated with increased revenues. Increased workload will in varying degrees lead to increased employment. Employment effects will depend on the degree of utilization capacity in the affected industries’⁵⁶.

The social values emphasized in these categories are exclusively concerned with the pure instrumental (economic) values of the Veslefrikk project. From the empirical material presented above there can be no disputing the fact that the EIA report takes as its point of departure an objective-instrumental ontology of man. This is obvious because the report simply does not put any emphasis on studying non-instrumental social value. In other words, human beings and the whole social dimension of the project are converted into non-cultural things.

In Chapter 3.4, however, the assessment does emphasize *safety issues* in relation to personnel. Here it states that:

‘Safety for personnel, environment and investments is of great importance for the design of the installations’⁵⁷.

The focus on designing platforms not directly endangering personnel and environments represents a willingness to internalize some cultural and environmental values however.

⁵⁶ Statoil, 1987, p. 37.

⁵⁷ Statoil, 1987, p. 15.

In Chapter 4.3, *Biological and fish conditions*, the assessment takes into account the interests of the fishing industry in terms of coordinating the two industries.

In chapter 4.4, *Other use- and prevention interests*, the assessment also takes into account the values associated with shipping traffic in the area of Veslefrikk in addition to cultural heritages such as Stone Age settlements and sea graveyards.

The assessment also includes environmental standards⁵⁸ in relation to pollution: the amount of oil in drilling discharges ought to not exceed 10 grams per kilo; produced-water ought to not exceed 40 milligrams per liter; waste is to be sorted and stored in “approved” places; emissions to air must be minimized and prevented. These standards also represent the internalization of intrinsic ecological values.

Also in Chapter 4.7, *Oil spill prevention*, the Veslefrikk project incorporates some intrinsic ecological values. The assessment emphasizes the need to prevent oil spills and states that:

‘The effort should be concentrated on those areas where oil spills will be of most severe damage for the ecology and economy’⁵⁹.

The focus on internalizing intrinsic social and ecological values on these areas is the closest we come to subjective ontology. The dominating values and motivation of Veslefrikk thus is instrumental.

⁵⁸ Statoil, 1987, p. 25

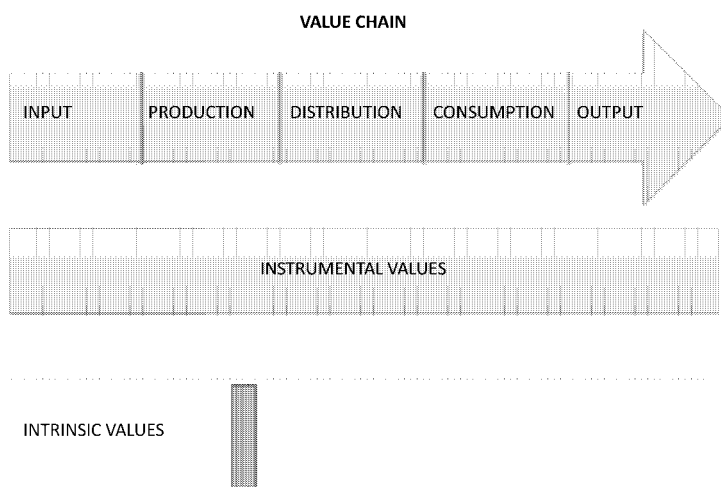
⁵⁹ Statoil, 1987, p. 29.

Value-chain analysis

If the values associated with Veslefrikk are put into a traditional value-chain model, the figure illuminates what kind of values (instrumental and intrinsic) and where in the project the different values are internalized. Fig. 27 illustrates that the main driving values for the Veslefrikk Project are the generation of instrumental values; hence an objective-instrumental ontology of man. The small amount of intrinsic values in the production phase represents the environmental standards with regard to pollution, the willingness to offset resources for oil spill prevention, and to take into account commercial fishery interests and cultural heritage. The willingness to design platforms which are not purely efficient but also “safe”, from a physical health perspective for the employees working on Veslefrikk is also represented here. From an ecosophical and subjectivistic point of view it is necessary to internalize intrinsic ecological and cultural values through the whole value chain.

Conclusion: Objective ontology

Figure 27 Instrumental and intrinsic values in the Veslefrikk project



3 Perception of science

In the following section the thesis discusses the perception of science, that is, the theory of knowledge underlying the social science part of the assessment.

The perception of science underlying the social science part of the assessment can be deduced from Chapter 5 and 4.3 of the report. In Chapter 5 we saw that instrumental or economic values dominated the social impacts of the Veslefrikk project. A probable reason for the assessment being one-dimensional oriented is that the concept of 'business impacts' and 'local interests' are *objectified*. The reasoning behind this claim comes from the fact that the assessments study social or human impacts solely from an *objective, spectator or I-It perspective*, instead of establishing a dialogical (hermeneutic; interpreting) relationship between the researcher (subject) and the study objects; e.g., employees, business leaders and environmental stakeholders as such.

The advantage of objectification is that it makes complex and comprehensive cases tangible and easy to handle. Consider for example Category 5.1 from the discussion on ontology in the previous subchapter. The research here attempts to reduce *all* the socio-economic impacts of Veslefrikk down to one objective quantity: 'total investment of NOK'. The reason why the research here chooses to make instrumental values a superior objective quantity, and not, for example, an intrinsic cultural value, e.g., love, or better a *balanced target*, is probably because only information deduced from pure observation can be classified as scientific. The reason why the report tries to reduce all impacts into one objective size in the first place is, however, probably because oil and gas projects of this kind are so vast in size, both materially and socially, that decision-makers and proponents find it hard to comprehend them alternatively. To put it nicely: "it is very difficult to ever understand all the consequences which a project of this magnitude may have - both in the short and long term." The total, long range, versatile ecological and

psychological consequences are by far unknown; and the 'I-It' perception has only the capacity to explore the surface of these.

The claim that the theory of knowledge of the social science part of the assessments is the positivistic theory becomes more nuanced, if we look closer at the research concerning the impacts for the fish industry. These studies are conducted in Chapter 4.3, *Biological and fishery conditions*. The purpose of Chapter 4.3 is to gain an overview of the potential effects which Veslefrikk may have on the fish industry. The inquiry into the fisheries focuses on five categories:

- 1) Bottom fauna
- 2) Fish resources
- 3) Consume and ring net fishing
- 4) Trawling
- 5) Aquaculture

Regarding 'bottom fauna', the research is centered on describing the species and the quantities of these for the area surrounding Veslefrikk.

Regarding 'fish resources', the research describes species, quantity of spawning conditions, and the trends relating to these.

Regarding 'consume and ring net fishing', the research describes a) volume of different fish species, b) location, c) fishing seasons and d) fishing equipment for each species (see fig. 30).

Regarding 'trawling', the research describes the quantity of catch rates during the period from 1976 till 1985 and the geographical concentration of different species (see Fig. 28 and 31).

Regarding 'aquaculture', the research describes the quantity of production of salmon and trout in Hordaland, Sogn og Fjordane and Møre og Romsdal during the last couple of years (1984 and 1985).

The knowledge above all shares one characteristic in common, it all concerns so-called "value-neutral" observations in which the researcher has played the role of an objective spectator, i.e., a subject-object perspective. The reason why we can call them "so-called" value-neutral observations is because these observations are apparently value-laden since they to a high extent aim at describing the *commercial* consequences.

Studying the fish industry from a pure subject-object angle results, however, as we have seen above, in a whole lot of facts. The assessment thus becomes a superficial assessment of pure technical-instrumental conditions such as: fishing methods, production in tones, season variation and geographical location of different fish-stocks, etc., etc. These facts do represent of course crucial information in relation to describing the potential effects Veslefrikk may have on the fish industry, but still only illustrate "the top of the iceberg"; at least from a hermeneutical perspective.

The subject-object theory of knowledge does not *reveal* what the Veslefrikk project actually *means* for the affected fisherman, that is, the subjective and phenomenological impacts. These non-factual impacts can only be understood through involved and participation studies in which the social researcher plays the role of an active and empathic fellow human being, that is, a subject-subject relationship.

It is strange to notice that knowledge of potential impacts on the 'fish industry' is collected simply through superficial observation-studies of how the O&G infrastructure physically hinders the different ways/technologies of fishing. This is despite the fact that fishing in Norway has a long tradition and has represented an important activity in relation to the Norwegian *identity*. Subjective and

phenomenological information/knowledge of how development affects the internal social world of real fisher-men is not addressed in the report. This is probably because narratives of this sort are considered subjective and do not therefore fulfill the rigid criteria of natural science. Another reason is probably the practical and financial challenges related to in-depth studies. A third reason is probably because the instrumental image of man is simply satisfied with assessments covering the main positive and negative material-instrumental (external) impacts of a project.

Conclusion: The received perception of science.

4 Scientific Ideal

From the discussion on the perception of science it is evident that the social science section of the assessment is oriented around the ideals of objectivity, detached observation, reductionism and verification instead of revealing subjective meaning codes, wholes and processes. This point in the direction of a scientific ideal of the EIA report on Veslefrikk which is very similar to the naturalistic ideal described in Chapter III.

Conclusion: Naturalistic ideal.

5 Ethics

The internal ethic of the social science part of the assessment is the criteria characteristic for the naturalistic ideal: verification. This is clearly shown by the exclusive use of naturalistic method: hypothetical-deductions and empirical descriptions.

The external ethic of the report must be considered non-existent or to a large extent instrumental. This is evident from the objective point of departure the research/knowledge takes. The research simply endeavors to describe the objective sides of development, what can happen and what will happen, not how development

ought to be. This is probably because the internal ethic also legitimates the morality of social science results based on the naturalistic/positivistic ideal.

An example illuminating the intimate relationship between the theory of knowledge and external ethic can be drawn from the part of the assessment endeavoring to *evaluate* the potential consequences for the fisheries and nature as such, that is, to put a *value* on actual negative effects. In Chapter 4.8, *Evaluation of consequences*, we can trace how the evaluations of the effects are made superficial and even value-neutral. Consider the following example of how the report evaluates the effects of a large oil spill on coalfish larva:

‘Veslefrikk is centrally located in an area where the coalfish larva is drifting and an oil spill during the spring may impact a whole year-class of coalfish. In the meantime our knowledge of the concentration and extent of coalfish larva is inadequate so that it becomes difficult to identify *overlapping-areas* between oil-flakes and larva-distribution which in turn makes it difficult to *calculate* the loss of coalfish in an accurate percentage’⁶⁰.

The statement here represents a typical I-It evaluation of environmental values. This means that the loss of coalfish larva, a whole year class, is reduced to an objective-instrumental size, i.e. an end-mean reduction; a focus on consequences instead of qualitative motivation or the meaning of such behavior. This is probably because the positivistic theory of knowledge only captures the objective (economic) or physical dimension of a potential oil spill, here emphasized as the ‘overlapping-areas’, and not the moral or subjective dimensions. The example above is not a unique example. The same evaluations are used for cod, herring, haddock, seabirds (see fig. 33), plankton, aquaculture and more (see pp.31-33):

⁶⁰ Statoil 1987, p.32, from Norwegian.

'Haddock also spawns in the Tampen-area. But spawning occurs more spread out over the whole northern part of the North Sea meaning that the larva will be more spread out and the effect of an oil flack less'⁶¹.

'Other fish-species and stocks can also be affected by an oil spill from Veslefrikk. Norwegian-Atlantic herring, cod, coalfish and haddock have important spawning localities outside the Møre-coast while the North Sea herring spawns off Shetland and the larva thus drifts through the southern areas of the North Sea'⁶².

'The chance that an oil-spill from Veslefrikk will destroy part of a whole class-year for these species does, however, decrease with the distance from Veslefrikk because the concentration of oil in the sea is reduced according to the time the oil flack is in the sea'⁶³.

'For seabirds the effect of the oil flack will first and foremost affect the auks. Apart from the breeding season they are always located on the sea and only travel with the seasons. We know, however, too little about these concentrations and the extent of these in the northern part of the North Sea to identify the overlapping areas between oil flack and auks'⁶⁴.

'Aquaculture, seals and life in the shoreline can also be affected by an oil spill. The aquaculture industry is at present experiencing strong growth in the county of Sogn and Fjordane, but because of the consistency of oil when it hits the shoreline, it will not present a real toxic danger for the fish. It can, however, create problems for equipment, taste and stress-related problems'⁶⁵.

⁶¹ Ibid.

⁶² Ibid.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Ibid., p.33.

From an ecocentric-subjective point of view, and from the intensions in the manual of 1990, an EIA report ought to ensure the intrinsic interests/needs/values of natural ecosystems and existential beings. This in turn prerequisites a hermeneutical and phenomenological science which endeavors to understand how projects relate ecologically with natural ecosystems and psychologically with the mental horizon of the people involved.

Conclusion: Instrumental-utilitarian ethic.

6 Esthetics

The esthetics of the environmental impact assessment report on Veslefrikk is compatible with the ontology of man and the theory of knowledge which the social science is based on. This implies presentation styles suitable for the presentation of objective facts. The figures from the report below provide examples of this.

Figure 28 Presentation of coalfish resources (Statoil, 1987, p.19).

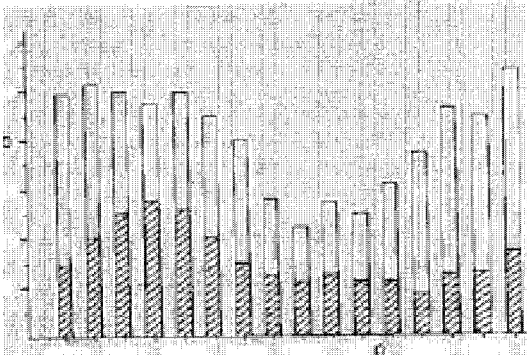


Figure 29 Presentation of important fish-banks in the Northern Sea (Statoil 1987, p.20)

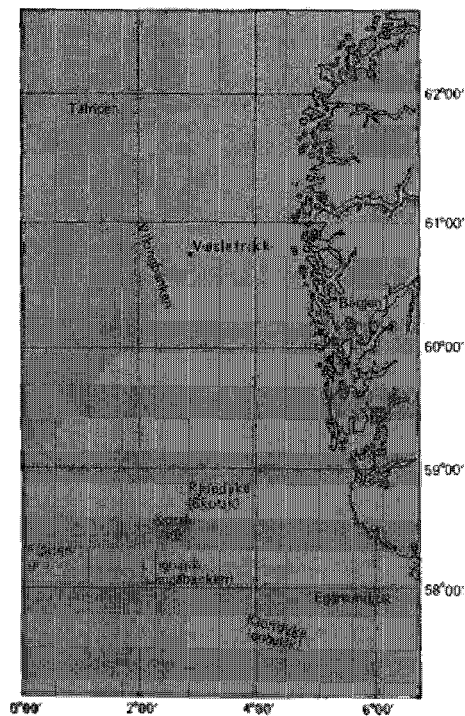


Figure 30 Norwegian catch rates in the Northern Sea (Statoil, 1987, p.20)

Art	År	Fangst	Redskap	Sesong	Pelt
Sild	1985	158	not	(jan-feb) mai-juni (sept)	Koral-, Ling-, Vikingbanken
Makrell	1985	18	not	(juni-nov) juli-okt	Sørvest i norsk sone
Bristing	1984	10	not	okt-mars	Doggerbank
Sei	1985	94	trål, not garn	hele året	Egersundbanken Vikingbanken Korallbanken
Torsk	1984	6,4	trål, garn	hele året	
Hysse	1984	3,4	trål, garn	hele året	
Hvitling	1984	+	trål, garn	hele året	

Figure 31 Presentation of fishery places in the Northern Sea (Statoil, 1987, p.21).



Figure 32 Presentation of total investments on the NCS including Veslefrikk (Statoil, 1987, p.35).

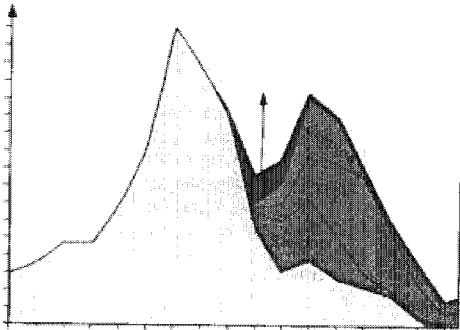
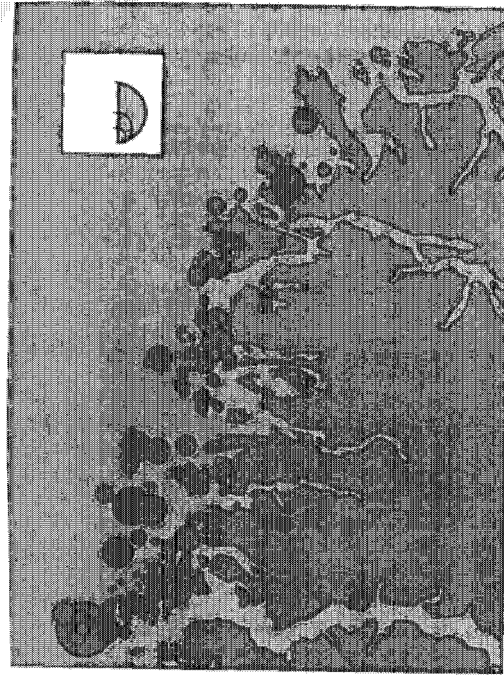


Figure 33 Presentation of known seabirds (Statoil, 1987, p.50).



The presentations above are of course important because they articulate factual conditions. But they provide us with little information or knowledge about the inner social values/impacts. This means that I-It knowledge does not reveal how the subjects working in the fish or oil industry or environmental representatives evaluate or *experience* the proposed project. Pure factual knowledge gives us no information about what the Veslefrikk project actually *means* for subjects (e.g., in relation to the human needs and values such as physiological or psychological satisfaction). To base impact assessments entirely on mathematics is an extreme fallacy of misplaced concreteness; i.e., to paint an extremely superficial picture of the situation.

Conclusion: Mathematical-quantitative esthetics.

Appendix to chapter VIII

The ecological and social dimension of the EIA report on Veslefrikk

4.0 Environmental situation in the area of Veslefrikk	
<i>4.1 Meteorological and oceanographic conditions</i>	Wind; temperature; snow and ice; wave data; wind/stream conditions;
<i>4.2 Bottom conditions</i>	
<i>4.3 Biological and fishery conditions</i>	Plankton; bottom-fauna; fish-resources; consume and ring net fishery; industrial trawl fishing; sea-mammals; aquaculture; sea-bird; nutrition availability and stock development in the North Sea; sea-birds and vulnerability; behavior; season; nutrition habits; stock situation; restitution time.
<i>4.4 Other use and conservation interests</i>	Shipping; cultural heritage; exploitation of bottom-masses and minerals; military operations
<i>4.5 Pollution</i>	Release of emissions during normal operation; drilling; produced water; use of chemicals during drilling and production; waste; emissions to air; accidental releases of emissions;
<i>4.6 Dispersion calculation</i>	Speediest drift time; slowest drift time; maximum volume of oil spill; minimum volume of oil spill
<i>4.7 Oil spill prevention</i>	
<i>4.8 Consequence assessment</i>	Normal operating conditions: produced water and drilling mud; start up and pipeline operation:
5.0 Supply of goods and services	
<i>5.1 Total investments on the NCS</i>	Total investments on the Norwegian Shelf represent a measure of investment temperature in petroleum projects. The measure is important because it <i>indicates</i> the size and the trend of the Norwegian Oil Economy. The measure, however, only illuminates changes in Norwegian Crowns

	(economic/instrumental values) and not real cultural (intrinsic) values.
<i>5.2 Consequences for Norwegian enterprises</i>	Reconstruction of “West-Vision”, pipeline deliveries, etc., encompasses a total amount of 3.4 billion NOK (1986). Norwegian suppliers are preferred.
<i>5.3 Contract- and purchase philosophy</i>	
<i>5.4 Local consequences</i>	The EIA report states that the local employment rate in the region in which the administration and supply base is located, will range between 0.5-1.5.
<i>5.4.1 Operation and supply bases</i>	‘The number of new jobs will be very limited’ (p.37).

CHAPTER IX THE CASE OF GOLIAT FROM 2009

1 Introduction

In this chapter the thesis reflects upon the current, state-of-the-art, EIA report on Goliat^{xiii} from 2009, in light of the hermeneutic-reflective apparatus outlined in Tab. 3, Chapter V.

The Goliat project is an oil and gas initiative located approximately 70 km. north of Sørøya in the county of Finnmark (see fig. 34). The shareholders are Eni Norge (65%), (operator), StatoilHydro ASA (20%) and Det Norske Oljeselskap ASA (15%).

Figure 34 Map of the localization of the Goliat field (Eni Norge, 2009, p.31).



Category 14.1, 'social profitability', addresses the total investment costs and expected revenues for the Goliat project. The report gives the following description of social profitability:

'Revenues, costs and net cash flow are estimated for the production of oil- and gas resources in the Goliat field ...'⁶⁶

Category 14.2, 'local and regional deliveries to Goliat', addresses the expected demand for goods and services in different markets.

Category 14.3, 'social effects, nationally and in Northern Norway', addresses the employment expectations Goliat is in need of.

Category 14.4, 'evaluation of future effects of development of other associated fields', addresses the opportunities to connect the infrastructure of Goliat with other potential developments in the future.

Category 14.5, 'social effects regionally and locally', addresses the economic effects in terms of employment (year of labor) during both business phases, that is, development and operation, and estimates for potential distribution of deliveries of goods and services between six municipalities (Hammerfest, Loppa, Hasvik, Kvalsund, Måsøy and Nordkapp).

Category 14.6, 'consequences for cultural heritage', addresses potential negative effects on cultural heritage that the different installations associated with Goliat may expose.

Conclusion

Category 14.6 represents the only intrinsic/cultural value which is planned internalized directly to the Goliat project. All the other "social" categories are centered on fundamental *economic* or instrumental values. This means that the chapter should instead have been termed "Economic conditions" instead of "Societal

⁶⁶ Eni Norge (2009), p. 204, from Norwegian.

conditions”, because social values are more or less totally absent from the discussion and assessment. The result is that the Goliat project is grounded on a fundamentally objective and instrumental ontology of man. The whole social aim seems to spin around economic values.

Conclusion: objective ontology.

The ontology of man underlying Chapter 8: Environmental impacts and prevention and mitigating measures.

Chapter 8, *Environmental impacts and prevention and mitigating measures*, studies how the realization of the “social” (economic) values discussed above relates to environmental values. The relationship between social and environmental values is studied through the following relations⁶⁷:

- 1) Emission to air
- 2) Regular emission to sea
- 3) Physical disturbance
- 4) Seismic
- 5) Waste management

Regarding ‘Emissions to air’ the mitigating measures are centered on technical solutions and the use of alternative energy resources (for complete list see Tab. 5 in the appendix attached to this chapter).

Regarding ‘regular emission to sea’ the mitigating measures are aimed at the reinjection of as much produced water as possible and the purification of these (see Tab. 6 of the appendix attached).

⁶⁷ Ibid., p.103.

Regarding the physical disturbances of the Goliat project, these matters are related to the anchor that keeps the drilling rig in position during drilling operations. Other disturbances come from pipelines and cables buried on the seabed⁶⁸.

Seismic activities on Goliat are forbidden in the period 1st of January till 1st of May. This is due to the negative consequences seismic activity has on the environment - especially for fish⁶⁹.

The production of waste during the development and operation phase is handled through OLF s' (The Norwegian Oil Industry Association) 'waste management systems' whose:

'The primary focus is to avoid the generation of waste. Secondly comes the focus on the maximum degree of reuse, recycling and recovery and the safe handling of residual waste'⁷⁰.

Conclusion

We see that through Chapter 8 of the EIA report, we observe many good examples of how the Goliat project has been planned to internalize intrinsic natural ecological values. The reason why these initiatives are needed in the first place, however, is that the project is fundamentally ecologically "hostile" because the primary social objective or value underlying Goliat rests on instrumental values alone. In addition the concern taken here are purely physical and technological concerns meaning that ethical and esthetical concerns are absent. The ontology of man prevailing in Chapter 8 is therefore also objective and instrumental.

Conclusion: Objective ontology.

⁶⁸ Ibid., p.132-133.

⁶⁹ Ibid.

⁷⁰ Ibid., p.134.

The ontology of man underpinning Chapter 9: Environmental risk management of acute oil spills.

Chapter 9, environmental risk management of acute oil spills, is about predicting the possibilities of oil blow-outs and oil spills and making predictions about possible environmental and social consequences. Concerning 'environmental risk management' the report states that:

'Risk management in this phase of the project consists primarily of identifying the hazardous- and accident situations, making them specific in the form of events and identifying risk mitigation measures. This is done by identifying measures to eliminate potential events or initiatives that provide better control and protection against the occurrence of events'⁷¹.

The assessment presents 11 events identified as situations needing attention. These are mainly centered on the drilling operations (see Tab.6 in the attached appendix).

Conclusion

Also in this chapter we see good examples of how intrinsic ecological values are incorporated, but the fundamental principle remains here: minimization of the negative environmental impacts which the one-dimensional focus on economic values generates; i.e., economics first, nature second; i.e., a reactive attitude towards environmental values. The ontology of man is thus instrumental.

Conclusion : Objective ontology.

⁷¹ Ibid., p.136.

The ontology of man underlying Chapter 10: Oil spill preparedness.

Chapter 10, oil spill preparedness, is an additional planning chapter for ensuring some environmental responsibility and internalization of values in the execution of the Goliat project. The preparedness encompasses four 'barriers':

'A barrier consisting of a fixed amount of emergency response resources with a fixed capacity, efficiency and response time, which together will capture and remove a portion of the pollution. Oil let through one barrier, is captured by the following. Together they will constitute a significant protection of environmental sensitive resources in affected areas⁷².

The four barriers constituting the preparedness strategy are⁷³:

- Barrier 1: Fighting pollution in open sea and close to the pollution source.
- Barrier 2: Collecting oil in the drift path (between the source and the coast).
- Barrier 3: Fighting pollution from the coast and the shoreline.
- Barrier 4: Reconstruction of the shoreline.

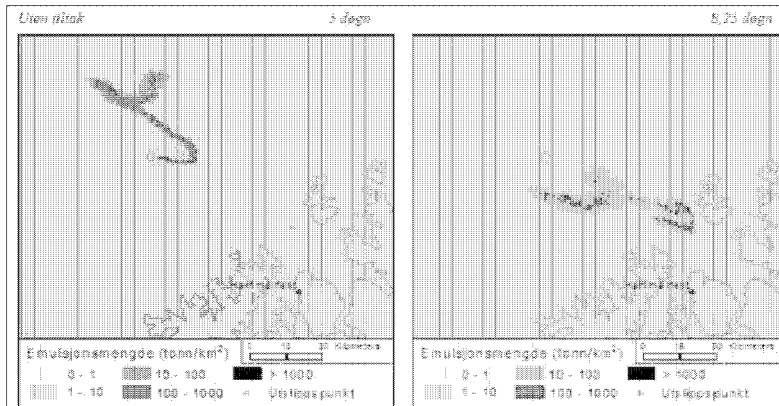
The Goliat project will in this regard establish an 'Oil Protection Organization' with the responsibility for oil spill protection on the Goliat field. The organization is to have the task of mobilizing resources, recruiting and educating personnel and developing oil spill scenarios⁷⁴.

⁷² Ibid., p.156.

⁷³ Ibid., 159.

⁷⁴ Ibid., p.157.

Figure 36 Drift paths for a potential oil spill on Goliat (Eni Notge, 2009, p.144).



Conclusion

We have seen that the three latter chapters (8, 9 and 10) discussed here have been oriented towards enhancing the environmental performance or the internalization of environmental values into the Goliat project. The assessment does, however, endeavor to internalize intrinsic values into the Goliat project for the purpose of mitigating potential "side-effects" that might occur as a result of exclusive focus on pure instrumental values. Thus, one tries to incorporate, indirectly, intrinsic values in the execution of the project, so that the negative sides of the one-dimensional focus on anti-social and anti-ecological values are *masked*, that is, to treat natural values as *substitutable*; analogous to, for example, an enterprise willingness to finance the construction of a cinema, sculpture or school in the local community after recognizing that years of poor business practice have destroyed the local pond.

Also the nature of the responsibility of these chapters is exclusively a technological concern.

The underlying ontology of man must therefore be classified as objective because environmental performance is regarded as something deserving lower priority than instrumental performance.

Conclusion: Objective ontology.

Further we shall see that the EIA report also finds it necessary to come up with external initiatives for mitigating potential *social/cultural* hazardous side-effects, i.e., internalization of intrinsic humanistic values.

Ontology of man underlying chapter 12: Existing business activities, consequences and preventive/mitigating measures.

In Chapter 12, *existing business activities – consequences and preventive/mitigating measures*, the assessment emphasizes the need to internalize the interests of those businesses/stakeholders present in Finnmark. These are:

1. The fish-industry
2. The aquaculture industry
3. Shipping industry
4. Tourism industry
5. Agriculture

The assessment plans to safeguard the values and interests of the *fish-industry* through the following initiatives:

1. Oil and gas installations on the seabed are planned buried in order not to hinder trawling.
2. Minimizing the dumping of stones and seismic investigations.
3. In case of an accidental large oil spill: establish an organization for oil spill preparedness and financial compensation for the loss of direct (fish resources, equipment, loss of fishing areas) and indirect (reputational) resources.

With regard to the *aquaculture industry* the report states that:

'Beside the installation of electric cables from land to Goliat, the development will not lead to activities which will affect the coastal zones where the aquaculture industry operates'⁷⁵.

The values and interests associated with the aquaculture industry are planned safeguarded through the following initiative:

1. An electric cable is planned buried under the seabed.
2. Financial compensation in case of oil-spills.

Regarding the latter initiative the assessment estimated the economic effects to be:

'For a typical salmon farm the economic damages for fish and equipment are estimated at 26 million Norwegian Kroner. ... In the municipalities where the probability of an oil spill is largest there are 33 salmon farms and 20 cod farms'⁷⁶.

The consequence of Goliat on the *shipping industry* is mainly associated with the danger of vessels colliding out at sea. The report estimates that a collision between passing ships will happen every 540 000 year, a collision with oil/gas field installation once every 1100 years, a collision with crude carriers once every 1650 years and a collision with fishing boats once every 37 000 years!

Regarding the *tourism sector* the report states that the Goliat project will promote the interests and values of the sector through:

'... operations -centre and helicopter- and supply base in Hammerfest mean the regular use of hotels in the municipality'⁷⁷.

The report also refers to a study of the reputational effect of an oil spill on the tourism sector in Wales, which concludes that once the:

⁷⁵ Ibid., p.191.

⁷⁶ Ibid.

⁷⁷ Ibid., p.193.

‘Oil was gone; the spill was relatively easy forgotten’⁷⁸.

The report also refers to a study which explains that the tourism sector experiences 20-50 % reduced activity during the first year of an oil spill, and still significant reduction after 4-5 years. The report states, however, that the negative effects of an oil spill can be compensated through:

‘Business and service travelers are relatively unaffected; their presence could even increase in the short term because of the clean-up work. This thus creates local demand which offsets the decline in tourism. The region where the oil spill occurs also gains increased publicity, which helps to prevent any weakening reputation. ... the loss of reputation for the region depends on the information provided in connection with oil spill. A well thought-out media strategy is thus an important emergency initiative’⁷⁹.

The assessment estimates that Nordkapp and Honningsvåg will experience a 20-30% decline in tourism during the first year of an oil spill. The tourist product which will be affected most severely is “bird-cliff-safari” on Gjesvær which is highly exposed to oil spills.

Conclusion

The crux of the *stakeholder responsibility* assessed in Chapter 12 of the report is, as we have seen, *to safeguard the objective and instrumental values*. This is clear from the empirical data on the different stakeholder shown above and maybe most transparently from the examples taken from the tourism sector. The data is therefore evidence of an objective-instrumental ontology of man because values in relation to the different sectors are purely instrumentally (economic) centered.

Conclusion: Objective ontology.

⁷⁸ Ibid.

⁷⁹ Ibid.

Ontology of man underlying Chapter 15: social responsibility – strategies for enhancing the positive effects locally and regionally.

‘Social responsibility’ is defined in the report:

‘... shall contribute in a positive way in relation to *ethics*, working conditions, human rights, environment and local value-creation’⁸⁰.

Implementation of the Goliat project endeavors to take responsibility beyond the sectors mentioned above in six ways:

1. Deliveries during operation – prequalification of the supply industry.
2. Longitude studies – social effects, ecology.
3. Waste-management of drilling disposals.
4. Education centers – for future Goliat employees.
5. Emergency – in relation to oil spills.
6. General competence development – from primary level to higher university levels.

Regarding the *first category*, Eni Norway states that they will cooperate with local and regional suppliers and officials in order to maximize local and regional supply contracts, and to support initiatives which can strengthen competence in the region.

The strategies towards these goals are:

1. Develop local/regional resources for oil spill preparedness.
2. Allocate resources for research and education (from lower to higher education).
3. Facilitate the opportunities for commuting and combining different jobs amongst the employees.
4. Research and development; longitude studies of the effects of petroleum activity in the Barents Sea.

⁸⁰ Ibid., p.220.

Regarding *Longitude studies*, Eni Norway plans to support research programs on the long- term social effects of petroleum activity, biodiversity, environment and maritime research.

Regarding *waste-management*, Eni Norway plans to find cooperating partners who can help them realize their waste-management policy mentioned earlier in this chapter.

Regarding *education centers*, Eni Norway plans to educate people in Finnmark about petroleum competence.

Regarding *emergency*, Eni Norway plans to develop a contract regime and strategies for the utilization of local fishers for the task of oil spill preparedness.

Regarding *general competence development*, Eni Norway plans to support education at all levels in Finnmark, especially within the areas of natural science, technology and petroleum related knowledge.

Conclusion

The social responsibilities assessed in Chapter 15 and illustrated here, are good examples of responsibility *surpassing pure instrumental responsibility*. In this chapter Eni Norway supports intrinsic humanistic and ecological values especially through supporting unconditional research and education. The ontology of man can therefore in this case be categorized as subjective and humanistic because Eni Norway endeavors to support local culture for *its own sake*.

Conclusion: Subjective ontology.

The ontology of man underpinning Chapter 17: Sami interests – consequences and preventive/mitigating measures.

In this chapter the report plans to take responsibility for enhancing the positive effects for the Sami culture. For this purpose the following is planned:

- Business development
- Education and research
- Longitude studies
- Cooperation with the fisheries

Regarding 'business development', the report states that it will support initiatives which can contribute to increased value-creation in traditional Sami economies, Sami tourism and support the Sami Youth Association. In relation to the support of Sami tourism the report states that it is important to put weight on 'quality and *local values*'⁸¹.

Regarding 'education and research', the report states that it will support and motivated Sami youth to take oil and gas related education and to support Sami research institutions.

Regarding 'longitude studies', Eni Norway plans to support research on the long-term social and environmental effects for Sami culture.

Regarding 'cooperation with the fisheries', Eni Norway plans to initiate cooperation with Sami fisheries and the Sami Parliament, with the particular aim of conflict resolution and building mutual interests.

Conclusion

Also in this chapter we see evidence of social responsibility surpassing instrumental values, that is, initiatives whose purpose is to support intrinsic Sami cultural values.

⁸¹Ibid., p.232, emphasis added.

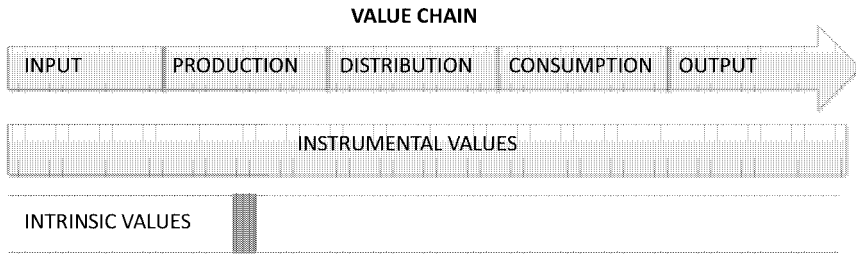
Conclusion: Subjective ontology.

Value-chain analysis

If the values discussed in this chapter are placed along a traditional value-chain model, the figure illuminates where instrumental and intrinsic values are incorporated in the Goliat project. This has been done in Fig. 37.

Fig 37 illustrates that the Goliat project is mainly driven by the instrumental (economic) values associated with the oil and gas resources. This was revealed from the analysis of Chapter 14, "Societal Conditions", in the report which showed that the Goliat project is mainly motivated by economic values. The figure, however, also reveals that the project endeavors to enhance and promote intrinsic cultural and ecological values, and also where this happens in the value chain. The intrinsic values of the production phase encompass ENI Norway's willingness to evaluate different alternative locations for the purpose of minimizing the negative impacts upon natural ecosystems, environmental risk management initiatives in addition to the development of an organization for oil spill preparedness. Cultural values include the willingness to take into account the interests of stakeholders, other business sectors and the Sami people. The figure also illustrates that a significant part of the social responsibility and the enhancement of intrinsic values happens outside the value chain. These also make up an important part of the social dimension of the report. These initiatives mainly involve the funding of research and education in addition to business consultancy and pre-qualification of the regional supply industry.

Figure 37 Values in the whole value-chain of the Goliat project



SOCIAL RESPONSIBILITIES EXTERNAL TO THE VALUE CHAIN:

- Resources for education and R&D
- Business consultancy
- Pre qualification of the local/regional supply industry

The figure shows that intrinsic values are only incorporated *fragmentarily*, without reference to the whole - and thus without meaning. To a high degree the focus is aimed at minimizing negative effects originating from the dominating, one-dimensional focus on instrumental values through the whole value chain. The ethical responsibility must here be classified as profit and strategy motivated, in that the driving force behind this petroleum project is ultimately the instrumental values hidden approximately 350 meters below the seabed and the number of jobs, or more precisely the salaries, generated as a consequence of these values.

3 Perception of science

This subchapter is an attempt to describe the perception of science underlying the social science part of the EIA report on Goliat. This means that we shall see which theory of knowledge underpins the social research of the assessment.

The perception of science underlying Chapter 13: Status description - societal condition.

If we begin with Chapter 13, *Status description – societal condition*, which is probably the most important chapter because the social values/condition assessed here are constitutive for how the initiative is *directly evaluated*, that is, whether the project is categorized as “good” and “desirable” or “bad” and “undesirable” social development. The reason why the chapter is constitutive is because it serves as background information/knowledge for the *direct* (instrumental) impacts of Goliat as interpreted in the previous subchapter. The following interpretation of the image of science helps to make our understanding of the paradigmatic components governing the report more nuanced.

Chapter 13 of the report emphasizes 5 categories:

1. Population and demography
2. Labor market, employment and competence
3. Infrastructure and public services
4. Business development
5. Status of cultural heritage

The first category, *population and demography*, studies population figures in the county of Finnmark. The major finding here is the fact that Finnmark has experienced a decrease in population of 3,7 % during the period 1992 until 2008. Another important discovery relates to the population growth of 400 persons in Hammerfest from 2002 until 2008. The study also discovers an increase of 10-15 % in young peoples' willingness to live and work in Finnmark due to the petroleum industry.

Category 2, *labor market, employment and competence*, mainly studies employment figures in the County of Finnmark. The studies provide thorough quantification of the various sectors in which all employees working in 2000 are counted and compared with the numbers for 2006. The major findings are that total employment in the County of Finnmark increased by 2,6 % in this period, meaning 900 new jobs. The main sectors experiencing an increase are business & consultancy and health & social care services. At the same time the number of employees working in the fisheries and industry has decreased by 229 and 926 jobs respectively.

The third category, *infrastructure and public services*, studies capacities in relation to airports, harbors, ferries, buses, highways and broadbands in the six municipalities (Hammerfest, Loppa, Hasvik, Kvalsund, Måsøy and Nordkapp). The major finding here is the fact that the vast distances in the County of Finnmark constitute a serious challenge for relative fast transportation of personnel and goods.

Category 4, *Business development*, is a very short study in which the development of The Snøhvit Project is described. The findings here are that local deliveries in Hammerfest to The Snøhvit Project constitute 1,5 billion Norwegian Kroner and that general business activity increased by 37 % from 2002 until 2004. The Snøhvit Project has also led to an increased interest for southern supply-industry to open local offices in Hammerfest.

Category 5, *Status of cultural heritage*, presents where and what type of cultural heritage is physically located in the influence area. The major findings here amount to the fact that many cultural sites do exist (both known and unknown).

Conclusion

The conclusion must then be that the assessment of 'societal condition' in the EIA report on Goliat takes the logical positivistic theory of knowledge as point of departure for the studies. Thus the knowledge generated is purely empirical descriptions of the physical social reality. This is probably one reason why the Goliat

project is fundamentally centered on instrumental values - as we indeed saw in the analysis of ontology. From a hermeneutical perspective, I-It knowledge constitutes important information about social phenomena, but this alone is insufficient in order to understand the social consequences. One therefore needs to supplement objective knowledge with subjective and phenomenological, that is, assess all three types of impacts.

The result of studying 'Society Conditions' from a subject-object perspective is that the life of the culture and human beings in Finnmark is objectified. The outcome of this in turn is an abstract and superficial description/explanation of a static condition, as well as some prognoses about the future. In itself the information is of little relevance for understanding the people and the communities of the North.

The corollary of "I-it" research is that the impact-analyses in the EIA report on Goliat are also necessarily superficial. The consequences concern only the objective and instrumental sides of work. The whole picture of what it *means* to work and the cultural values of work remain not assessed.

Conclusion: The received perception of science.

The theory of knowledge underlying Chapter 11: Status description - existing business activities.

The empirical data which we shall analyze and discuss here is found in Chapter 11, *Status description – existing business activities*. This chapter is the underlying study for Chapter 12, existing business activities – consequences and preventive/mitigating measures, which we analyzed in the section on ontology above. Remembering that the ontology was instrumental for all sectors, this was, however, especially evident in relation to consequences for the tourism industry. Further analysis of the theory of knowledge can help us understand how and why this was possible.

The assessment endeavors to study impacts for the following business sectors:

1. Fisheries
2. Aquaculture
3. Shipping
4. Tourism
5. Agriculture

The assessment of the fisheries studies four phenomena. First it explains that in 1991 the fishing industry employed 2500 people, whereas fifteen years later the number had declined to 1300. About three quarters of these were full-time employees. Finnmark has 1.5% of Norway's population and 10% of all fishermen.

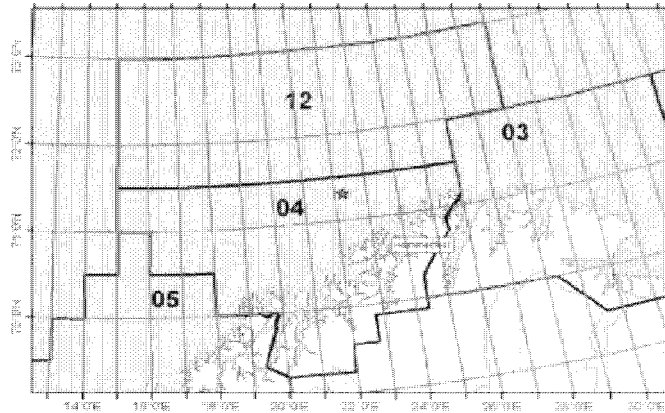
Secondly, the study also explains the seasonal catch variation for different fish species (see Tab. 8 in the attached appendix if interested).

Thirdly, the study explains that three major fishing areas surround the Goliat project (see Fig. 38) and it provides yearly catch-rates for these areas. For example in Area 03 the total amount (tones) of fish caught was 118 926 in 2000, 121 269 in 2001, 339 101 in 2002, 59 997 in 2003, 81221 in 2004, 70439 in 2005 and 44884 in 2006⁸².

Fourthly, the study illustrates where the pipelines system (infrastructure) will collide with a rich fishing area. For example is it explained that between 1100 and 2300 tons of fish is caught in the direct area of Goliat, and that a particular good area for catching cod, the so-called "Lofoten junior", is located 10-20 km. south of Goliat.

⁸² Ibid., p.175.

Figure 38 Major fishing-banks in “The High North” (Eni Norge, 2009, p.175).



The assessment of the *aquaculture sector* studies three phenomena. Firstly it explains where different maritime farmers are located geographically between Hasvik and Måsøy and Nordkapp and Gamvik.

Secondly, the study also shows that the majority (70) of the farms are salmon farms and 8 cod farms. Nationally the fish farms in Finnmark constitute 6.5 % of all farms in Norway.

Thirdly, the study also illustrates the production of salmon from 1994 until 2006 in weight and value, and the total quantity of employees working within the aquaculture industry in Finnmark: 237 (2008).

The assessment of the *shipping industry* explains that there are ten shipping routes within 10 nautical miles of the location of Goliat. Annual traffic constitutes approx. 490 passing ships or 9 passing pr. week, or 1.3 passing per day. Of these 490 were ships and 150 were tankers. 40 % of the tankers were of a size 50-150000 dvt., and 40 % were 50-25000 dvt., 20% were less than 25000 dvt., and only one ship was larger than 150000 dvt.

The assessment of the *tourism sector* studies three phenomena. Firstly it explains that Finnmark had, in 2006, 415 employees working within the tourism-related

industry. 300 or 70 % of these were located in Hammerfest, 64 in Nordkapp, whereas other municipalities held 10-12 positions each.

The study also reveals that the density of hotels has declined in Hammerfest/Kvalsund/Hasvik and Alta/Loppa by 18.1 % and 9.8 % respectively, while the other regions have experienced an increase from 2006 until 2007.

The study also explains that Nordkapp has 200 000 visits pr. year and Honningsvåg approximately 300 000. Most of these tourists travel by sea during the period May - September.

The *Agriculture* sector is not studied because:

‘With the exception of reindeer herding, there is almost no agriculture in the area affected’⁸³.

Conclusion

The social science applied here shows one and the same characteristic: so-called value-neutral studies in which the researcher has played the passive role of purely auditing the surface of social phenomena; that is, external social phenomena. Objective descriptions are of course important in relation to impacts assessments, but in isolation it makes extremely superficial picture of the situation, at least from a hermeneutical perspective.

Conclusion: The received perception of science.

Perception of science underpinning Chapter 16: Sami interests – Status description.

The research concerning *Sami interests* studies the following social phenomena:

1. Sami culture.
2. Reindeer herding.
3. Coastal and fjord fishing.

⁸³ Ibid., p.183.

4. Traditional subsistent activities.

The study of the *cultural* phenomenon reveals that language, literature and songs are constitutive for culture. It also reveals that a central feature of indigenous cultures is that:

‘... cultures’ existence is directly related to peoples livelihoods’ (Eni Norge, 2009, p.225, from Norwegian)⁸⁴.

Further the study concludes that:

‘Eni Norway’s conclusion is that the Goliat development will neither have any significant positive nor negative effects for Sami culture, if nothing beyond the development is done. The measures described in Chapter 17.5.2 “Measures for enhancing positive consequences” can contribute to the creation of more positive effects also for the Sami population’⁸⁵.

The study regarding *reindeer herding* explains that the herding requires grassing areas and that 45 % of Norway’s geographical area is suitable for reindeer. The study also explains that these areas are divided into 80 reindeer herding districts owned by various Siidaer (reindeer executives or families). The study further concludes that:

‘Regardless of alternative development options, the Goliat project will have medium to huge negative impacts. This is first and foremost because development will occupy territories for summer herding which are already scarcely distributed along the coast of Finnmark’⁸⁶.

The study concerning *coastal and fjord-fishing* explains that infrastructures and facilities of Goliat are not located outside the zone determined by the Sami Development Fund. The study further concludes that:

⁸⁴ Ibid., p.225.

⁸⁵ Ibid., p.228.

⁸⁶ Ibid., p.229.

'... it is impossible to make a distinction between the participation in fishing activities based on *ethnicity*. The size of the equipment, the boats and the crew constitute the main difference between the different groups participating in the fisheries, not ethnic origin'⁸⁷.

The study regarding traditional *subsistent activities*, explains that these activities are mainly exercised on the east side of Finnmark by the elder population. The study also explains that agriculture forms an important part of the material fundament for the Sami population. The study further concludes that the effects of Goliat will equal zero because:

'The main reason for this is that the operation industry is not located in areas where subsistent activities are exercised' (Eni Norge, 2009, p.230, from Norwegian)⁸⁸.

The assessment also suggests that the following mitigation measures ought to offset the negative effects:

1. An el-cable is planned buried in order to reduce the disturbance to reindeer.
2. The use of helicopters to transport female reindeer during birth.

Conclusion

The conclusion must be that the perception of science underlying the studies with regard to the Sami interests' is the detached, logical positivistic tradition. This is evident because the information/knowledge about the different phenomena are purely descriptions of external social reality, that is, what can be directly observed through I-It techniques. In other words, the studies here merely reveal the external and physical dimension of Sami culture. The subjective and phenomenological dimension is absolutely absent and neglected. Social reality is thus objectified or

⁸⁷ Ibid.

⁸⁸ Ibid., p.230.

regarded as “things”. This in turn creates problems because the inner lives of subjects are ignored. What is left is a superficial explanation or “scanning” of the social environment. Superficial explanations in turn are problematical and of little use because they do not reveal how the *whole* person might become affected by the initiative.

Conclusion: The received perception of science.

4 Scientific Ideal

The studies conducted in the report and discussed above under the perception of science are objective-analytical studies. This is evident from the empirical-descriptive and hypothetic-deductive methods prevailing through the report and discussed above, in addition to the total lack of interpretative methods such as hermeneutics and phenomenology.

The claim that the scientific ideal is the naturalistic, objective-analytical ideal is probably most evident from the exclusive focus on quantifying the instrumental (economic) values of the project, of existing industry and those which can be expected in Finnmark and the six municipalities. This information is in addition to being in tune with the objective-instrumental image of man also compatible with the norms of the scientific ideal. This is because the data fulfills the criteria of intersubjectivity and verifiability which are hallmarks of analytical method. The economic facts provide good objective measures of social impacts because they are simply neutral in the sense that they represent identical/mechanical sizes/effects/values for all members of society. In other words, when all the subjective pros and cons in relation to the project are cleared away, what is left is the tangible objective core of society. The focus on the instrumental sides of society also thus represents a reductionistic approach to human nature. Together these norms point in the direction of the naturalistic ideal.

The reason for the one-dimensional focus on the objective and instrumental (economic) consequences of Goliat is probably that the instrumental image of man and the compatible value-neutral image of science endeavors to explain the pure realness of social developments; that is, the tangible and physical consequences. The result is an objective picture of the situation as an abstract and atomistic picture. The holistic social consequences of development are thus ignored. In order to reveal the inner life and intrinsic values associated with development projects it is necessary to supplement analytical studies with interpretative studies.

The major challenges of turning EIA reports from an objective study to an ethical study probably relate to the current need for *commensurable sizes*, that is, a simple measure which either speaks in favor or against development; i.e., objective sizes.

Conclusion: Naturalistic ideal.

5 Ethics

Internal ethics concern the norms for how scientific work ought to be conducted. For the naturalistic scientific ideal the internal ethic is fairly simple to determine. This is because the rigorous criterion of objectivity demands that only knowledge deduced from detached observation and thus is universal and verifiable deserves to be referred to as “science”; all other forms of knowledge are termed ‘pseudoscience’.

The external ethic of the Goliat report differs for the various chapters.

Chapter 14 regarding the social consequences of Goliat is totally dominated by an instrumental ethic. This is evident because the whole concept of ‘culture’ is juxtaposed into a definition which is purely instrumental (economical). All consequences in Chapter 14 are measured in terms of monetary values (Kroner); all human ambitions and motivation are also calculated in terms of Kroner. So there can be no disputing the external ethic here.

Chapters 8-10 addressing the consequences for environmental values endeavor to study by using the analytical ideal how we can avoid environmental disasters. The consequence is a practical ethic calculating what to do and what not to do. This implies that nature first of all is objectified (values beyond instrumentality are eliminated), and secondly that we try to control nature similarly to how a puppeteer pulls the strings in a puppet show.

The chapters covering the various existing businesses in Finnmark (Chapters 11 and 12) and the chapter concerning Sami interests, all reveal an objective perception of culture and thus a purely instrumental or end-mean reductive ethic.

The chapters emphasizing social responsibility and strategies for enhancing the positive effects of Goliat, reveal a clear subjective perception of culture. Through these chapters (15 and 17.5.2) we see a willingness to support culture for its own sake, that is, for the purpose of humanistic and ecological values.

Conclusion: Instrumental-utilitarian ethics are dominating.

6 Esthetics

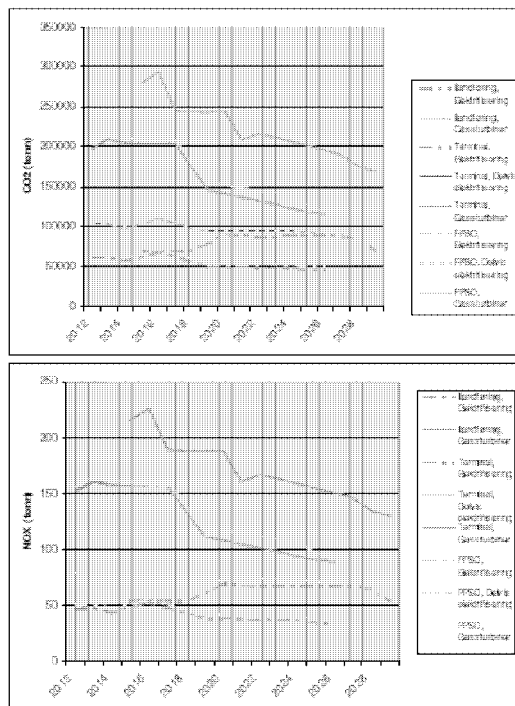
The esthetics of the report also corresponds with the chosen ontology of man, the perception of science and the ethics. Corollary, statistic and mathematical presentation forms are used to exhibit the various social and ecological impacts and societal conditions. Below a more or less random selection of examples from the report are presented.

Conclusion: Quantitative-statistical presentation styles.

Figure 39 Emissions to air⁸⁹,

År	Dager	Drivstoffbruk (tonn)	Utslipp CO ₂ (tonn)	Utslipp NO _x (tonn)	Utslipp nmVOC (tonn)	Utslipp SO ₂ (tonn)
2012	305	12 200	39 040	854	61	34
2013	305	12 200	39 040	854	61	34
2014	238	9 520	30 464	666	48	27
SUM	1 031	41 240	131 968	2 886	207	115

Figure 40 CO₂ (above) and NO_x (below) emissions to air for the different alternatives⁹⁰.



⁸⁹ Ibid., p.104.

⁹⁰ Ibid., p.107.

Figure 41 Yearly CO2 emissions⁹¹.

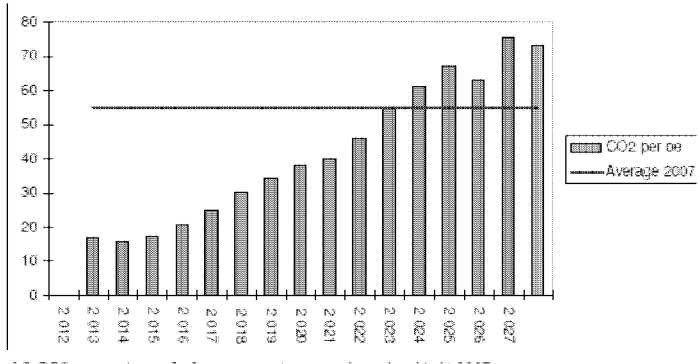
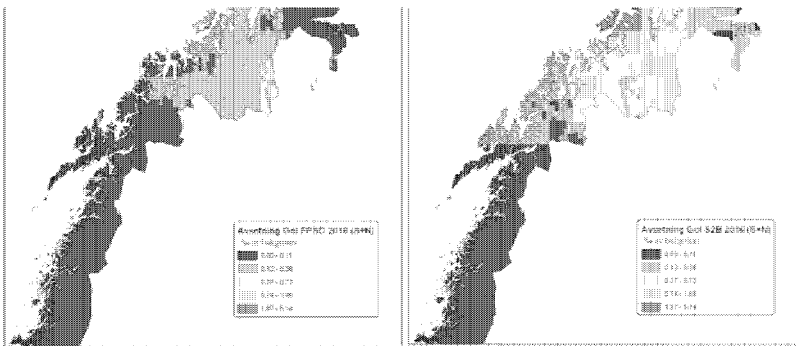


Figure 42 Production of pollution equivalents in the influence area (p.114).



⁹¹ Ibid., p.111.

Figure 43 Probability for the loss of various bird stocks pr. season of superficial blowouts⁹².

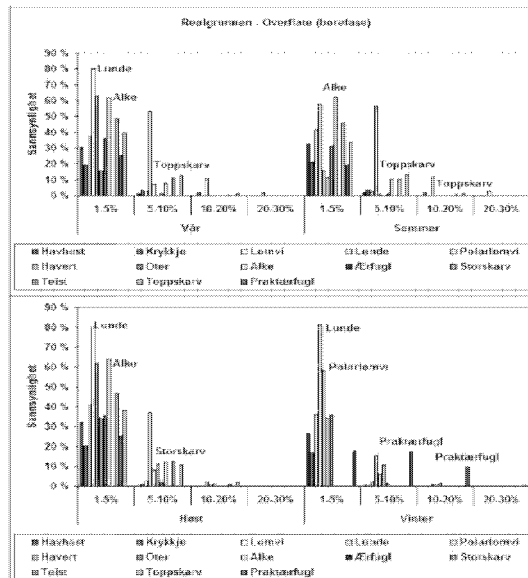
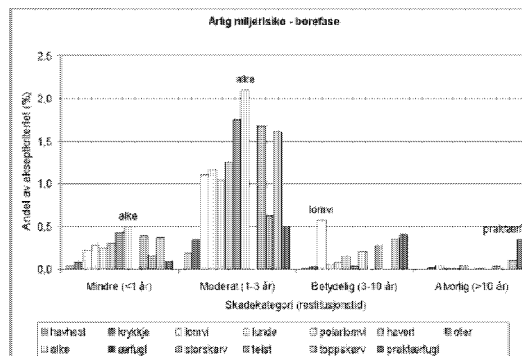


Figure 44 Yearly environmental risks for seabirds and mammals during drilling phase⁹³.



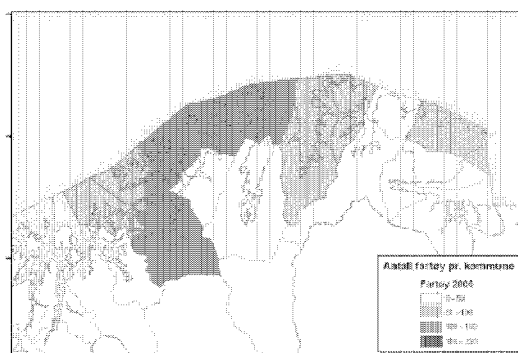
⁹² Ibid., p.147.

⁹³ Ibid., p.149.

Figure 45 Quantity of male fishers pr. municipality in Finnmark⁹⁴.

FINNMARK	1991			1996			2001			2006		
	Alle	Herav		Alle	Herav		Alle	Herav		Alle	Herav	
		Hov	Bi		Hov	Bi		Hov	Bi		Hov	Bi
Alta	310	206	104	272	136	136	176	96	80	135	97	38
Berlevåg	83	73	10	72	53	19	79	65	14	84	51	33
Båtsfjord	117	101	16	108	96	11	104	71	23	93	72	21
Garnvik	143	110	33	131	89	42	92	59	33	68	48	20
Hammersfest ⁹⁵	322	256	66	294	247	47	253	197	56	179	147	32
Hasvik	143	110	33	167	133	34	102	83	19	79	67	12
Kvalsund	85	56	33	81	54	27	70	37	33	36	23	13
Loppa	209	147	62	206	134	72	131	88	43	93	69	24
Lebesby	156	121	35	141	94	47	104	67	37	68	47	21
Måsøy	244	217	27	221	179	42	185	140	45	128	99	29
Unjarga-Nesseby	38	15	23	50	22	28	38	18	20	21	16	5
Nordkapp	286	241	45	254	203	51	229	169	80	158	127	32
Porsanger	84	51	33	79	46	33	65	30	35	29	25	4
Sør-Varanger	55	35	20	66	30	36	58	25	33	25	20	5
Deatnu-Tana	70	34	36	73	31	42	50	31	19	35	24	11
Varde	115	94	21	113	77	36	101	77	24	81	59	22
Vadsø	90	55	35	93	44	49	65	34	31	48	37	11
Total	2555	1922	633	2400	1648	752	1692	1267	605	1340	1030	310

Figure 46 Quantity of fishing vessels pr municipality in Finnmark⁹⁵.



⁹⁴ Ibid., p.173.

⁹⁵ Ibid., p.174.

Figure 47 Distribution of catch-rates surrounding Goliat⁹⁶.

Tonn / Andel (%)	2009	2001	2002	2003	2004	2005	2006
Hovedområde 03	118 326	121 269	339 101	59 997	81 221	70 439	44 884
• Not	39 %	41 %	63 %	11 %	12 %	11 %	13 %
• Gam	8 %	7 %	2 %	5 %	9 %	12 %	13 %
• Juksa	3 %	3 %	5 %	7 %	4 %	4 %	3 %
• Line	12 %	9 %	5 %	32 %	24 %	28 %	38 %
• Snurrevad	10 %	11 %	4 %	13 %	15 %	16 %	16 %
• Trål	29 %	29 %	22 %	30 %	34 %	25 %	15 %
• Annet	0 %	0 %	0 %	0 %	2 %	2 %	2 %
Hovedområde 04	222 972	283 153	78 643	182 449	97 291	85 888	115 451
• Not	48 %	57 %	22 %	48 %	21 %	17 %	39 %
• Gam	11 %	10 %	25 %	11 %	20 %	22 %	18 %
• Juksa	4 %	3 %	5 %	5 %	7 %	8 %	5 %
• Line	5 %	3 %	13 %	6 %	11 %	10 %	17 %
• Snurrevad	7 %	5 %	7 %	5 %	13 %	13 %	10 %
• Trål	25 %	21 %	28 %	25 %	29 %	31 %	20 %
• Annet	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Hovedområde 12	39 810	35 589	23 860	26 525	29 113	26 375	29 970
• Not	7 %	17 %	3 %	15 %	6 %	-	-
• Gam	0 %	0 %	-	1 %	0 %	0 %	1 %
• Juksa	-	-	-	0 %	-	-	0 %
• Line	62 %	71 %	82 %	67 %	76 %	78 %	74 %
• Snurrevad	0 %	0 %	-	-	0 %	0 %	-
• Trål	30 %	12 %	14 %	17 %	18 %	22 %	24 %
• Annet	-	-	-	-	0 %	0 %	0 %

⁹⁶ Ibid., p.175.

Figure 48 Most important fishing zones in The Barents Sea, West of Finnmark, in relation to the infrastructures of Goliat ⁹⁷

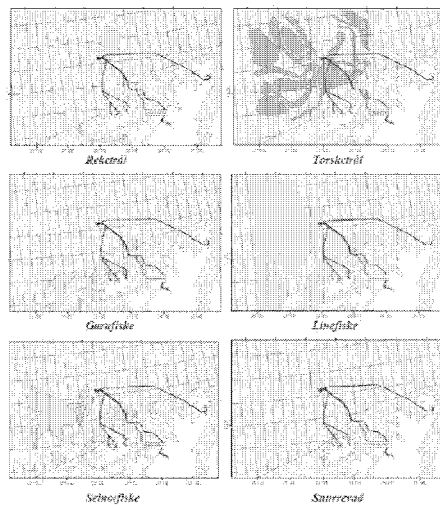
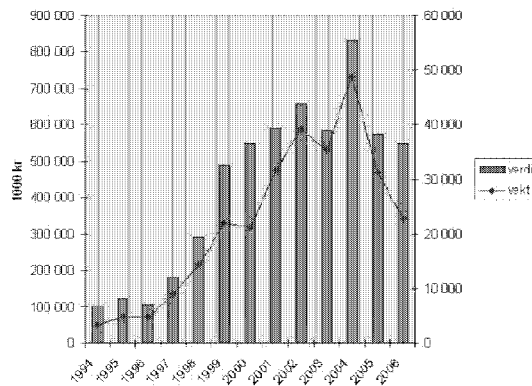


Figure 49 Production of salmon in Finnmark by weight and value ⁹⁸.



⁹⁷ Ibid., p.176.

⁹⁸ Ibid., p.181.

Figure 50 Employments in Finnmark⁹⁹

	Dysshaltige personer eller løstet		Dysshaltige personer eller arbeidsledet		Netto innverping		Nettoforfalling eller årsnedgang	
	2000	2006	2000	2006	2000	2006	2000	2006
50 Finnmark Finnmark								
Jord- og skogbruk	525	455	119	512	1620	118	-14	-11
Industri og handel	1712	1452	-258	1713	1484	229	-19	-2
Utdanning av skole og høyskole	55	254	194	0	21	21	-58	-230
Industri, bergve	3342	2452	-890	3210	2324	-929	-92	-159
Kraft- og vannforsyning	422	348	-74	365	358	-39	-7	-12
Bygge- og anleggsvirksomhet	2468	2794	324	2344	2147	-623	-282	-28
Hotell- og restauranter/virksomhet	1418	1278	-140	1234	1236	-64	-124	-72
Helsehandel	4459	4876	419	4136	4351	213	-323	-224
Transport	323	297	-26	315	264	-53	4	-3
Transport og kommunikasjon element	2432	2319	-97	2161	2143	-18	-21	-192
Finansiell tjenesteyting	359	323	-36	334	389	-68	-15	-35
Personlig tjenesteyting	1320	1152	-168	1334	213	779	-371	-67
Offisiell og forvaltn. virksomhet	4215	4072	-143	4114	4299	-98	-104	0
Undervisning	3274	3628	354	3209	3689	60	-45	-63
Helse- og sosialtjenester	7109	7774	665	6927	7521	654	-262	-230
Andre statlige og personlige tjenester	1227	1422	195	1142	1311	168	-64	-111
Ukjøpt	216	213	-3	273	232	-41	-3	-6
I alt, alle næringer	36166	36217	51	34258	34920	506	-2068	-1446

Figure 51 Employment from 2000 to 2007, in the six municipalities, Finnmark, Northern Norway and the nation as such¹⁰⁰

	År	Lokalst. i kommuner	Lokalst. i fylke	Utdanning av skole og høgskole	Industri og bergve	Kraft- og vannforsyning	Bygge- og anleggsvirksomhet	Hotell- og restauranter/virksomhet	Transport og kommunikasjon	Finansiell tjenesteyting	Personlig tjenesteyting	Offisiell og forvaltn. virksomhet	Ukjøpt	I alt
Lokalst. i kommuner	År 2000	9,99	0,44	10,26	0,99	5,59	10,52	9,15	1,24	4,20	11,72	0,24	0,26	0,76
	År 2003	9,05	0,59	8,50	0,89	6,35	15,54	8,40	1,13	5,28	13,41	0,26	0,26	0,76
	År 2005	8,12	1,60	8,69	1,13	6,38	10,10	8,60	0,98	6,44	11,06	0,39	0,39	0,76
	År 2007	7,55	2,08	7,96	1,08	6,36	11,79	8,07	0,94	6,99	11,00	0,22	0,22	0,76
Finnmark	År 2000	7,33	0,16	8,24	1,41	7,18	10,25	7,62	1,52	4,71	14,59	0,76	0,76	0,76
	År 2003	7,16	0,22	7,12	0,93	7,22	16,10	7,18	1,02	5,18	16,91	0,94	0,94	0,94
	År 2005	6,88	0,73	7,02	1,00	7,26	16,31	7,19	0,89	5,88	16,55	0,50	0,50	0,50
	År 2007	6,48	0,69	6,76	0,90	7,93	10,84	6,99	0,81	6,29	15,80	0,54	0,54	0,54
Nord-Norge	År 2000	8,84	0,40	9,34	1,09	7,02	10,29	8,05	1,27	6,01	12,84	0,64	0,64	0,64
	År 2003	8,55	0,42	8,27	1,02	6,94	10,59	7,65	1,23	6,24	14,12	0,58	0,58	0,58
	År 2005	8,03	0,51	8,02	1,05	7,04	10,01	7,49	1,24	6,85	14,79	0,65	0,65	0,65
	År 2007	7,62	0,58	8,12	0,90	7,68	10,72	7,49	1,28	6,20	14,80	0,38	0,38	0,38
Helo landet	År 2000	8,06	1,24	11,31	0,79	6,57	18,27	7,49	2,07	9,86	35,71	0,73	0,73	0,73
	År 2003	7,79	1,27	12,07	0,68	6,39	18,28	7,03	2,00	9,95	37,77	0,63	0,63	0,63
	År 2005	7,46	1,30	11,57	0,65	6,94	18,42	6,87	1,97	10,56	37,85	0,52	0,52	0,52
	År 2007	7,17	1,43	11,35	0,62	7,30	18,43	6,68	1,95	11,41	37,17	0,43	0,43	0,43

⁹⁹ Ibid., p.197.

¹⁰⁰ Ibid., p.198.

Figure 52 Revenues from Goliat for the 3 alternatives¹⁰¹

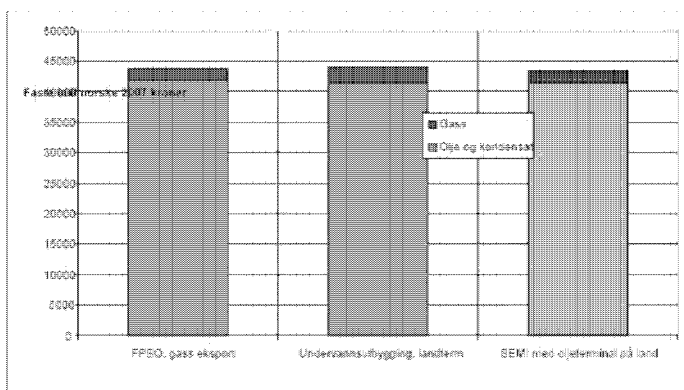


Figure 53 Investment and operation costs for the 3 alternatives¹⁰²

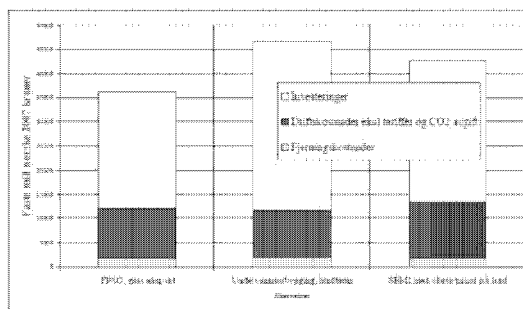


Figure 54 Deliveries for each alternative during the development phase¹⁰³

Alt:	Byggeperioden					
	Total NOK (mill)	No %	NOK (mill)	Reg %	NOK (mill)	Lck NOK (mill)
1	26 926	56	15 149	6	941	93 779
2	32 414	59	18 993	7	1348	66 890
3	37 166	53	19 853	12	2379	36 851

¹⁰¹ Ibid., p.205.

¹⁰² Ibid.

¹⁰³ Ibid., p.209.

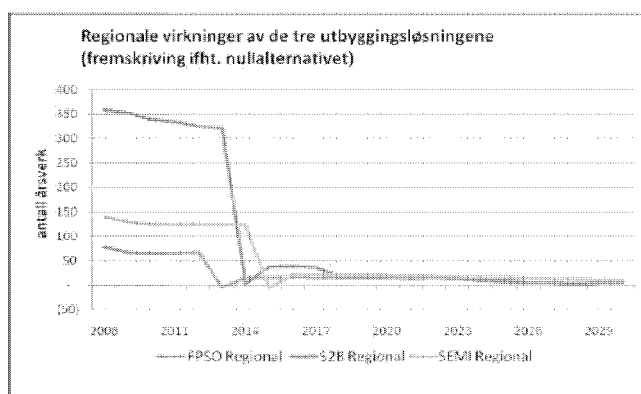
Figure 55 Direct employments resulting from Goliat for the whole development phase; for the whole nation¹⁰⁴.

SYSSELSETTINGSVIRKNINGER (ÅRSVERK)	FPSO (Alt 1)	SEMI (Alt 2)	S2B (Alt 3)
NASJONALT			
Byggeperioden (hele perioden under ett)	25 275	34 180	39 635
Driftsperioden (for ett typisk år)	1 845	2 110	1 730

Figure 56 Direct employments for Northern Norway¹⁰⁵.

NORD-NORGE			
Byggeperioden (hele perioden under ett)	555	1 300	3 460
Driftsperioden (for ett typisk år)	395	540	595

Figure 57 Regional effects of the 3 alternatives¹⁰⁶.



¹⁰⁴ Ibid., p.211.

¹⁰⁵ Ibid., p.212.

¹⁰⁶ Ibid., p.214.

Appendix to chapter IX

Table 5 Mitigating measures for emission to air (Eni Norge, 2009, p.113).

<ul style="list-style-type: none"> • An energy solution based on power supply from countries in combination with gas turbine at the facility is assumed to contribute to the achievement of national objectives and international commitments and to reduce emissions from the field.
<ul style="list-style-type: none"> • A gas turbine is assumed for heat recovery.
<ul style="list-style-type: none"> • A gas turbine at the facility will be installed with low-NOx technology to minimize NOx emissions.
<ul style="list-style-type: none"> • Further technical measures to reduce air emissions from energy production constitute some of the further work in the retail phase.
<ul style="list-style-type: none"> • Optimization of energy consumption and minimizing air emissions will focus on the operational phase and are discussed in the field of energy management system.
<ul style="list-style-type: none"> • Both high-and low-pressure flare gas will be recycled back to the process instead of being flared.
<ul style="list-style-type: none"> • There will be no continuous pilot flame on the facility.
<ul style="list-style-type: none"> • All energy consuming equipment at the facility will be electrically powered -to be supplied by shore power and independent of gas available in the process at any time.
<ul style="list-style-type: none"> • The compressors and the larger motorized units will be controlled by way of speed control (VSD) contributing to more efficient operation.
<ul style="list-style-type: none"> • In addition to the exhaust heat from the gas turbine being utilized, it is planned to install electric heaters. This contributes to the energy system of the facility which is largely based on CO2-emission equipment.
<ul style="list-style-type: none"> • The planned installed separation technology contributes to more efficient oil-water separation and thereby reduces the total heat demand.
<ul style="list-style-type: none"> • Measures of VOC recovery by tankers are assumed to transport oil to reduce emissions from unloading and transport.
<ul style="list-style-type: none"> • The potential for LNG operation of supply vessels will be considered.

Table 6 Mitigating measure for processed water (Eni Norge, 2009, p.126).

<ul style="list-style-type: none"> • A technical solution has been designed that will fulfill the requirement for 95% re-injection of processed water by a good margin. The design of strategies for operations will focus on the highest possible degree of reinjection and minimum discharges (if at all).
<ul style="list-style-type: none"> • There will always be a greater number of pumps available for injection of processed water than that required for normal operation.
<ul style="list-style-type: none"> • As a result of the injection being used as pressure support, more water injectors will be available and well availability will be high.
<ul style="list-style-type: none"> • Collecting tanks for temporary storage of processed water provides a buffer against discharges.
<ul style="list-style-type: none"> • Treatment of processed water will always be operational so that unpurified water is prevented having to be discharged into the sea.
<ul style="list-style-type: none"> • The choice of chemicals will be focused on the chemical's intrinsic properties so that chemicals with minimal environmental risk will be chosen. All chemicals that may be released are categorized by SFT as category green or yellow.

Table 7 Environmental risk plan for Goliat (Eni Norge, 2009, pp.137-138).

Theme	Description	Consequence
Drilling program	Drilling basic pilot gas wells before commencement of drilling operations on each template.	Reduce the risk related to basic gas incidents.
Drilling program	Drill 4 pilot holes to determine the exact depth and position of the various segments of reservoirs, including the depth of the top of the reservoir, gas-oil contact, and oil-water contact.	Reduce uncertainty related to reservoir target and events related to this. Increase the productivity of wells.
Well design	Sensitivity assessments have been implemented for blow-out rates for each well type, with a focus on well diameter and penetration of reservoirs.	The wells are designed on the principle of minimizing the consequences given an event, without affecting productivity of the wells.
Well design	Events (exhaust) shall be normalized as quickly as possible.	The wells are designed in such a way that a relief well is to be drilled as quickly, efficiently and easily as possible.
Well design	Well-specific risk analysis is used to characterize the well's inherent risk characteristics. Risky operations and sequences identified.	Drilling programs fluid strategies and operational conditions should be optimized to reduce the risk of loss of well integrity.
Well design	The cement around the casing shall withstand design pressure load and be gas tight. The cement around the casing through Realgrunnen / ringed seal segments to penetrate up and through these reservoirs.	Reduce the risk of hydrocarbon leakage and migration of oil at the wellhead.

Well-and completion design	The well material requirements are based on the extended life and integrity of the well, to reduce the effects of corrosion, temperature, chemicals and oxygen that can occur during operations.	Risk for well integrity issues and the need for interventions reduced.
Completion-strategy	Risk for completion solutions has been implemented, which makes recommendations on selected completion strategy.	The chosen solution provides a gain in relation to the risk of leaks and barrier failure.
Completion-solution	Minimize the need for well interventions, particularly well work-overs and replacements of “Christmas trees”.	Selected completion solution minimizes the need for well interventions and provides a significant lifetime gain in relation to basic design.
Simultaneous operations	Reduce the likelihood of falling objects or other hazardous incidents that can damage the sea bed frames and reduce security.	An operation manual for simultaneous operations shall be carried out before commencement.
Completions-solution	Installing sensors and monitoring procedures for early detection of failure in the barriers.	Sensors will be installed in sub-sea installations that require monitoring and control of existing barriers.

Table 8 Seasonal variation of the fisheries (Eni Norge, 2009, p.174)

<ul style="list-style-type: none"> • Cod and cod fishing off Vest-Finnmark/Troms/Vesterålen during the period November-March/April.
<ul style="list-style-type: none"> • Spring cod fishing off the coast of Finnmark during the period March to June.
<ul style="list-style-type: none"> • Haddock long-line fishing off the Finnmark coast in the summer and autumn.
<ul style="list-style-type: none"> • Net fishing of coalfish in West Finnmark - Lofoten during the period September to January.
<ul style="list-style-type: none"> • Seining coalfish out of West Finnmark and Troms in the spring, summer and autumn.
<ul style="list-style-type: none"> • Greenland halibut fishery during the period June-August along the edge of the boat with conventional equipment .
<ul style="list-style-type: none"> • Winter capelin fishing in the Barents Sea and the coast of Finnmark and Troms during the period January-April.
<ul style="list-style-type: none"> • Net fishing for lumpfish during the period April-June.
<ul style="list-style-type: none"> • Fishing for crab off the coast of Eastern Finnmark during the period September to December.

PART V: CONCLUSIONS AND REFLECTIONS ON HOW TO MOVE FROM ATOMISTIC TO HOLISTIC EIA-RESEARCH

Fremskritt, hva er det? At vi kan kjøre fortere på veiene?

Nei, fremskritt det er legemets nødvendige hvile og sjelens nødvendige ro.

Fremskritt er menneskets trivsel (Knut Hamsun).

CHAPTER X: HOLISTIC EIA-RESEARCH: ONTOLOGICAL, EPISTEMOLOGICAL AND METHODOLOGICAL IMPLICATIONS

1 Introduction

This chapter attempts to answer the third research question of the thesis:

What paradigmatic implications do the findings in this thesis have for EIA-research: ontologically, epistemologically and methodologically?

Before continuing to answer research question 3, however, the thesis recapitulates the four empirical chapters.

2 In-/coherence within Norwegian manuals and EIA research

The earliest manual, T-746, of 1990

Chapters VI and VII in Part IV of the thesis attempted to interpret the earliest (1990) and the latest (>2000) Norwegian manuals on EIA in light of the conceptual framework outlined in Table 3 in the chapter on methodology (V).

Interpreting the earliest manual from 1990 proved that the fundamental understanding of the reality of nature and human nature were in accordance with ecosophical and subjective ontologies respectively. This is a plausible interpretation because the manual emphasizes the need to explain how human interventions in nature relate to specific (plants, animals, organisms, etc.) and general (landscapes, biotopes, ecosystems, etc.) ecological components or how “everything hangs together”. The manual thus also explicitly articulates and expresses the many and intricate intrinsic values inherent in any natural ecosystem. The meaning of the text discussing the intrinsic values of nature seems to lie in the wish for the proponent and the authorities to acquire a comprehensive ‘understanding’, as opposed to an ‘explanation’, of the relations between the initiative, cultural and ecological systems. The reason for this claim that a hermeneutic approach to knowledge is tacitly expressed is simply because the manual requires us to gather knowledge of impacts in the light of *both* a mechanistic explanation (cause-effect) *and* the purpose or meaning explanation of what it actually *means*, in value terms.

The image of science underlying the earliest manual of 1990 is, however, interpreted to be the received, naturalistic image of science. These interpretations are deduced, albeit perhaps not always and adequately in accordance with the ‘principle of charity’, from the research question raised and addressed by the manual itself. The problem identification here is clearly influenced by the objective ideal endeavoring the generation of subject-object or ‘It’-knowledge through observation of data or facts. The result is an exclusive focus on material and economic impacts such as change in demography, settlement structure, house development, demand and supply of private and public goods and services, occupation of land, release of health damaging emissions, etc., etc. The demand for supplementing empirical descriptive knowledge with knowledge of an introspective art, as discussed under the ontology of the manual above, is thus seriously lacking. This means that the EIA-research or the problem identification of the earliest manual is unable to produce subjective and

phenomenological knowledge or what the initiative actually means, in value terms, for society and nature.

Correspondingly, the external ethic of the research is lacking or exclusively instrumental/utilitarian (end-mean reductive) because of the objectivistic ideal's emphasis on '*Wertfreiheit*' or value-freedom. A serious and normative consideration is thus lacking at all levels (individual ~ society and eco-component ~ eco-systems) in the manual.

Not surprisingly the manual favors that environmental, social and economic impacts are presented in mathematical or quantitative-descriptive styles. This makes sense when the perception of science is the common received view: facts ought to be precise and numerical in as far as possible. The manual is thus seriously in lack of esthetics capable of expressing and articulating the "soft" or "deep" environmental and subjective impacts of initiatives.

The earliest manual of 1990 is consequently characterized by an internal inconsistency or incoherence between ontology, epistemology, methodology, ethics and esthetics, where ontology is anchored in deep-ecology and subjectivism, while the perception of science, the scientific ideal, esthetics and ethics are all anchored within the Instrumental-Received Research Paradigm.

The latest manual on EIA according to the Ministry of the Environment

From the empirical material presented in the appendixes to chapter VII in addition to the interpretation and discussion of these in the same chapter, it is plausible to claim that the ontologies of the manual are in accordance with the Ecosophical-Hermeneutic Research Paradigm. The reason for this claim is deduced from the evidence showing an indisputable monistic fundamental understanding of natural ecosystems and human systems. A monistic view on man and nature was clearly the case from Chapter 6 of the Governmental Report No. 26 from 2006 emphasizing the

need to incorporate the dynamic interactions of natural eco-systems into human management control systems.

The presupposed ontology of man was deduced from the research questions listed in the appendix to the manual. The questions were interpreted as evidence of a subjective-humanistic fundamental understanding of the human nature. This was because the questions addressed in Chapter 1 and 2 are in sum designed to assess both physical and chemical change *in addition* to environmental ethical and esthetical changes. Chapter 1 is exclusively designed to generate a descriptive account of how initiatives are expected to bring along physical and chemical or factual changes in local and global ecosystems (e.g., pollution, CO², SO², etc.). Chapter 2 is designed to illuminate how initiatives are expected to affect the qualitative or ethical and esthetical dimensions of nature. It is particularly articulated that a concern for natures' intrinsic values and human experience ought to be incorporated.

The epistemology and methodology is interpreted to be governed by the IRRP. This is because the manual articulates and expresses a general or dominant image of science as an activity characterized by observation of facts or data. Evidence from the manual supporting this view is the statement demanding that scientific results ought to be numerical or quantitative in as far as possible. It is difficult to see how it is possible to articulate and express knowledge concerning the problem identification addressed in Chapter 2 of the appendix, i.e., value and esthetical impacts, in numerical-quantitative terms. In addition the lack of guidelines concerning the dialogical, or how to synthesize descriptive and interpretative information about the parts into a coherent whole or into a coherent understanding of environmental impacts, constitute a firm base of evidence for categorizing the image of science governing the manual as the received image of science.

As a consequence of the dominating willingness to quantify environmental impacts, questions concerning the ecological and social side-effects of an initiative are left in

the shadows, at least those beyond utilitarian concerns. A utilitarian ethic is manifested in the widespread use of remedies in EIA, as held to be sound practice in our manual.

In line with the 'principle of charity' in the hermeneutic method, we can bend towards interpreting the esthetics of the manual as being pluralistic because qualitative styles are tautological mentioned together with quantitative-descriptive styles. Maybe it is correct to state that by 'qualitative' the manual means qualitative empirical (sense impressions) descriptions of facts or data exclusively, and not qualitative arguments and assessments of spontaneous experience and conscious-processes.

The manual on EIA after the ME is, as we see, also characterized by incoherence between the different paradigmatic elements.

The latest manual on Health and Well-Being in EIA according to the Ministry of Health and Care Services (MHCS)

The meta-analysis revealed that the manual on health and well-being in EIA holds an interpretation of human nature as being fundamentally existentialistic and ecocentric. The reason for this claim is deduced from, amongst others, the monistic interpretation of the concepts of human and natural 'well-being' as basically complementary; i.e., the well-being of society correlates with the well-being of nature (cf. fig. 14). The meta-understanding or the ontology of man of the manual is thus cardinally compatible with the monistic ontology outlined under the Ecosophical-Hermeneutic Research Paradigm.

The image of science in the manual, however, puts strong emphasis on the need to distinguish between subjective judgments and evaluations on the one hand, and scientific facts/data on the other hand. The manual therefore recommends, as we have seen, a reductionistic research strategy for proponents meaning that studies are restricted to the external/physical factors related to well-being; i.e., those effects

which are interpersonal and verifiable. The consequences of the proposed research strategy are that knowledge is limited to describe the superficial and preliminary aspects of social life. For example problem identification in relation to the effects on 'social networks' is reduced to fit a method characterized by observation (e.g., spatial conditions, noise, pollution, etc.). For the purpose of comprehending and synthesizing the total health treat picture of physical factors the manual also proposes a mathematical equation (cf. fig. 16).

It seems surprising that the manual chooses to study subjective impacts and 'well-being'-matters by way of natural scientific ideals. Surprisingly since the manual reflects upon and underlines that the concept of well-being cannot be objectified and made interpersonal in the traditional sense, and that EIA-research has historically defined and treated the concept inadequately and fragmentarily. The manual thus concludes, in despair (!), that the scientific endeavor is inadequately equipped to sufficiently evaluate health and well-being impacts.

Subsequently, the proposed research strategy generates models, theories and hypothesis which are of the type 'cause-effect' or mechanistic explanations. Useful enough as they are, mechanistic explanation are value-neutral thus saying little about subjective evaluations, experience and esthetical sensibility; i.e., the inner life of subjects. The external ethical responsibility of EIA-research is thus limited to safeguarding the physical/chemical-instrumental (utilitarian) sides of individuals and society.

In accord with naturalistic ideals the manual encompasses a wide sample of quantitative illustrations of how health and well-being impacts ought to be presented and communicated.

The manual on health and well-being after the MHCS is, as we see, also characterized by a notorious incoherence between the highest meta-level and the lower paradigmatic elements.

The latest manual on Social Economic Analysis according to the Ministry of Finance (MF)

In contrast to the two latter manuals discussed above, the manual according to MF is characterized by an objective-instrumental ontology. The three different versions of the Cost-Benefit Model assume that all values, economic, social and environmental can be expressed in utilitarian values and converted into Norwegian Kroner. The models evaluate projects with a positive net-value, that is, benefits surpass costs, as social-economically beneficial, and this means that the population is “willing” to pay at least as much as the project costs. The manual is aware of the abstraction, economic/utility maximizing image of man, presupposed by these models, but states that it leaves all ethical and esthetical concerns to decision-makers.

The image of science these models is anchored on can only be the received image endeavoring observation of facts or data or in this case ‘willingness to pay’ or ‘price’. The social-economic analyses are good examples of research based on subject-object or spectator or ‘I-it’ perspectives. In other words, the manual on SEA cares little about the ‘Thou’ even though the models aim at describing the ‘total value’ picture of projects.

The external ethic of cost-benefit models is thoroughly instrumental or utilitarian because it attempts to put a monetary value on everything that is conceived relevant to the project.

The esthetics of these models is quantitative-statistical oriented because empirical input is or is converted into a numerical size.

In contrast to the three manuals discussed above the manual according to MF is, due to the objective point of departure/ontology, characterized by *coherence* between the different elements (the value of coherence ~ incoherence will be discussed in the next sub-chapter).

The EIA report on Veslefrikk of 1987

In the EIA report on Veslefrikk we saw that the dominating values behind the Veslefrikk project were instrumental (economic) and the share of intrinsic ecological and humanistic values minimal (cf. fig. 27). This was evident because nearly all articulated and expressed social motivation behind the project was the generation of Norwegian Kroner. The amounts of social and ecological values are reduced to a minimum only to safeguard the lives of personnel and the physical-chemical quality of the ecosystem in case of catastrophic emergencies. The analysis therefore concludes that the image of man in this EIA-report is based on the objective-instrumental view.

The theory of science underlying the value-assessment of the EIA-report on Veslefrikk is at least partly responsible for the “quantificationism” here. This is so because social and ecological issues addressed in Chapter 5 and 3 of the report (business impacts, local impacts, fishing, aquaculture, etc.) are objectified and made measurable or quantifiable. The reason for this must be that the researcher studying these phenomena takes the role of spectator or observer, i.e., a subject-object relationship, and from this “neutral” position knowledge about reality is produced through the observation and description of facts and data. There is of course nothing wrong with empirical-descriptive knowledge, but it merely makes up an abstract and lifeless interpretation, as is evident, when impacts for the fisheries are juxtaposed into purely material consequences.

The external ethic of Veslefrikk represents illustrative cases about how ethics based on the received epistemological view is interpreted. Mechanistic explanation models produce quantitative-physical knowledge of, in this case, the moving patterns of various fish and birds species. The research of the report locates and predicts several occurrences of fish and animal life; a factual basis which could, however, have been used for determining good and sound environmental ethics (in order to make good evaluation we need good facts). Instead the report attempts to argue that a sound

ethical code can be deduced from purely physical conditions, that is, the overlapping structure of oil spill, infrastructure etc. on the one hand, and fish and birds on the other side. By doing this the report converts a normative question concerning what is the right and good thing to do into an empirical (sense-impression) matter, thus ignoring the argumentative and reflective nature of normative/ethical questions.

The research carried out on the Veslefrikk project is presented in tables and figures thus making the esthetics of the report quantitative.

As was the case with the manual on SEA, so also is the conclusion regarding the EIA report on Veslefrikk. The research of the assessments report is characterized by *coherence* between ontology, epistemology, methodology, ethics and esthetics. All paradigmatic elements of Veslefrikk lie within and are thus efficiently described by the instrumental-received research paradigm.

The EIA report on Goliat of 2009

Paradoxically the ends/needs for which the Goliat project is meant to realize and satisfy are termed 'social' when they in fact are 'economic'. This was evident from the meta-analysis of Chapter 14 'Societal Conditions', showing that what ENI Norway is really assessing here are the regional (Finnmark) economic effects that are expected to spin off directly from the development and operation phase. ENI Norway interprets in other words that 'social conditions' and 'economic conditions' are the same thing and that the former does not include anything that the latter does not. Five of the six thematic areas constituting the chapter on 'Societal Conditions' concentrate exclusively on financial and beneficial issues. The only cultural component of ENI's analysis of "social" consequences involves the mapping of pre-historical sites. The meta-analysis therefore concludes that the dominant driving values behind Goliat are economic, thus signaling that a strong reason for stating that ontology of man is the objective-instrumental image of man which governs the Instrumental-Received Research Paradigm outlined in chapter III of this dissertation.

Chapter 8, 9 and 10 of the report address the ecological aspects of the project. These chapters include assessments which mainly attempt to answer the research question: how to eliminate and minimize the physical and chemical changes which Goliat causes to natural ecosystems? The means of handling these challenges and enhancing the environmental performance of Goliat, are exclusively of a technological kind. The means are beyond doubt effective and illustrate well how a large industrial project can incorporate intrinsic ecological values. The reason that they are needed in the first place is to minimize the effects of actions made solely on instrumental grounds. The analysis must therefore conclude that the ontology of man underlying these three chapters is objective.

Chapter 12 addresses the important concern of ‘stakeholder responsibility’, that is, how the fish-, aquaculture-, shipping-, and tourist industry, in addition to agricultural interests, may be directly or indirectly affected by the project. The meaning of the stakeholder responsibility as articulated and expressed in the report is clear cut: to coordinate and safeguard the commercial/instrumental (economic) stakes of the “players” mentioned above. This is beyond dispute a crucial part of any form of stakeholder responsibility. However, if the principle of economic compensation is not nuanced and balanced with other values/concerns, the outcome can quickly become misleading and counter effective. This was for example the case in Goliat’s interpretation of the responsibility towards the tourism industry, in which ENI managed to draw the conclusion that hazardous oil practice may turn out to benefit these sectors through increasing the amount of hotel stay-over nights and restaurant visitors in the affected locality!

Chapter 15 and 17 address social and Sami responsibility. In these chapters it is possible to trace a subjective ontology of man. The image of man as a subject with a multifaceted motivation can be inferred from ENI’s intensions of supporting research, education, learning and competence development in general for all ages, social classes and ethnic belonging.

The ontology of the EIA-research on Goliat is therefore, as we have seen, characterized by an internal incoherence: in Chapters 8, 9, 10, 12 and 14 we find evidence of an objective-instrumental ontology of man, while Chapters 15 and 17 use a subjective ontology of man. The incoherence here needs to be elaborated on in more detail. This will be further handled in the next subchapter.

The analysis of the perception of science revealed that the various social and business impacts were studied from the traditional I-It perspective, meaning that the received image of science steers the social research. The claim raised here is deduced from the empirical material showing that the report satisfies itself with studying the various social and economic phenomena (population, demography, competence, cultural heritage, business sectors, etc.) through quantitative and empirical descriptive studies. The social science section of the report is thus occupied with explaining cultural and economic life in Finnmark through counting 'hard' facts - from an observer point of view. Useful as empirical descriptions and quantitative patterns are, they bring us little information about the actual psycho-social and cultural life of subjects, i.e., the meaning and purpose a subject finds in the economy, culture and nature.

Not surprisingly the external ethic of the research characterized by objective ontologies (8-10, 12 and 14) is also characterized by instrumental or utilitarian ethics. This means that the knowledge gathered in these chapters is useful for determining an ethic or for designing human and ecological responsibility policies aiming to safeguard and ensuring the economic rights/interests of stakeholders. In Chapters 15 and 17, however, it is possible to trace a non-instrumental ethic from ENI's intension of supporting intrinsic human and ecological values (education, research, competence development, etc.).

The external ethic of the Goliat report is therefore also characterized by internal incoherence.

The esthetics of the report accords with the objective ontology of man and nature and the subject-object perspective from natural science. We see that the various hard facts collected through quantitative studies are presented as mathematical-statistical figures (cf. fig. 39-57). Presentation of 'soft' or qualitative data is in this report absent.

The EIA-research of the Goliat report represents an interesting development within Norwegian EIA-research. This is because the latest state-of-the-art assessment includes elements of the Ecosophical-Hermeneutic Research Paradigm (EHRP), as well as elements of the Instrumental-Received Research Paradigm (IRRP). The research is as we have seen characterized by a *double internal incoherence*. More about this in the following section.

3 Concluding remarks on empirical findings and the value of in-/coherence

The conclusions discussed here are illustrated in Tab. 9 presenting the systemic relations between ontology, image of science, ethics and esthetics. We see that at an ontological level the manual on Social Economic Analysis (SEA) after the Ministry of Finance (MF) and the EIA report on Veslefrikk can be placed within the Instrumental-Received Research Paradigm (IRRP). These two documents are therefore characterized by *coherence* between the five elements: objective ontology, received image of science, utilitarian ethics and quantitative-statistical esthetics.

The Goliat report is characterized by objective ontology, but features of subjective ontology are also present. The EIA-research of Goliat is thus characterized by a *double internal incoherence*: both objective and subjective ontologies and instrumental and non-instrumental external ethics are present. The image of science and esthetics of Goliat is compatible with the received, naturalistic perception of science. The conclusion in this case can therefore be interpreted as incoherent. The driving values behind Goliat are, however, undoubtedly instrumental, but the inclusion of cultural values provides evidence for paradigmatic development in

Norwegian EIA research; a development towards more ecosophical and hermeneutic ideals. The conclusion that the Goliat report is – a special case – incoherent and that elements of an “intruding” paradigm exist, seems to provide the correct analysis of this research.

The earliest manual and the two latest manuals on EIA and HWB according to the Ministry of the Environment (ME) and Ministry of Health and Care Services are all characterized by subjective ontologies, while the four remaining elements lie within the IRRP. These cases are therefore also characterized by *incoherence* between the five elements.

Table 9 Illustration of empirical findings and conclusions

		Earliest Manual	Latest Manuals			Veslefrikk	Goliat
			EIA; ME	HWB; MHCS	SEA; MF		
Ontology of Man	EHRP	√	√	√			√
	IRRP				√	√	√
Image of Science	EHRP						
	IRRP	√	√	√	√	√	√
Ethics	EHRP						√
	IRRP	√	√	√	√	√	√
Esthetics	EHRP						
	IRRP	√	√	√	√	√	√
Conclusion		Incoherence	Incoherence	Incoherence	Coherence	Coherence	Double internal incoherence

What is then, actually the value of in-/coherence? Hermeneutics seeks to reveal the meaning or underlying coherence of text or text-analogues through studying and interpreting each part in relation to the whole and vice-versa. Coherence of parts

and wholes, that is, the parts are logically related to the whole, is thus the secure criterion of adequate interpretations. Therefore, in general, coherence is something positive, something meaningful. Coherence in relation to the paradigm concept, as it is interpreted in this study, means that the five elements are compatible with each other; as we saw was the case for the manual on SEA according to the MF and the EIA reports on Veslefrikk (see Tab. 9). If this is not the case we have incoherence; which is the situation for four of our six cases.

Does this mean, then, that the manual on SEA according to the MF and the EIA reports on Veslefrikk represent more concise, truthful and coherent knowledge/information? In one sense it does mean just this as the criterion of coherence is fulfilled: consistency between ontology, method, ethics and esthetics. This means that there exists a peaceful co-existence between worldview, methods, sound ethical praxis and esthetics.

On the other hand, the argumentation for objective ontologies (nature and man), which the manual according to the MF and the EIA reports on Veslefrikk and Goliat holds, represents abstracted or simplified laboratory versions of human and natural reality or the concrete, and is thus something negative. The manual on SEA according to the MF does indeed recognize this criticism and the limitations and dangers of assuming and juxtaposing all values into money terms; for the purpose of making the various Cost-Benefit Methods operational. If the economists assume otherwise, however, that is, a non-instrumental image of man, they know they will have to abandon, most likely, the cost-benefit theory. If this should happen, new theories and methods need to be developed; in fact we see new "green" economic models, methods and theories popping up everywhere in the academic world (cf. the discussion on ecological economics in chapter IV). In despair, however, economists and the manual on SEA find it easier to define problem statements that fit the traditional cost-benefit method: the economic endeavor is to determine the 'price'

of social and ecological goods and services (similar to the discussion on neoclassical economics in Chapter III).

The method in the manual on SEA for determining 'non-priced values' (cf. discussion in Chapter VII and Fig. 24), is, however, interesting. The method here is actually in accordance with deep-ecology and subjective ontology and the hermeneutic theory of science and esthetics. This is because the method aims at collecting a rich qualitative account of the various environmental and social phenomena related to initiatives. In practice this means that researchers approach their study objects *as text* or text-analogous *to be read*, and by doing so they exercise the 'I-Thou' relation; all for the purpose of getting access to subjective and phenomenological information/knowledge. The manual on SEA according to the MF does therefore also here argue for and interprets that reality cannot be understood through instrumental and natural scientific terms alone, such as the statement that all values are really quantifiable, but that values are more complex and of a qualitative character, meaning that these need to be interpreted and studied by means of qualitative methods in order to be revealed and understood. The problem with the 'non-priced value'-method, however, is the framework it adopts for comprehending and synthesizing the qualitative information. Instead of keeping the research process and the value assessment within the hermeneutic circle, that is, continuing to build a common understanding (melting of horizon) through qualitative argumentation, the method attempts to interpret qualitative argumentations through the language of mathematics; or to step beyond subjectivity and the hermeneutic circle. For example by reinterpreting an argumentative account concerning the intrinsic value of some ecosystem experience, into quantitative "+" (plus) and "-" (minus) which are further subtracted from each other.

The question of the value of in-/coherence and the assumption that coherence is positive and incoherence is negative, can now be adjusted. Coherence, as it occurs in the manual just discussed and the EIA reports, cannot be classified as positive

because this assumes an abstract image of man and nature, which it accepts “in despair”, and thus ends up in the fallacy of mistaking the abstract for the concrete. Coherence in this sense is thus one-dimensional and reductionistic, meaning that only the instrumental and physical/empirical descriptive sides of a project are covered and assessed. Coherence between ontology and the lower meta-levels, as we see in the manual on SEA and the report on Veslefrikk and by far also in Goliat, also prevent or blocks constructive criticism and paradigmatic development because of the strong position the neoclassical economic paradigm enjoys. This is probably the reason why the manual on SEA does not spend time reflecting upon the concepts of ‘value’, ‘social economic surplus’, ‘willingness to pay’, etc., and why the Goliat report juxtaposes ‘social-values’ into ‘economic values’. In this sense coherence must therefore be classified as something negative and even potentially dangerous. It must be underlined that the following study strongly advises and alarms political economists and economists of profession speedily to engage in inter-disciplinary and dialogical processes with other professions. A central aim of these most needed endeavors should be to develop economic policies, theories and methods that are based on *concrete* and *realistic* assumption about reality instead of being method centered and letting the rigid and abstract criteria of cost-benefit analysis determine projects and reality.

What about incoherence then? Is it all good or what does it mean? Incoherence means that worldview is not compatible with science/method, ethics and esthetics. This is the case for the earliest, two of the latest manuals and the EIA-research on Goliat. These documents clearly articulate and express intentions of internalizing holistic values, but argue that EIA-research ought to be based on the received image of science.

Incoherence can in one sense be interpreted as something negative, because ontology and epistemology are not compatible. It is negative because the natural

scientific method converts the worldview to fit with its rigid criteria, which in turn makes the worldview deviate from the initial, intended worldview of these manuals.

Incoherence can, on the other hand, be interpreted as something positive because it means the existence of different perspectives meaning in turn that our research is more reflexive and interdisciplinary. This means that the incoherence of the three manuals and the Goliat report represent something positive because they are of a more reflective kind involving the inclusion of subjectivistic and hermeneutic ideals/values. These incoherent manuals and the report become therefore more developed, more mature, more concise, more truthful and more meaningful/coherent in a sense. This is because they are less abstract, less reality diluted, less superficial than the coherent cases presupposing objective ontologies. Incoherence in this sense means that they are intended to fit a reality characterized by complexities, multiple perspectives, by human emotions, ethics and esthetics. This cannot be understood otherwise than political attempts to foster more humane and eco-friendly projects and societies. Thus, in this line of reasoning, incoherence in manuals and EIA reports must be understood as something positive.

It is obviously political and general pressure from society and businesses themselves, that contributes to the worldview and ideals/norms of these three manuals plus the Goliat report and thus the corresponding paradigmatic incoherence. The reason for the incoherence we see in the most recent and state-of-the-art EIA-research can be explained by the increasing pressure from politicians and other members of society to enforce international rights and conventions in relation to ecological and human concerns, but that scientists, professionals and specialists applying the received image of science are in practice responsible for the actual EIA-research into the various ecological, social and economic parts. Evidence of such an explanation is especially apparent from the latest manual regime in which we see the same inconsistencies existing between ontology and methodology, but in contrast to the earliest manual we find additional incoherence in *ontologies* between the different

ministries. For example the Ministries of the Environment and Health and Care Services hold a clear subjective ontology, whereas the Ministry of Finance operates with an objective image of man.

An example fitting the system well is the following. Politicians and society claims the following: “well-being for human beings and natural beings”. This statement represents the ontological norms or the political ideals/intensions. Furthermore scientists are hired to study how a case relates to human well-being and bio-diversity. The researcher endeavors to study the conditions as value-free and objectively as he or she can, that is, he/she applies the received view of science, thus immediately displacing consistency between top and lower levels, because his method presupposes an objective ontology; i.e., the reductionistic approach only captures the physical, primary qualities of the concept of well-being. Maybe the most grave consequence of this practice can be seen in the Amazonas with the petroleum industry affecting the life and culture of indigenous tribes in a devastating way; but still extraction goes on because scientists cannot find objective/physical (“cause-effects”; e.g., in relation to cancer) evidence for the negative exposure.

The reason that the latest manual regime includes different and incommensurable ontologies is probably due to different ministries being occupied in their daily work with different parts of society, reality and social phenomena. This dynamic together with the interplay between partial ministries and partial scientific camps (researchers and research-consultants with their scientific models, theories, concepts, presentation styles), for example, between the Ministry of Finance and economists, between Ministry of the Environment and ecologists, biologists, etc., and between The Ministry of Health and Care Services and psychologists and physicians (medical doctors) contributes towards a more and more fragmented culture where cooperation, interdisciplinarity and consistency between political ideal, intensions and norms (ontologies), on the one hand, and practices on the other hand, is experienced and conceived as more and more difficult. (This is probably the reason

for the rapid growth of academic literature and interests concerning phenomena such as 'complexity' (see e.g., Taylor, 2001; Ehrenfeld, 2008).

The demand for inter-disciplinarity, as expressed in the 'instruction', remains utterly unresolved in the latest manual regime when no communication between the ministries is established; each ministry is responsible for developing its own manual. This means that each social, environmental and economic impact/effect is assessed totally independently of each other and that the nature of the relationship between effects (ministries) can only be constituted by some form of utilitarian weighting (similar to the discussion on 'non-priced effects' in Ch. VII). Correspondingly the relations between the parts and their link to the whole are lost/absent/ignored.

It makes sense to understand incoherence as a positive feature of EIA-research in the sense that it fosters dialectical EIA-research. The EIA-research of the Goliat report characterized by double internal incoherencies (ontology and external ethics), represents a positive paradigmatic development which our earliest empirical case (EIA report on Veslefrikk) does not include. This fact sends a strong signal that EIA-research/practice has changed during the last 20 years or so. The nature of this change has also been effectively described by the use of the two paradigm concepts applied in this dissertation. The shift we see involves a fundamental re-orientation of values and stakeholder responsibility in relation to project endeavors. This is evident from the internalization of elements of subjective ontology and non-instrumental ethics in the Goliat report.

If the hypothesis stating that the existence of an ecosophical-hermeneutic rivaling paradigm is on the march or struggling through a Kuhnian pre-paradigmatic phase is correct, that is, EIA-research experience a slow paradigmatic development, we should expect that the future will involve more interpretative, hermeneutic and phenomenological studies and the internalization of non-instrumental and stricter environmental ethics, in addition to a broader use of more soft and qualitative esthetics. A crucial success factor of future hermeneutic EIA-research rests upon

authorities', proponents', and social researchers' ability to understand and reveal the conscious content, the psychic social impacts, of how individual and unique subjects experience and evaluate the situation/project. This understanding is increasingly being demanded and underlined in modern EIA research (cf. manual on health and well-being), but unfortunately and surprisingly current EIA-research is severely ignorant of the field of hermeneutics and the science of man.

It is an interesting observation to see that paradigmatic changes of EIA-research seem to originate and build their force external to and not from within research communities. It is possible to interpret these particular instances as evidence pro Kuhn's hypothesis of research communities as totally or partly closed systems with little interest showed towards other research communities and perspectives, as proclaimed in his theory of the 'psychology of research' (Lakatos & Musgrave, 1999). This evidence enhances the view of Kuhn, but diminishes the thoughts of Sir Karl Popper; at least from a descriptive angle (Popper's normative view on a research community as open, reflexive and critical is beyond doubt the right view of how scientific discovery ought to happen; i.e., his theory of the 'logic of scientific discovery').

As stated, the trend towards more holistic EIA-research seems to be initiated and fostered from outside research communities. This implies that the success of future EIA-research based on ecosophical values and hermeneutics depends on the pressure established by politicians and in society. This means in turn that development must probably be forced through stricter legislation. It is also important to underline that academic freedom and new-thinking within research and scientific work deserves more attention and ought to be supported and promoted. The central aspect here is to foster and encourage research that is "looser" meaning that traditional naturalistic criteria such as objectivity and interpersonal results must be downsized in relation to social research.

The rest of this chapter includes an account suggesting how EIA-research can be developed from their current instrumental-received character (atomistic) to become a more humane, eco-friendly and holistic tool for authentic sustainability; as we in fact have seen from the ontology of the manuals, is the intended purpose of the Norwegian EIA regime.

4 From atomistic to holistic EIA-research: ontological, epistemological and methodological implications

Through Part IV of the thesis it is evident that the following (1) ontology and (2) epistemology enjoys hegemony and govern contemporary EIA research/practice:

1. Objective Ontology
2. Received Image of Science

An objective ontology means that contemporary impact assessments are centered on describing the potential instrumental effects on project development. EIAs are therefore dominantly concerned with the instrumental values of the initiatives to be taken.

The received image of science means that contemporary EIA-research is centered on empirical description and observation of factual (objective/physical) sides of social phenomena. The result is, as we have seen, a severely superficial and thin description of social impacts - ignorant towards 'psychic effects'.

These two traits are the reason that contemporary EIAs are atomistic. In order for the EIA tool to serve the purposes intended in the different manuals, it is therefore necessary to supplement contemporary EIAs on these two levels: ontology (values) and epistemology/methodology (methods for inquiry). Furthermore the thesis will discuss some ontological, epistemological and methodological implications for holistic EIA-research.

From value monism to value pluralism

The current partial structure dividing problem statement and responsibility between the various ministries (specialist organizations) must be transformed into a structure allowing and ensuring *inter-disciplinary* approaches and common responsibility, that is, knowledge of the various 'parts' (ontologies, norms) and their relation to the 'whole', that is, the holistic-coherent picture.

The most significant consequences of anchoring EIA research in trans-disciplinary approaches involves an enlarged focus on values, that is, from merely instrumental (economic), utilitarian values to cultural and meaning-centered values. This means that holistic EIA-research needs to cherish and promote development projects fostering the realization of cultural and meaning-centered projects, that is, humanistic-existential values; similarly to the way contemporary EIA cherishes instrumentality. This does not mean that utilitarian values should be suppressed, but rather balanced with meaning; if they are not balanced, the project will be experienced as meaningless - precisely because meaning-values are suppressed. The fundamental implication of subjective ontology in relation to development projects involves *anchoring projects more deeply within a humanistic-existential or a broader value-horizon or cultural context*. In short this means that a person's intrinsic needs, values, feelings, potential, etc. must be internalized more seriously than is the case today.

In practice this means that the Ministry of Health and Care Services and the Ministry of the Environment must be involve more pro-actively. Because these ministries stand for subjectivistic ontologies in the form of humanistic and ecological values needing to be internalized in the planning of project much more seriously than is the case today.

As a reference system for cultural/humanistic values, Maslow's theory of human motivation and personality can be partially used (cf. chapter IV). The crux of

meaning-oriented projects is thus to develop and realize the inner life of humans. This implies that physiological (exercise, physical well-being, safety, etc.) and psychological (love, friendship, contact, self-realization, spiritual, psychical well-being, etc.) values/needs must receive attention, not merely instrumental values; which are in fact only “means-values” and never “ends-values”; i.e., ends in themselves such as cultural values.

Anchoring initiatives more deeply in a cultural and ecological context also necessarily means measuring not merely physical-chemical change in relation to nature and culture, but also *value change*, that is, subjective-psychical ecological and cultural values; i.e., felt and experienced qualities together with ethical evaluations.

This means that projects cannot simply be evaluated in relation to instrumental values, but must be understood and interpreted in the light of cultural and natural values as well. This implies that the experience of work is at least or perhaps even more central for social development than merely material outcomes/products. This means that the *being* dimension of work, that is, the kind of *identity* work gives us and the *feeling* of this, is at least as important as the *having* dimension, that is, the material outcomes of work (e.g., materials, benefits, etc.).

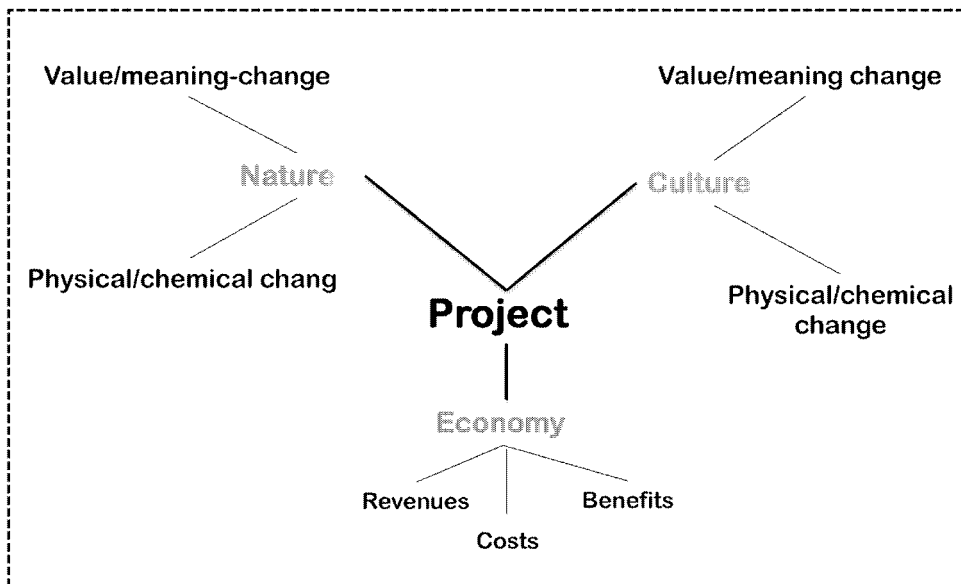
Holistic environmental management research is visualized in model 1. The model emphasizes the need to internalize a pluralistic set of values: from instrumental (benefits and costs) to intrinsic values; physical and psychical cultural (e.g., friendship, belongingness, health) and ecological values (ethical and esthetical).

Projects endeavoring holism need necessarily to *balance* instrumental and intrinsic values, that is, to move away from the contemporary weighting (utilitarian) of ‘effects’. This is precisely because they are *intrinsic values*, that is, values in themselves and thus not substitutable.

Model 1 is of course an abstraction of holistic projects because it is partial, that is, it splits values into three areas (economic, ecological and cultural). The reason for

doing this is analogous with that of splitting the paradigm concept into a worldview, a perception of science, and so on, that is, for pedagogical-analytical means. In reality the values are closely interrelated; hence the stippled line encapsulating the model and the values. For example sustaining biodiversity is basically a cultural norm which can increase psychic well-being; increasing economic benefits may lead to the subjection of cultural and ecological values and so on.

Model 1 Holistic Environmental Management Research (EMR)



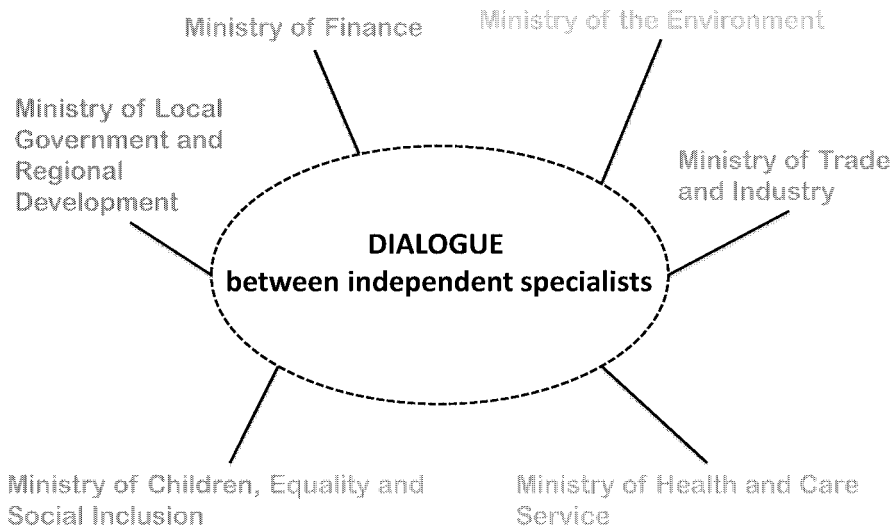
Criteria which should be adopted by a manual on EIA or an EIA-report anchored in deep-ecology and subjective ontology:

- Value assessment: What type of values does the initiative promote?
- How does the initiative promote meaningful development; i.e., balanced interplay between utilitarian, ecological and cultural values?

From partial to dialogical/inter-disciplinary EIA-research

If EIA research are to serve the purpose of revealing the holistic impacts of projects, that is, to go along and assess how initiatives impacts (physically and ethically) the economy, culture and nature as described above and visualized in model 1, it is necessary to produce interdisciplinary research. If the manuals, for example, are to work as a skein for how proponents ought to go along and assess the holistic picture, the various ministries or researchers' or specialists' for that matter, need to communicate and cooperate together. Through dialogues and cooperation the parties gain insight into one another's realms/perspectives and concerns (ontologies), that is, economic (Ministry of Finance), cultural (Ministry of Health and Care Services) and environmental (Ministry of the Environment) concerns and values; plus the ministries currently responsible for their individual manuals (cf. tab. 4 in Ch. VII) (see model 2). *The idea behind the dialogue method is to establish integrated networks which in turn make it possible to coordinate concerns and interests for the various ministries or stakeholders, that is, to take into consideration, at the same time, economic, cultural and ecological values.* First then can a common, coherent interdisciplinary account be comprehended and worked out, that is, a holistic understanding ('*Verstehen*') of the *relations* between a project's cultural, economic and environmental impacts - as visualized in Model 1.

Model 2 The Dialog-Method: a tool for Holistic EMR/EIA-Research



The dialogical framework has the potential to produce knowledge about which projects are meaningful/-less, with the gist of this, I believe, being to bring *humanness* back down to Earth and into EIA-research. This is because *dialogues are hermeneutics in practice* because 'value-change' or *psychical knowledge* in relation to culture and nature is *articulated* and *expressed* and made public for the participants thus producing knowledge which the received image of science, i.e., precise and impartial observation of objective data suitable for descriptive claims and generalizations, i.e., *physical knowledge*, does not produce.

Indeed it is plausible to assume and hope that these collaborating networks will shed new light on things enabling new problem identification and problem solutions. Not least will this contribute to assessing the real meaning of projects, that is, the relationship between the initiative and the cultural field, and the true ecological balance/imbalance of the initiative, that is, the relationship with the field of ecology.

In the space of a relatively short time, I think, the network perspectives will illuminate that a clear line does not in fact exist between what is good for culture, economy and ecology (cf. discussion on ontology in the manual on HWB in ch. VII, 3). The logic behind this claim appears trivial. The reasoning here can be found in the deep-ecology interpretation of self-realization meaning that it is a culturally meaningful phenomenon to design projects in balance with the laws of nature; i.e., which do not deplete our local natural ecosystems.

Another consequence of the network perspective concerns ethical and esthetical experience of a project; that is, the *phenomenology of work*. Directing attention to the meaning dimension of work enables us to discover whether or not and why work is experienced as meaningful or not. Experience knowledge is useful because it makes clear if and which part(s) of work are meaningful/-less. This knowledge is important for at least two reasons. First, if work is experienced as meaningless, the whole endeavor should be questioned as to whether it should be initiated or abandoned. Here utilitarian values must obviously play a role. Secondly, it enables us to design businesses that are more fun, more enjoyable, and more qualitatively valuable for human need-gratification and self-development.

Criteria to be adopted by a manual on EIA or an EIA-report anchored in hermeneutics:

- Dialogical method for coordinating values.
- Through the application of hermeneutic-interpretative methods the values and meaning of an initiative should be assessed and presented.
- It is an advantage if the findings from previous hermeneutical research are presented in various qualitative forms (e.g., articulated as clearly as possible in literary form, but also expressed through pictures, music, plays and other creative expressive forms).

5 Some personal, ad-hoc reflections on the future of EIA-research anchored in deep-ecology, subjectivistic philosophy and hermeneutics

Anchoring projects more thoroughly in an existential context provides a categorical fundament for (re-)defining human needs, values and freedom. It makes sense then to assume that this view will, in fact it must, change to significant extent materialistic-instrumental oriented projects. This will in turn decrease superficial needs/preferences and reduce the usage of matter and energy from natural ecosystems.

The need to evaluate the qualitative motivation behind projects to a much higher degree, that is, morally to discriminate between projects, will probably offset much production because of the shift in decision philosophy from cost-benefit regimes; i.e., a shift from doing what we purely *can* do, uncritical of our motivation, to what we *ought* to do.

At the same time one can also imagine that the new values will initiate/promote new projects which have previously been categorized as unreasonable based on a utilitarian, cost-benefit point of view, but experienced as highly meaningful from an existential-ecological point of view. But in general, at least in the short and medium range of time, the increased focus on internalizing ecological and cultural values will probably imply the reorganization and transformation of already existing projects/practices (as we have for example seen with the increased focus on social and ecological values from the EIA on Veslefrikk to the EIA on Goliat), as well as reducing production and consumption of matter and energy in general. It also seems plausible to assume that another major change will involve choosing renewables, both energy forms and materials, as well as more “soft” and less energy intensive technologies. We already see this happening to a certain degree today with an increased focus on producing renewable energy, electric engine cars, Italy’s abandonment of plastic shopping bags and so on.

The trend of thinking in non-reductionistic ways is, however, far from acceptable, in that this would ultimately mean focusing more strongly on the consumption side of energy. The real problem is our ever-increasing demand and “need” for energy. A truly holistic approach on the energy issue forces us to move further on and ask deeper questions than merely those technical ones concerning how we can enhance efficiency or switch our national and global energy balances from fossil fuels to renewable energy or whatever. Authentic sustainability is only possible if we ask the question: “how can we decrease, substantially, our energy demands while at the same time keeping stable or in fact even increasing the human and non-human qualities of life?” Maybe it is correct to say that we need a shift or even supplementing the technical centered questioning with cultural and meaning-centered questioning. The point is that while sustainability issues in relation to the link between economy and nature are more or less recognized, the link to the cultural context is almost completely ignored.

It is easy to see that changes in the input of matter and energy of our economies and projects are inextricably linked to changes in our cultural values; or input of cultural capital or knowledge and values. This probably means that if we want to change our projects, we must also probably make *changes in ourselves*, that is, transform our current instrumentally centered culture.

6 Ideas for further research

Ecosystem approaches

Ecosystems are examples of holistic systems in which all parts are harmoniously related to one another and the whole. It thus makes sense to see natural ecosystems as a metaphor for sustainable socio- and economic systems: so called ‘ecosystem approaches’. The gist of ecosystem approaches is to establish harmonious symbiotic relationships between socio-economic and ecological systems, analogous to the circular patterns we find in ecology. This involves establishing networks of producers,

consumers and redistributors (or decomposers), *niches*, all mutually dependent on one another's input and output.

Can eco-system approaches be integrated in EIA? Is this a useful framework to adopt?

From top-down to bottom-up projects

The change in ontology from an objective to a subjective perception of reality necessarily means ascribing more autonomy to individuals and local stakeholders, once again attaching special importance to ethnocentricity, and thus once again the re-enchantment of the world. This argument suggests then a pro-active attitude encouraging decentralized and bottom-up initiatives. Correspondingly the subjective ontology also promotes policies and initiatives enhancing *cultural diversity*, as well as biological diversity.

Currently top-down planning dominates the agenda. Logical-positivistic epistemological endeavor is largely responsible for legitimizing these standardized and universal/objective policies, because the objective construal reduces cultural differences. In fact any unique qualities or local meaning codes are more or less regarded as metaphysical hog-wash or naïve pre-modernity (as we in fact saw explicitly articulated in the Goliat report concerning the Sami people). There can be no other reasoning behind the fact that one single authority can sit on his high horse ladling out his wisdom and preaching the future for other autonomous and rational and non-rational beings.

There are many reasons why bottom-up initiatives will prove the most efficient way to organize projects/society. The ecological reasons are obvious. For example we can mention more energy-efficient (decreased energy need) transportation, fostering soft technologies, and so on. Also the social-psychological reasons are clear-cut. For example, through fostering tight bonds between society members or natural I-Thou relationships, higher motivation for cooperation and responsibility, engagement,

feeling of worth, more transparent dependency structures, etc.; in other words, a more holistic frame for existential realization.

What emerges from this is a more holistic project and collective culture. This means that the relationships between economic, cultural and ecological values merge together into a complex web. This complexity has both a personal and a systematic dimension. It is personal in that it fosters, in principle, a generalist rather than specialist meaning individuals need to possess or learn a variety of skills (both technical and empathic). It is systematic in the sense that societal functions will become more integrated, leading to a more dynamic and healthy relationship between culture and nature. This latter point will be especially observable in relation to the production, distribution and consumption of food. Today our practice ignores the fact that we, and not least our children in the future, will depend on rich biological resources in their surroundings to sustain food security. This is due to the increased fragmentation of precisely the network-relations between natural and cultural systems. The decrease of local natural resources increases the demand for energy-intensive ways of distributing food and other daily necessities which in turn hinder the realization of the reduction of the material and energy loops. I suggest that the main reason for this stems from the epistemological construal of the world dating from the seventeenth century; here the reductionistic ideal is especially evident.

Based on the discussion in the thesis, I would like to signalize that this area ought to be further addressed by researchers, especially, by way of multi-disciplinary scientific work.

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Dissertation notes

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The first aim of the dissertation is to develop a conceptual tool (two paradigms) for the purpose of analyzing Environmental Impact Assessments (EIA). This positions the dissertation in a field which includes environmental management, the philosophy of science, environmental philosophy and ethics. Thus making the research at hand, to a great extent, an interdisciplinary piece of research.

Using two research paradigms, Johansen discusses six Norwegian EIA cases with regard to ontology (nature and human), perception of science, scientific ideals, ethics and esthetics. The intention of the analysis is to illuminate the paradigmatic presuppositions governing Norwegian EIA-research. Part V of the dissertation discusses the transition from atomistic to holistic EIA-research.

Through applying hermeneutical reflexive methodology, the thesis reveals findings of significance: the manuals on EIA and EIA reports are characterized by an ever increasing incoherence (from EIA report on Veslefrikk of 1987 to Goliat, 2009). Concretely this means that contemporary Norwegian EIA-research can be characterized as much “talk”, or promises about sound ethical and humanistic concerns, and less “walk”, or little actual research and implementation of the norms and values promised; hence then the lack of correspondence (incoherence) between values (ontology) and method/practice.

The kernel message of this dissertation is to make it clear that the reason why humanistic and environmental concerns are absent and left out in the shade can be explained by the epistemological and methodological choices of EIA-researchers. These choices in turn result in consequences for ontology. The dissertation discusses it being necessary to use the epistemological position of hermeneutics in order to gain a deeper (intuitive and emphatic) understanding (‘Verstehen’) of social and environmental impacts. This method utilizes a subject-subject relationship between the researcher and the study object in order to understand the inner unique experience of subjects and social phenomena.

The thesis suggests several ways forward (ontologically, epistemologically and methodologically) with regard to how current atomistic EIA-research can be developed into holistic EIA-research.

ISBN: 978-82-92893-21-0

Trykk: Trykkeriet UiN

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