The construction of pseudo-science:
Science patrolling and knowledge policing by academic prefects and weeders

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ABSTRACT

The mission of the worldwide movement of skepticism is to combat pseudo-science. The proponents use standardized scientific empirical epistemology and methodology to counter the claims regarded as false. Debunking pseudo-science has become a popular activity with great support both from the science community and public discourse. In this study, the Swedish branch of the skeptical movement is analyzed in terms of its epistemology, its methods of debunking and its policies for establishing clear boundaries between good and bad science. It is argued that pseudo-science is partly constructed in debunking narratives. These activities are critically analyzed in terms of their intolerance for differences and for its character of an emergency unit performing "epistemological cleansing" in the academic community. The work is based in the fields of science communication and critical studies of science and technology.

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INTRODUCTION

A local branch of the skeptical movement

The association *Vetenskap och folkbildning* ("Science and Adult Education"; hereafter VOF) was established in the early 1980s with inspiration partly from the United States and the *Committee for the Scientific Investigation of Claims of the Paranormal* (CSICOP).[1] The North-American predecessor was founded 1976 and have from this year published the journal *Skeptical Inquirer* (initially the journal was called *The Zetetic*). Among the founders of the North-American branch were scientists and writers such as Carl Sagan, Isaac Asimov, Philip Klass, Paul Kurtz, Ray Hyman, James Randi, Martin Gardner and Sidney Hook. These well known authors and researchers have all contributed in disclosing and revealing pseudo-scientific phenomena. Some of their disclosures have been translated into several languages and have achieved mythological fame among the world wide skeptical movement.[2] The Swedish organization VOF publishes the quarterly journal *Folkvett* (Sw. "People's (Common) Sense"). Writers associated with *Folkvett* often quote international work. They cite as well as translate articles originally published in e.g. *Skeptical Inquirer*. A leading person in the Swedish branch of the skeptical movement is Sven Ove Hansson, professor of Philosophy at Institute of Technology (KTH, Stockholm, Sweden), who apart from being one of the founders of VOF has published several books on this theme during the last two decades (Hansson 1995[1983], Hansson & Sandin 2000; Jerkert & Hansson 2005), as well as several articles and editorials in *Folkvett*.

The American journal as well as its Swedish counterpart is popular among professionals and researchers in the field of science and technology who there can find support for their perspectives on knowledge. They can also be entertained, as well as scared, by examples of how various claims of representing a scientific methodology can be used in order to endorse all sorts of pseudo-scientific explanations to natural phenomena. Taking part in the continuous negotiation of boundaries between science and its deviant versions thus seems to constitute a relevant activity among active researchers and professionals.

The world wide movement of skepticism is not homogenous, although

1 An editorial in *Folkvett* (4/2002) explains why the Swedish branch of the skeptical movement initially did choose not to use the word "skeptic", the international catchword, for its own local organization and recognition. By not using the word "skeptic", which in the local context was associated with people who represent a particularly restrictive or narrow conceptualization of preferred knowledge, they wanted to disassociate themselves with this narrow view and converge with established scientific methodology as the only instrument for distinguishing well founded from unfounded assertions.

2 The movement have national organizations in 39 countries.

there might be shared values and epistemologies. The Swedish branch is obviously developed in a national context which is cultural specific, but some problems may have a more general character. This world wide movement for defeating pseudo-science emerged during the 1970s and 1980s largely as a response to the influences among young people especially but not exclusively, from different kinds of non-Western spirituality and ideology that often are referred to as New Age. In particular, these influences attracted young people who searched for alternatives to the dominating Jewish-Christian and Western world views and its associated expectations on the life span and destiny. Another important explanation for the emergence of phenomena such as CSICOP and VOF in the 1970s and 1980s is to be found in the post-World War II critique of science based on doubts concerning the possible benefits of science and the alleged risks ensuing from its implementations, for instance, in nuclear bombs and armament, and its potential negative effects on the environment. Among other things, this explicit critique of science, also by some renowned scientists, led to the acceptance of a critique of science in the intellectual establishment. In his historical sketch of the skeptical legacy, Hansson avoids scape-goating those individuals who show an active interest in alternative movements that sometimes exhibit pseudo-scientific character, but orients his critique against those individuals who are exploiting innocent people for their own gain (Hansson 1995:69). Thus he understands these alternatives, influenced by non-Western traditions and critique of science, less in terms of a people's movement with a democratic character and more in terms of business enterprises under direction of charismatic and profit driven leadership.

The work in the association VOF is devoted to enlightenment concerning science and understands its special mission as combating erroneous and deviant science that are represented as true science, i.e. pseudo-science. An important momentum for the association is informing the public in the correct way so that false science can be identified and dismissed. This work in the pursuit of truth and enlightenment is made by those who claim to master the correct scientific methodology.

The decline of "Swedish reason"

In a Sunday feature article (February 13, 2005) in the Swedish daily newspaper *Dagens Nyheter*, the acclaimed novelist P.C. Jersild writes with worry concerning the fate of reason among Swedes: "Whatever happened to Swedish reason?" In the article, Jersild is reviewing a new book with the title *Vetenskap eller villfarelse* (*Science or Delusion*; Jerkert & Hansson 2005; hereafter VVI) which he declares is so "invaluable" that he closes the

review by issuing the general recommendation that it should be mandatory reading for all school pupils and also in journalist training. Such unanimous recommendations are not often given by famous authors and this alone deserves further commentary.[3]

In his chronicle, Jersild focuses on the analytical object in VVI. i.e. the scientific analysis and assessment of astrology, parapsychology, mysticism, creationism, homeopathy, divining-rods, etc. understood as pseudo-science. The common denominator in the analysis is that neither of these phenomena can withstand critical scrutiny from the perspective of robust science, something that is also shown in the chapters of the book. The book VVI is written by active scientists who belong to the skeptical movement (VOF) and who are combating pseudo-science while simultaneously praising the merits of empirical methods. Jersild welcomes the book as "invaluable", not just because it is well composed, but because he agrees with the timely aim to restore "a decent order of thought, self critical but not nihilistic, with sound respect for facts". He associates this with a return to the virtues of what is characteristic of "Swedish reason": "Basically, it is about questioning, not to take anything for granted, not too easily accepting sweeping generalizations".

One liberty taken by Jersild in his review is to associate reason with generalizations about national character ("*Swedish* reason"), although this is done with apt reservations and a politically correct circumscription. Using the analysis of VVI as a point of departure, Jersild also take the opportunity of questioning folk piety in general and the critique of rationalism and rationality. In his review there is thus a drift from the explicit object of VVI, i.e. pseudo-science, towards identifying a new target, i.e. humanities and social science at large, along with feminism, folk piety and postmodernism. The following questions can be posed: Is this also one of the implicit motives of VVI? Is this a critical object that becomes more explicit in related contexts and expressions of the skeptical movement? Some of the authors of VVI have written other books and many of them collaborate in editing the quarterly

3 My article is translated from a longer version in Swedish, entitled "'Folkets vett?'. Vetenskapens folkliga kunskapspoliser, 'akademiska ordningsvakter' och 'ogräsbekämpare'". All translations from Swedish, this text at large and others that are quoted, are my own. As all translations, the texts quoted are object of changes which the original author may or may not be happy with. This is particularly so here, where I am translating from Swedish to English for many readers who may know the work in original language. I apologize for the unintended changes of meaning which come as an effect of translation. Luckily, I have benefited from engaged and critical readings on the Swedish version of this text by the following persons whom I hereby want to acknowledge: Erik Berggren, Nils Enlund, Lars Ingelstam, Claes Nilholm, Jörgen Nissen. Despite all critical comments that would lead to changes in the text, I have taken the liberty not to always follow their suggestions.

journal *Folkvett*. The association VOF annually issues the award "The Annual Adult Educationalist Award" ("Årets folkbildare") to the person who most deserves to be praised for his/her work that conflate the work of the association. P.C. Jersild won this award in 1997 for his authorship that focuses on "the nature of humanity".[4] This relation in itself might not prove sufficient in equating the opinions of Jersild with the ideology of proponents of VOF, but it is certainly a possible basis for exploring a similar kind of drift in terms of analytical objects in their writings, i.e. towards including in the category of pseudo-science, also the somewhat unholy alliance consisting of the humanities, social science, feminism, religion and postmodernism, suggested by Jersild.

Methodologically, I realize that the critique of *Folkvett* might be framed as a defense for the pseudo-scientific phenomena under scrutiny in the journal. The critical reading of *Folkvett* risks being interpreted as an advocacy for what is the critical object in the journal, i.e. the systematic questioning of phenomena such as divining-rods, anthroposophy, or whatever else is investigated. And if not being a direct defendant of any of these allegedly pseudo-scientific movements, one runs the risk of indirectly legitimating their existence and public following by potentially undermining the dismissal of them as false; guilt by association. Through the dynamics of rhetoric one might be forced to respond to such direct or indirect claims only if one do not actively endorse the willingness to oppose pseudo-science? Once and for all: I am not a devotee or defendant of divination, parapsychology, racism, creationism or any other phenomenon brought up by the association in books and journals.[5] It is in my interest, however, to advocate a certain degree of openness and tolerance in the name of academic freedom and inquiry. I will do this in order to understand and explore (but not necessarily share) various knowledge perspectives and cultures based among folk and deviant science communities. If I want to defend anyone I would like to help to observe this freedom of expression and belief from the systematic witch hunt by self-proclaimed science patrols, knowledge

4 The association also issues "The Annual Delusion Award" to the one who deserves this antithetical goal.

5 Place for confessions. I once wrote a newspaper article about "crop circles", but more from sociology of science perspective. My doctoral dissertation focused on Christian fundamentalist Bible reader's text practices. These practices were often alien to my own views, but I never understood my role in terms of a "knowledge police" with the mission of evaluating the ways of interpretation in the congregations. I have traveled widely, for instance in Asia and I have met people who have inspired me, whether they were performing and professing Hindu faith practices, such as yoga, meditation, Ayurvedic healthcare or astrology. I do not see my mission as identifying human errors in culture whether they occur in the South Indian province of Kerala or in Sweden.

polices, "academic prefects and weeders", whether these are physicists, philosophers or novelists. The quotes, also in the title above, "academic prefects" (Sw. "ordningvakter") and "weeders" (Sw. "ogräsbekämpare") are not my own, but are adapted from a writer associated with *Folkvett* and VOF, Tor Sandqvist (2000:186), who in the vein of the skeptical movement declares that the fight against pseudo-science is not done for its entertaining values, but because as a serious scientist one is "forced" to act as an "academic prefect and weeder". This mission is neither entertaining nor fun, declares Sandqvist, but simply "unglamorous and boring" to the limit of being "painful" (ibid).

The structure of this text is the following. In this article, I will analyze the Swedish association VOF as an example of the world wide skeptical movement. In the next chapter I will theoretically link this analysis to a threefold perspective on knowledge ideologies: first, the way in which various knowledge perspectives and knowledge cultures are discussed and evaluated; secondly, concerning the role of communication in science and, in particular, the relation of science and the public in this exchange; finally concerning "boundary work" in science as the contemporary knowledge hegemony. In subsequent chapters I will focus the analysis on seminal texts in the Swedish branch of the skeptical tradition. Thereafter I will identify the "seven steps" in the skeptical procedure of dismantling pseudo-science that is used among skeptics and then show how these "seven steps" is narratively constructed. My general argument that pseudo-science is *constructed* by skeptics is partly shown in this narrative analysis, but it is also shown in the previous chapters. In the final part of the article, I will bring up a limited set of questions for discussion and also take the opportunity to comment on the normativity of the present text.

KNOWLEDGE CULTURES, COMMUNICATION AND BOUNDARIES IN SCIENCE

Before turning to an analysis of the various arguments, methods and ideologies behind *Vetenskap eller villfarelse* (VVI) and other publications from the association VOF that P.C. Jersild as one among many commentators have welcomed, we need to attend to theory and research concerning the three areas of interest here, namely (1) the encounter between different knowledge perspectives and cultures, (2) the view on communication between science and the public, and (3) perspectives on how boundaries in science are negotiated and maintained.

The encounter of different knowledge cultures

The contributors in *Folkvett* and the members of the association VOF are usually scientists and researchers representing a range of disciplines in science and technology, to a lesser extent they belong to the behavioral sciences and the humanities. Even less frequently they can be found in the social sciences. The scientists are mostly physicists, engineers or biologists. The behavioral scientists are mainly psychologists and those representing humanities are usually (analytic) philosophers. Despite the relative breadth in the represented disciplines the differences in terms of knowledge perspectives are not that emphasized. Largely one can identify a great acceptance, also among the philosophers, for the relevance and dominance of a knowledge perspective that is based on the empirical methods of the natural sciences. This convergence is an example, albeit limited, of the domination of basically one and the same knowledge perspective even among fields that traditionally have been separated, e.g. on the lines famously delineated by C.P. Snow. This ideological kinship and affinity among representatives from various disciplines adds both strength and legitimacy to their common goal of applying such methods to the study and dismissal of deviant (controversial) phenomena. The common ground in terms of a consensual methodology stands in contrast to the deviant methodological character of fringe phenomena in science. This can be understood in terms of a process in which diverging knowledge areas (e.g. philosophy and physics) converges into one and the same (natural science) perspective in order to more effectively combat alternative views. The reason why the science perspective come to dominate is due to the fact that the theories and methods that are questioned, such as creationism, divining practices and complementary medicine, represents alternatives to standard scientific explanations. In terms of alternatives to standard explanations they also contain critique of the epistemological assumptions of dominating science. Another reason for this convergence between natural science and humanities is historical and goes back to the classical form of analytical philosophy that came to take the role of a meta-philosophy for empirical science (cf. below).

In VOF this scientific knowledge perspective is also merged with an explicit mission for the dissemination of correct information and especially for adult education (Sw. "folkbildning"). This is enabled by participating in public discourse concerning criteria and quality in knowledge production, in particular scientific knowledge production and its deviant cases. This knowledge perspective can also be identified in the way that science communication is conceived (cf. below), where a top down process from science to the public affirms a quite conventional distribution of roles in

public discourse on science, giving the expert his/her role as Expert with a mandate to correct errors not only in one's own discipline but also in all other areas where the scientific method (in singular) can be applied. The challenge for science communication (cf. below), according to VOF, is less to investigate curious phenomena and theories in their own right and more to hunt down alleged cheaters who have exploited the legitimacy of science and also innocent victims. The revision of these errors and forgeries is based on a firm belief in the correct transfer of the expert's perspective through criteria and arguments brought in from the methodology of natural science or from a general methodology applicable to almost everything.

In the article by P.C. Jersild, we encountered some explanations to his assertion of the decline of "Swedish reason". These explanations are taken from knowledge areas that represent critical alternatives to natural science and rationality. In this case both religious thought and the specific brand of social science and humanities thinking that Jersild identifies as "postmodernist", are based outside of the dominating science paradigm and can thus be conditioned to criticize this hegemony. In the group around *Folkvett* we can identify a very low tolerance for the relevance of such critique of rationality and, secondly, a general lack of acceptance for any knowledge perspective that is not based in natural science. Their way of understanding the conditions of a debate concerning knowledge is that their paradigm and methodology should dominate such debate. Thus one can claim that other knowledge perspectives than the ones that are based in natural science can not be considered as science. Already in 1983, Sven Ove Hansson defines "science" in a way that still is the official definition of science for VOF. "Science is the systematic search for such knowledge that is not based in a unique individual, but that anyone could find or control" (Hansson 1995:24). At the web page of the organization there is an addition to this original formulation: "Pseudo-science is assertions that are not based in science but that are presented as such to give the impression that they are based in scientific thinking". Words and expressions such as "systematic search", "not based in a unique individual", "could find or control" leads to a vision of scientific activity as a search for stable, controllable and individually independent regularities and laws. This leads us to the idea of science in the form of systematic empirical natural science, thus strictly restricting the scope of scientific traditions. Less obviously this perspective can be related to perspectives in humanities and the social science, as well as mathematics, where such "errors" as irregularities and deviance can be as interesting as those which are regular and mainstream. Even more remotely, one can see a great distance to phenomena and events that are unique and never again re-occurring and where the idea of "control" is replaced by "interpretation".

According to such a definition, science is always performed from a particular perspective in a specific time in history.

Obviously, this definition of science endorsed by VOF is determined by the specific context in which it is used, i.e. the context of informing the public about scientific forgery and delusion. In his texts on science and adult education, Hansson has almost nothing to say about social science but, in an analysis of his and the association's "debunking" of scientific delusions (cf. below), there is a profound tacit agreement in terms of social and political assumptions, not the least through a politically informed mission for a citizen's science, something that "anyone could find or control". The general focus is natural science and the specific focus are claims to science which do not hold, and this character spills over into definitions of what science in general can be.

It is possible to find examples where different knowledge perspectives are discussed in VOF. On the one hand how (wrongly) alleged scientific claims are identified and dismantled as pseudo-scientific, on the other hand the lack of concern with other potentially relevant knowledge perspectives, for instance taken from the humanities and social science. Partly this is an effect of the specific focus, but the implication is that a rather one-sided view of science comes to dominate in the intervention in public discourse.

Scientists, science communication, and the public

Learning of the conditions, practices and ideologies inherent in communication between experts and the public is made in the research area "science communication", and in particular, in the area called "public understanding of science" (PUS).[6]

Alan Irwin and Mike Michael (2003) present a view of the interdisciplinary field PUS that interrogates the relation between science and the public. The examples they look at in particular are the cases where science and technology are controversial (e.g. nuclear power, GMO-food, and BSE-epidemics), and not in the first hand those cases of aspirations to scientific status which might not hold according to criteria for distinguishing science. They highlight the fact that society and private enterprise often can benefit from endorsing a specific kind of science and technology, for instance by securing energy resources through nuclear power plants, or securing the production of food by GMO-technology. Such sciences and technologies become controversial because many critics claim that they contain risks

6 A more correct designation, following Irwin & Wynne (1996), would perhaps be "public understanding of science and technology".

of a specific kind that is systematically neglected by the interest groups. One of the questions they ask is what "understanding" of science and technology actually means for different individuals and groups of people, for instance researchers, politicians, and groups that are directly affected by technology, e.g. those farmers who live in the adjacency of a nuclear power plant.

A common conception of public understanding is that the public lack true knowledge and insight, they thus have a "deficit" in terms of knowledge. This deficit can be countered through education in order for the public to acquire a more correct understanding. The notion of the public as a homogenous but deficit collective that lacks scientific knowledge is called the "deficit"-model. The corrective to this model is accomplished by access to correct expert knowledge, on the one hand, and to ways of distributing or disseminating this knowledge in a proper way, on the other. Erroneous understandings need to be mitigated and corrected in order for the right knowledge to disseminate. Among those who cultivate the "deficit"-model there is a general fear that the public should loose their interest in matters concerning science and technology more generally. There is a fear that the public show signs of ignorance facing these important phenomena. Irwin and Wynne (1996:1) argues that these "deficit"-models with its associated fear of public ignorance can be understood as signs of a more fundamental condition concerning the social negotiation of power and order in the form of science and technology. This indicates an assumption of a separation between public identity and scientific organization in contemporary society. Discussions that are based in "deficit"-models also have as the objective to identify and combat the forms of science that cannot be justified by normative ideology. The idea seems to be that the public should appear as being "helped" by being "enlightened" regarding which model is right and which is incorrect ("false", "pseudo-scientific", "un-scientific") and carry a negative impact on their understanding of what science and technology is. The "deficit"-model is based on the idea that there is an interplay and negotiation between science and the public. But this negotiation is of a Machiavellian character, i.e. the researchers are always correct and the negotiation have more to do with making this explicit by disregarding alternative models, rather than truly discussing what science actually can mean. Among scientists it is quite common to ridicule such more radical notions of the prospects of negotiation, as a populist leveling of scientific methodology into the business of everyone.

This understanding of science is based on a definition which generally does not accept those lay definitions of science that people might cultivate

as their own and that might also be idiosyncratic, ambivalent or "false". The basic assumption is that access to science education of a particular kind is good and this can even be something that identifies the properties of a democratically engaged citizen. Irwin and Michael (2003:26) quotes a report from the British Royal Society where scientific literacy (or education) is associated with "enhanced practical competence in everyday life; greater capacity to make informed decisions; enhanced employability; increased ability to contribute to the democratic decision-making process (which nowadays entails a much greater element of scientific knowledge)." To have (or to lack) scientific literacy thus constitutes one important criterion for the ability to act as a citizen and to contribute to discourse and negotiation in a contemporary democracy.

The citizen's own knowledge perspective is often neglected or diagnosed as erroneous. This systematic intellectual rejection takes place despite what alternative and qualitative studies of public's understanding of science and technology often shows, namely that people more or less know from where they learn about these things (mostly from the media) and, more importantly, that they vividly carry several parallel and rivaling perspectives in their repertoire (without becoming schizophrenic) and that they can motivate their trust as well as critique in relation to authorities.

Irwin and Michael (ibid:28) argues that it makes sense to think of laymen's knowledge perspectives - "lay epistemologies" - rather than their "deficits". It is not in the first hand a matter of using formal criteria to declare what is true and false (but this is repeatedly declared to be one of the prime goals of science) but in showing how people are engaged in complex processes which consist of weighing various opinions about trust, legitimacy, use and power against each other. Such assessments and the more specific ways these are done are always related to social identities, practical circumstances and the view on personal responsibility and the interpretation of the joint political mission. The conditions for understanding laymen's knowledge perspectives and how these works in concrete contexts, are potentially critical. This is so because they can lead to the de-legitimation of scientific institutions and their interpreters.

Claiming that the public's understanding of science is "deficit" is not, argues Irwin & Michael, an innocent assertion. It is an ideological statement that performs a function in the interpretation of the distribution of power between politics, science and the public. The perspective contains normative assumptions that can be derived from certain basic assumptions in psychology, such as the following: (1) the human being is a creature who have a "store" of knowledge, in this "store" it is possible to detect the golden truths from "putrid clumps of innocent knowledge" (ibid:26)

or a complete lack of knowledge[7]; (2) the "deficit"-model is a necessary condition for structuring investigations that aims to describe how people's knowledge conform to or deviate from a norm that is based in accredited scientific knowledge; (3) the model assumes furthermore that people are not particularly reflective nor morally sensitive. Such methods can be presented as neutral tools and analytical frameworks, but they are not, argues Irwin and Michael.

In general the production of knowledge about the public's understanding is associated with quantitative methods and the "deficit"-model often evolves in distance from the social and cultural contexts where people live and work. There is thus a risk that such approaches neglect understanding how knowledge and values constitute important properties in the everyday life world and context of work, family and local culture. The questions that people are asked in this abstracted way, runs the risk of neglecting this important contextual anchoring.

Boundaries in the world of science

Boundaries inside and outside of science or concerning systems of ideologies compatible with science in a broader sense is a well-known phenomenon in areas such as studies of higher education, sociology of science and theory of science (Gieryn 1999; Tight 2003; Rothblatt & Wittrock 1993; Becher & Trowler 2001). Within science studies and "science communication" (cf. above) the object of study is also how boundaries are established and maintained, in particular the way in which (the "correct", "good" and "true") science can be distinguished from other systems and forms of knowledge, for instance ("bad", "false" and "pseudo") non-science or everyday knowledge (Irwin & Wynne 1995:8). The object of study is also those communicative mechanisms which are used by social groups along with scientific arguments and academic legitimacy to support their interpretation of some phenomenon.

In this chapter, I have introduced some theory in three related knowledge areas and have tried to show how these can be relevant analytical entries into an understanding of how the construction of pseudo-science take place in the realm of the association VOF. In the following chapter, I will focus on some foundational texts in the Swedish branch of the skeptical movement in

7 Hansson (1995:36) uses exactly this metaphor to describe how the potential threat against our worldviews is constituted by pseudo-science: "A small part of the ideas that are today proposed, and that currently challenges received common sense, are correct. They should be incorporated with our worldview and with what is declared as common sense in the future. *It is a matter of washing out the gold from the gravel*." (my emphasis).

order to approach a deeper understanding of their mission of constructing and dismantling pseudo-science. We will get to know a bit more regarding the VOF writer's definition of science, emphasizing the homogeneity in accordance with a dominating natural science perspective. We will also approach their view on science communication and the conditions for this interchange as well as their view on legitimate and illegitimate boundaries in science and pseudo-science.

THE EPISTEMOLOGY OF SKEPTICISM: SENSES, CRAFTS AND SCIENCE, REALITY, AND ANTI-RELATIVISM

I started this text by referring to the recent book reviewed by PC Jersild, *Vetenskap eller villfarelse* (VVI). It is, however, another book from the VOF circle that will be at the center of this analysis. Sven Ove Hansson's *Vetenskap och ovetenskap* (*Science and Non-Science*; 1995[1983]; hereafter VOV) juxtaposes the "craft of knowledge" against its "forgery" (or anti-craft).[8] This book contains topics that subsequently become common ground for the writers in VOF. Earlier, we mentioned how the definition of "science" in this book, with just an additional sentence, still constitutes the guideline for VOF. In the book, however, a more detailed justification of this definition is made in an empirical way. In the book we also find a typology of seven characteristics of pseudo-science that is a standard item and often referred to in articles in *Folkvett* and in other places. This typology will be brought up in the subsequent analysis. VOV also contains a manifesto for adult education that obviously is a core part of the agenda of VOF. Thus, it is not far fetched to regard this book as a seminal text that strongly influences the agenda for "enlightenment" and adult education. The book contains some interesting thoughts and ideas, many of which are typical for the *zeitgeist* of the late 1970s and early 1980s. There is a general plea for larger involvement among citizens in questions concerning science and society that seems to mirror the student movement's critique of political power and academic elitism, as well as emergent environmental consciousness in a time dominated by discussions concerning the uses of nuclear power. There is also a critique of current ideologies associated with New Age. These traits in the book signals the need for increased influence from citizens on important political decisions based on science. But these traits are also merged with a very strict and formal definition of the character and utility of science.

The most long-lived elements in this book, according to my opinion, is the

8 This is a pun with the Swedish words "hant*verk*" and "fusk*verk*" which does not easily translate into English.

engaged search for a science communication that is relevant to laymen and the recognition that this communication should be placed in a democratic context. Here I would suggest that Hansson anticipates a later development which strengthens the links between science and society, which has become central in areas such as risk research, democracy studies and science studies (cf. above). But, in contrast to this relatively open engagement with democracy and social issues in VOV, later outputs from the same author and the group looks less like research and more like the work of an academic emergency unit equipped with methodological arsenal, bullet safe overalls and, not the least, a strong dose of indignation and missionary zeal to keep science clean. As an implication of this development, the engagement for democracy and science-public dialogues has lost its openness and engagement and has petrified into bantering academic elitism. VOV is, by and large, a text written with both seriousness and innovation in mind. In the following parts of this chapter, I will focus on some claims made by the author. Given the argument above, that there is a strong link between the book and, some parts of, the later development of the association, I will argue that many ideas represented in VOF are typical of the Swedish branch of the skeptical movement and that the text thus is a relevant place to start a critique.

I will argue that intolerance of alternative knowledge perspectives is explicit and strongly formulated in VOV (although in euphemistic fashion) to such an extent that I have found it necessary to pinpoint my interpretation of what I believe it represents. I argue that it in a problematic way represents a general intolerance for all that does not converge towards a joint scientifically based concept of reality, whether this is the most apparent forms of pseudo-science like astrology, divination or homeopathy which belong to the group of phenomena that are so readily dismantled by the critical minds of VOF. But, in principle and according to the epistemology outlined in VOV, it concerns all knowledge that humans acquire and which is not corroborated by science or else derived through the required and controlled sensory perception of scientific methods, whether these are the folk wisdom, good advice or a practical ethics based in Christianity, Islam or Judaism. Certainly this tendency towards a general intolerance is problematic. Those who affirm the practices of VOF may not be aware of this or they may operate with very contradicting standards for discrimination. Therefore, a critical analysis of this local variety of the skeptical movement is urgent.

Only sensory perception will lead to truth

In the preface to VOV the author states the following:

> Our time is contradictory in terms of the development of scientific knowledge. On the one hand, there is a larger than ever increase in knowledge in most areas. On the other hand, there is a growing interest in movements that are skeptical or negative against traditional science. The conflict between science on the one hand and its critics and competitors is the basis for this book. (Hansson 1995:7)

This relatively open *mis en scène* of a contemporary conflict between science and its critics/competitors constitutes the basis for a discussion of "science and its rivals" (ibid). One would believe that a scientific analysis of this conflict should aim at describing the conflict from both sides of the divide, identifying their specific arguments and norms, but instead this opening is transformed into a normative pamphlet which unanimously defends the science side and show a great unwillingness to understand its "rivals". The rivals are not defined as other opinions in the community of science, but as those who claim to be researchers and scientists but who cannot, according to certain criteria, be identified as such. Taking this staging of contradictions and conflicts as a start, the chapters of the book cover the following areas: what is the scientific method? (Ch. 1 "The crafts of knowledge"); a suggestion for criteria that distinguish science from pseudo-science (Ch. 2 "The false work of knowledge"); on forces that make pseudo-science popular (Ch. 3 "Humanity at the centre"); on the supposed connection between modern physics and ancient mysticism (Ch. 4 "Physics and mysticism"); should man have access to scientific knowledge? (Ch. 5 "Should humans know?"); what can be done to strengthen the role of science in society? (Ch. 6 "Science to the people"); finally a few words about a resistance movement (VOF) under formation.

In the vignette to the first chapter, Hansson introduces his theory of epistemology under the title of "The praise of senses and sensory richness´(Sw. "Sinnenas och sinnrikhetens lov"), a pun that exploits the roots of the word "senses", meaning both the five senses and ingenuity. He writes: "This book is a praise for senses ["sinnena"] and sensory richness ["sinnrikhet"]" (ibid:9[9]). This is an empirical theory of knowledge production based in the sensory faculties, a manifesto for empiricism. Hansson lets the substantive "sinne(na)" ("senses") constitute the ground for the adjective "sensory richness", and thus derives a normative assertion from a descriptive condition, a "ought" from a "is".[10] A similar transition

9 All references and quotes in this subsection are to this page, if nothing else is indicated.

10 This is done in contrast to the well known dogma within moral philosophy, ascribed to David Hume, that many hold relevant and important, namely that it is not possible to derive and "ought" from an "is". Compare with what Hansson writes later in the book (1995:75)

with verbal deviations is also available in English, where "sense(s)" derive "sensible, "sensitive", "sensitivity" etc.

In a concentrated space (page 9 in VOV), Hansson outlines an epistemology based on the senses. For instance, he says that "the senses mediate beauty and sensuousness", thus both aesthetics and sensitivity can be derived from a foundation in the senses. Subsequently, he says that "the senses are our only way of reaching out to each other. It is amazing how they can bring people close to each other". The way in which the senses provide a foundation for commonality is fundamental. The senses are the only means by which inter-human relations are at all possible. The senses are "amazing" tools that can establish an experiential proximity between people. At the end of this page he states: "You and I live in the same world. With the senses and the sensory richness we can learn to improve our understanding of this world. *One* world to discover in common. *One* world to administrate in common." (emphasis in original). We here can witness a rhetorical shift from the careful introduction of the possibility of human inter-subjectivity as a result of an "amazing" communicate process, to the more determined and final statement that the world is "one" and in common, both in terms of discovery and of administration.

In a faithful empirical manner, Hansson represents the consequential view that "the senses are our only way of relating to the exterior world". He admits that there are also possibilities for perceiving "inner worlds" but these inner worlds are hierarchically related to (the knowledge of) the exterior world (cf. below). In comparison to the sensory impressions of the exterior world, the "inner world" is "pale" and lack "nutrition". If one could contrast the impressions from the interior and exterior worlds, he speculates, the impressions from the "inner worlds" would "completely deteriorate". The sharp distinction between "inner" and "outer" worlds is based in the different conditions for making sensory perceptions and is repeated later in Hansson's manifesto, then as a way of describing the historical conditions for the production of knowledge. One could perhaps try the idea that Hansson represents a relatively strong form of (ethical) empiricism, i.e. a radical trust in the origin of all knowledge in the senses[11],

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concerning what science, based in empirical observations, can not be used for: "The craft of knowledge have taught us that the descriptive anthropocentrism is a delusion. But when it concerns the ethical anthropocentrism, or other moral questions, science is not able to give us any answers. Science concerns the question of what is, not the question of how things ought to be. *It is a mistake to derive the wishful from the existent*." (my emphasis)

11 Maybe we need not regard *The National Encyclopedia* as an "arbiter of truth" but in connection with the entry for "empirism" it says that empirism in its classical and relatively strong form is a position that today is deserted. The writers of the entry emphasize that empirism is s strong component in theories that take a middle position between empirism and rationalism.

not because he do not realize that senses as well as knowledge also can have an inner origin, but because of ethical and political reasons he finds good arguments not to cultivate any kind of (sensory-based) knowledge that are based on the idiosyncrasies of inner worlds. Later in the book, in connection with a discussion that leads up to his definition of science (cf. above) he engages with different dilemmas that have to do with their places of origin in the "inner path to knowledge" (Hansson 1995:23). There he produces ethical arguments that are mobilized in order to refrain from the "inner path to knowledge" on behalf of the "outer". These ethical arguments are already explicit on the single page we are examining here and they suggest that the inner worlds (in plural) lead to subjectivism and isolation, while the outer world (in singular) per definition is common. Paradoxically, the inner worlds lead to a pluralism associated with subjectivity, discord and lack of recognition, while the production of knowledge through the outer world unites the plurality of people in a syncretistic world view. The conviction that sensory perceptions of the outer world give people access to a common world is formulated as an ethical and normative principle of the proper production of knowledge. "The inner worlds", he claim, "belong to different people, but the world of sensory perception is common". What is interesting and characteristic with this epistemology is also the balance between the world of sensory perception and the common ground, a play between "enchantment" and "disenchantment", to borrow the notions of Max Weber. "Enchantment" is not a word that Hansson uses but perhaps something similar, the Swedish word "förborgat" is used which means hidden, veiled or secret. The indeterminate dimension of "enchantment" has a parallel, if not an exact equivalent, in the indeterminacy of "veiled". Somewhat later the expression "det hittills fördolda" ("the yet veiled"), still indicates that the world of sensory perception contains phenomena and events which are "veiled" and "undiscovered". The proposition that these undiscovered things should be "secret" ("fördolda") may be a strong assertion in this context, but this could without doubt constitute a fruitful base for an analysis of the world view of radical empiricism from the point of view of, for instance, psychoanalysis. The expressions "förborgat" ("secret") and "det hittills fördolda" ("the yet veiled"), refer to the belief in the current and future existence of a plentitude of undiscovered phenomena. It is as if the outer world in some uncanny sense become animated, still without using the word "enchantment", which obviously might not be a congenial notion in this setting. It is as if the outer world is identified with an agency that holds things back. The image of something yet undiscovered (with or without the use of words indicating agency and intentionality) refers also to the optimistic possibility of a "sensitive use of the senses". By "using sensory

richness" the undiscovered can be discovered. These properties of the well functioning empirical production of knowledge, is precisely what Hansson would like to promote. Exploring the possible uses of sensory perception is a function of sensory richness. It is something that can reproduce its own properties in an affirmative way. This also indicates that Hansson, to some extent, advocate a certain form of rationalism, despite downplaying this element in a general outline of the epistemology, if not "sensory richness" is the rational counterpart to senses. The fact that he is advocating a certain form of rationalism is not surprising because a strong version of empiricism may be very difficult, if not impossible, to understand. It should be emphasized that an empirical epistemology also leads to the promotion of an empirical methodology, which is the fundamental tool of skepticism.

In the epistemology of Hansson, aspects of both monism and dualism can be identified. On the one hand, a strong distinction is made between the inner and outer world, and on the other hand he states that the only world in common is the outer world and this is common for all, despite individual differences. It is based on the senses as a shared human resource for social consciousness. The fact that two apparently contradictory conceptions run together may not be strange in a pragmatic sense, but is perhaps not as consequential as some theories would expect. The monistic dimensions of the theory can be traced to certain conceptions that were influential in the late 19th Century, e.g. in the psychological theories of William James and, later, with the philosopher Bertrand Russell. Both represented what was called neutral monism, i.e. a theory of how reality is constructed based only on the contents of the sensory perceptions. According to this theory, sensory perceptions assume a neutral character that is neither completely material nor totally mental, but a bit of both. There are traces of such neutral monism in the theory Hansson defends, just because he so strongly values the primacy of the sensory perceptions beyond anything else. A more explicit and perhaps more coherently formulated materialist epistemology would have given us reason to trace an inspiration also from Marxism. Despite the prevalence of a shared attitude against false consciousness and the view that religion is an artificial stimulant, I argue that Hansson only ostensibly is standing on the side of the people (cf. below) against the powerful in his approach to ideology critique. Most often the Marxist analysis of ideology leans towards dismantling the hegemony of dominating ideologies, but in the case of Hansson and VOF it is reversed: it is a matter of identifying false consciousness among people in order to beat some real truth into them. The sweet talk about "science to the people" becomes a strategy to reinforce the durability and correctness of the world view proclaimed by conventional academic science and expertise.

We have seen that Hansson refutes any kind of dualism other than the kind of pluralism that leads to a syncretistic convergence towards one and the same world view. We have seen that he defends a form of ontological dualism with its modern origin in Descartes. This dualism carries in Hansson a character which in other contexts, that of anthropology and religious studies (but also in areas such as peace research and the field of international relations), have been described as "antagonistic dualism" (or even "evil dualism"; Hansson's lexicon does not use "evil" but medical and biological metaphors such as "pale", "malnutrition" and "atrophy"), i.e. images of how the two components in the dualistic relation are mutually exclusive, or how an actor can interpret them as contradictory out of certain moral criteria. Other forms of antagonistic dualism that have a moral rather than deistic character is the eternal opposition between two principles, one good and one evil, which plays an important role in traditions such as Zoroastrism, Mandeism, Manicheism and other Gnostic sects that traced their origin to the Hellenic world. The character of Hansson's dualism, leads us to make some comparisons which are perhaps less obvious, but still relevant, with other moral systems taken from the world of anthropology and religion. Hansson's theory does not have any superhuman overtones, but it is interesting to see how ethical statements in the epistemology of VOV actually make the comparison with religious systems relevant, without claiming to be the same. Another common trait is that Hansson, like many religious ideologues, compassionately talks for the collective and how good feelings of sociality and community can be cultivated in traditions.

I have here chosen to go into the epistemology proposed by Hansson, because I argue that this theory has an important role to play as a theoretical foundation for the activities in the association VOF. The empirical approach adopted is not new at all but has its general history in British science and philosophy with thinkers such as Bacon, Locke, Hume and Berkeley. The epistemological theory of Hansson and the group around VOF shows similar foundational assumptions as the classical British empiricism (and also, with logical positivism, cf. below): the source of all knowledge comes from sensory perceptions; there is widespread skepticism against all kinds of speculation not based on senses; knowledge can be acquired only *a posteriori* (after or through sensory experience); the method to use is induction (empirically motivated); observation is the momentum in the uses of reason rather than intuition and belief. It is the "presence of witnessing senses" that grounds all and, in particular, the imperative that phenomena are meaningful only if they can be perceived experientially. John Locke, for instance, talks of two kinds of experiences: sensory perception and reflection, outer and inner experience (cf. below). In *Novum Organum* (1620), a manifesto for a new

conception of the senses, Francis Bacon discusses four types of barriers for people's achievement of true knowledge. These barriers, called "idols", restrict people from achieving objective knowledge. These are: the idol of the tribe (the erroneous habit of ascribing an order to nature which is not there); the idol of the cave (individual constraints that are product of socialization or learned); the idol of the town square (common conceptions that relies on the power of speech over thought); the idol of the theatre (stereotyped preconceptions that contains an uncritical belief in authorities). We will later see that the theories of idolatry in Bacon echoes through Hansson's list of seven items that are barriers to true scientific knowledge, i.e. seven signs of pseudo-science. The fact that Bacon wrote about these things even longer ago than 1983, does not mean that they are invalid for all present concerns. When you are an empiricist, you strongly need sharp eyes and ears, good smell and taste, as well as a sensitive skin. But you also need to watch your mouth.

How knowledge is constructed and mediated in crafts and science

A difference brought up by Hansson, apart from the dualism and the distinction between the inner and outer paths of knowledge, concerns the different conditions for producing knowledge in crafts and science. The historical analysis of the importance of crafts for the emergence of modern science, based on empirical observations available to anyone, is an established view within history of ideas, history of science and social history. In the context of VOV it also becomes part of the argumentation to favour empiricism, an opinion that, it is argued, is still relevant for any evaluation and assessment of theories. One implication of this stressed in this and other chapters and texts, is that deviations from this empirical norm cannot be characterized as science. The methods that constitute the arsenal in the empirical tradition can constitute a norm and carry the tools with which non-empirical (i.e. in this context, "non-science") theories and their proponents can be disarmed.[12]

It is well worth noting that Hansson is generally critical of the historical role played by academia. He takes a forceful stance for the craftsmen, not only in the historical analyses but also in the analogies that describe how the two professions communicate their knowledge to non-specialized people.

12 The choice to use military metaphors are here my own and do not reflect the lexical choices of Hansson, at least not in this part of the text. In other parts of the text, however, expressions such as "combat" [bekämpa] is used, but such formulations can of course be used without any military or combative intention.

He argues that the craftsmen represent a better strategy for communicating their knowledge. This crafts-perspective on science is important for the later appeal to a "science to the people" (Chapter 6 in VOV).

Without repeating the historical analysis in Chapter 1, I want to identify the argumentation behind this idea and indicate how the epistemology being sketched out is put at work. A premier example of the craftsman who anticipates the scientific revolution is found by Hansson in 17th Century England, literally before the breakthrough of empiricism. He uses this example in order to illuminate "the contribution of the craftsmen for the origin of modern natural science" (VOV:15). Those properties identified among the craftsmen that anticipate the scientific revolution are the following: the interested attitude; the willingness to experiment by trial and error; being curious and eager to know; wanting to understand; skills in specific crafts that can be a departure for doing systematic investigations. With help of the English mechanic Robert Norman, Hansson presents a credo for craft as a basis for scientific knowledge. Norman becomes the example for the tradition among craftsmen to search for answers, for instance among instrument mechanics, navigators and miners, and also among artists who, at this time, also were identified as craftsmen.

With later examples taken from the growth of archaeology and ecology, Hansson argues that it is instructive to understand sciences in terms of crafts in need of experience, imagination and the ability for making combinations: "In common for these and other scientific crafts are that they aim at exploring as much knowledge as possible from their areas" (VOV:18). Precisely the concrete acquaintance with materials and skills about processes that are based in craft, shows, according to Hansson, that science origins from practical and physical work rather than from the reading of texts.

As previously mentioned, the crafts differ from the academy in several ways, for instance in terms of how language is used for communicating findings. Hansson leaves behind the historical outline of developing professions and identifies the problem of communication as the contemporary state of dialogue between science and the public. Also for the craftsmen a professionally based language was available, perhaps best survived among chimney sweepers. The chimney sweepers is the example used of the communicative intentions among the craftsmen as contrasted to the academics (his example are the physicists). In relation to both these groups there is a communicative problem, because both groups have profession specific languages. He characterizes physics as a more specialized skill which is more difficult for an outsider to understand. Hansson derives this difference by asserting that "most physicists, in contrast to most chimney sweepers, are very inexperienced in explaining to non-

professionals what they are doing" (VOV:19). From this short description and other formulations in the same part of the chapter outlining a familiar history, we can realize certain things regarding the conclusions made by Hansson. First of all, being a craftsman (either chimney sweeper or physicist) requires that one is also being understood by others. We recognize Hansson's epistemology which is stating that commonality is an important criterion for true knowledge. Secondly, in a communicative context, this first condition has important implications: being understood is a criterion for a knowledge that is common and thus achieved through a correct empirical epistemology. And the opposite position is thus that the one who cannot make him(her)self understood, i.e. the person who is not able to make knowledge into a commonality, cannot claim true knowledge, because the ability of making knowledge common is also a criterion for making knowledge valid. Being able to explain the intricacies of one's craft or skill for non-professionals is much more than informational good will; it is a necessary and sufficient criterion for any true knowledge. This requirement from "below" could be understood as a form of opportunism or populism, but in the manifesto by Hansson this constitutes the basis for an imperative of induction that proclaims "science to the people". Does this really mean that he believes that all people should understand everything in order for knowledge to become valid science?[13] Does this mean that he believes that also amateurs and private researchers can make important contributions to craft and knowledge crafts such as archaeology, astronomy and ornithology? We will soon understand how this imperative of popularity and induction is merged with a rationalist managerial view on the need for compartmentalization and specialization of work, something that in turn, risks to strengthen the legitimacy of the exclusive character of the academics and to prevent them from public exposure.

The problem of communication in combination with the possibility of false expectations or incorrect categorizations, create a situation in which the diffuse boundaries between scientific disciplines can be manipulated. How boundaries can be established between disciplines is done in at least two ways: "Often what is required is that people with different areas of expertise work together to solve a problem" (ibid)). This is what he calls "interdisciplinarity". His definition of "interdisciplinarity" is comparable to

13 To compare with the article by Jersild twenty years later might be a bit anachronistic, but then he describes precisely the extreme position stating that "everyman becomes his/her own critic of science" and for Jersild this is something that is far from good. We should note the difference in which Jersild talks about the menial influence that religion and postmodernism, with its doubt about the existence of a reality, have had for a common public understanding of science.

what nowadays is called "multidisciplinarity". He notes, however, that there are also other ways of making boundaries in the name of "interdisciplinarity" and some of those he regard as "abuses" that is thus warned against: "it is not interdisciplinary science but non-science if academics explore areas for which they lack training and skills, and then demand that their work should be regarded as professional" (ibid:20-21). The notion of "interdisciplinarity" is seldom used by Hansson and by the VOF writers at large, but can be traced in two versions, one good and one bad.[14] The consequences of non-scientific boundary crossings are, on the one hand, "catastrophic". It is non-scientific and untrustworthy if some researchers make these explorations, but not necessarily, on the other hand, if others do it. In fact, as we have seen, this is a common method used among VOF writers, especially the philosophers among them, to challenge knowledge areas outside of their own expertise and criticize particular studies in those areas (cf. above). It is possible that these critics also have qualified training and expertise in, for instance, archaeology, psychology and religion otherwise their interventions should be identified as examples of non-scientific transgressions. It is an immense distance between what the former and the latter are doing. The former are examples of non-science, the latter is an example of what we could call scientific quality assurance. This distinction between different kinds of scientific work is a running principle in the activities of VOF for two decades, shared with the world wide skeptical movement. One reason that the notion of "interdisciplinarity" is not often used is that they are more concerned to distinguish what is science and what is not. Instead of using words such as "interdisciplinarity" they use concepts like pseudo-science, bad science and non-science.

In the previous analysis the discussion in VOV concerning different sciences aims primarily at defining cases where the legitimacy and authority

14 But see one of Hansson's chapters in HLÅ where he is discussing the need for cooperation across boundaries. He accepts that interdisciplinarity "rightly" have become a venerable notion: "But it needs to be stressed that good interdisciplinarity precisely is about such kind of cooperation between researchers from the particular disciplines. That one researcher goes into areas for which she [sic!] lacks competence have not much to do with interdisciplinarity" (HLÅ:286). See also the final chapter of HLÅ where the authors discuss the need for complementary supervision in those cases in which a student or a graduate student moves across the borders of disciplines: "Hopefully, such an order can in time contribute to a culture that is more interdisciplinary and cooperative…" (296). In VVI, Hansson warns for the implications of a researcher who "enters into areas other than those in which they have expertise, without cooperating with experts in the new discipline" (VVI:288). This warning recognizes that interdisciplinarity can be an adventurous activity if it is done by a singular person who also lacks competence. On the other hand, if it is done within a group there seems to be a larger degree of security. Hansson also warns for the deficits in the supervision of thesis which can provide an opportunity for pseudo-science to get a "foot-hold", as if it were some kind of mould or virus (ibid).

of science is abused. On the first hand, it is a matter of discovering examples of non-science. Less frequently is it a matter of discovering examples of bad interdisciplinarity.[15] This discussion in VOV do not aim towards decreasing respect for expertise or to establish mistrust, but is motivated by the need for dismantling false authorities (ibid:21). Hansson believes in a good collaboration that is based in a fair division of labour: "It is impossible for everyone to know everything. Society by necessity builds on specialization, also when it comes to knowledge" (ibid). Specialization is thus a necessary feature of contemporary society.

The way to truth leads through the two paths of knowledge and through a common concept of reality

In the previous, we have shown how Hansson's distinction between craft and academic knowledge works as a way of describing the historical development of the production of knowledge, from an extreme faith in authorities towards a perspective of science as a democratic resource free for access ("for anyone"). We have also shown how he constrains the democratic view of "people as intellectually equal" through an acceptance of the division of labour and specialization typical of modern society. This acceptance leads to the position that people should realize that they cannot understand modern physics although in principle they "*could … be able*" to do this. "Anyone", he says, "could for instance repeat Robert Norman's experiment with magnetism", but there is certainly a certain distance between repeating Norman's work with magnetism and an experiment in the tunnels of CERN (VOV:21). What people should do, however, is to have faith in what physicists say. This is not the same thing as the good old faith in authority, Hansson explains, where ordinary and subordinated people should accept the findings of authorities. There are, however, certain obvious similarities between the two attitudes to authorities.

There are two dominant understandings of the production of knowledge that goes through all the history of ideas (VOV:21-24). He calls them, maybe following Locke, the inner and the outer way (cf. above). The way to truth leads through the two paths of knowledge, where the choice falls on that path which helps to create a common concept of reality.

The inner path to knowledge is established on learning about self and the world initiated within the individual, for instance in the way that

15 In an interview in the union journal *SULF-tidningen*, Hansson talks about the threefold objective with the critique of the pseudo-scientific delusions: to dismantle researchers who use their scientific credibility for other purposes; to detect doctoral thesis work that goes out of hand; to detect badly supervised student thesis work.

the medieval philosophers speculated about nature. Another tradition that believes in the validity of the inner path, exemplified by Hansson, is mysticism. Insights are created through meditation or by the consequent practice of different regimes for the body (asceticism, dance, fasting, ecstasy, yoga, etc.): "In common for them all are that they accept inner revelations as indications for what is true about the outer world" (ibid). The inner path to knowledge aspires to say the truth not only about inner states of consciousness but also about the outer world. In contrast to the outer path to knowledge, which by definition (cf. above) leads to common knowledge, and therefore to true knowledge, there is no guarantee that individuals through the inner path to knowledge will come to the same conclusion. This is a major drawback which disqualifies this path.

The outer path to knowledge, on the other hand, builds on the senses as our only possible connection with the exterior world (cf. above). In an absolute sense, all knowledge is created through the senses. In an earlier section we have followed Hansson in his historical outline and the argument that this is the basis for modern science. Just like in this previous argument, Hansson take a clear stance for this belief, the superiority of which have been proven throughout history: "When it comes to knowledge about the properties of the outer world, the senses are the only possible link and we are thus most wise only to stay with the outer path to knowledge" (ibid:21). We recognize this from his epistemology, where the senses unproblematically become what unite us with the world and with each other. Nowhere in this book is there a critical discussion of the senses, for instance that we can be cheated by them, or that I can see what you cannot see, or that you can hear what I cannot hear. He notes, however, that the availability of good instruments for measurement is a very important condition for negotiating ambivalences, but there is probably more to say about this: "Then we need methods that give the same results independently of who performs them, namely experiments and exact observations" (ibid:24).

Another argument for the outer path of knowledge is ethical, i.e. the fact that the outer path to knowledge offer the same result for all human beings. This is a (social) ethical argument because the existence for methods that are in common "which all contributes to make our description common and precise" is an argument for its accuracy: "The outer path to knowledge gives us a common reality". Believing in ethical empiricism means following the outer path to knowledge.

The opinion that staying with the outer path to knowledge constitutes the only valid method leads to a radical disqualification of all other forms of knowledge acquisition, not only introspective mysticism, but also philosophical speculations about nature and all those other methods that are

used within contemporary cultural and social sciences. From the above it is absolutely clear that Hansson prefers the outer path to knowledge towards true knowledge, but he continues to identify different problems with the inner path to knowledge, as if to eliminate every form of lingering doubt concerning its falsity. Some dilemmas with the inner path to knowledge that are listed are the following. First of all, the inner path to knowledge, in its various guises, cannot be accepted because that would mean that "we all live with different world views" (ibid:22). This is both unpractical and untenable because it would result in hierarchical divisions with serious social implications. There is thus a basic need for humans, whoever are included in this category, to have a common view on reality and life: "In order to function together we need to have a common world view"(ibid). There are both practical and administrative needs that make the outer path to knowledge necessary and make the inner path impossible. It is not possible to create a coherent and well functioning society without having access to the form of foundation that a common world view constitutes. The choice of the outer path to knowledge is thus motivated by practical and political reasons.

The second dilemma with the inner path to knowledge is its inherent faith in authority, i.e. the view that the beliefs of certain people are more important than others. In exemplifying this dilemma he refers to the absolute authoritarian position accredited to Aristotle during the Middle Ages. He mentions also how, within mysticism (again), there are hierarchies and layers of consciousness that correspond to the levels of insight represented by different individuals, something that obviously create a system of domination and subordination. Since Hansson's text was written in the early 1980s, he exemplifies the faith in authority with "the fashionable movements with assumed Oriental origin that now are flourishing in the Western world" (ibid: 23) and with the inner voices that are given authority in the world of spiritism. Another problem with authoritative systems is that they cannot be reformed (ibid). A faith in authority cannot be merged with a will to accomplish a joint world view. The ethical argument has to do with distribution, information and communication:

> If I demand that others should believe and act following a certain conception about the properties of the world, a respect for these people as fellow human beings requires that this conception is something that they can check themselves. With the help of the senses alone and without a faith in authority, we can achieve a joint conception about the world, a common concept of reality. (ibid:23).

Once again, he emphasizes that human respect and dignity requires that knowledge should always be accessible for control by others, an ideal

of knowledge acquisition that is characterized by respect, democracy and equality. But, as we have seen, this view is merged with a born again faith in authority which is based on the practical division of labour in society, an opening for social differentiation that risks challenging the ideal of democracy and which only can be fairly balanced if researchers take responsibility for participating in the public dialogue about science. The fact that this guarantee seems to lie entirely in the hand of an academic elite is of course not a serious argument for the demise of faith in authority, but we should perhaps recall that Hansson is not giving a description of the state of the world as it is but he shares his political vision about the ideal conditions of a better society. This political vision based on a politicized epistemology thus plays an important role as an argument for which path to knowledge to choose. Hansson also give an argument against this, by showing exactly how the contemporary organization of science counteract this democratic ideal of the ideal distribution of knowledge: "Particularly in its way of encountering the public, the world of academia can be as authoritarian as any other mystical sect" (ibid:23). Hansson thus agrees that this critique against the lack of social responsibility in science is a correct observation, but he still believes that science has an ability to undergo democratic reformation, i.e. science can become much better with the help of political visions and a politicized epistemology.

It is in this context, where one of the two paths to knowledge has been chosen, that the way to truth and a common conception of reality is opened. And it is at this moment that he defines science (cf. above) with an emphasis on equal rights, the systematic search, the independence from individual opinions, and the access to individual control: "Science is the systematic search for such knowledge that does not depend on the individual, but that anyone should be able to discover or control" (ibid:24). In a footnote (no. 9, p. 138) the definition is said to be an original formulation by Hansson but that it is inspired by theories that "emphasize criteria concerning repeatability and inter-subjective coherence, wherever that is possible".[16] By stressing the need for empirical methods he is not denying the importance played by an individual genius or the creative role that an institution can have in certain parts of a research process (ibid). The acknowledgement of a variety of non-empirical production of knowledge should perhaps give some credit for accepting the inner path to knowledge as relevant in some contexts, but Hansson is probably not prepared to go there even if the parenthesis with geniality and intuition does not accord with the consequential choice (cf. above) of the outer path to knowledge.

16 Hansson is in this context referring to T Clements (1968) *Science and Man* and JM Ziman (1968) *Public Knowledge.*

Anti-relativism

In the previous section, we have encountered examples of how craftsmen became prototypical agents for the production and communication of knowledge. Another heritage from the craftsmen is, according to Hansson, their curiosity and willingness to experiment, an ability that have also been mediated in the emerging science in Europe during the 17th Century, a skill that guarantees the successful development and cultivation of knowledge. Despite the introduction of a method for securing knowledge through observation and sensory perception by the craftsmen, knowledge in itself is never complete but can always be changed and developed. This is contrary to the kind of absolutism that characterized the production of knowledge among academics, where the opinions of the authorities always weighed stronger through "the final answers in the writings of Aristotle and the Church fathers" (ibid:24). Or, in a way similar to authoritarian mysticism, a movement that has not changed in two thousand years, according to Hansson's historical perception.[17] Precisely this property of science of being challenged and tested again and again, preceded by the willingness of the craftsmen to be led by their curiosity into new examinations, is a preparation for the critical consciousness of modern science. "Science", Hansson declares, "is a method, not a collection of absolute truths that should not be questioned" (ibid:25). Science has as its goal the endless search. The indeterminacy of its sublime character is in common with art (or perhaps some kind of mysticism). It is as impossible to achieve absolute physics or absolute psychology as it is to finally accomplish the perfect piece of music or art.

The discussion of the unending character of the search for (true) knowledge aims to differentiate this perspective from another perspective on knowledge which also has the indeterminate along with a continuous reconsideration as identifying characteristics, but that, in contrast to science, is both destructive and unethical. The property of (the good) knowing is to be open for successive reconsiderations and changes and never finally being mixed up with a general doubt on the correct formulation, what he calls knowledge relativism. The fact that knowledge is always open for revision does not, paradoxically, mean that there should be any doubt about the accuracy of (true) knowledge. Hansson navigates between various meanings of the word "secure" in secure knowledge. To the question how knowledge can be an object for change and revision, he distinguishes between that

17 It is not specified what kind of mysticism he is thinking of, but we need to note that the ways in which knowledge can be acquired through emotion and intuition are many and the different mystical traditions carries on diverse relations to their traditions, some more traditionalist and others more reformist.

knowledge which can be changed and that knowledge about which "one with a large degree of security can say that they will not change" (ibid:27), i.e. there is knowledge which is so secure that it need not be doubted at all, neither today, nor tomorrow. With examples taken from the physics of Newton and Einstein, he emphasizes this tendency towards security even more by declaring "that there are a lot of things in science that is known, and that reasonably need not be doubted" (ibid:28). In his critique of knowledge relativism, he argues that this position erroneously fails to recognize this security and stability with some knowledge and that their proponents therefore exaggerate the potential for permanent changeability. In fact, Hansson seems to anchor his theory in a view of knowledge which is quite different from the one he stated in the introduction to this part of the argument: from an endless search and the principal acceptance of the indeterminate character of knowledge, towards recognizing that "quite a lot in science" can be finally assured. The difference between Hansson's theory of knowledge and the knowledge relativists, are that the latter in a more consequential way affirms changeability while Hansson emphasizes both changeability and permanence. And this might be done, first of all of practical reasons, because the concrete applications of natural science should be so difficult to perform and understand if there was not a certain degree of permanence. We have already seen that the focus on the practical and the methodical is important: "Science is a method, not a collection of undisputable truths" (ibid:25). From this way of reasoning, one could understand that what is permanent and firm in science is not what is inherent in the assertions about "the properties of the world" but the scientific methods used. Science is defined as a belief in a certain method.

Another feature of Hansson's theory, which differentiates the two indeterminate epistemologies from each other, is that Hansson's theory constitutes a defense for the determination because their supporters want to act. At least they want to believe in the importance of taking a stance for something that is beyond, if the expression is allowed, the specific epistemic situation, thus a form of ethics or politics, or any other kind of normative teleology which marks the choice of one knowledge above another into something valuable. The imperative of a teleological character is a bit inconvenient, he speculates, because it might be much easier not to take stance. How is it possible to understand the difference against the all too often sloppy ethics which lack norms and which represents the position of knowledge relativism? The opposite to the "comfortable" knowledge relativism need to be something more challenging ("inconvenient") and something that leads up to a moment of choice. Knowledge relativism is described as something that is "very comfortable", which is enabled through

the banal simplicity of doubting enough about everything. In itself, this is not an attitude of search, he declares, but a position which means that one sufficiently accepts not knowing or not wanting to take a stance. It is like wanting not to take a stance at all, an anti-stance. The indeterminate character of knowledge invites such a lack of morality when it comes to the uses of knowledge, just like faith in authorities can result in the individual freeing him/herself from any responsibility for knowledge. He identifies several other differences between the two attitudes, for instance the premise that certain problems are yet unresolved does not mean that all problems are unsolved. The existence of unsolved problems, for instance mysteries, puzzles and unsolved mathematical problems does not mean that they are not possible to solve.[18] He then uses an important aspect of epistemology to mobilize another argument against relativism, namely the fate of commonality and common reality if knowledge is differentiated. Because the goal to create such common reality is so strong and because it is motivated by the strong conviction that we all can converge towards each other through sensory perception, Hansson resolutely wants to mitigate the potential for differentiation in the relativist position. How it is finally possible to solve the problem of differences among people and the encounters between different cultures, is something that is not at all talked about in this text, but according to the theories advanced he would have problems to accommodate these with his theory. The defense for the differences that can mean, for instance, "this is true for you but this is true for me" is something that is politely but resolutely denied. The position that is denied can, at a first glance be experienced as "nice and tolerant" (ibid:29). The claim that there are differences among people thus carries some initial attraction for Hansson, but the most important and convincing, is the experience of the existence of a common reality, an ontological faith that dominates any doubt about differences.

The text analyzed here is written in the early 1980s, in a time when the multicultural society was perhaps not so generally recognized in Sweden (the book was reissued in a second edition in the mid-1990s without any changes whatsoever), but an afterthought is that Hansson's way of coping with the epistemological, moral and political dilemma of difference, in the pursuit of mobilizing arguments against knowledge relativism, is much too simplified. The theory has the pretension of being a socially and politically

18 In an editorial in *Folkvett* 3/2004 the alleged fear for the unexplainable by the researchers with their "well ordered, spiritually poor worldviews" is countered: "Mysteries are in fact important driving forces in science. Science should rapidly wane if there were no unexplained mysteries to solve". We can also compare this with that part of the epistemology that (above) was described in terms of "the hidden" that waits to be discovered like unexplained mysteries.

relevant exposition of the function of knowledge, i.e. there is an explicit political will formation in his specific way of formulating the theory. There is, however, a large gap in his argument concerning differences and the consequences these can have for an understanding of what common reality is. What is most apparent in his theory is the emphasis that there should be *one* common reality (emphasis in original) and that this common reality should be based on an empirical scientific ground. In such a scientifically based common concept of reality there is no space for anything "nice and tolerant", i.e. none of these characteristics can qualify as criteria for the creation and formation of the common world. What we here encounter, I will argue, is a particularly explicit denial of tolerance in science and politics. This is an expression of a position of cultural color blindness or ignorance for differences. This, I will argue, is a very acute problem for the VOF writers and for Hansson. The problem is detected already in VOV, but is following the writers in VOF as an unwanted ghost into our contemporary times, all until the latest issues of *Folkvett* and into VVI, which was so warmly affirmed in public discourse. Here is also an obvious link to Jersild's argument about the decline of "Swedish reason". There are many explicit denials of racism as a legitimate scientific theory in VOF[19], but there is, on the other hand, an explicit affirmation of intolerance in science and politics. I deliberately say not only scientific intolerance but also political intolerance here, because the epistemology of science portrayed in VOV is designed to play a role in the discourses of democracy which is constituted by a citizenry which are scientifically literate (cf. below). The word "intolerance" of course carries a negative value and it is thus not used by writers in the VOF group, but they use moralizing euphemisms and devices framing the discourse such as "initially it may appear to be nice and tolerant", "the one who says so denies common reality" and "sometimes it can be difficult to acknowledge a common world view, because we all have our prejudices" (ibid:29).

The obvious objects for a critique by Hansson in VOV and by other writers in the VOF tradition, and that which is saluted by PC Jersild, the media, and venerable institutions such as The Royal Academy of Sciences, is that they appear to take grabs with something that many understand to be a problem, namely different kinds of pseudo-science. Just because pseudo-science sometimes is presented with serious scientific claims this invites an attempt at dismantling the false pretenses towards science, using the empirical method of verification (cf. below) as a norm. The knowledge traditions that do not stage as science (but could be associated with some kind of pseudo-science), can also be criticized, but the very argument of a

19 See for instance Hansson (2004) and Bergström (2005).

falsely assumed scientific aspiration is no longer valid. Just because there is a widely distributed skeptical attitude towards those phenomena that recurrently are the object of skeptical analysis in *Folkvett* and in the three books, the groups of VOF writers become glorified in the public mind as heroes just because they so bravely and self-sacrificing offer themselves to a public defense of the light and the struggle for enlightenment (and for the "Swedish reason"). Their mission, as historian Karin Johannisson (2005) formulates it in a review, is "a journey with reason as a lampoon and with truth as a goal". This lightness, which many are prepared to welcome with gratitude, this critique of pretentious pseudo- science (or pretentious science at large, although this is not part of the dismantling repertoire of the VOF writers) make people accept many of their attitudes towards tolerance, knowledge and politics. Spontaneously we accept that someone is taking on the role as a responsible agent of quality assurance, in particular if this seems to be enacted with passion, altruism and perhaps even without economic or career gratification, "in a spirit of a high ambition to save the world from false knowledge" to once again borrow a description from Johannisson. Precisely this condition that they act as self propelling apostles, who fight for us, hides the possibility that our own idiosyncratic constraints or a selected part of our world view may become the next object for skeptical analysis and demystification. There are obviously many other kinds of science that would not withstand the skeptical industrial torches of VOF. I think for instance, of my own discipline, communication studies and all those interpretations that can never be corroborated by the method of verification. Even though some strands of communication studies do use hard core empirical methods, most do not. At large, I will argue that it is problematic to acknowledge solely one method as *science* and only one epistemology as *scientific*, when there are at least a couple of more standards available. Science with capital S is established as a norm for science. Having another conception of science or one that is complementary is a threat against the scientific community and the polity based on and constituted by this epistemology.

THE METHODS OF SKEPTICISM: IDENTIFYING DELUSIONS AND THE SEVEN STEPS TOWARDS DISMANTLING THEM

Agents in the VOF circle identify themselves as an active party, not only when it comes to communicate knowledge to the public but also more substantially when it comes to assess different kinds of truth claims. The mission of information includes communicating to the public the critical analyses of phenomena that claim to be scientifically based, but that in closer inspection turns out not to be. This communication clearly has a normative

character. It is a matter of distinguishing "good" from "bad" and, in the service of the public, to inform about this.[20] The successful accomplishment of this mission requires sharing a general skepticism of deviant science and pseudo-science as well as having access to methods for dismantling alleged scientific analyses and truth claims. Such methods are generally found within philosophy (logic and the analysis of argumentation) and general statistical methodology (critical reading of quantitative data) but can sometimes be described as a universal methodology common for those who belong to any field of science (Hansson 1995 Ch. 2; Jerkert 2005b). Such information efforts can also be based in the thorough acquaintance with some distinct area within natural science (e.g. physics or biology) or within behavioral sciences (psychology) where one's own correct conception of what science is can be contrasted to the (false) alternative. The departure for such an analysis is thus that there are correct answers within this area and that a critical examiner *cum* skeptical inquirer have access to this and is able to apply his/her comprehensive critical potential on a dubious area characterized by forgery and falseness in order to communicate this correction to the public.

One of the strong motivating forces in the VOF circle is to actively participate in the negotiation and establishment of boundaries between "good" and "bad" science. The project that led to the publication of *Högskolans lågvattenmärken* (HLÅ) was called "Higher education at the borderlands of science" ("Högskolan vid vetenskapens gränsmarker")[21]

20 Olsson (2000:261) writes about pseudo-science in adult education and gives examples from some courses that have been arranged at a branch of Stockholm University by the physicist Jens A Tellefsen and the physician Bengt Stern. Olsson is very clear with his own definition of adult education: "Since adult education [folkbildning] means the transfer of knowledge it is required that the person who wants to practice adult education in advance, in a trustworthy way, is able to distinguish between what is true and what is not true". Olsson describes the scientific process and compares scientific theories to certification: "A scientific theory thus carries a kind of quality control. It is 'certified' [kravmärkt] in the way that groceries can be certified when they have passed through a quality control, i.e. when the production fulfills the strict conditions for production". (ibid:262).

21 Compare also the expressions used by Sandin in his international review of pseudo-science in academic contexts (2000:30-42): "Another journal with a clear approach to *border science* is…"; "scientific *border cases*"; "the *borderlands* of science"; "the universities potential *tiptoeing* in the *borderlands* of science" (my emphasis). See also VVI (7) where Jerkert and Hansson, with a reference to HLÅ, writes about the new book as a "continuous analysis of phenomena in the *borderlands* of science" (my emphasis). It is obvious that the word "border" carries negative connotations in this context. It is something that borders to science in the sense that border cases are scientifically dubious. The expression "tiptoeing" or "strolling" is associated with walks in a no man's land that lacks both morality and jurisdiction. As possible alternative notions for pseudo-science Sandin (ibid) lists the following: pathological science, deviant science, para-science, heterodox science or frontier science. The examples he is looking at is deviant chemistry and physics, archaeology and divination, creationism, parapsychology and "anti science".

and aimed at studying those cases within the university where the quality control seems to be out of order, which is referred to as "The low water marks of the higher education" ("högskolans lågvattenmärken").[22] This very same expression is regularly used in the journal *Folkvett* to designate a recurring concern with the reporting of academic failures. The incentive for studying examples of academic failures are several and interlinked, but in HLÅ the authors are primarily studying research with governmental funding and the base line is that projects of that kind should not at all be financed and, if they are financed, they should be reported. These reports are very detailed and explicit. What they are studying are official document available to anyone but in the context of *Folkvett* and VOF it is also perfumed with an attitude of public accusation and scape goating. We have already noted that VOF not only issues "The Annual Adult Educationalist Award" ("Årets folkbildare") but also "The Annual Delusion Award" ("Årets förvillare") showing the institutionalized and ceremonial character of the scapegoating of deviant cases. Their own identity is the patrons of truth, protecting the criteria for quality which is part and parcel of scientific work and, often besides a more regular scientific mission this specific kind of gate-keeping "boundary work" (Gieryn 1999) becomes an important addendum. "False science must be combated" in order for the anchoring of scientific methods and results among people, Hansson writes (1995:113) and continues, "if we really respect other people we have to be concerned that they are not exposed to false conceptions". This battle against falsity and pseudo-science is "unglamorous and boring" to the limit of being "painful", according to the writer who also talks about "academic prefects and weeders" (Sandqvist 2000:186).[23] This extra-curricular work is done outside of one's original research and is linked to what is called "the third mission" (Sw. "den tredje uppgiften") which is a mandate for communicating scientific results to the public. This also means interventions and expeditions into fields that are often outside of the competence of VOF writers. If outside of one's core area of expertise, the VOF work can be regarded as an external and self-initiated quality control in those cases where it is already from the outset obvious

22 The very expression, "the low water marks of universities" is used within the framework of articles in *Folkvett*. It is recycled as a regular where new academic failures are reported.

23 Sandqvist (ibid) also talks openly about those "'who don't have anything better to do'. It is precisely by having something better to do that one is acquiring the competence to dismantle humbugs and it is mandatory for everyone (in science) to make their contribution in this regard". As a writer of this text, I also have important things to do and it is exactly this. In the project, "The content and organization of cross-boundary learning" (Forstorp & Nissen 2003), we are precisely studying various aspects of how boundaries and borders are drawn at different levels of teaching and learning in universities.

that quality control is insufficient.[24] In many of these cases the topic areas might be of a kind that the writers actually are familiar with, in any case they embrace the activity of crossing boundaries between disciplines given that this is done in a good way. A large part of the work done by VOF affiliated writers takes place in the form of external revision and quality assurance and, in some cases, a re-examination of studies that have been made in the disciplines. Such interdisciplinary examinations are often motivated by the claim that it is a specific aspect of the application of the scientific method that is under consideration, for instance logic and coherence, or the use of quantitative methods and statistics. These aspects of the analytical method are presented as a universal feature of the scientific methodology and as such it works to reduce the character of the boundary crossing. We have seen that the word "boundary" in the context of VOF seem to carry a negative weight (cf. above) and it is thus hardly used referring to the transgressing work made by the VOF circle authors and their critical examinations.

How then is it possible to dismantle delusions? How is pseudo-science constructed as false? In the remaining part of this chapter we will take a closer look at the seven steps towards dismantling them and then compare this with the definition of science above and also with the main properties of logical positivism.[25] Finally, we will also try to identify the narrative of the construction of pseudo-science and its dismantling.

The seven steps towards dismantling pseudo-science can be understood as the identification of seven different ways of breaking the rules of science, according to the definition used. We recall the previous concise definition: "Science is the systematic search for such knowledge that is not dependant on the individual, but that anyone could discover or control" (ibid:24). All of these seven characteristics are abuses against this way of understanding science, but first of all Hansson mentions some criteria for the dismantling of pseudo-science that are not valid, for instance assessing individual qualifications. It is not relevant, he argues, if a person has or has not a formal training as a researcher, but it is most often necessary. In principle, he thereby defends the possibility of so called private research. Another insufficient criterion for skeptical analysis is that it is not enough to contrast a scientific theory with a pseudo-scientific alternative if it is not also shown why the former is superior. Furthermore, it is not sufficient to use the common sense

24 A few of those external revisions are made by philosophers on areas other than their own: Cantwell (2000a; 2000b) and Lagerlund (2000) are studying the use of divining-rods in the area of paleogeography and dynamic geoscience; Rabow (2000) is studying archaeology; Sandqvist (2000) studies psychology and parapsychology; Sandin (2000) studies psychology; Hansson himself studies a range of phenomena outside of the discipline of philosophy (1995; 2000; 2005).

25 See also Jerkert 2005.

as a norm for evaluation because this is an object for continuous change. Some of the ideas that challenge common sense will in the future be part of our world view, he adds with address to the observation by historian of science Thomas Kuhn concerning the dynamics between paradigms and anomalies in the development of knowledge: "It is a matter of sorting out the gold from the gravel" (36, cf. p. 17). He also introduces a general rule concerning the understanding of the dynamics of knowledge: "In order for science not to stagnate, it is necessary to remain critical against the old theories, and to be prepared to abandon them if other and better descriptions of reality emerges. But in order for science not to embark a wrong track it is also required that new theories are met with criticism and that those only are accepted if they better than the old ones are able to add explanatory force." (ibid:58). The following method for dismantling pseudo-science is designed to work as such a methodical instrument.

If one start from the definition of science (cf. above) it is possible to derive the seven characteristics of pseudo-science as the negative implications (opposites, disconcert and neglect) of the normative method.

(1) The requirement that each individual should be a potential controller of knowledge in combination with the condition that knowledge should be independent of individual, supports the first characteristics, faith in authorities ("*certain persons is ascribed such great ability to decide what is true and false, that others just have to conform to their judgments*" (ibid 36-37[26]).
(2) The requirement to discover and control truth demands that all investigations should be repeated with the same result. The second characteristics, therefore, are those experiments that cannot be repeated ("*trusting investigations that have been performed singularly but that have not been repeated with the same results*"(ibid:38)).
(3) The search for knowledge should be systematic, therefore it is not sufficient with odd examples ("*one uses designed examples when a statistical sample would be possible*" (ibid:43)).
(4) All knowledge should be proven against reality, but sometimes there is an unwillingness to do that ("*One tries not to test the theory against reality, despite the possibility for doing this*" (ibid:47)).
(5) All knowledge should be tested against reality and if it does not hold or can stand counterproofs it should be judged as false, but there is sometimes a lack of recognition of counter proofs ("*one claims that the theory is correct even though there are observations or experiments that are not confirming the theory*" (ibid:49)).

26 All quotes that describe the seven characteristics are italicized in original.

(6) The control of knowledge must not be dependent on the individual and his/her specific demands or wishes, but must be exposed to a test that is independent of the individual. But some claims to knowledge can include implicit delusions ("*one demands that the theory should be tested on such conditions that it only can be affirmed, not disaffirmed, by the result of the test, whatever this is*" (ibid:52)).
(7) Only the knowledge which passes these tests will be accepted as such, and if there still exists unexplained or unverified phenomena these could lead to explanations which are pseudo-scientific ("*one deserts reliable explanations without replacing them with something new, so that the new theory leaves something more unexplained than the old theory*" (ibid:54)).

There is thus a logical relation between the definition of science and the seven characteristics of pseudo-science, which are also formulated as criteria for testing them and finally for dismantling them. The seven characteristics, among which some (i.e. (4), (5) and (6)), ((1) and (5)) are very close to each other, constitute valid criteria for identifying "clear examples of forgery in the craft of knowledge". The seven steps thus constitute the instrument with which delusion could be separated from true science. Using these criteria, Hansson proposes, we can establish boundaries between what is science, and what is not, between good science and bad science, between true and false, while still not risking to loose the "assertions which are true and well founded", i.e. the mythical "gold" that can be hidden among the gravel.

The definition of science thus works as a method for deciding what science is. This was obvious already for the group of philosophers such as Carnap, Neurath, Schlick and others who belonged to the Vienna school during the 1920s and 30s and who together formulated the program of logical positivism or what is sometimes also called logical empiricism or neo-positivism. The group consisted of philosophers and they were particularly concerned with the philosophy of the natural sciences. For this group a linguistic assertion was identical with the method with which the truth claim could be investigated. It was the duty of philosophy to clear out and bring order to the concepts, assumptions and methods that were used in science. All these efforts were in the service of sorting out true claims from false claims, or what they called claims that were meaningful or meaningless. This implies that the meaning of a linguistic assertion is assessed only by the method of verification. Only those linguistic formations can be true that says something about empirical conditions in reality. Important in logical positivism is thus the basic condition that all true knowledge needs to be based in observations (and sensory perception). The only candidates

to meaningful assertions are those that claim something that can be empirically proven. The core of logical positivism is the rule of verification, i.e. all statements which cannot be verified with the help of only sensory perceptions are meaningless. Later in the development of the movement, this rule is replaced by the rule of confirmation, i.e. a variety of the former where a meaningful scientific statement should be supported by empirical observations, even if they cannot finally be verified.

To compare the world famous Vienna circle and their epistemology, on the one hand, with the Swedish VOF group and their definition of science in order to identify non-science, on the other, might be a comparison which is both unbalanced and unmotivated.[27] I am certainly not trying to equate these groups, but I am arguing that there are strong similarities between them that can only be explained by detecting a historical influence from the former on the latter. This influence exists along with other traits that have been identified in this analysis, the neutral monism; the dualism and the Popperian urge to save the open society from its enemies, a lingering cold-war dualist rationality which divides the world into the good guys and the bad guys. I claim, first of all, that there are similarities between logical positivism and the way in which science is defined in VOV. Without going into further detail, I will argue that many of the characteristics of logical positivism are also typical of VOF and the way Hansson writes in VOV. First of all, this is valid in relation to the assertion that all true knowledge is possible to derive from empirical observations, that knowledge can only be verified by a rule of verification or a rule of confirmation; only that which is verified can be identified as meaningful, and, finally, that it is based on a meta-theory of science which have the character and properties of a philosophy of natural science. The only aspect of the above mentioned that does not fully correspond to the

27 Hansson explicitly protests against the idea that the members of the project "Högskolan vid vetenskapens gränsmarker" ["The university at the borderlands of science"] would subscribe to a positivistic ideology. To be called a positivist is an expected critique of those who combat pseudo-science. Hansson argues that this critique is very futile since the analysis of pseudo-science is not about philosophy of science but is primarily about the systematic applications of science and the critical analysis of these. It is the concrete arguments that matter, he argues, not what kind of –ism one happens to be identified with. The project was financed by "Rådet för forskning om universitet och högskolor" [The council for research on universities and higher education] and its final report was HLÅ. My perspective is, first of all, that the arguments associated with logical positivism are explicit in the analysis in VOV and, secondly, that each application of a method rests upon a philosophy of sciences and its epistemology. In the critical applications done within the realm of VOF, the basic epistemology is associated with logical positivism, this observation is not just a matter of attributing an –ism, it is more important. In order to understand the applications it is relevant to derive some aspects of their theoretical sources. Hansson obviously regards the notion of "positivist" as both erroneous and irrelevant, which is surprising given the epistemology that he in fact develops.

theory of the VOF group is the question about the irreconcilable linguistic functions. We have seen previously that Hansson is somewhat more liberal in this regard when he programmatically claims, on the one hand, that "it is a mistake to derive the desired from the existing" (ibid:75) and, on the other hand, when he lets the noun "senses" lead over to the adjective "sensitive" (cf. above) or how he explicitly wants the empirical theory, for ethical and political reasons, to converge in a concept of a common reality, which is an expression for a political vision or, if the expression is allowed, for desire and wishful thinking.[28] The similarities identified have implications for the method that is used to identify what is designated as non-scientific. The properties of pseudo-science are not coherent; the seven characteristics are probably unevenly distributed and different from each other in scope and seriousness. What I want to show here is that the seven characteristics of pseudo-science, together or in isolation, constitute negations of the principle of logical positivism, in particular of the rule of verification or confirmation.

Certainly it is flattering to be associated with logical positivism, even if authorities such as *The National Encyclopedia* in Sweden describe this philosophical position as "deserted". In fact, this is a philosophy of science and a philosophy of empiricism which works as a meta-theory for science. When natural scientists and engineers will formulate their philosophy of science it will often be similar to logical positivism. Therefore, it is not far-fetched to understand why so many scientists and engineers are so passionately engaged in the skeptical movement, because the movement more or less is constituted by themselves, and the methods they use for dismantling pseudo-science from its scientific claims are the methods with which they have long professional experience. For some, these methods can be applied in areas far away from their own expertise, mainly because they claim that the method for dismantling pseudo-science is a central part of their professional equipment that the crossing of disciplinary boundaries meets no resistance.

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28 It is maybe impolite to bring up the issue of wishful thinking again because Hansson regards this as a necessary component of the pseudo-scientific theories. Such theories "respond to a dream for how the world should look like, rather than how the world really looks. The wishful thinking is maybe the main reason to why so many pseudo-sciences have got such a large following" (ibid:65-66). By wishful thinking he refers to such things as the following: life after death; the affirmation of a religious fundamentalism; the affirmation of ethnic superiority; ideas about universal medical panacea; to prophesize on human character; to make the future less unexpected. By this dimension of wishful thinking pseudo-science offers "a comfortable short cut to knowledge, but it is a way that misses the goal"(ibid:68). I argue that Hanson's own theory contains wishful thinking, certainly not about a life after death, but about an idealized political community and a dream that one worldview will be common for all people. Although this dream is based on this side of death, it is still wishful thinking.

THE NARRATIVE CONSTRUCTION OF PSEUDO-SCIENCE

In this part of this text, I will describe some structural elements in the narrative of dismantling pseudo-science. I will claim that pseudo-science in part is discursively constructed in order to qualify as pseudo-science. The dismantling of pseudo-science in VOV has a relatively coherent character (ibid:33-59). This structure is dramaturgic and contain, like many popular narratives with a moral point of view, both heroes and villains, right and wrong. But it is presented as a neutral method which is based on the qualities of rationality and methodology and thereby, in principle, devoid of dramaturgy, rhetoric and morality.[29] Its structure is both logical (rational, methodical) and moral and aims to serve as an example of deterrence and, in inverted analogy with this, to serve as good example. By dismantling the enemy, so the logic goes, one is also able to reconfirm the values of the hero, just like in the folk narratives analyzed by literary theorist Vladimir Propp in early 20th century Soviet Union. The rhetoric of dismantling pseudo-science is a heuristic demonstration of errors and delusion which is achieved with the help of the rule of verification. Finding (or constructing) a structure means the following: inside this framework one can place new examples of pseudo-science with the goal of being able to follow the structure for dismantling. This is done in order to produce the effect of a revelation of delusion. It is the well-proven method of de-mythologization or disenchantment applied to pseudo-science.

The fact that the narrative of dismantling has a structure does not mean that its validity should be at stake. All scientific writing works with its own rhetoric typical for the genre. The integration of rhetoric with science does not make science any less scientific, although some would perhaps like to think away its influence. Such a structure is discernible even if it can be taken as compromising by the person doing the activity of dismantling. What I want to argue in this analysis, in relation to the general conditions of

29 In the final chapter of VVI, Jerkert discusses what it means to study controversial phenomena. He argues that it is a matter of applying "ordinary common sense" (VVI:305). Jerkert recommends the following methods before undertaking the VOF-style analysis: a criticism of anecdotes; to check assertions (e.g. about the Bermuda triangle); "the burden of proof is always with the one who presents assertions that runs counter to established experiences and knowledge". In connection with the last point, he argues that exponents for "odd theories" often tries to reverse the burden of proof. Furthermore, he mentions a couple of things that those with access to a methodical analysis can check: blindness; double blindness; statistics; significance tests; control groups; chance. All these things of course belongs to empirical research methodology and is part of its standard repertoire, something that is also noted by Jerkert: "To think through the method for analysis beforehand is always good in empirical research, not only when it comes to the analysis of controversial investigations. There is accord in the community of researchers that investigations with methodical shortcomings should be regarded as more or less useless. Unfortunately, this insight is often difficult to share with persons who have a strong emotional commitment to unscientific conceptions" (ibid:305).

science communication, is that the narrative of dismantling pseudo-science rests upon a fairly coherent and consistent idea of how such dismantling should be argumentatively and communicatively organized in order to count as a valid form of dismantling pseudo-science. In this form there are certainly strong influences from a reproduction of a scientific logic from logical positivism by means of the rule of verification, but there are also other narrative and moral properties reminiscent of stories in for instance investigative journalism where the element of dismantling hidden truths works as a very strong organizing principle in order to achieve polarization and tension. Strangely, the narrative of dismantling pseudo-science also displays similar structural properties with another form of popular narrative, namely the storytelling about unexpected, supernatural and unexplainable phenomena.[30] This structural similarity should of course not lead to the assumption that the different narratives are based on a similar epistemological foundation, quite the contrary.

I believe it is possible to distinguish five sequentially organized structural elements in a narrative of dismantling: (1) An introduction stating the truth and validity of scientific knowledge or some aspect of this; (2) A violation against the scientific truth takes place and a description of this violation; (3) A description of the characteristics of the method of pseudo-science; (4) A turning point of the start of reducing the validity claims of pseudo-science by means of the method of verification; (5) The end constitutes a repetition of the doctrine of science (cf. (1)).[31] In the following analysis all examples will be taken from VOV.[32]

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30 Se, in particular, Wooffitt's (1992:135) discussion of the reductionism in various ways of normalizing the paranormal, a strategy that is used by skeptics as well as by those who have encountered some unexpected paranormal phenomenon: "One feature of the inauspiciousness of reporting anomalous events is that, due to the prevailing skepticism, there is always the possibility that recipients may try to formulate explanations of the reported experience so as to recast them as ordinary (This is quite often a strategy which skeptical experts employ when they appear in television documentaries about the paranormal)". Another similarity brought up by Wooffitt concerns the constitutive character of the paranormal narrative, something thatapplies also to the attempted disclosure of pseudo-science: "the product of the organized communicative practices which are sediment in its description. The accounts [UFOs etc; my comment] themselves are constitutive of the phenomena to which they refer." (ibid:197).

31 The following analysis is based on the identification of structural elements in narratives on pseudo-scientific disclosures. The analysis is simplified and should be supplemented in order to show more details and contexts. The quotes used, for instance, are taken from a set of stories without further mentioning. All, excerpts, however, derives from the stories collected on pp. 33-59 in VOV.

32 These rhetorical elements could be compared with many of the other articles in *Folkvett* that also have the strategy of dismantling as its structural organization. These elements can also be compared with other typologies on the structure of narrative, for instance the one suggested by Labov (1967).

Introduction with a truth about the character of scientific knowledge

The first step in such a structure is generally very explicit. It is a matter of starting the narrative with a description of the scientific norm in relation to which the coming story and its alleged candidate of science constitutes a deviation. Here it is possible to start the story with an assertion concerning the basic rules of empirical science. Such statements are designed to constitute a common frame of reference in order to reproduce and thereby establish its validity. For instance, it is possible to start with a repetition of the truth that is also explicit in the definition of science (cf. above) that knowledge should deal with connections and phenomena in reality that is observed independently of those who are identifying these: "Science deals with establishing connections in a common reality. Therefore it cannot rest upon experiments that give different result depending who is performing them." (ibid:38-39). Another start is to establish what practical conditions are at hand for empirical investigations: "It often happens that one wants to know what is valid for all objects or phenomena of a certain kind, but for practical reasons it is not possible to examine all of them" (ibid:43). Another variety is to repeat the dogma within the empirical tradition that the requirement for anyone to test and retest methods, theories and individual experiments:

> A scientific theory has its full and only value in giving a good description of reality. Before stating that a theory is true one therefore has to compare it thoroughly with observations done or that are possible to make during the event. When new observations emerge that have importance for the theory, the theory has to be tested against these observations. (ibid:47).

It is especially important to accurately describe the cases that follow and not follow the main rule: "If with the theory one wants to describe reality, one must carefully consider every deviation between the theory and reality. Such deviations can, however, lead to the nuanced adjustment of the theory or that the theory must be abandoned" (49). The test must be producing straight answers, right or wrong, true or false. There is no intermediate position: "A test that is worthy should be able to give either a positive or a negative result for the theory that is tested, depending on the result" (ibid:54). The empirical method builds on the coordination between the hypotheses and the testing of these in individual case studies:

> … theories usually contain predictions about the possibility of observing a particular phenomenon or that it is possible to acquire a particular result in an experiment. Assume that I am presenting a theory which includes a certain prediction… (52).

The dynamics of science is systematic and cumulative, explanatory and empirically based:

> The goal with the work of science is to successively explain even more aspects of the sensory world. In order for a new theory to be accepted it is required that it both can explain everything that the old theory can do, but that it also can explain also those things that the old theory could not explain. (54).

A violation against the scientific truth takes place

The second step implies an account of the fateful consequences of such a violation against the scientific truths. What will happen, for instance, if there is a violation against the requirement that all knowledge should be tested and retested? "The result will be stern and dead dogmas instead of living and growing knowledge" (ibid:47). Such tests and trials have to be affirmed or rejected, there are no other alternatives: "The one who demands that his theory should be tested only for affirmation, tries to avoid the counter-arguments by others in a way that is inconsistent with a search for truth and that is also free from prejudice." (53).

The second step in this structure is not always used, but sometimes the skeptical analyst goes right ahead towards explaining the characteristics of pseudo-science (see (3)). The description of these characteristics comes to constitute a contrast against the introductory truths and they appear as a violation against these. In this second step of the narrative, the fateful character of the violations against the norm is anyway quite evident.

A description of the characteristics of the methodology of pseudo-science

A starting point here is to identify the pseudo-scientific phenomenon, its frequency and general popularity. Such descriptions are quite generalizing and often give the impression that the examples are just tiny pieces of evidence selected out of a whole ("a few examples will suffice"; "there are plenty of examples") which of course also can be the case. But with such a way of arguing an impression is constructed of an anonymous and standardized mass of people who seems not being able to think for them. Another strategy is to focus on the elements of discourse for the marketing of the ideology under critique. This discourse is a form of communication that always tends to be reductionist and formed by incisive wording, for instance: "on the cover it says". Other expressions that carry such grand claims are: "a similar position has" and "is often visible as". There can also be expressions concerning people's claims on their knowledge projects which serve to bracket these claims with distance and reservation, for instance by identifying someone

as "the hero" or to use modifying expressions in order to bracket intentions: "he *believed*"; he [Fleiss] *thought*", "astrology *claims*", "where it is *asserted* to have shown"; there he *claims* that"; "he *tries* to prove"; "who *stated* a prediction"; "the scientologists *states*"; "he *declared* having shown"; "the most *controversial* example"; "everything gives *the impression*".[33] I have marked the words that together help to create an impression of distance in relation to the epistemological ambitions within pseudo-science. It is not a matter of being sure or to prove something, but it is a matter of believing, assuming, asserting, claiming, giving impressions and trying to prove. All these words indicate a method that is based on dubious assumptions or that which is conducted in a haphazard manner, observations that of course are fully in line with what will be proved by contrasting the pseudo-scientific phenomenon with the empirical method of verification so that the result will be a difference that dismantles and debunks the pseudo-scientific attempts at explaining.

Still another way of marking a distance to the knowledge project is to show how its assumed claims too easily circulates in the public discourse, especially in the media and thereby attracts a new and perhaps unworthy attention: "Now and then statements occur in the weekly press"; "it is a common misconception". Here the media are portrayed as an important but somewhat innocent and uncritical broker of that which does not hold for serious analysis.

Here it is also shown more concretely how pseudo-science violates some of the rules that characterize real and good science, i.e. examples are given of some of the seven signs of pseudo-science: "proving from singular examples are very common"; the same argument have been mentioned"; "from what we know (…) have not"; "have refused to let this be tested", "if observations like that really existed"; "the most obvious examples".

To these characteristics belong also identifying the way in which proponents of pseudo-science have staked out their own careers (despite that Hansson earlier have disqualified arguments that focus on biography in a skeptical analysis of pseudo- science): "The most successful authors", "two of the most visible are"; "made the author a multi-millionaire"; "the prosperous business"; "his books have sold in more than 50 million copies". An image is constructed of pseudo-science as consisting of greedy cheaters who hijacks scientific legitimacy for their own profit and fame.

It should be emphasized that both step (2) and (3) are marked by a

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33 See also the introductory chapter to HLÅ where Hansson's lexical choices about the creationists are the following: "the so called creationism"; "claims"; "a very strong movement"; "one of the best organized scientific approaches"; "have been able to recruit university employees". And about the scientologists: "one of the most notorious sects"; "rough methods against dissent"; "ruthless ways of earning money".

distance that anticipates the fourth step. As a reader of a pseudo-scientific debunking narrative, one already knows what is coming before the fourth step starts. This is obvious already from the outset, where the framing of the issue triggers the expectations that this will be understood as a text that dismantles some popular belief. The reader is invited into a narrative for the construction and reproduction of scientific truths and thereby shares an expectation that this is a start of a mock trial where a phenomenon definitely will be found not to hold. In the continuing second and third steps, it will become even more obvious that the phenomenon under skeptical analysis will not hold for scrutiny, and the fourth step will be a confirmation of this expectation. Writers in the VOF circle want to act seriously and to present their analyses as factual. Thus they stick to the method of verification in a consistent manner, but an analysis of these skeptical dismantling reports also shows the rhetorical effects at work. The method is framed by the skeptical attitude which the method is designed to confirm. This play between the heuristics and pedagogy of the method, on the one hand, and, on the other, interventions into the method of a theoretical and ideological character is not an unusual example of how the desires and wishes of the critic unconsciously or deliberately shines through.

The turning point or the reduction

The fourth step involves the turning point or the reduction where the claims of pseudo-science are explained in the vocabulary of natural science. This is designed to be the apex of an analysis where the alleged results are demystified and replaced by an explanation brought in from science. As I have argued above, this analytical culmination is not a surprise, but is the result of a dramaturgic progression prepared through lexical choices and a critical distance that already have marked the phenomenon with some distance and its result as either ridiculous or false. This takes place through the reduction of the pseudo-claims or as a demonstration of how the pseudo-claims do not correspond to the standards set by science: "But it is really only speculation"; "there is no way to …"; "speculations cannot be proven"; "Experiments that cannot stand repetition of others will not be sufficient departures for conclusions that also other people should trust"; "But when the same persons have been tested in careful experiments"; everything "have been explained as"; "if one seriously wants to test"; "if you try to estimate (…) it will show"; "the studies that are made show no correlation"; "The pilot Larry Kusche controlled the facts"; "got reliable facts"; "the result was disastrous"; "Many of the vessels that (…) had in fact"; "which X chose not to do"; "then it will show that". Here we can see

the contrast between the epistemological notions that are used and how these express more certainty and security vis-à-vis pseudo-science. Scientific explanations are marked as "cannot be proven", "careful experiments", "could be explained", "seriously", "it was shown", "controlled the facts", "reliable facts", "in fact", it will show". Pseudo-scientific explanations are marked as "speculations", "do not stand up to repetition", "the result was disastrous", "choose not to", etc. That there is such a polarization of epistemic markers is no surprise, given the motivation for the dismantling and that these rhetorical choices dramaturgically help to support the difference that one is determined to show.

We can conclude that there are almost no "clean" methods. Also my effort at describing the rhetoric of the skeptics is full of these markers. I am also doing a narrative and my reading is a construction in a similar way as Hansson and the VOF circle. This is an important observation of methodological as well as normative character, to which I will return in the discussion.

A science credo

At the end of the typical skeptical analysis a scientific credo is repeated, the same as was represented in the introduction. A full circle of skeptical analysis is completed when you return to the same or similar truth: "There is a need for critical analysis of different methods for treatment. Such analysis requires comparison of groups that have been given different treatments", "If you want to test your theories against reality it often means that you are fully convinced"; "There is of course no reason to believe in such correlations between the shape of plants and their potential for containing healing substances"; "In fact, what the theory should describe is reality, and then it is also against reality that it should be tested". The methods of those persons who defend pseudo-science are described as haphazard and inconsequential: "this ignorance for counter proofs seems to be common among pseudo-scientific writers". It is also noted that a claim on scientific status is not a guarantee for truth: "nothing will be more truthful because the one who saying it is a university professor". To the conclusion of a story belongs also the well known strategy of putting an end to a conversation by referring to death and disaster, in this case to associate the implications of pseudo-science with generally recognized and morally dubious phenomena such as Nazism and the Holocaust.[34] The end of a story about pseudo-

34 See the article "Death and furniture. The rhetoric, politics and theology of bottom line arguments against relativism" (Edwards, Ashmore & Potter 1995) in which the authors bring up various cases in which death and destruction (often in the form of genocide) is used as a rhetorical bottom-line in argumentations. The intention with such formulations,

science is similar to its beginning. It is an opportunity for the reproduction of the norms that are valid for good science in the pursuit of being able to dismantle the bad cases.

There are few examples of an unsuccessful dismantling of pseudo-science; this is a contradiction in terms. Those examples that are exposed in the group of skeptics and for the public are the successful examples because these are the ones who can attract readers and that can constitute a base for confirming a "community of disbelief" (Hall 2000). It is an ideological counter movement that makes their important work in the active battle against false science. This is enacted through constructing a variety of texts that are reproducing the good in the pursuit of identifying the bad in science. It is more uncommon that the work of skeptics consists of testing their own methods, or showing more open ended examples of analysis where it is sometimes successful and sometimes not. On the contrary, the method, when used, can only have one direction, namely entering a process of dismantling. Thereby a paradigmatic demonstration is made, and the predictability and circularity is almost complete. It is relevant to assess the value of such a method, despite the aim to confirm what one already assumes to know. If the aim is to challenge the advocates of pseudo-science with good arguments based on facts, this form of narrative seems to be badly chosen because is exudes passionate partisanship in the guise of methodological neutrality.

With some freedom of interpretation, it is possible to see some less typical examples in Hansson's book, for instance his counting of "examples where the establishment of boundaries needs more reflection". Hansson refers in this context to ufology, graphology, the psychoanalysis of Reich, the genetics of Lysenko's, creationism and parapsychology (ibid:33). But the concession concerning the precise drawing of boundaries is merely rhetorical because these are all objects of skeptical analyses in other outputs from the VOF group, and always with the same result. Hansson's doubt is just dressed up as a serious concession to the rule of criticism, when in fact it is as full of skeptical ideology as any other of the cases brought up. The singular difference consists, perhaps, in the stringency of applying the prescribed method.

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the authors argue, is to establish a common border beyond which it is not possible to go. This strategy of extreme cases could be found in the VOF-corpus, for instance in Hansson's introduction to HLÅ where he warns that pseudo-science might pave the way for Nazism. He uses two particular cases from the Swedish context but his argument is more general: "It would be unwise to take too lightly on the question concerning what ideas and perspectives the university can lend its legitimacy" (HLÅ:23). His warning concerns Nazism directly, but the warning is more general and concerns also other phenomena to which the university can lend its legitimacy. The idea is that other ideologies apart from Nazism also can create a mess.

A possible example of a failed dismantling of pseudo-science can be found in Hansson's treatment of the psychoanalysis of Freud (ibid:53-54). The context where psychoanalysis in its classical form is brought up is as an example of the sixth characteristic of pseudo-science, the denial of counter proofs. He gives the example that Freudians possibly would shy away from counter proofs, but the very interesting observation, for my analysis, is that he is here framing psychoanalysis with the same kind of criteria that should be used for the control of a natural science theory, something that many, not the least the Freudians, would claim to be a gross misrepresentation since the psychoanalysis of Freud is not a natural science theory. He adds: "This example will not suffice to identify psychoanalysis as pseudo-science. The decisive thing is if psychoanalysis can show other, more determinate predictions that can be tested by means of various experiments." Here it is possible to see an example of a pseudo-scientific dismantling narrative that is not completely successful. But, on the other hand, he is foreshadowing the potentiality for new empirical trials and subsequent testing of the scientific character of Freudianism. And if the criteria for assessment are continuously constituted by the method of verification and if the theory of natural science and methodology will prevail as a standard meta-theory, the result of this future investigation will be fairly predictable. Therefore, this example of failed dismantling of pseudo-science can be regarded in the light of not being a failure, if only time allows the skeptic to pursue this approach. It is just a matter of where and when this will take place, not if it is possible. Concerning psychoanalysis, Hansson refutes psychoanalysis as a non-science (in distinction from pseudo-science) because their proponents have not made the effort to make their theories accessible for empirical testing.

CONCLUDING DISCUSSION

Initially we noted that the new book by some writers in the VOF circle, *Science or Delusion* (VVI), was warmly welcomed by the commentator PC Jersild in his chronicle; "Whatever happened to the Swedish reason?". Reading Jersild's article, I got the impression that he sketchily talked about "Swedish reason" and also that he in an overly generalizing way placed this in contrast to the image of the Swedes that is presented in VVI, i.e. Swedes in general as believers in delusion, magic and hocus pocus. His way of explaining this mismatch by the influence of the irrationality of religion and postmodernism was also problematic, not because these ideologies are lacking critique of science, but because his critique of them as the enemies of "the Swedish reason" lacked nuance. In his article, Jersild is defending "Swedish reason" as certain psychological and espistemological dispositions

with a national and even national-romantic character. These alleged national traits and self-identities stands against something other that is less specified. His way of talking about "the Swedish reason" suggests that there is an enemy out there threatening to destroy this self-identity. This enemy is not in itself associated with any nationality, thus he is not suggesting that the enemy is of a particular ethnic origin. What he is doing, however, is to elevate "the Swedish reason" as an ideal and to make the assertion that this ideal is now somewhat lost.

Starting out from of an identification of several problems in his article, I pursued the analysis of VOF by a critical reading of a text that is a predecessor to VVI, Sven Ove Hansson's *Vetenskap och ovetenskap. Om kunskapens hantverk och fuskverk* (VOV). In definitions, goals, several editorials and analyses, there is a strong resemblance of VOV with the program of VOF. Choosing to analyze the ideology of VOF through the reading of this early text rather than the more recent VVI, is due to the fact that this book is more programmatically written, as a manifesto for a "science for the people". A similar analysis could, however, be made of VVI and that the results in terms of the knowledge perspectives endorsed the role of science communication and of boundary work, would not be radically different.[35] It should be obvious that I am not engaging in this debate out of revenge for some previous VOF critique of some particular pseudo-scientific position. I am aware, however, that my critique of VOF can be understood as a tacit legitimation for every pseudo-scientific phenomenon that the association needs to combat (cf. above).

In this analysis, I have identified some problems with the VOF movement that were also present in the chronicle by Jersild.

1. By their definition of science, the VOF group offers an instrument that represents a natural scientific world view and this is actively endorsed as the very norm for science in society. I am of the opinion that the theories and methods of natural science are of great importance for civilization, welfare and the rational ways of dealing with physical and biological

35 Sometimes I have myself been invigorated with that anger by which Sandqvist (2000:186) argues hits the "prefect" and "the combat soldier of irrationalism" when "pseudo-science expresses *such* stupid things" (emphasis in original). Maybe I can also subscribe to the relevance of this becoming reflexivity: "Neither boredom or holy rage are conditions that are fruitful for precision and factuality – something that can contribute to explain why the combat soldiers of irrationalism sometimes gets too hot, express themselves perhaps too dogmatically or maybe take recourse to standard accusations that maybe are not well adapted to the particular case at hand." (ibid) I would not be at all surprised if my analysis contains the same kinds or exaggerations and "faults" similar to those that I have identified with others.

phenomena within the framework of national systems of innovation. In contrast to the ideals of classical logical positivism, with which I claim that the VOF group are influenced, I do not regard the natural science theories as the original master theory from which every human phenomenon can be explained and reduced. I doubt that all human phenomena can be explained and understood with help of theories from natural science and generally by access to an empirical world view. Saying that, I am not thinking on spectacular things like paranormal events and experiences of after life, but on more mundane social, political, psychological and moral phenomena where issues about knowledge and learning are represented.[36] My perspective is at large more oriented towards the sociology of knowledge and constitute thus a challenge to the hegemonic character of natural science theories, in particular in its generalized form as a master theory of knowledge.

2. I believe it is problematic that the VOF group in their, for some reasons well motivated, critique of pseudo-science, contributes to consolidate the primacy of natural science theories in society. This takes place with the observation that the empirical principle of verification, basic for all scientific methodology according to VOF, in fact is grounded in a process of knowledge production that is inherently democratic. I claim to have shown in the analysis that this attractive democratic ideal, however, rapidly declines to a consolidation of the conventional roles of experts (the scientists and cognoscenti) and the laymen (the public). The plea for a "science for the people" is thus no more than a carrier for a badly dressed conventional belief in expertise. One obvious problem with the general endorsement of such a perspective on knowledge, particularly in the drastic polarizations of knowledge as "craft and anti-craft" (Sw. "hantverk och fuskverk") or "good or bad science" (*Science or delusion*), is that these divisions tends to equate natural science with what is "good" and "craft", and the humanities and social science with what is "bad" and "anti-craft". The primary objects in the analysis of the VOF group are pseudo-scientific phenomena that are presented as science. Not only in the text by Jersild but also the writings by the VOF circle it becomes apparent that there are other objects to combat that are not compatible with natural science methodology, such as religion, postmodernism, and the "repudiated humanists and social scientists", identified by Jersild. I am worried that VVI, as an example of work in the VOF circle, is generally so well received by concerned critics, because to my understanding this movement constitutes a legitimation for intolerance and

36 Sandin (2000:40) is referring to the philosopher Mario Bunge who exemplifies stances such as anti-science and pseudo-science with interpretive traditions such as existentialism, phenomenological sociology, ethnomethodology and radical feminism (sic!).

for what could be called a *general epistemological cleansing* in the universities and in public life. The definition of science that is used by the VOF group risks actively de-legitimating other understandings of science and critical inquiry. In the analysis of some texts, I have found support for an explicit abandonement of tolerance and understanding, completely in line with Jersild's praise of "the Swedish reason" as a national norm for knowledge. The VOF group not only disregards other sciences, but also other opinions and systems of thought (cf. Johannisson 2005). Their way of defending and ascribing natural science as a norm risks being understood as explicitly intolerant.

3. Another problem with the VOF group is the dominance of a male understanding of knowledge and science. This help to emphasize the impression of conventional scientism that is typical of the group at large. Out of 31 chapters in the two anthologies HLÅ and VVI, only one chapter is written by a woman and another chapter has the same person as co-writer. Concerning the issue of gender and the VOF circle, Karin Johannisson writes in her review of VVI, "The Men against the Myths":

> The soul of the scientific savior is provocative. Not because he is wrong, but because he is one-eyed and enclosed in his own image of the world. And why is he so often a he? (One asks if it is just by mere chance that all of the writers in the book are men) When feminists claim that the natural scientific project of enlightenment is coded in a masculine way, they touch upon something that is central. The very claims to have access to the right instruments and the right rationality come very close to a patriarchal project. Faithfully the whole truth is appropriated – certainly with polite bowings to all the social scientists and humanists that work with sympathetic projects of interpretation but who in fact risks being regarded in the same terms as quacks and romanticists. But a sharp intellect is not only reserved for the men of the laboratory. Neither is scientificness. It is rather a matter of incompatible paradigms where they look for different things at different levels of epistemology. (Johannisson 2005)

I would like to stress Johannisson's point about a project that is coded in a masculine way. It is not just "very close to" but it is a patriarchal project where a conventional and very successful epistemology is used as a tool for standardizing the production of knowledge in general. With natural science as a norm all kinds of phenomena are supposed to be explained. Like Johannisson says, they make "polite bowings" in their fight "for the light of enlightenment (…) against the darkness of delusion" (ibid).

4. The VOF group is part of an international movement of skeptics that share a mission to combat "delusion". This movement is an answer to the critique

against science and the scientific rationality that have emerged from different origins during the post-World War II era, even though the philosophical attitude of skepticism certainly has a much longer history. During the 1960s and 1970s, many young people in the Western world were influenced by various faith practices and ideologies with an origin in the Asian world, such as transcendental meditation, yoga, Taoism, Buddhism, Sufism, etc. Under the general concept of New Age other practices such as divination, astrology and healing emerged in the spirit of what is sometimes called the Age of Aquarius. The critique of science is not only a matter for New Age, but also for the environmentalists, the feminists and the anti-globalization movement. With leading social thinkers such as Zygmunt Bauman, Ulrich Beck and Anthony Giddens, to name a few, there is also critique of science and technology, showing how these allegedly beneficial processes also leads to the emergence of a risk society. My point in referring to these other movements and these theorists is to show that the critique of science and its inherent goodness is not just something that is claimed by the faithful believers, the "age of Aquarians", and by "disillusioned" postmodernists, but this is a much wider phenomenon which must be acknowledged.

5. Throughout the years, the VOF circle has increasingly come to identify their mission as "quality work" and "quality assurance".[37] These notions became popular during the 1990s not only in higher education, but in most parts of public administration. They are used in order to give the battle against false science a somewhat new name, a fresh face. The whole project of "quality" gives new legitimacy to this concern. But the thought of "quality assurance" taking place in the form of self-identified academic emergency units using empirical fundamentalism as its armory, it probably alien to those who give a bit of serious thought to the issue of quality. Under the banner of "quality", the VOF group, identifies its interest not only as combating false science, but the project expands. It is also, as Hansson explains in an interview, a matter of identifying researchers who use their legitimacy as researchers for other purposes. Does this also includes researchers in technology and medicine who run their own companies on their university salary, economists who are represented in boards of private companies and dentists who participate in ads for dental floss? It is also a matter, Hansson

37 See HLÅ and the project "The university at the borderlands of science" that is analyzing the "process of quality assurance in the system of higher education". This book contains descriptions of several cases where this quality control seems to have failed. Quality assurance is here understood in analogy with quality control, which is a very mechanical understanding of the way in which quality assurance is enacted in the Swedish system of higher education.

continues, to identify doctoral dissertations that have failed or deviated from the norms of science. Does this also includes dissertations that lack theoretical frameworks and those that are critical? Finally, it is also a matter of identifying badly supervised thesis work, but one could ask if it is also includes discussing union issues such as the growing amount of work that university teachers often are exposed to? The battle against false science has thus, under the general label of "quality work", come to be broadened into a general certification of science with a self-identified mandate to test the truth in almost any area of knowledge production. I believe that many would have to struggle to accept the presence of such an emergency unit that with blind empiricism and blinkers draws up the limits between right and wrong, true and false, bad and good: the VOF group claims to have access to the methodology of real science. It can take on the responsibility for scientific certification and constitute a self-selected truth commission. Waxing conspiratorial: What is next? Maybe the VOF group will be recruited by some official truth commission? Will we see thematic issues of *Folkvett* focusing on the Christian faith in the virgin birth, or the Eucharist and its theory of trans-substantiation? Maybe we can read critical articles not only about astrology, but also about the Catholic's relation to the Pope or the cult of saints? Maybe we can see anthologies from VOF that criticize not only New Age and divination, but also dismantle the prophet Mohammed and Buddha? Where is the limit drawn for the kinds of analysis that occupy the VOF group?

In conclusion: there are no "clean" methods. Also my effort at describing the narrative of the skeptics, their method and epistemology, is full of these markers. My reading of VOV and the discussion of the VOF circle is also a narrative that is constructed as a critical response to the hegemony of knowledge that the group is pursuing. My narrative can be criticized and dismantled as well. In showing this humble version of normativity, I subscribe to an understanding of science as based on continuous negotiation.

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