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Forest health: Coming to terms

Ashley L. Preston
The University of Montana

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FOREST HEALTH:
COMING TO TERMS

by

Ashley L. Preston

B.A. St. John's College. Santa Fe, NM. 1984
M.S. University of Montana. Missoula. 1995

presented in partial fulfillment of the requirements
for the degree of

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The University of Montana

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Approved by:

Chairperson

Dean. Graduate School

5-25-01

Date

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Since the USDA Forest Service began managing public lands nearly one hundred years ago the agency’s mission and methods have shifted in accordance with public desires numerous times. In this dissertation I suggest that in addition to being responsive to changes in social values and economic and ecological conditions, the Forest Service (and forestry education) must also be responsive to the shifts in our understandings of language, knowledge, power, and authority. These shifts, many of which are documented and expounded upon in the humanities, have profound implications for the praxis of forestry generally and on the discourse of forest health in particular.

In this paper, I outline some of the dominant strains in continental philosophy (Kierkegaard’s theory of being, de Saussure’s semiotics, Derridean deconstruction, Lyotard’s analysis of knowledge in the post modern world, Foucault’s archeology of power and knowledge) and use them to “reread” the FS discourse on forest health. In addition to deconstructing the FS discourse on forest health, I also examine the medical establishment’s discourse on human health. The comparison is enlightening: the medical community and the Forest Service are facing similar critiques and challenges to their knowledge and power structures, but their responses have been somewhat different. Even as the Forest Service is seeking to establish and strengthen objective, biophysical criteria for the determination of forest conditions, the medical community—or at least part of it—is slowly moving away from its exclusive commitment to a narrowly biophysical definition of health and the medicine-as-science model of health care toward a biopsychosocial model that demands the use of multiple sources of knowledge, some of which are distinctly non-scientific.

I conclude with a suggestion that in order to be more responsive not only to the shifts in understandings of knowledge noted above, but also to those brought about by forestry’s own reconceptualization of the forest as an ecosystem, forestry education might consider introducing forestry students to alternative ways of knowing. In short, I suggest that forestry become aware of its own situatedness and educate its students to the ever-changing cultural context in which the discourse and practice of forestry is carried out.
When I use a word, it means just what I choose it to mean—neither more nor less.

--Humpty Dumpty

The contrasts and contradictions that can permanently live peacefully side by side in a skull make all the systems of political optimists and pessimists illusory.

--Albert Einstein
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Chapter One
Introduction

Words and magic were in the beginning one and the same thing, and even today words retain much of their magical power. ... Words call forth emotions and are universally the means by which we influence our fellow creatures. Therefore let us not despise the use of words ...

-Sigmund Freud

This is an essay about words, about the problems of interpretation and those of meaning, and how those words ultimately affect what we do in the forest. It accepts (with qualifications which will become clear) the premise that for humans, the word, logos, language, is fundamental: “In the beginning was the word,” John tells us. The essay tentatively assents to the presumption (and one could say, arrogance) of the generative, creative power of language, of the ability of humans to “speak the world into being” without, however, naively assenting to the oft heard assertion that there is nothing other than words. Just as the god of the Old Testament did to the world in Genesis—“And God said let there be ...”, so we do on a daily basis. Out of chaos and formlessness, god—and we—speak identity and difference into being—and thereby establish in some sense, the possibility of being itself. The question then of who gets to speak and to interpret, to establish the criteria by which knowledge is deemed knowledge, is not negligible: the one who defines the terms of the discourse is the one who ultimately controls the discourse and the actions that follow therefrom. This dissertation is about coming to terms in forestry.
In the management of public lands and natural resources, control of the terms of the discourse is hotly contested. That portion of the general public that is concerned or interested is no longer content (if ever it was) to accede to professional authority, to leave interpretation and establishment of meaning to the Forest Service. Today, there are multiple contenders for the job of speaker and “high interpreter:” interested individuals, environmental groups (a heterogeneous lot that does not speak with one voice), user groups (also heterogeneous), affected land owners, individuals whose livelihoods depend upon using the forest in some fashion or another, corporations, etc. They question everything from the commodity production orientation of forest practice (or the lack thereof), the production of knowledge that legitimates and dictates those practices to the discursive traditions that are used to construct nature itself. “Salvage,” “forest health,” “roadless area,” “wilderness,” “ecosystem” to name but a very few, are examples of words or phrases that lead to radically different actions depending on how they are interpreted.

In this dissertation I examine the discourse of “forest health.” I look at its definition(s), the meanings and values ascribed to it (or concealed within it), how the discourse constructs or understands its object (the ecosystem or forest), and the knowledge frameworks that are brought to bear in articulating it, with the objective being to deconstruct forest health as a term—by which I mean to better understand how the term functions (or fails to function) in the continuing debate over forestry praxis on Forest Service lands.
As my research proceeded, ambiguity increased. Definitions were unable to resolve problems of interpretation in key terms; they only provided more key terms that needed to be unpacked. The ambiguities inherent in the terminology (inherent, one begins to suspect, in language itself) revealed potentially irresolvable internal contradictions between stated objects and objectives and epistemological commitments.

In an effort to get a better fix on the "health" term itself, to understand how it might be used and understood in other areas of practice and discourse, I performed the same analysis on the medical discourse on human health. This second task, however, fragmented into two distinct parts upon closer examination: the medical community or discourse is deeply divided along ontological and epistemological lines. On the one hand are those who conceive of medicine as a natural science, treatment as a technical endeavor, and health as a strictly biophysical condition; they are concerned only with the body and the bodily manifestations and biological vectors of disease. On the other hand are those who are committed to an "ecological theory" of health; they see medicine as a social science (science understood broadly in its Latin sense of "knowledge") and health as a culturally mediated condition of the real (body); their focus is on persons, as beings who exist in the cultural or symbolic and the real.

My third task in the discussion on health (Chapter Five) is a cross-discursive comparison or "rereading" of forest health through the (refocused) lens of the medical discourse on
health. The inconsistencies that arise in forest health between object, objective, and epistemology begin to yield when reevaluated in light of the insights gained in articulating the distinction between "medicine as a natural science and health as a value-neutral biophysical condition" and "medicine as a social science and health as an ecological condition that involves the whole person." The specter of contradictions concerning what is and what we think is and what we want to be continues to loom; but contradiction is, as Kierkegaard would say, the fundamental condition of being a concrete, actually existing being, that lives in the real as well as the symbolic, in the past, present, and future, in the world that is and the world that it wants to be. In other words, life itself is possible precisely because of the irreducible tension between the simultaneity of either-or. The re-reading does not reduce ambiguity either—if the linguists are right, it never will—but the ecological model of health internalizes ambiguity, treating it not as something to be gotten over, disregarded, or dispelled by reduction and isolation, but as an essential and ineluctable attribute that makes agreement possible.

Forestry, like medicine, is one of those endeavors that straddles the divide between the symbolic and the real; it rides what N. Kathryn Hayles calls the "cusp"—the "self-organizing, transformative process" by which we make sense of the chaotic "unmediated flux" of the "out there" (Hayles, in Soulé 1995, 49). These transformative processes include "sensory, contextual, and cognitive components;" we see and experience what we do (conceptualized as observations and experiences or events) because of our peculiar physiology and anatomy (i.e., as a species), our individual histories, our cultural history,
and our particular situation within time and space. That is, what we know of the world is
the result of an ongoing negotiation between what is out there and who or what we are.
Because forestry, like medicine, rides the cusp foresters and physicians must open the
epistemological portals wider to include multiple sources of knowledge qua knowledge,
not as opinions or expressions of "desires" that are somehow inferior or secondary to the
"hard data" of scientific knowledge. Foresters and physicians must make an effort not
only to "interrogate the referent" but to interrogate themselves interrogating—to examine
the conditions under which one might know the forest or the body, but also those under
which one might know what one thinks one knows about the forest or the body, and this
means accessing knowledge produced in other disciplines and by other people. The
forester, like the physician, must learn to "speak in tongues;" to try to understand not only
what is "out there." but to understand the stories that we all have about what is out there.

This dissertation is a step in that direction; it is an effort to come to terms, in all their
ambiguity and contradiction, with the ineluctably "fissured" and open nature of the USFS
discourse on forest health by looking at the terms themselves and following where they
lead. Hal Salwasser (then director of the USFS' New Perspectives Program) understood
the need to come to terms, and in his case, the need to try to control them. In 1992, in an
effort to convince Dale Robertson, then Chief of the USFS, to adopt Ecosystem
Management as Forest Service policy sooner rather than later, Salwasser argued that "it's
time that the Forest Service adopt Ecosystem Management terminology ..., and that we
shape it, rather than let somebody else define what it is and then us having to live with
that definition... we should embrace the terminology and at least play a part in shaping what it comes to mean” (Salwasser, reported in Freeman 1998, 205). He worried that the USFS would lose control of the terms of the discourse, and by association, control of the referent. Salwasser’s understanding of the peculiar relationship between words or discourse, power, and management of the “out there” is distinctly at odds with the understanding articulated by a team of USFS researchers in a General Technical Report on forest health in the Southwest. In what begins as a promising foray into semiotics and its impacts on forestry, the authors close with this assertion:

Science. environmentalism. wise-use. conservation. and popular culture all interpret nature according to the mythologies of its own interest group. Behind all these mythologies lies the physical reality of wildlands. Agencies concerned with forest ecosystem health must sift through the cultural constructs to find core reality. The Forest Service cannot manage mythological wildlands (USDA FS /Dahms and Geil1997. online).

Apparently, they think the Forest Service alone can directly access the “core reality.” the “flux” behind all the stories; the rest of us are stuck with myths. (I am reminded of one of Einstein’s aphorisms “Whoever undertakes to set himself up as judge in the field of Truth and Knowledge is shipwrecked by the laughter of the gods.” The FS is perilously close!) Salwasser’s position and that of the team of USFS researchers delineate the two radically different approaches to understanding the relationship between knowledge and language,
us and the "out there," the symbolic and the real that characterize the field of
investigation in this dissertation. My argument is that the USFS is in no better position to
define the terms of engagement on the grounds of some privileged access to the real than
the rest of us are; for all its outward looking, it (and its researchers) are as bound by the
constraints of culture, history, language, and physiology as any other human or human
discourse.

This project is prompted by Derrida's insight into the ineluctably "fissured" or open
nature of discourse; thus forestry, as a discursively generated or language-based practice
is eminently vulnerable to critique from without and deconstruction from within. It also
accepts his insistence that this fissure, this openness, demands from each of us the utmost
vigilance: because we can't know the Truth (which might serve to check or restrain our
discourse and our discursively based actions), we have a responsibility to avoid
foreclosing our discourse in such a way as to exclude other voices (Derrida, in Caputo
1997). "Health" is the fissure in the discourse on which I have focused; it provides a way
in as well as a way out. By this I mean that unpacking the USFS' understanding of the
term health leads one to investigate other terms in the USFS health discourse, and
because the term health is also used in other discourses, because it is dispersed, it also
invites comparison to non-forestry discourses.

Much of the theory (theories, really) that informs this project comes out of a field of
thought (or better yet, an approach to thinking about being, knowledge, and language)
that is known as continental philosophy. In this work, I am indebted to Kierkegaard's understandings of being, Saussure's work in linguistics, Derrida's insights into text and his rereadings of Saussure's work, Foucault's analysis of the relationship between knowledge and power, and to Lyotard's (following Wittgenstein) examination of the state of knowledge in a postmodern world. I am also indebted to what N. Kathryn Hayles calls "constrained constructivism," an eclectic approach that seems to normalize contradiction and ambiguity by insisting upon the retention of the simultaneity of the either-or/neither-nor (in other words, be refusing to choose). All of these will be more fully elaborated in Chapter Two.

The analysis itself is done on written texts. I chose to limit my attention to those texts on forest health produced by the USFS, most of which have been produced in the last decade. With respect to the texts used in Chapter Four (on medicine) I limit myself to those produced by medical practitioners or those involved in the education of future practitioners. It is a convenience, one that artificially limits the interpretive possibilities, but this is true of all critical analyses. I settled upon USFS literature because in the final analysis, it is the USFS who manages for forest health on public lands; if they are incorporating meanings of forest health generated in external discourses, then it should show up somewhere in their literature.

In selecting particular USFS texts that might be "representative," I solicited the advice of two individuals who have been instrumental in the USFS and in framing the USFS.
discourse on ecosystem management, of which forest health is a key (if not the key) objective. In response, Dr. Hal Salwasser suggested that there was not much of value coming out of the FS on forest health these days and he could offer no titles that might serve my purposes (Pers. com., 10-1-00, e-mail). Dr. Jack Ward Thomas responded to my enquiry with a list of his publications, none of which took up with the issue of forest health per se (Pers. com., 10-6-00, e-mail). So, I did what most researchers with a field study do: I did some general reading to find out in which locations the “species” of interest had been sighted (USFS literature) and to narrow down a time frame (Q: When did the term forest health come into serious play in FS policy and practice? A: About 1990). I then marked out my “plots” (USFS documents on forest health published in the last 10 years). I chose works with “forest health” in the titles and followed the citations. I looked at policy statements (particularly those at the national level) as well as regulatory and planning documents because they establish the USFS objectives. I also looked at the technical reports produced at the regional and individual forest level because they told me something of how the objectives were being interpreted and “reified” at the level of practice. Eventually, the documents begin to repeat themselves, to quote and requote the national objectives, and then to expound on the minutiae of pathogens and “pathoeologies.” or to take the stock definitions, criteria, and techniques and map them out onto individual forest landscapes in order to determine “present conditions” or to gather baseline data.
For the texts used to construct the medical view of health, I used the same methodology: I queried a few professionals (two clinical physicians and a public health administrator) for suggestions, and I foraged among the voluminous technical and scientific publications in search of the more rare treatises on health itself. In the process I discovered the broad schism mentioned earlier and so directed my subsequent searching to finding texts that seemed to “represent” both sides of the health debate. Thus, the sampling may not be exhaustive, but it is nonetheless illustrative of the Forest Service position on forest health and the medical communities’ changing understandings of human health.

With respect to methods. I take my cue from Karl Popper who declares himself uninterested in questions of method except insofar as the method permits or inhibits the clear statement of an interesting problem and the critical examination of the various proposed solutions (Popper 1997, 16). In other words, Popper is an advocate of rational discussion, of logical argument, produced and sustained by whatever means one may bring to bear in sincerely looking for a solution. Like Popper’s inquisitive and unfettered philosophers, we are here interested in a multi-faceted problem (the problem of forest health and how it might compare to that of human health), and because our problem is complex, we may have to “philosophize in many different ways.” We will not “pledge ourselves in advance” to any one method, but rather welcome any method that may help us to see our problem more clearly (Popper 1997, 20, 22). Thus, though I make no claims to being “without method,” I do submit that the complexity of the problem (the meaning of forest health) admits of multiple methods.
As noted above, I limited my attention to USDA FS publications and did not venture out into the rich body of text on these issues produced outside of the USFS. I did this for two reasons (other than the obvious one of pragmatics). First, the FS is a public agency responsible for managing vast public lands and their management is hotly contested. Second, if the FS is aware of and responsive to ideas generated in extra-forestry disciplines or venues, it should show up in their publications. It may very well be that the FS is carrying on an internal dialogue about problems of method, alternative knowledges, the role and/or limitations of science, the changing role of authority and expertise, the connection of knowledge and power, and the “heterogeneous multiplicity” of the concept of health. But if this dialogue does not appear in the publications, and if it is thus concealed from the general public, then the general public will make its assessment of the FS motives and programs based on what it does put “out there” for public consumption. The fact remains, however, that the words are the FS’ own and thus presumably represent the FS’ position on forest health, they are in print and published for public consumption, and are thus available for deconstruction and critique. Again, the dissertation does not pretend to be exhaustive. It is however, the result, as Stuart Kauffman says in his book *At Home in the Universe*, of “one mind’s transect” through the forest of literature on human and forest health (Kauffman 1995).
Chapter Two
‘Words and Things’

... A task that consists of not—of no longer—treating discourses as groups of signs (signifying elements referring to contents or representations) but as practices that systematically form the objects of which they speak. Of course, discourses are composed of signs; but what they do is more than use these signs to designate things.
-Foucault
An Archeology of Knowledge

My task in this chapter is to sketch out the broad themes or features of the field of inquiry known as continental philosophy (CP). Having delimited the space, I will then identify and elaborate more fully on those features or approaches that are pertinent to this project—an approach that might (over-simply) be called textual analysis by way of Saussure, Derrida, Foucault, and Lyotard, among others. Selectivity is necessary (though dangerous) because even though continental philosophers share some fundamental epistemological and ontological commitments, these commitments are elaborated and articulated in sometimes conflicting methodological and theoretical frameworks. As one editor ironically notes in his Introduction to a volume bearing the impressively comprehensive title of Continental Philosophy: An Anthology, the ambiguity and instability of the field of inquiry designated by the name is a “sign of the times” (McNeill and Feldman 1998, 2). CP is not a homogenous, monolithic philosophy organized around one central theme with a single, obligatory methodology, but an approach to knowledge and language that fosters dispersion and eclecticism. If there is a connecting thread that runs through all of CP, it is woven from the proposition that words, signs, tend to be inexact—or less exact than philosophy had assumed them to be; that ambiguity is therefore inherent, ubiquitous, and ultimately irreducible; that there is no necessary
connection between a sign and a referent—that is, the mind is not a mirror of reality, and structures of knowledge or logoi bear no essential, obligatory, ineluctable connection to "structures" in the real. Thus knowledge (as a function of language) is always contingent, partial, situated. Different continental philosophers tease this thread out in different ways; they make different inferences from this basic insight about words; they apply it to different philosophical, social, political, and economic institutions and knowledge frameworks with different results; they draw different conclusions about what we can know and how we know it, about the relationship between "mind and matter" and who we are.

Despite these radical internal differences, CP is sufficiently coherent that we can say that its way of thinking about knowledge and language is radically different from the way of thinking that has informed Western scientific practice (and by association, land management) to date, i.e., logical positivism. Suffice it to say that even though logical positivism is generally acknowledged as passé in many fields, forestry remains largely committed to the project of objective knowledge, or radical empiricism, and the correspondence notion of truth. My thesis questions that implicit commitment and reexamines the praxis of forestry from the perspective of CP in an effort to open it up to the possibility of its own future (Derrida).

But we need a more elaborate, detailed articulation of this overly-general characterization of CP that takes into account its differences. The editors of the above mentioned anthology struggle to articulate a "definition" of CP—a near Herculean task given its
Eclecticism and internal resistance to reduction under a singular name or title.

Nonetheless, they suggest that

Continental philosophy broadly accepts and shares a fundamental insight of Hegel’s thinking: namely, that reason, rationality, thought, i.e. logos in general, are constituted in an intrinsically historical manner; that their mode of being is the same as that of human existence itself, and in this sense guarantees no eternal truths or certainties. ... [T]he desire for scientific truth is no less historically contingent and questionable than any other purely “logical” truth, and offers no eternal or ultimate solutions to fundamental questions of human existence. ... [This] awareness of the intrinsic historicality of its own undertaking thus tends to be a distinctive hallmark of continental philosophy (McNeill and Feldman 1998. 1-2).

What is distinctive about CP then is that it is a “style of philosophizing in which the practitioners put their own traditions, cultures, histories, and languages into question and into dialogue with one another;” i.e., it is self-conscious (McNeill and Feldman 1998. 2). It philosophizes about philosophy, it interrogates itself interrogating; every thought, statement, or discourse is subject to “deconstruction” (an internal critique), as well as contest from without. “Doing” continental philosophy is like thinking yourself thinking, seeing yourself seeing—it is an endlessly iterative, reflexive and reflective language game that is both inwardly and outwardly directed; that is, it questions the possibility of thought
and conditions for knowledge that obtain both within the system or particular discourse and without it.¹

CP has abandoned the search for ultimate truth and certainty since no person can legitimately claim a universal position above and beyond his own bodily existence; in fact, it is bodily existence that is the condition for knowledge (cf. Kierkegaard and Lyotard). In reestablishing the universality of doubt (an Enlightenment project that logical positivism sought to abandon), CP focuses instead on the problems of signification, interpretation and meaning, and knowledge as well as on power, author-ity, and responsibility in a world in which signifiers are acknowledged as floating free of the signified and signs of referents; it rejects the ontological primacy of an objective obligatory unifying logos; it decenters and fragments the “knowing” presence or subject; and it posits a world in which the structures of logos cannot be shown to be a perfect analogue of the structures of reality, thereby foreclosing/precluding the possibility of any knowledge being known to be eternally or universally true. Of course, we cannot know that we don’t have the truth. Knowledge is reflexive—we know, and through corroboration we know that we know. But this is the knowledge that we can’t have. All we can have is that “we know and we think that we know,” corroboration is never perfect and complete and the truth remains always in doubt.

¹ “Games” here should not be understood as trivializing or mere fun. Word games, in the way that Lyotard and Wittgenstein mean them to be understood, are deadly serious. Word games are how we broker power/knowledge, and in practices like forestry and medicine, control of the words means control of the knowledge, which means (ideally) control of the forest or the body. My argument, however, is also that control of the words is fleeting and illusory—which assertion does not stop us from speaking!
For our purposes, it is especially important to note that this way of doing philosophy is not restricted to philosophy; this method, if you will, of openness, of reflexivity or criticality is increasingly an integral part of such diverse fields of inquiry as the social sciences, science studies, cultural studies, anthropology, medicine, psychology, art and literature, political studies, economics, and even (eventually perhaps) the "hard" sciences like biology, physics, chemistry, and all their various permutations into specialties, sub-specialties, and sub-sub specialties (see Haraway, Harding, Levins and Lewontin, Sorrell, Prigogine and Stengers etc.). Forestry is an (unacknowledged and unwilling, I think) irreducibly cultural and interdisciplinary praxis, not just because it has political, social, economic, ethical, philosophical, ecological, and scientific facets or components, but because each "facet" is inextricably intertwined with and intimately informed by all the others. As such, it cannot escape the radical effects of continental philosophy on our perceptions and/or constructions of ourselves and the world, on knowledge and ways of knowing. Nor, for that matter, can any other praxis (including CP itself).

Over the decades, continental philosophy has gone through many incarnations; the traces of these "incarnations" remain: CP has not so much moved on as added on. Each new articulation or application incorporates and grows out of some earlier theoretical orientation. At one point, it was virtually "synonymous" with Husserl's phenomenology and Heidegger's ontological expositions; at another with the existentialism of Sartre and

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1 As nearly as I can tell, what the FS means by "interdisciplinary" is that we must consider all the sciences when managing ecosystems. To that end, they have diversified their staffs to include researchers from a variety of scientific disciplines, including the social sciences.
de Beauvoir, and at yet another, it was almost indistinguishable from semiology à la Saussure. CP was at one time characterized by structuralism à la Levi-Strauss, Marx, Freud, Barthes, and Foucault among others³ and, after the revolutionary May of 1968 in Paris, it took on the guise of poststructuralism— whose most notable proponents are perhaps Deleuze, Lyotard, Irigaray, and Kristeva. At present, continental philosophy is closely associated with the philosophic approach known as deconstruction— which may or may not be a particular style of thought within poststructuralism —and whose progenitor and foremost practitioner is Derrida (Audi 1995, 158). Yet another persistent strain of continental philosophy is known as critical theory, a style of philosophizing that permits—and in fact requires—the critique of social, economic, and political institutions and practices and the construction of an alternative theoretical construct. Present day critical theory has its roots in Marxism, the Frankfurt School, and in Habermas’s theory of communicative action. Contemporary discourses such as feminism, ecofeminism, gay studies, deep ecology, environmentalism, cultural studies, etc. are considered by some to be potential candidates for inclusion either under continental philosophy in general or critical theory in particular (McNeill and Feldman 1998).

Rather than establishing particular theoretical or methodological guidelines, continental philosophy fosters a critical environment based on the premise that we are all living, existing, situated, becoming beings who thus cannot know everything, (but who also

³ As an example of the fuzziness of the divisions between “movements” or themes in Continental philosophy, it is worth pointing out that Levi-Strauss and Foucault are sometimes also considered as poststructuralists. (Conley 1997, 3-5)
cannot know what we don’t know). In other words, no one can make a claim to know the
Truth nor, conversely, can we claim that what we think we know is not the truth. We are
linguistic beings, a “symbolic species,” and it is through our categories of thought, our
signs, that we know the world; that is, knowledge of the “out there” is knowledge because
it is expressible in language.

This elaborate premise establishes the grounds for challenging structures of power
(political, social, economic, ethical, etc. institutions) that are inextricably tied to
structures of knowledge that have “forgotten” their own contingency and constructed
themselves as “unsurpassable a priori limits” (Foucault). Challenges to the current power
and knowledge structures are ubiquitous: race relations (cultural studies, post-
colonialism), gender relations (feminism and ecofeminism and gay studies), economic
relations (Marxism, developmentalism. Cobb and Daly, Schumacher, Escobar), politics
(Foucault, Derrida, Conley, Marx, etc.), medicine (Sacks, Weil, homeopathy,
naturopathy, chiropractic, etc.), academia, human-nature relations (deep-ecology,
ecofeminism, environmentalism, etc.), art, ... Just about every institution that is
established upon some sort of knowledge or way of knowing is contestable by often well-
articulated and persuasive alternative narratives that privilege different ways of knowing
and being. Continental philosophy thus demands of its “practitioners” extreme vigilance
and profound responsibility: the Truth is not out there; we are ultimately responsible for
discourses that we produce and thus must take care that the words we loose do not
destroy the other. Incidentally, this criticality, if you will, is not merely an affect of
academics with nothing better to do than quibble over semantics. Its roots may arguably be in academia, but it has escaped the narrow bounds of the ivory tower (some might point to the student revolts in May of 1968 in Paris (V. A. Conley and J.-F. Lyotard) while others would point to the tree hugger’s embrace of positions like deep ecology) to permeate and flourish in the culture at large.

But we have gotten ahead of ourselves—or more precisely, we have gone “large”—when we need to go small. What we need to do is to articulate some of the details or specific features that constitute the backbone of CP and inform its many permutations (and the theoretical and methodological orientations of this dissertation). That is, we need to look at how it “constructs” or understands self (and other—both other persons and forests), how it understands language, how these understandings relate to knowledge, how that knowledge affects and effects forest policy, and how policy affects and effects forest health. Much of continental philosophy hinges on what Derrida calls the never-ending task of “reading and rereading” Hegel, and so we will begin here, with Hegelian metaphysics’ presumed closure of knowledge and the end of philosophy (quoted in Taylor 1986, 1). The speculative, metaphysical unity of Hegelian philosophy upon which much of modernity (and logical positivism) is founded, is achieved only by willfully forgetting what Kierkegaard calls the concrete, empirical, living subject; that is, Hegel’s perfect closure of knowledge is effected by the identity of thought and being, an identity which comes at the cost of the “particular existing human being,” or at the cost of difference, of existence and life themselves (Kierkegaard in Taylor 1986, 170). For
continental philosophers like Kierkegaard, Nietzsche, and Lyotard, this cost is too high. If knowledge depends upon abstraction, upon the transcendental unification (identity) of self and other, a unification and abstraction which necessitates rejection of the particularity of the circumstances of lived experience then we may perhaps need to rethink knowledge. For them, Hegelian philosophy's speculative unity is an interesting and provocative thought experiment, but not a very useful one if what we are looking for is a way for us as living beings to know the world we live in: the actually existing world in which we are actually existing beings. This, of course, is the world that forestry praxis inhabits. Of what value is abstract knowledge if one doesn't actually live in an abstract world? What is the point of positing some "perfect" unity of thought and being (omnipresence) when we so clearly are not omnipresent? We don't experience ourselves, or know ourselves, as identical with all of existence (the arguments of deep ecologists notwithstanding). In fact, our knowledge of the world and of self appears to be both differential and deferred, that is, it is predicated upon perspective, on mediation: we know, and we know this because we think that we know. Absolute knowledge of some abstract reality that is predicated on some abstract self is not likely to be very useful when it comes to living in the here and now. It is more useful to figure out the conditions of knowledge that obtain in a world in which there is always an outside; a world in which there is always something that is not known; and a world in which as limited, situated, embodied beings we cannot know the extent of what we don't know.
This is the ineluctable tension inherent in human existence: we abstract in order to know (language, naming, is an abstraction, a violence,⁴ an objectification, a stepping back from the particular thing to the general category of things that fall under that name: tree, ecosystem, forest) and in order to survive, but our abstractions as abstractions leave out features whose importance we cannot even pretend to estimate, and the loss of which may prove fatal. For Kierkegaard, the tension of lived experience and its urgency is located in the paradoxical nature of the simultaneity of either-or (like answering yes to a question of “either... or...?”). The contradiction cannot be overcome except at the expense of life itself. For Kierkegaard the one inescapable condition of knowledge is the temporality of the lived subject and this one fact determines everything else:

not for a single moment is it forgotten that the subject is an existing individual, and that existence is a process of becoming, and that therefore the notion of the truth as identity of thought and being is a chimera of abstraction, in its truth only an expectation of the creature; not because truth is not such an identity, but because the knower is an existing individual for whom the truth cannot be such an identity as long as he lives in time (Kierkegaard in Taylor 1986. 174).

As knowing subjects that are always becoming, our knowledge is inevitably incomplete. There is always an outside, a “not-known,” a gap—even an other person or an other

⁴ This notion of violence is attributable to Derrida; see “The Violence of the Letter” in Of Grammatology.
moment—that fosters ambiguity. The job taken on by (neo-Kantian) continental philosophers is to acknowledge the possibility of that which cannot be thought, to apprehend the outside, the other; to refuse the comfort of “forgetting” that Hegelian abstraction offers; to reject the conservatism that permits closure; to renounce the illusion of full (spiritual) presence (a task aided by the Freudian conjecture of an “unconscious” that forecloses the possibility of full self-awareness or presence); to refuse the retreat to some ideal timeless unity or identity (or transcendental logos or law) that collapses difference thereby “dissolving the tensions inherent in concrete human existence”—a Romantic unity upon which knowledge was predicated in the logical positivist project (Taylor 1986, 15). Simply put, the job of continental philosophy is to figure out as best we can how we as concrete, particular, contingent, differed and deferred living beings can know anything at all about a world that is also always in the process of becoming. We are biophysical, embodied beings, or minds: we are existing subjects in an existing world. We live in the out there and we have ideas about it; we call it a world, a planet, a forest, or an ecosystem. Continental philosophy’s discursive critique of knowledge is helpful insofar as thinking about the problem of knowledge helps us to live in that world, that forest, that ecosystem, or that planet. CP does not deny the possibility of empirical knowledge of the world (which is not to say the “out there”), but it refuses to permit those with a particular agenda (basically all of us) to use empiricism as an evasion of critique or an exclusionary strategy.
Continental philosophers next take up with the problem of language because it is central to knowledge—of self and other. This project owes much to Saussure’s critical analysis or “science” of language, semiology. Mark Taylor, a professor of Humanities at Williams College, and author and editor of several books on postmodernism, continental philosophy, and deconstruction suggests that there are several key themes that come out of Saussure’s structural approach to linguistics that are important for us. First, to Saussure we owe the now prevalent notion that signs are “arbitrary conventions” whose meanings are fixed by conventional association rather than by any necessary or obligatory connection between signifier (“sound image”) and signified (concept) (Saussure 1972, 67-8). Moreover, the signifiers themselves are only “differentially” identified: that is, each signifier is a unique entity by virtue of its difference from other signifiers within the language system (the difference between “for” and “form” consists in one letter) and this unique signifier is meant to convey (to signify) a particular meaning or concept (a signified) (Saussure 1972, 118-9). The connection between the signifier and the signified is also purely conventional. Meaning is determined by the position of a sign within a network of shifting signs—an economy of signs that is itself always shifting, rather than by some obligatory correspondence to a preexisting, prelinguistic, essential reality; there is no transcendental signified that stands outside of the sign system, no catalogue of catalogues that does not include itself (Saussure 1972, 65-66). Meaning is relative and differential—that is, “identity” is a function of difference between signs within a closed system. in short, of non-identity. Derrida, incidentally, complicates this system of differed signs by reintroducing time (the problem of always becoming, of always opening to the
future) and distance (in writing) thereby also deferring meaning and thus reinstating the polysemic nature of language as central and irreducible.

Yet another important point that arises out of Saussure's linguistics is that the speaking subject, in addition to constituting the world through language is itself constituted by its position within the sign system (Taylor 1986, 14). That is, we speak our selves, as selves, into being in the same way we do the world. This insight

reverses the modern philosophy of subjectivity by suggesting what later is described as the 'decentering,' 'dissolution,' or 'deconstruction' of the subject. ... Subject is a function of system rather than system a function of subjects (Taylor 1986, 14-5).

This has important implications for the autonomous speaking, creative, atomistic, individualistic subject upon which much of the project of modern philosophy and science is predicated. According to this reading of the subject, of self, we as subjects are an artifact of our language system. To become (self-conscious subjects?), we think, speak (or write) and are thought, spoken or written about. To bring the world into conscious being for us we do the same. We are an artifact, a manifestation, of an infinite number of discursive formations. Who we are is a function of our (not always known or intended) positioning within these discursive formations; the self is constituted and reconstituted at the ever-shifting nexus of diverse discourses.
To bring it down to earth a bit: we define ourselves (and are defined by others) by reference to many different conceptual categories. Imagine Tom. He identifies himself simultaneously as Chinese, male, an accountant, a student, father, brother, son, rich, tall, guilty of perjury, a poor writer, a heavy drinker, a good driver, a bad mathematician, a soccer player, a hiker, a lover of nature, a consumer of wood products and fossil fuels, etc. etc. The same sort of (only vastly more complex) constructive multi-discursive positioning holds true for the constitution of the forest (or ecosystem) (think of the forest that produces pulp, that participates in the hydrological and the carbon cycles, that is home to wildlife (and "pests"), that offers spiritual renewal, income, aesthetic pleasure, etc.) — the critical difference, however, is that the ecosystem only gets to be spoken into being through the words we speak for it, and the "speaking we," like the thing(s) spoken about, do not speak with one voice.

In building his science of language, in seeking the systematic in the midst of the accidental and the incidental, Saussure focuses his attention on the synchronic (timeless, as in "always in the present") aspects of language (la langue). For Saussure, time is anathema to system and to structure (Saussure 1972, 79-80, 84-89 ). In order to get at the true structure of language, one must extrapolate from the temporality of the living, spoken language because this language is constantly changing in sometimes unexpected ways. This experiential language is highly volatile, because each time a word is used, it appears in different contexts, with a different network of associations that are both historical
(going backward and pointing forward in time, deferred) and current (participating simultaneously in the construction of multiple (or sometimes binary (light/dark)), non-coincident discursive realities, differed); that is, we look for meaning in historical usages of a word, its immediate context, and in the ways it is being used around the same time in other discourses or venues. From this view, meaning, like existence and knowledge, is emergent, contingent, always becoming; it is never self-present, never simultaneous, it is both differed and deferred.

Things that change unexpectedly tend to resist systematization; in science, as well as traditional philosophy, the point is to get beyond the constant flux to discover the principles, the laws, the structures or frameworks that govern that flux; in other words, to abstract from the many to get to the one. Thus, in order to build a science or a philosophy the usual approach is to reduce, to step out of the flux, to ignore or control for time. For the structuralist Saussure time is inherently disruptive and thus antithetical to system-building, while for many post-structuralist continental philosophers time and its passage are the unavoidable conditions of lived experience (Derrida, Lyotard). The challenge after Saussure is to explore the conditions under which meaning is possible in a language that is differed and deferred, that is, in a language that is no longer closed, but open or fissured.

My use of differed here is slightly different, although not contradictory to, Saussure’s use. By differed, Saussure means that each word is a unique word in that it is different from all the other words (or signs) around it, i.e., language is relative and terms receive their identities by virtue of their difference from other terms in the system.
Thus, we have a subject who is "decentered," who is always in the process of becoming, and never fully present either to itself or to the world. This fragmented subject constitutes itself and its world through a language in which meaning is differential and presence is always deferred, self-referential ("circular" or tautological, but imperfectly so (Derrida’s fissure)), and relative. And it is only through this fissured language and this fragmented subject that we come to have knowledge. We know nothing except in so far as we know it through language, through logos; all knowledge—whether it is of self or other—is mediated or constituted through language. We know nothing immediately because to do so would mean that we have full and perfect cognitive presence (identity), and to say that we are fully present is to ignore the undeniable fact of our self-conscious experience of ourselves as particular, concrete, existing beings that are always becoming in time, in a present-ing that never arrives (Kierkegaard).⁶

Knowledge requires both consciousness and cognitive process; it is mediate and never immediate. We know of things through language, through a sign system that though it bears no essential connection to the "out there," nonetheless seems to enable us to make sense of and to organize the sensory data that bombards us. We are a species that is not content just "to be:" instead we must also think about being and about what it means to be. (This idea, incidentally, is not new: Locke wrestled with this problem of the dual nature of man. In Lockean terms, knowledge consists of complex ideas, unlike simple ideas (sensations) that can be "immediate." Kant agreed with this distinction.)

⁶ Kant proposes that the only time that we experience ourselves as fully present is in the act of creation, in artistic activity. Kierkegaard holds that we experience ourselves as fully present only momentarily.
Knowledge, then, is never just personal, but always social—via language. Foucault’s analysis of discourse and its relationship to power is also applicable here. In his *Archeology of Knowledge* Foucault develops the thesis that systems of thought are “discursive formations” that function and evolve independently of the “beliefs and intentions of those who use them.” In theorizing thusly, Foucault builds upon and further reifies Saussure’s idea of a “decentered” (no longer intentional, transcendental, fully present, or “titular”) subject:

Discourse is not the majestically unfolding manifestation of a thinking, knowing, speaking subject, but, on the contrary, a totality, in which the dispersion of the subject and his discontinuity with himself may be determined. It is a space of exteriority in which a network of distinct sites is deployed (Foucault. 1972. 55).

In order to account for change—from one formation to another, or one system to another, Foucault introduces a “genealogical” approach that incorporates the “non-discursive practices” of social, political, and economic power structures—vaguely reminiscent of Nietzsche’s *will* in his “will to power.” In doing so he rejects the Marxist and Hegelian teleological interpretation of inexorable “historical progress.” and instead insists that the resultant discursive formations are merely temporary, contingent structures based on fleetingly, in passion. Arguably, these two come together in Kant’s treatment of the sublime and genius.
epistemes—ways of knowing—that provide paradigms for understanding phenomena. These formations are the result of the culmination of small, undirected, unrelated, and often unintended acts and events that are dis-integrating even as they are becoming:

A discursive formation, then, does not play the role of a figure that arrests time and freezes it for decades or centuries; ... it presents the principle of articulation between a series of discursive events and other series of events, transformations, mutations, and processes. It is ... a schema of correspondence between several temporal sites (Foucault, 1972, 74).

For Foucault, knowledge and power are inextricably intertwined. Knowledge is a form of control, and control (or power) creates the conditions under which knowledge is recognized or constituted as knowledge. In this sense, knowledge is not “a tool” employed by powerful interests, but “precisely as bodies of knowledge, they are tied (but not reducible) to systems of social control;” the knowing, powerful subject is not itself outside of knowledge (recall our catalogue of catalogues that perforce includes itself) (in Audi 1995, 276).

There is a strong ethical motive to Foucault’s philosophizing that becomes increasingly apparent in much of his later work, which sought “the liberation of human beings from contingent conceptual constraints masked as unsurpassable a priori limits and adumbration of alternative forms of existence” (Gutting, in Audi 1995, 276, and Foucault.
For Foucault (as with later Derrida) we have a responsibility to the future (more accurately, if awkwardly stated as "the becoming") which obligates us to critically examine the assumptions that inform our statements, statements that are themselves designed to evade or mask their own origins, limitations, and contingencies in hopes of establishing themselves as True. However, we are not here doing a strict hermeneutics (looking for the Meaning that stands beyond the text, the extra-discursive.""Transcendental signified"). Neither Foucault’s nor Derrida’s “excavation” of the heterogeneous multiplicity of discursive formations or systems is intended to lead one to a “prediscursive” truth or a “presystematic” reality of objects. For Foucault, “behind the completed system, what is discovered … is not the bubbling source of life itself, life in an as yet uncaptured state,” but rather behind, beyond, before the systems under investigation, one can expect to find more systems, more networks, more discourses of the prediscursive (Foucault, 1972, 76).7

No one is free from discourse, including the Forest Service. It’s discourse on forest health seeks to assert Forest Service authority based upon a variety of implicit claims to prediscursive certainty (by virtue of its use of the scientific methodology, for instance, and its access to “specialists” or “authorities”). And it is this authority-seeking discourse—in so far as it seeks to foreclose other discourses—that we have a moral obligation (if Foucault and Derrida are to be believed) to challenge.

7 Of course, not every discourse is a discourse on the prediscursive. And there are other ways to assume authority (brute force, for example: or deception).
Given the disjunct, the gaps, between mind and matter, between structures of thought and structures of reality, between signifier and signified, sign and referent, that CP seems not only to recognize but to revel in and exploit, one might conclude that we can never know anything at all. All we have is words, and even those are slippery at the best of times—even, perish the thought, scientific words. This would appear to leave us in the absurd and indefensible position of asserting that nothing is real, there is no “out there,” at least not one that we can access. Experience, however, indicates otherwise—if for no other reason than that something seems to slap back, to intrude, to irrupt into our thoughts, our seamless narratives, and into our biophysical existence. Indeed, it is at those moments when the “out there” does something unexpected (contrary to our ongoing narration), that we are most forcefully reminded that our words haven’t quite got a grip on it. (Illness, as we shall see, is one of those unexpected irruptions that leaves us scrambling for words and for an identity.) There are those who wish to find a way to live in a world that is both real and linguistically constructed—a way that acknowledges but does not succumb to the illusions or comforts of either—a world that is real and ideal. “knowable” empirically and rationally. N. Kathryn Hayles, among others, suggests an approach that she calls “constrained constructivism” in which one rides “the cusp,” or crest of the wave that delineates the edge, the surface where the flux of the real meets and conditions, and is in turn conditioned by our ideas about it (see Hayles “Searching for Common Ground,” in Soulé Reinventing Nature). In other words, constrained constructivists seek to live on that verge where the brain meets the mind—in full recognition that the brain is a creation of
the mind and the mind a creation of itself that (we surmise) would not exist in the absence of (our created or imagined) brain.

Under this view, Elizabeth Ann Bird (following Foucault) argues that scientific knowledge of the “out there” or the flux is not considered a representation of nature, but is instead thought of as a “socially constructed interpretation with an already socially constructed natural technical object of inquiry” (Bird 1987, 255). Constrained constructivists are, however, keen to differentiate themselves from thoroughgoing social constructivists (Latour and Woolgar, among others) who contend that scientists, for example, do nothing other than negotiate for meaning and interpretation in an endless power struggle to see whose theory, whose paradigm will win out (Bird 1987, 259).

Hayles and Bird both suggest that “we need to go beyond the [extreme constructivists’] notions that scientific negotiation takes place only among people and assert that science is engaged with nature in negotiating reality itself” (Bird 1987, 259). Thus.

Reality is being negotiated at the same time as its theoretical construction. And both of those, the reality and the interpretation, are not merely social constructions, but at both levels negotiations with nature. Nature’s role in that negotiation takes the form of actively creating something materially new and of resisting or accommodating the range of metaphorical and theoretical imaginings with which it is approached (Bird 1987, 259).
Under this rubric of knowledge, we might surmise that “forest health” is something that is both constructed and constructing; the forest, the ecosystem (understood non-essentially and non-mystically) participates in our definition of health by doing whatever it does often in spite of our words. To some extent, we can intervene, act, so as to alter what the forest does, but at other times it is clearly our ideas or words that must yield to the imponderable force (nonmystical) of the out there. The forest is not infinitely plastic or biddable to the forester’s or consumer’s demands any more than the human body or patient is to the physician’s interventions or advice. “Health” is no more found out there in the forest than it is freely created in the human mind in the absence of external constraints.

* A Word About Science

Before closing, it is necessary to broach the issue of science and its treatment or use in this dissertation. As my research and writing progressed, “science” kept cropping up; as we shall see, it is the FS’ preferred knowledge framework or methodology as well as that of the medical “establishment.” One cannot escape confrontation. Then too, some sort of discussion on science was necessary in an effort to resolve (or if that is too ambitious, to at least acknowledge) the growing contradictions and ambiguities that pervade my use of that term in this essay. My discussion of science appears late in the paper (p. 142) for several reasons. First, a critique of science per se is not the theme of this paper; in fact, the same criticisms that I make of science might be made of any discourse that attempts to conceal its origins and establish itself as an “unsurpassable a priori limit.” Second, I do
not wish to convey the sense that I am quibbling with the FS' or the medical communities' use of science. I simply wish to point out (following philosophers of science and sociologists) that the Forest Service, like many institutions, organizations, or individuals, tends to use science uncritically with little or no examination of its origins or legitimating grounds; to assert its findings as objective Truths; to invoke its name as if to thereby foreclose critique; and to use science and scientific language as a means to establish authority and exclude or devalue other forms of knowledge and other voices.

Third, because I wish to retain my focus on the project at hand (forest health), I limit my treatment of science to the FS' use of it in identifying or defining forest health and in framing the discourse on it. To that end, my discussion of science (admittedly superficial) incorporates much of the work that is done in Chapters Three, Four, and Five and would be out of place if moved forward. And finally, although I do not disagree with the use of science in the management of public lands, for reasons which will become clear, I feel somewhat less sanguine about accepting forestry as just a science—even an applied one.

Thus, my enquiry into the philosophy of science is brief, limited only to a few key insights made by scientists themselves, about the relationship between human knowledge systems and language and the extent to which they affect our ability to engage with the world. I also note scientists' own observations about the limits of science, particularly with respect to such large, complex, amorphous "things" as ecosystems. Ultimately, they conclude that what we think of the world—scientifically or otherwise—is as much a function of who we are and how our minds work as of what the "real" is really like. And
further, that the bigger and more complex and unbounded the object under examination, and the more variables included in the “experiment,” the less likely one is to achieve a high level of certainty.

Concluding Remarks

In summation, we can say that continental philosophy rejects the unifying “grand narratives” of traditional philosophy and science. It refuses to abstract from the multiplicity and contingency of lived experience to some hypothetical eternal, objective, stable position. Continental philosophy also accepts the paradoxical nature of language: language is the condition that makes knowledge of the self and knowledge of the other possible, but it is that which makes the immediate experience of self and other (as pure existence or identity) impossible precisely because it constitutes the self and the other by way of signs that are differed and deferred. It accepts, without reserve, the ineluctably fissured nature of knowledge (as discourse), which as a product of a language that is differential and deferred and a subject that is also always becoming, is always partial, incomplete, imperfect, situated. In short, it refuses to extrapolate, to presume to stand outside of itself and its milieu, to simplify or reduce in an effort to better comprehend, what is not in the end either simple or comprehensible except by an act of inconceivable violence—violence because such a simplification subjects the subject to a hegemony of improperly-assumed knowledge in the name of authority, an authority that cannot justify its existence except through further violence.

3 The term “grand narrative” is attributed to Frederic Jameson; see his Postmodernism, or, the Cultural Logic of Late Capitalism, for his excavation of the term.
There are several important implications that follow from these “confessions” that are pertinent to this project. Due to the situated, fragmented, fissured nature of the discursively knowing subject, no one discourse can lay claim to an objective truth (including this one—a point which must remain unproven in accordance with Gödel’s theorem).\(^9\) We can only have a perspective. This assertion, far from leading to unbridled relativism as some assume, instead forces upon us the utmost responsibility. According to Derrida, the inherent limitations of our knowledge obligate us to be ever vigilant, to be excruciatingly aware and critical of our presumptions, to be open to the future and to the possibility of change.\(^10\)

Second, because language is slippery and discursive systems are independent and contingent, meaning is never fully or perfectly controlled or controllable by any one party or a singular discourse (although the desire for perfect control does persist). Thus—and this is perhaps the most important point—“language games” (Lyotard and Wittgenstein) become the means by which power and knowledge (Foucault) are brokered in the political economy of signs and in social life. According to Lyotard (following Wittgenstein) in his book *The Postmodern Condition: A Report on Knowledge*, language games, like all games, are a struggle for supremacy, a fight or a contest. But also like

\(^{9}\) For an elaboration of the Theorem (paraphrased by Douglas Hofstadter as “All consistent axiomatic formulations of number theory include undecidable propositions” (p. 17)) see Hofstadter’s *Gödel, Escher. Bach: An Eternal Golden Braid.*

\(^{10}\) See Derrida’s *Politics of Friendship* and Caputo’s *Deconstruction in a Nutshell: Conversations with J. Derrida* for an elaboration of his notion of responsibility.
other games, they are governed by a set of rules—rules which are not internally generated or legitimated by the game itself, but rather are the object of an explicit or implied contract between participants. These rules determine and specify the properties and the uses to which the various categories of utterances can be put. If there are no rules, there is no game (Lyotard 1984, 10). One sometimes plays the game, makes some language move (an utterance) for the “sheer pleasure of the invention,” for the joy to be had “in the endless invention of turns of phrase, or words and meaning.” (Lyotard 1984, 10). At others, the point is to “win,” to know that one’s connotation, one’s language, is the accepted one, the one that will be acted upon (this is the sort of language game that the FS is currently engaged in with the public). Despite these “agonistics” however, the bottom line for Lyotard is that language is social, and the moves in the game are the bonds that hold us all together (Lyotard, 11). Language games are about sharing knowledge (of whatever sort). Knowledge, then, is a function of talking across discourses as well as within them: it’s all about coming to terms—of constantly triangulating from one (or more) position(s) onto another (and back again) and grappling with what Foucault calls the “heterogeneous multiplicity of concepts.”

Far from being some esoteric, obscure, unreal (and anti-real, some would argue) fantastical mental brain child of a bunch of “armchair or coffeehouse” philosophers who have about them “no glimmer of earth, of leaves and soil” (cf. Shepard, Soulé, Sokal, Koertge, etc. (the quote is from Shepard, in Soulé, 20)), Continental philosophy, albeit in an odd way, gives voice to that earth in all its infinite complexity and irreducible
difference. It categorically refuses the comfort of a presumed objective knowledge (yielding Baconian "secrets" of nature) gained at the expense of abstraction from the actually lived existence of the embodied human being (and the Baconian torture of nature). It allows that we are a symbolic species, one that lives in a world of thought and signification, a species that is as much a product as a producer of "webs of meaning," but also insists that we are a biological species, a species that is as much a product of this time and this place as it is a producer thereof.

For some, continental philosophy requires a philosophy of the flesh, but one that is not reduced to it. It permits that one might "theorize" a rule, a law, a logos, but insists that one never forget that it is an abstraction that comes at the expense of the concrete particular, a unification that comes at the expense of difference, a thought that comes at the expense of life. Traditionally, the object of deconstruction and of critique or analysis has been philosophy itself. But as we noted above, the insights and "intuitions" of continental philosophy about language and knowledge permeate the wider culture. Forest management, of course, "happens" in that wider culture, as does the construction or identification of the object (forest or ecosystem), the articulation of the objective (for our purposes, forest health), and the establishment of the methods and theoretical constructs by which both will be known (science). Forestry, (and science) as a fundamentally and ineluctably linguistic and social—even public—enterprise cannot escape the impacts of continental philosophy on our understandings of language and culture.
Which brings us to our topic: forest health, and its comparison to health as it is understood in the medical community. Use of the external landscape or geography of nature as a metaphor for that of the internal geography of the body is not new; nor is its converse. It is also not uncontested. The tendency to conceptually equate the inner and outer landscapes, the body and nature, and then to use this conceptual framework in conjunction with a hierarchical value system that justifies control and dominance of both internal and external nature has been thoroughly critiqued and deconstructed by environmentalists, feminists, and ecofeminists among others. Without assenting to any necessary or essential connection between body and nature, I am nonetheless interested in the following chapters in investigating the possibility of similarities between the discursive traditions associated with the health of each. Modern Western medicine is an attempt to manage and control the bewildering "wilderness of our ... inner nature" by locating the sources of both health and disease in the biophysicality of the body; diagnosis and treatment are articulated in the language of pathophysiology and pathoanatomy, and are highly technical affairs; knowledge is objective and ideally the knowing physician is disinterested (Marchessault 2000, 11 and Cassell 1997, 10). Modern Western forestry attempts to manage and control the bewildering wilderness of nature by casting forest health and disease in equally narrow biophysical terms; forest disease and health are generally defined in terms of pathologies; diagnosis and treatment are left to disinterested and objective experts or professionals. In both instances, the result is that science (medical sciences in the one instance and natural sciences in the other) is the privileged
theoretical and methodological knowledge system, and in each case diagnosis and treatment become matters for experts rather than laypersons. The impetus for the comparison does not depend upon an essential connection between body and nature; it depends only on the existence of shared terminology, structures of knowledge and legitimation, and shared roots in the modernist tradition that give rise to particular practices.

The most obvious example of shared terminology is the use of the terms health and disease. Nearly sixty years ago Aldo Leopold wrote that conservation was the “effort to understand and preserve” the “health” of the land. By health he meant “the capacity of the land for self-renewal.” He may not have been the first to speak of land management in terms of health maintenance, and certainly his notion of health as a primary goal of management did not catch on until the late 1980s-early 1990s, but forest health, as an unquestioned good is now the dominant theme in forestry discourse. In fact, in the USDA Forest Service Strategic Plan (2000 Revision): Integrity and Accountability: A Framework for National Resource Management the Forest Service states that its mission is “To Sustain the Health, Diversity, and Productivity of the Nation’s Forests and Grasslands to Meet the Needs of Present and Future Generations.” The Plan lists ecosystem health as its number one goal, while the objectives of the three other goals—multiple benefits to people, scientific and technical assistance, and effective public service—are generally framed in terms of how they fit in with the first and, what appears to be, overriding goal of ecosystem health (USDA FS 2000). Given the shared
terminology, it seems unlikely that a discourse on health in the environmental field can escape the traces of meanings of health produced and circulated in the medical discourse on human health. It is thus also unlikely that a forest discourse on health would be immune to critiques being leveled against the medical discourse regarding health and disease.

Another reason for a cross-discursive comparison arises from shared roots in the modernist, positivist tradition that tends to favor science and scientific methodology as the standard of knowledge and legitimacy. In both instances, but even more so in the medical sciences than in the environmental field (at least thus far), the assumptions that underlie this traditional commitment to science, as well as the role of science itself, are being challenged by alternative conceptual frameworks and value systems. Furthermore, the practices that concern themselves with health—medicine and forest management—share similar organizational and institutional commitments. Both are professional fields, dominated by experts trained or certified in the esoteric knowledges and sophisticated technologies that delineate their fields (again perhaps more so in medicine than in forestry). As we shall see, both fields face similar threats to these knowledge and power structures from a variety of sources. “Consumers” (of nature or the body) can access information directly, even scientific information, from a wider variety of sources; palpable (if not pervasive) public dissatisfaction with the results of professional management (or care) coupled with a growing distrust of professionals’ motives make people reluctant to leave decision-making to the experts; proliferation of non-traditional
organizations and institutions that deal with both nature and the body (NGO's, HMO's) can sometimes mount credible and appealing alternatives to traditional institutional programs and policies; and finally, the appropriation and dispersion of both bioscience and ecology through all facets of public and personal life (what social scientists and medical anthropologists call the "medicalization," and what I call the "ecologization," of modern society) makes it nearly impossible for one entity—the Forest Service or the American Medical Association—to successfully control the terms of the discourse.

But perhaps the strongest incentive to compare the two fields is that the forestry discourse itself explicitly invites comparison by occasionally invoking the human-medical analogy of health as an explanatory model. Leopold invokes the medical analogy when, in elaborating on his notion of land health, he compares the body to the land, and land "doctoring" to the doctoring of the human body:

In general, the trend of evidence indicates that in land, just as in the human body, the symptoms may lie in one organ and the cause in another. The practices we now call conservation are, to a large extent, local alleviations of biotic pain. They are necessary but they must not be confused with cures. The art of land doctoring is being practiced with vigor, but the science of land health is yet to be born (Leopold 1991, 274).
He speaks of “pains” and “cures,” two concepts we don’t often associate with forests or forest management, but which are two major foci of medical practice. The power of the analogy persists today. In a 1996 USDA Forest Service publication devoted to assessing forest health, the authors compare the evaluative and interpretive work of a team of researchers (ecologists, entomologists, hydrologists, pathologists, silviculturists, and others) to that of “heart, kidney, lung, and other medical experts who are asked to diagnose blood and chemistry results that fall outside normal values or that result from traumatic injury” (USDA/FS Dale 1996. [web site]). Again, my point is not to seek ontological convergence of the objects of medicine and forestry but to provoke a reflective, cognitive dissonance at the epistemic level within the forestry community by juxtaposing forestry discourse on health with an extra-forestry discourse that finds itself grappling with similar dilemmas and confronting similar critiques (and with whom the term health is most readily identified).

Given the health cult in America, it seems plausible that people would be as enthusiastic about healthy forests as they profess to be about healthy bodies—or about all those other entities, states, or functions to which we apply the health signifier: economies, markets, diets, appetites, choices, relationships, communities, families, bodies, minds, businesses, societies, etc.. Thus, as a rhetorical trope, a political mantra, a persuasive theoretical concept that garners almost unanimous public support, the adoption of “health”—with all

11 There are those in the USFS who resist the analogy of forest health to human health, and by association, the comparison of forest management to the management of human health; nonetheless, it is impossible for the USFS discourse on health to escape the meanings of health produced and contested in that of human health if for no other reason than they share the same terms.
its attendant positive affective values and connotations—as the ultimate goal of all land and resource management is strategically brilliant. Or perhaps not.... Because, as it turns out, even though we all generally agree that healthy forests, like healthy bodies, healthy economies, and healthy relationships are generally good things to have or be, there is considerably less agreement on how to achieve it, and even more importantly, in what it consists. Then too, as is the case with human health, it is by no means clear how willing we are to alter our lifestyles in order to achieve health. This is true in regards to discrete organisms, but even more true in regard to the multi-organismal structures like societies, forests, and ecosystems. That is, there doesn’t seem to be a universally acceptable, clear and unambiguous understanding of health that leads inexorably to definitive and incontestable management actions. Incidentally, as we shall see, the same lack of consensus plagues medicine and medical practices with similar effect. This fact—the dispersion and ambiguity of the health signifier—is not lost on the USFS (e.g., Forest Health Science Panel 1997; USFS/Dahms and Geils, 1997), but while the medical community appears to be accepting (more or less gracefully) its loss of control of the signifier “health” in the human realm, as we shall see, the Forest Service appears to still be committed to a program in which health and disease are defined as objective and scientifically by experts trained to interrogate the biological “real” and to interpret the “signs” correctly.12

12 “Signs” is used here in the conventional, unexamined medical sense of the word: a doctor (as objective observer) examines a patient looking for signs—objectively knowable conditions or indicators (a cut, a fever, a fracture, an amputation, etc.)—and interrogates the patient for symptoms—subjective descriptions of unknowable indicators (pain, nausea, dizziness, etc.). The distinction between signs and symptoms reproduces an increasingly criticized duality between body and mind and is “falling out of favor” in more recent medical discourses.
In the next chapter I am not so much interested in exhaustively cataloging and then deconstructing the whole of the USFS discourse on forest (or ecosystem) health or in minutely examining and critiquing the programmatic activities that follow from this discourse (the articulation of which takes up the bulk of the USFS literature on health). Rather, I am interested in exploring how the USFS and the medical community define their terms (health and disease); what sorts of knowledge (and technologies) they bring to bear on the definition of the problem and the identification of solutions; how their knowledge or epistemic commitments necessitate and reify particular power structures; and finally, how the forestry discourse on health might be “reread” in light of some of the ongoing developments in the medical and meta-medical practice and discourse.

I am working from the premise developed most fully by Michel Foucault in his *Archeology of Knowledge*, which in turn is derived—with significant changes—from Saussure’s work in semiology, that words receive meaning and value by virtue not of their connection to an objectively given referent but rather from their relative and constantly changing positions within a language network that consists of open ended discursive practices, each of which deploys a particular term in sometimes radically different ways.

I am also engaging in textual analysis, (or to a lesser extent deconstruction a la Derrida), to whom we owe the notion that all texts are “necessarily fissured;” that they carry within
them the possibility of their own impossibility by virtue of inherent contradictions embedded within all language. If one takes a strictly deconstructive approach one could tentatively accept, for example, the “closure” of the USFS discourse on health, and then “pull it apart” from the inside. That is, one could undermine the certainty of the terms by showing how the discourse itself is internally fissured by ambiguity. My approach includes elements of deconstruction, but is primarily textual analysis, focusing to a larger degree on the relational nature of discourse that invites comparison across ultimately arbitrary discursive boundaries. Thus, under this reading, “forest health” is not a “closed” signifier that can be unambiguously defined exclusively within the confines of USFS discourse with reference to a specific physical entity, function, or state, and then unproblematically applied, but is instead a term that designates a constantly shifting (emergent) nexus of numerous discursive practices with a similarly numerous and varied field of possible empirical referents.
Chapter Three
Forest Health:
The Undiscovered Country

In the 1997 Report on Forest Health of the United States written by the Forest Health Science Panel, the authors state at the outset that, contrary to the customary scientific methodology, they are not going to define “health.” The problem, according to the authors, is that forest health has become a catch-all term, one often “defined and redefined” in order to meet different objectives and to cover a wide range of different, often conflicting “immediate concerns” (Forest Health Science Panel (FHSP) 1997, Appendix C, unpaginated). In defense of such an unprecedented action (“science usually deals with ambiguities of definition by defining a term at the beginning of a report...”) they simply concede that the term is imprecise and then go on to say that they will “discuss the present and potential ability of the forest to provide the various values that different people want from the forest” (FHSP 1991). They add that “Forest Health conveys various concerns that people have of the forest’s ability to provide a range of values.” These values, they contend, are of two sorts: those that a forest provides (has?) by virtue of its condition and function, and those that it provides for humans, that is, those features of the forest that contribute in some way to the quality of human life (FHSP

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1 The report was commissioned by the Honorable Charles H. Taylor, USC, 11th District of NC. The panel is composed almost exclusively of scientists in academia. The goal of the congressman is “to educate himself and others on the forest science basis of the issues” (FHSP 1997, Appendix D, unpaginated). The report is important because it is a “scientific” analysis of the environmental, economic, and social effects of 8 different policy options, as well as an analysis of present forest conditions. Its purpose is to provide members of Congress with a scientific basis for decision-making at the national level.

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1997, 1.2). The report itself consists of an exhaustive catalogue and survey of these two different sorts of values.

Essentially, then, what we have is a scientific report on forest health that categorically refuses to deal with health *per se*—that is, it refuses to tackle the problem of what health *is* and what it *means* (as we shall see, the medical and meta-medical discourses suffer from a similar “reluctance” to engage directly with the term “health”). A strange beast indeed, since if the authors can’t identify in any clear way what it is they are reporting on, one wonders how they decided upon what to report about it. As noted above, the authors concede at the outset that it is nearly impossible to define such an ambiguous value-laden term, and further add that “a term with multiple definitions” (and definitions that are constantly changing) is not useful to scientists; that, in fact, such a vague, “ambiguous” term does nothing but “obfuscate analyses” (FHSP 1997, 1). And since “science deals with specifics, and terms with multiple definitions” are not specific, one might gather, from their own admission, that *health* is not a topic for the scientists” (FHSP 1997, 1). In this deduction, however, one would be mistaken since the Forest Health Science Panel proceeds to compile a several-hundred page scientific document ostensibly on the topic of forest health.

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14 In Appendix D, the authors state that they have taken a “management science” approach in the analysis of policy. Their intent is to separate the “analysis of conditions and alternatives from value judgments”; “conditions” then are understood as real, and their analysis and identification as objective, while the choice between management strategies that will promote or negate certain conditions is conceded to be subjective, and hence best left to policy makers.
Despite their refusal to define their key term, the authors do provide a list of ten definitions of forest health in their appendix (Appendix A). These are definitions offered by different organizations and the definitions are often revised or updated as professional opinion changes and public opinion warrants; the USFS, for example is responsible for three different definitions, the Society of American Foresters for yet another three. For our purposes, the USFS definitions are of most interest, but I also include Aldo Leopold's definition since it is oft cited by foresters and because his essays have informed much of contemporary FS discourse on forest health. For Leopold, "health is the capacity of the land for self-renewal" (Leopold 1991, 258). In 1993, the USFS' preferred definition of forest health was "the ability of a forest to recover from natural and human-caused stressors" (FHSP 1997, Appendix A, unpaginated). By 1997, the preferred definition of forest health was:

A desired state of forest health is a condition where biotic and abiotic influences on the forest (for example, pests, atmospheric deposition, silvicultural treatments, and harvesting practices) do not threaten resource management objectives now or in the future (Forest Health Science Panel 1997, Appendix A, unpaginated)

(Definition # 1).

The Panel notes that, at of the time of publication of the report (1997), the USFS was contemplating a change in definition to the following (a change which has since been effected):
A condition wherein a forest has the capacity across the landscape for renewal, for recovery from a wide range of disturbances, and for retention of its ecological resiliency while meeting current and future needs of people for desired levels of values, uses, products, and services (Forest Health Science Panel 1997, Appendix A, unpaginated) (Definition #2).

And finally, just to further confuse matters, the current (2001) USDA Forest Service National Headquarters web site defines forest health as

a measure of the robustness of forest ecosystems. Aspects of forest health include biological diversity; soil, air, and water productivity; natural disturbances; and the capacity of the forest to provide a sustaining flow of goods and services for people (USDA FS National. HQ web site: www.fs.fed.us/land/emterms.html) (Definition #3).

The one thing that every one of these definitions shares (excepting the pre-1993 definition) is that forest health is connected in some way—either essentially or accidentally (a critical difference, as we shall see)—to peoples’ desires. That is, according to the definitions, forest health seems to have a dual nature: one biological (understood as “real”) and one cultural.
But let's back up a moment and look at the definitions themselves. The context in which Leopold articulates his definition is instructive. Despite his (earlier quoted) desire to develop a "science of land health", Leopold gets to the concept of land health by way of the ecological conscience, that is, by way of ethics.

A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity (Leopold 1991, 258).

Health, for Leopold, is clearly not a value-neutral term that can be defined by a value-neutral, objective science. It is a normative concept, one that is inextricably linked to a normative conceptual framework called a land ethic which, in turn, is based upon an "ecological conscience." For Leopold, the land ethic is the natural extension of human ethics, and human ethical systems and frameworks are cultural products (arguments from sociobiology notwithstanding) with deep roots in philosophical and metaphysical discourses. We generally agree, following Hume, that one cannot move logically and necessarily from an "is" to an "ought"—that is, from a particular condition or state of affairs to a particular action or judgement—unless or until we insert a normative judgement which enables us to interpret the condition as something that means something affectively (producing a positive or negative emotional response), something that necessitates a this response and not that response. In fact, Leopold's conception of
health is not just normative or affective, but carries the force of a moral imperative: our ecological conscience requires us to sustain land health. Thus, land health is not just “a good” that we should work toward, but is itself “Good.” It is not, then, strictly speaking a science of land health that he is after—at least not one of the disinterested sort to which we became accustomed under logical positivism.

On a more “practical” side. Leopold’s conception of health is historical in the sense that a healthy forest (or an ecosystem) is one that can reproduce itself (as historically constructed) in the future. Therefore he is correct to use the terms conservation and preservation since his notion of health is not so much innovative as it is conservative. Health is more a function of sameness or permanence, of iteration and identity, of the ability of the land to reproduce itself as it was, rather than of difference or change. The implication is that this historical (usually understood as “pre-European” or “pre-contact”—the apparent arbitrariness of this choice will be discussed later) forest (or ecosystem) was (objectively, self-referentially) healthy in the first instance.

The 1993 Forest Service definition (Definition #1) is quite provocative and is fraught with danger for any organization that is overwhelmingly committed to a positivist tradition that values certainty, abhors ambiguity, shuns even the specter of “subjectivity,” and privileges scientific theory and methodology. The 1993 USFS definition states (somewhat tautologically and thus un informatively) that forest health is a “desired state,” which state is a “condition where biotic and abiotic influences on the forest … do not
threaten resource management objectives now or in the future.” This “desired state” (of
forest health) is simply not a category that is amenable to any sort of reductive or
abstractive approach; that is, desire resists rationalization, quantification, abstraction, and
rigorous scientific testing precisely because it is essentially irrational (beyond reason, or
more precisely, before reason). This, of course, is not to say that desire resists articulation
(admitting of a bit of slipperiness here in conflating desire with demands....): social
scientists use survey techniques to catalog and rate them; economists assume given tastes
and preferences become evident through “demand curves;” etc. Ironically, forest health
itself is actually left undefined because all we are concerned with is a desired state—a
telling omission, as we shall see. But the single-most remarkable thing about this
definition is that it defines health in terms of already established or agreed upon
management objectives: we first decide what we want a forest to do or have or be, both
now and in the future, then we retroactively define forest health so as to fit (“not
threaten”) those desires. (And ironically, almost inevitably these desired present and
future conditions are for the romanticized past (historical) conditions.) That forest health
is somehow tied in to a future condition, or with an ability to reproduce itself, to maintain
its identity, into the future, and that that future state is linked to human desires, implies
that health is somehow inextricably bound up with human expectations or hopes (my
inclusion of this particular feature becomes more clear in the discussion of human health).
The upshot is: if it can’t deliver what we want today and tomorrow, it isn’t healthy.
Clearly, then, under this definition, health is not an objective condition that is found in a
forest, but is instead first articulated and then looked for or created. This of course, begs
the (huge) question of the acceptability or desirability of the management objectives—an open-ended question if ever there was one, not to mention the question of sustainability. Such a definition is virtually impossible to defend on the grounds of science. (Consider this: A perfectly healthy though lightweight slave would be defined as “unhealthy” if unable to lift the building blocks of the Egyptian pyramids; a forest that produces a fine crop of aspen is unhealthy if it is unable to produce its quota of desired wood fiber, etc..)

In anticipation of these dangers of trying to frame health and develop criteria by reference to management objectives, (some of which the FS admits have actually been responsible for the alleged unhealthy conditions15 ...) a 1992 USFS report entitled *Forest Health and Ecological Integrity in the Northern Rockies* recommends that criteria for forest health be derived not from management objectives but from ecological conditions. The authors suggest that “ecosystem function” provides a suitable base from which to develop objective criteria and state that “a forest in good health is a fully functioning community of plants and animals and their physical environment.” and further, that “a healthy forest is an ecosystem in balance” (USDA FS/Monnig and Byler 1992, unpaginated.). In order to determine what a “fully functioning” “balanced” and thus healthy forest might look like, the report suggests that we look, once again, to the forests and ecosystems of the pre-European era as models; that is, that we look into the past for the meaning of today’s signs.

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It is worth taking a moment here to note that this focus on the past, particularly on “European” settlement as the defining moment between health and its decline is a persistent theme in American forestry (and meta-forestry or environmental) discussions of forest/ecosystem health, integrity, and restoration. Both health and integrity are conditions (or measures) that are identified by reference to “pre-European” (the Salish-Kootenai foresters use the term “pre-contact”) conditions; restoration is something we do in order to get back to those conditions. In fact, it is even codified (and presently contested by the Bush administration) in several sections of the planning regulations. Section 219.2 of the Code of Federal Regulations concerns how we might go about achieving and maintaining ecological sustainability. Sub section 219.2(a)(4) states that “Current conditions must be compared to the distribution of historical conditions prior to European settlement to develop insights about the current status and integrity of ecosystem components” (Code of Federal Regulations (CFR), vol. 64. No. 192, §219.20 (4)) and further that we must evaluate “the effects of human activities.” taking care to distinguish between “activities prior to European settlement, which had an integral role in the landscape for a long period of time, from activities after European settlement, many of which are of a type, size and rate that were not typical of disturbances under which native plant and animal species and ecosystems developed” (CFR, Vol. 64. No. 192, §219.20(a)(3)). The references to “pre-European settlement” as the (sometimes implied, but often explicit) definition of “the norm” or of “health” are ubiquitous throughout the literature; the choice of this point in
time as the norm has not escaped considerable attention and criticism, but the USFS
seems to have accepted it.  

The present USFS definitions (#'s 2 and 3), not surprisingly retreat from the unmitigated
subjectivity of its predecessor by identifying the term “health” with some condition in the
presumed real. We will look first at Definition #2 (this is the definition that seems to
appear most often in print...). Definition 2 retains a social or cultural component, but the
relation between these two components— culture and nature—is not entirely clear. The
language and structure of the definition establish an uneasy tension between people’s
desires and the objective conditions on which those desires depend. It begins with a
statement of the objective conditions of the forest that would classify it as healthy—“the
capacity across the landscape for renewal, for recovery from a wide range of disturbances.
and for retention of its ecological resiliency” (see, for example, Clark and Munn (1986)
for a discussion of resilience and disturbance). These conditions must be achieved or
maintained “while meeting the current and future needs of people for desired levels of
values, uses, products and services.” Grammatically, the establishment of certain
ecological conditions stands alone as a complete thought (or sentence). To this already
complete thought is appended a dependent clause that establishes a secondary role for
human desires. Thus the structural arrangement of the two components of the definition
conveys a slightly different message than that which one might read on the face of it. The

W. Cronon (ed.) Uncommon Ground; and, Guha, Cronon, Noss, Rolston, in J.B. Callicott (ed) The Great

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establishment and maintenance of ecological conditions appears to be on a par with ("while") meeting people's desires. However, because people's desires and needs are cast (grammatically) as dependent upon ecological conditions, one could get the idea that desires are subordinate to ecology. This interpretation is borne out in both the USFS' Strategic Plan 2000 and the planning regulations (see CFR §219.19, §219.20, and §219.21). In fact, the Bush administration is challenging the regulations on precisely these grounds (elevating "natural" ecology above "human" ecology, if you will). I am not really interested in arguing the truth value of this statement (whether people's desire are and should be subordinated), but only in pointing out how this construction treats health as a culturally independent condition—as if people's desires did not have some fundamental effect in defining health at the outset. The "objective" conditions appear to be the foreground, the prerequisite for meeting the "needs of people for desired" conditions: it is clear that these conditions are considered to be outside of, beyond, before, or other than culture and that they are knowable and this knowledge itself is not cultural. By defining health in this way the FS establishes a schism that entails a dichotomous framework that effectively (or so it hopes) permits it to retain control of the discourse of the objective conditions—the ecology—of the forest while simultaneously allowing for the inclusion of public discourses that express desires. By separating out forest conditions from public desires, and by retaining for itself (as we shall see) the power to define those conditions through a scientific discourse, the FS attempts to retain control of the terms of forest management; desires are included and considered—not as essential qualities of
health, but as adjuncts or qualifiers—, and must be pursued within the parameters of ecological limits as established by science.

That people's desires are subordinate to and separate from forest health is not immediately obvious in the definition itself (despite the grammatical structure of the sentence), and is thus open to argument and interpretation. However, I believe that other FS literature supports this primacy and independence of ecosystem or forest health—at least with respect to its own responsibilities and authorities. For example, as noted earlier in this paper, Goal 1 in the Forest Service's Strategic Plan 2000—the plan that is "the keystone of the FS management system, providing the context and purpose for [all future] agency actions"—is ecosystem health. The mission statement (again) is "to sustain the health, diversity, and productivity of the nation's forests...." Goal 2 is to "provide a variety of uses, values, products and services for present and future generations by managing within the capabilities of sustainable ecosystems" (USDA Forest Service 2000, iii); and later, "domestic and international activities are directed at developing values, products, and services in such a way as to maintain ecosystem health" (USDA Forest Service 2000, 4). The value of each of the four goals and each of the individual objectives is framed in terms of its contribution to or impact on forest health (USDA Forest Service 2000, 11).

In another USFS document, The Committee of Scientists Report, the Committee states that sustainability is "the overarching objective of National Forest stewardship"
It admits that sustainability can be difficult to define, but that it is composed of interdependent ecological, economic, and social components (COS 1998, xiv). The Committee then goes on to clarify the relationship between the components: sustainability "calls for integrating the management of biological and ecological systems with their social and economic contexts, while acknowledging that management should not compromise the basic functioning of these systems" (my emphasis, COS 1998, xiv). And further, "ecological sustainability [maintaining the composition, structure, and processes of a system] lays a necessary foundation [is a "key goal" in fact] for national forests and grasslands to contribute to the economic and social components of sustainability" (COS 1998, xvi). Management must "operate within a baseline level of ensuring the sustainability of ecological systems..."(COS 1998, xvi). Health and sustainability are not synonymous, but they are inextricably bound to one another in FS literature: forest (or ecosystem) health seems to be a prerequisite for sustainability and at the same time, health is one of those things that we must sustain (see above). However, my point is neither dependent upon their coincidence, nor on the determination of whether ecology or people should come first; instead, I am only interested in pointing out that in both instances, ecological sustainability and/or forest health, each is considered to be a condition of the "out there" that stands outside of, beyond, and even over and against the needs and desires of people.

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17 This Committee was convened in December of 1997 by the United States Department of Agriculture to "provide the Secretary with scientific and technical recommendations on the FS land management planning process" (Society of American Foresters December 1998, web site). It consists of 13 members from such disciplines as forest and range ecology, fish and wildlife biology, silviculture, hydrology, sociology, land management planning, and natural resources law.
I interpret this deliberate juxtaposition to mean that forest health is not only not a function of people's desires, but that it is also not an artifact of culture or language. Since 1997, at least, the FS has been careful to maintain a distinction between the ecology of forest health and the desires and needs of people because in the end it believes that forest health (and/or ecological sustainability) is an objective condition that exists altogether independently of the culture through which it is constructed and known.

This definition, like Leopold's, is also inherently conservative: a state of health is one that is premised upon renewal, recovery, retention, and resiliency. In every instance, health is function of going back, of reproduction of its historical self in perpetuity: going forward into the future means returning to the past. Health, as we have seen, is almost invariably defined by historical (pre-European) conditions. This definition sanctions and validates the collection of data on historical conditions because if health is indeed understood as an ability to return to some preexisting historical state (which implies a sustainable cycle) then one must know what that state is in order to return health to it [like getting back on the rails of a toy train set!]. This eternal return is reminiscent of Hegelian conservatism in which knowledge, in search of certainty and closure, turned back upon itself when confronted with the irreducible ignorance at its limits. Just as Hegel retreated to the safety and comfort of a knowledge that always already contains not-knowledge, so forestry retreats to a definition of health that is self-referential, identical with itself—that consists largely in what is already known as (reconstructed) historical fact.  

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18 The choice of date may be arbitrary but it is not unmotivated or capricious. We choose this date because it is close enough for us to have some idea (not to say knowledge) of it and of the conditions that obtained.
And finally, the definition of health (§3) that appears in the glossary of terms for EM on the USFS Headquarters web site offers some interesting contrasts: "a measure of the robustness of forest ecosystems; soil, air, and water productivity; natural disturbances; and the capacity of the forest to provide a sustaining flow of goods and services for people." The first thing that pops out is that previously health was defined as a condition or a state, but here it is a measure. The next difference to leap out is that we have exchanged all the "re-'s" for "robustness." According to Webster's, robust comes from the Latin meaning oaken, hard, or strong. We no longer seem to be looking backward into history or pre-history for our health, but instead are looking for "strong and healthy; hardy: vigorous" forests (health is a measure of the health of a forest....!). Robust forests or ecosystems are "strongly or stoutly built," they are "rich and full-bodied." Then too, in what appears to be a radical departure, this definition normalizes "natural disturbances" making them a quality of health itself rather than defining health as the capacity to recover from them (cf. Holling (1992) and Holling, in Clark and Munn (1986)). This opens the door to normalizing insects, wildfires, weather "events," geophysical "events," and all sorts of other hitherto "unhealthy" pathogenic critters and processes. And finally, the sentence structure (a series of grammatically equal clauses separated by semi-colons, joined by a final "and") implies that all of the listed "aspects" are of equal value. What is missing, or at least left indeterminate, is an explicit statement of how we might know (as

but far enough away that we cannot be absolutely certain of what it was and thus be held to unachievable standards. There is nothing wrong with selecting this date: just don't pretend that the forest of 500 years ago is any more "healthy" or "representative" of "forest-ness" than the one 10,000 years ago or the one today. That is, the choice is based on preference, not on science or purely objective (in the sense of unmotivated) criteria.
objective states) “diversity,” “productivity,” “capacity” “disturbances,” and “goods.”

Given the general commitment of the Forest Service to objectivity and to science I might hazard a guess that these signifiers would be filled by interrogating not the human population, but the referent (the forest or the ecosystem). But I am mystified how one might classify a condition as productive or a population as diverse without first having decided upon a measure. Also, this definition makes things “for people” (i.e., wants) an equal, not a subordinate part of health. We are back to the pre-1997 definition (#1)!

This pre-1997 definition is, it seems to me, a very interesting definition precisely because it defines (in the sense of eliminates) very little. The only powerful qualifier or criteria is to be derived from the last clause: “the capacity of the forest to provide a sustaining flow of goods and services for people.” And this of course is the crux of the matter—this is where things depart from the “objective” and the scientific.

So, where is the FS on the subject of forest health? We have looked at Leopold’s definition, as well as at a series of deeply conflicting definitions produced by the USFS. And indeed, we would have to agree with the authors of the report with whom we began: forest health is an ambiguous term that changes over time and place. We seem to be stuck somewhere between health as an objective condition—a condition of the (presumed) real that has nothing to do with culture or language or human categories of thought; health as a subjective state—a condition determined entirely by culture, by people’s desires stated in the form of management objectives; and health as an ultimate norm, or even a moral
good—Leopold's concept of land health. We have the notion of health as a *measure* of other things, and that of health as a state or condition that makes other things possible. In some instances a healthy forest is one that looks like historic and pre-historic forests (the notion of health as reflexive and reproductive, as identical with itself), in others it is associated with its capacity to perpetuate itself in some form into the future, and in another instance it has only to do with it's present "vigor."

The relationship between people's needs and desires and forest health is also left indeterminate: Are they equal? Do needs and desires take precedence? Does forest health take precedence? I suppose the only thing we might venture to say about forest health is that neither we (the public) nor the FS seems to have a definitive, conclusive, stable idea of what it is. (It may be that the FS, like the medical community, is internally divided—between those who would have science rule (and objective health prevail) and those who want to keep the focus on human wants and needs. As of now, neither side has "won.") In spite of this, as we shall see, the FS has gone on to identify a number of indicators of health. developed measures for these indicators, and assigned a value to each measure all so that we might objectively determine the health of a forest.

Unpacking each definition only reveals more ambiguity; behind each term there are more terms, each of which is circulated in its own complex economy of signs. It is not clear that looking toward the forest itself (if such a thing is even possible) will yield any greater clarity or definition because seeing anything at all depends upon our having previously
determined sight categories. Then too, the assignment of one term to an "observed" condition or an experience is (initially) an arbitrary choice, a choice that is then submitted, so to speak, to the society at large for confirmation. If the controversy over the FS' conception of forest health and its interpretation of the data is any indicator, a significant portion of the public does not agree with how the FS has filled its signifier; it is unclear whether these people do not see the same things the FS does when it looks to the forest, or whether, having seen the same things, they do not interpret their meaning in the same way.

Beyond (or before) the definitions
Having inquired into definitions of the objective (health) we have yet to see how the FS defines the object\(^\text{19}\) (the forest, or the ecosystem) that is supposed to be made healthy. The FS' original "unit" of concern or focus was for the single resource, be it trees, or water quality, recreation opportunities, wildlife or fish. Regardless of the particular object, it was generally treated as an isolated, decontextualized entity, state, or process; in other words, the concept was reified or treated as "real." The FS dealt with parts, rather than wholes. The reductive approach worked well in terms of simplifying things at the conceptual and modeling level; it was somewhat less successful at actually producing the array of specific goods and services thus reductively identified; and so far, completely unsuccessful at producing/ reproducing/sustaining/restoring the more complex biophysical conditions and processes upon which the production or maintenance of goods
and services was dependent. The FS has retreated from the single-resource approach to land and resource management, acknowledging that

the days have ended when the forest may be viewed only as trees and trees viewed only as timber. The soil and water, the grasses and the shrubs, the fish and wildlife, and the beauty that is the forest must become integral part of resource managers’ thinking and actions (Sen. Humphry 1976, 122 Congressional Record 3618-19).

The ecosystem concept now dominates forest management and it is the health of the ecosystem (or the forest understood as an ecosystem as Sen. Humphry’s points out) that is the focus. So what is an ecosystem?

The English ecologist Tansley, the acknowledged progenitor of the term, said that an ecosystem includes “not only the organism-complex, but the whole complex of physical factors forming what we call our environment” (Tansley. 1935, in Kimmins 1987. 25). Odum proposed a more complex definition: “any unit that includes all the organisms (i.e., the community) in a given area interacting with the physical environment so that a flow of energy leads to a clearly defined trophic structure, biotic diversity, and material cycles (i.e., exchange of materials between living and non-living parts within the system) is an

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19 I am using “object” in a non-technical sense: I mean only that it is the thing that we are looking into, the object of our enquiry or of our activities (not as in goal, or as opposed to “subject”—just the “topic” of concern, if you will, or the thing toward which we are directing our attention.

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ecological system or an ecosystem” (emphasis added, Odum 1971, in Kimmins 1987, 26). The Forest Ecosystem Management Assessment Team defines an ecosystem as “a unit comprising interacting organisms considered together with their environment (e.g., marsh, watershed, and lake systems)” (Forest Ecosystem Management Assessment Team (FEMAT) 1993, IX-10). The authors of Ecosystem Management: Principles and Applications define an ecosystem as “all the organisms in a given place interacting with their nonliving environment” (USDA FS/Everett 1994, 369). The USFS · HQ web site “People’s Glossary of Ecosystem Management Terms” defines an ecosystem as “an arrangement of living and non-living things and the forces that move among them. Living things include plants and animals. Non-living parts of ecosystems may be rocks and minerals. Weather and wildfire are two of the forces that act within ecosystems” (USDA FS HQ 2001, www.fs.fed.us/land/emterms.html). With the exception of Odum’s definition, which includes a very specific normative component that drastically narrows the list of “possible ecosystems,” these definitions eliminate nothing. An ecosystem is everything, including one might say, the non-systematic. Ecosystem advocates are quick to point out that this concept also includes humans and human artifacts, such as cities or farms. One could even, if one wanted to add yet another layer of complexity and push the concept to its logical extremes, include human symbolic or cultural systems. In other words, an ecosystem would not just be about spatial or physical phenomena or relations but also about conceptual and cognitive noumena and networks. But I will leave that aside for a moment.
In light of the FS' reconceptualization of the unit of concern in forest management, it becomes difficult, if not impossible, to identify any event, process, function, state, or entity of any intensity, frequency, extent, or duration as unhealthy based upon some objective criteria of what a healthy ecosystem is. Any ecosystem, as it is, no matter what it is, is healthy by default if one is going to subscribe to the notion of an objective health that exists independently of human ideas of it. I say this, because ill-health is generally considered to be some deviation from a norm, to (as we shall see in the section on human health) indicate some departure from a predetermined "identity." If the definition of an ecosystem establishes no norm or identity, no particular ontological qualities or characteristics, functions or structures, it becomes difficult to subsequently determine a "deviation" or "derangement" that might constitute a departure from "health." An ecosystem thus defined provides no motive whatsoever to seek out data on historic or prehistoric conditions: there is no reason to look for "historic ranges of variability;" no reason to establish limits or baselines or trends; no indicators to identify; nothing to measure: indeed, no (objective) scale by which to assign a meaning or value to any measure taken. Unless, of course, one already has some specific (or perhaps only vague) idea of what one wants an ecosystem to do, be, or have; that is, unless the human component of the ecosystem has an expectation. But that, of course, is an altogether different thing.

But we will carry on. and do as the FS has apparently done and simply ignore the inconsistencies that are cropping up in the discourse on forest health, and see where we
might get if we: 1) accept that forest health is an objective condition of the forest as seems to be strongly indicated (in different ways...) by the two present USFS definitions of it; 2) accept that an ecosystem is “a unit comprising interacting organisms considered together with their environment;” and 3) accept that human needs and desires do play a role in forest health, not at the level of determining what it is but rather in determining how we will promote, use, or allow that health to be compromised in order to serve our own interests (Def. 2). These assumptions, which I think are not inconsistent with those made by the FS, lead to particular practices. The first is that the FS is overwhelmingly committed to a scientific exposition of the objective condition of health—scientists interrogate the referent, the forest, in search of indicators. and the second is that in keeping with their “health as natural science” model, they tend to treat the public’s contribution as “not-knowledge,” but as myth, opinion, or stories that bear little resemblance to the reality that foresters must deal with (except implementation strategies). In this category of “public” I include those who may know forests or ecosystems in sometimes non-scientific or “other-scientific” ways (environmentalists, nature writers and historians, environmental philosophers and ethicists, loggers, miners, etc.), as well as those who deal not with forests but with knowledge itself, or with human systems like the economy, the culture or politics, with art or aesthetics, etc.

Because the present definition of forest health is understood as an ecological or biophysical phenomenon, FS researchers head afield to “interrogate the referent” when it comes time to identify the sources of disease and the criteria by which we might judge the
status of health. (Incidentally, this not-so-subtle-shift from a discursive focus on health to a practical search for disease occurs in medicine as well...it seems that it is easier to "identify" disease and derangement than to identify health.) The bulk of USFS literature on forest health is devoted either to the exposition of current conditions (generally agreed to be "unhealthy") supported by lengthy, detailed evidentiary chains that purport to demonstrate the lack of health (Science Report on Forest Health of the U.S., Colorado Forest Health Report, Blue Mountains Forest Health Report, California Forest Health...); to the development of technical manuals designed to standardize the criteria, the research techniques, and the interpretation of data (e.g., Forest Health Monitoring: Field Methods Guide [National 1999]); or to the articulation of forest-health policy initiatives (Science Report on Forest Health of the U.S., USDA Strategic Plan [2000 Revision]). Almost without variation the discussion of forest health is framed in terms of fire, weather, animal damage, insects and diseases, and the field research is conducted with an objective "to determine the status, trend, and condition of forest resources" with respect to these five criteria (USDA FS [Blue Mountains...])1991, USDA FS /Dale1996). However, the definition of an ecosystem gives us no objective grounds for naming any of these phenomena as unhealthy; and even though the two USFS definitions of forest/ecosystem health do provide some limited grounds (on the basis of how fire, insects, etc. may affect resiliency, productivity, renewal, robustness, etc.) they cannot do so without the further addition or incorporation of explicit value judgements about what it means to be productive, resilient, robust, or renewed; and without the support of an ecosystem "identity." these value judgements will have to be acknowledged as referring to human
constructs not "found" qualities of ecosystems. Furthermore, the value of the status, trend, and present condition is almost inevitably judged by reference to the past; the "benchmark" for the norm in all instances is "pre-European settlement." Once again, the choice of this particular point in (pre)history as the standard of ecosystem health is not one that is necessitated by either the definition of an ecosystem or that of health.

One gets the sense that the criteria like the measures themselves are established by fiat; we are provided no sustained, in depth discussion of the justification for their use nor offered any explanation of why or how these are essentially related to health, are signals thereof, or are healthy or unhealthy in and of themselves. To establish these connections, these explanatory and justificatory frameworks, one would need to go beyond science, to the realm of narrative (Lyotard 1984). The Forest Service's lack of sustained enquiry into the choice of these indicators becomes particularly poignant when we are told by these same researchers in these same publications that these same "diseases," "catastrophic events," and "dysfunctional processes" are also absolutely critical to maintaining forest health—or even are healthy themselves....( USDA FS 1991 Blue Mountains .... II-1: USDA FS 1998 Colorado Forest.... 22; USDA FS 1992 Forest Health...)). Nonetheless, research scientists proceed to measure biodiversity; the quality of water, air, and soil; determine the presence or absence, decline or increase, frequency, intensity, duration, density, etc. of organisms, chemicals, structures, interactions, or processes. Whenever possible, the scientists reconstruct as best they can the historical presence, intensity, and frequency of each known phenomenon in the hopes of establishing an historical range of
variability by which to interpret the meaning of present conditions. However, with the exception of fire which can be traced back quite far, the oldest records available on insects and diseases in the Blue Mountains of the Pacific Northwest, for example, date to the 1870s and are considerably less than comprehensive (e.g., USDA FS 1991, throughout). We do not exactly have a “thick description” (in terms of scientific data) of the historical forest, much less of the pre-historical (before stories) or mythical (before written record) forest that would enable us to reconstruct a rich and complex picture upon which to base a judgement of ecosystem health today vis a vis the past in the Western U.S..

The numbers indicate that researchers in forestry “do science.” They don’t do anthropology or ethnography (except in the most limited way, as in the protection of cultural artifacts), they don’t do philosophy or even ethics, they don’t do literary analysis. In keeping with the expanded, holistic notion of an ecosystem and the commitment to an “interdisciplinary” approach to managing them, Forest Service offices are now staffed by an impressive array of highly educated and very competent scientists and technicians in diverse fields: hydrologists, geologists, silviculturists, economists, wildlife biologists and/or ecologists, botanists, ecosystem analysts, systems analysts, GIS technicians, fish biologists, foresters, endangered and threatened species specialists, pathologists, entomologists, fire specialists, water quality specialists, etc.. There is also the occasional sociologist (usually of the social science persuasion), archeologist, and lawyer, along with public relations officers, recreation managers, and law enforcement personnel. The Blue
Mountains Forest Health Report (1991) is compiled by a team of research specialists: a forest entomologist, forest pathologist, silviculturist, watershed specialist, ecologist, wildlife biologist, and a fire and fuels specialist. The Forest Ecosystem Management: An Ecological, Economic, and Social Assessment (1993) is compiled by over 600 scientists and technical experts from a variety of (...scientific) disciplines (this number includes support personnel). Of the 600, there were six named contributors who were not (which number varies depending on whether you believe economics and sociology to be sciences or humanities) scientists or technicians. (The FS, incidentally, counts sociology and economics as sciences, not as humanities, as we can see from the language of the National Forest Management Act (see next paragraph).)

Even at the level of policy and management, the commitment to science and scientific knowledge and the faith in the expertise and eminence of scientists is evident. The Strategic Plan 2000 “includes consideration of science-based information from recent resource based assessments” along with ideas, suggestions and other information (USDA FS 2000). Goal 3 of the Strategic Plan is to “develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability (USDA FS 2000). The National Forest Management Act of 1976 (16 USCA 1660(6)) calls for the “integrated consideration of physical, biological, economic, and other sciences” in developing and maintaining forest plans (NFMA 1976, 16 USC 1604(b)). A 1994 report entitled Ecosystem Management: Principles and Applications, was compiled by 113 scientists and offered a “scientific
evaluation of the effects of Forest Service management practices” (USDA FS 1994, Vol. I: Executive Summary, 1). Ecosystem management is “based on sound science” and adaptive management (“the proactive approach of the FS to restore and maintain healthy ecosystems”) is a “science-driven management experiment” that “applies scientific principles and methods to improve resource management...as new scientific findings and social changes demand” (USDA FS 1994, Vol. II, 368; USDA FS/Dahms and Geils 1997). In a statement praising the Science Report on Forest Ecosystem Health in the U.S. (1997), Congressman Don Young (R-AK) says that it “marks the beginning of a more scientific, fact-based approach to some serious forest problems.” This three-step approach requires “understanding the science” and “examining the science” (produced and validated by a “pre-eminent group of forest scientists”) so that members of the Congressional committee can “develop fact-based forestry laws that use the best scientific information” (and indeed, this language is incorporated in the recently finalized Planning Rules of the Code of Federal Regulations ...). The scientific approach not only provides “better information” but also reduces the chance that “emotionally-based rhetoric will form the basis of our forest management laws.” Young aims “to move away from rhetoric and towards fact-based forestry laws that allow management to improve the environment.” Young goes on to add that “management using scientific information, not opinion, not rhetoric, and not a special interest agenda is what our forestry law must encourage” and thanks the Speaker (Gingrich) for his “call...to build a case for change based on sound, quality SCIENCE” (R. Don Young, Press Release/Statement, 12-13-96(?), in Press Packet). Congressman R. Smith (R-OR) praises the Report’s authors and
those who have come to testify in congressional hearings on its behalf, as "highly regarded forest scientists" and "highly credible forestry experts" whose "conclusions are powerful" (R. Smith, News Release in Press Packet, 4-9-97).

Thus we see that forest and ecosystem health are almost invariably cast in scientific (biological, chemical, ecological (narrowly construed)) terms. The FS appears to assume that biology and ecology, despite being logoi, are "a-cultural" and that even management and policy are understood as quasi-scientific and technical endeavors. Forestry schools offer science degrees and are invariably located in the science section of the university system rather than the humanities' section. And finally, we note that the FS' use of science is not limited to interrogation of the referent; it is also the preferred methodology when attempting to gain some insight into people's needs and desires. Inquiries into social values and economic concerns tend to take a social science (recall NFMA's mandate) approach, rather than, say a qualitative ethnographic or anthropological, or even a philosophical or linguistic, approach. As "sciences," economics and sociology take tastes and preferences as givens and therefore subject to disinterested investigation and quantification via surveys, items bought and sold, travel costs expended, and other "revealed" preferences. The information—to even be considered as information—must be of the sort that can be formulated into quantifiable objectives (USDA FS/Everett 1994, 11) and reduced or formalized into some sort of a "data base" in which information is most often (though not always) presented in numerical form.
In short, the invocation of science and scientists is meant to reassure us that the FS is giving us “information,” hard data, facts, not rhetoric or opinion; and that furthermore, these scientists are disinterested and have knowledge, they are not victims of emotions or interests that might lead them into error or into the realm of unsubstantiated myth. It is for this reason that the definition of forest health (as a scientifically formulated goal) is so important to the agency and why ambiguity of the definitions so severely deconstructs and undermines the agency’s self-promoted mythology as simply “doing good science.”

Concluding remarks

So, we have inquired into forestry’s object (the ecosystem), (one of) it’s objective(s) (forest health), and the preferred method and theoretical framework (science) by which both object and objective might be known. And in doing so we have encountered unexpected difficulties. The object or focus of concern, the ecosystem, the thing we want to be healthy, appears to lack any sort of “identity” because its all inclusive nature normalizes (or “ecosystematizes”) everything; it is not a “self-defining unit of analysis” (Binkley 1998, 31). Neither of the definitions that the USFS uses provides objective grounds for assigning any particular value (health or disease) to any one state, process, function, organism, relationship, interaction, or assemblage. The concept of ecosystem health then cannot be derived from the ecosystem itself—either as a concept or as a referent. Despite FS efforts to define it as an objective, biophysical phenomena (with an unclear a posteriori relationship to human needs and desires...), health may ultimately be an inherently and ineluctably subjective a priori judgment that is then read back onto or...
mapped out on the biophysical world, and continually reevaluated for validity and consistency with our empirical observations, our experiences, and/or our ideas thereof. Thus, specific arrangements or relationships, patterns or processes, functions, states, trends, or conditions (resiliency, renewal, robustness, productivity, etc.) are defined not discovered as healthy. In an effort to ground these criteria in something other than mere human choice, we select some (pre)historic ecosystem (pre-settlement, not pre-Jurassic, for example) as our model ecosystem and say “that ecosystem is healthy, that is the measure, because it does, has, or is this or that and we like (for whatever reason) this or that.”

This step, the move from description to prescription, the application of value judgements is concealed by the FS definition and moved to what appears to be a later stage: first we (the scientists of the FS) will determine the (objective) state of health of the ecosystem by using science, and then you (the public) can tell us what you want and need. But if we agree that the FS definitions of an ecosystem lead to no necessary specific conditions, and if we further agree, based on this, that a determination of health involves value judgments at the very outset, then we must also rethink the role of science. If an ecosystem is what the USFS says it is (and we suggested above that it might be even more complex and manifold) then science may not be the best (or at the very least, the only) tool for knowing it. Even the most committed scientists admit that science is ill-equipped to deal well with large complex wholes (by “whole” here I do not mean some mystical, prediscursive,
essentialist, reified “One,” I mean in the sense of everything, all the details in their infinite, heterogeneous multiplicity); its methods and theoretical frameworks are better suited to reduction, to analyzing isolated variables under controlled conditions. The whole point of reductionist science is to ignore all “accidents” of time and place, to abstract from the situation, from the particularity of actually existing phenomena, to find the laws that govern all of (abstract) nature. But we don’t live in abstract, well-behaved, clearly defined “ecosystems;” we live in an infinitely varied, constantly becoming flux that escapes our words (our definitions) even as we speak them.

And finally, if we accept the suggestion that the FS’ attempt to define health by reference to an “objective” biophysical “real” conceals implicit value-judgements, we will also have to admit that the role of science is somewhat different. Again, by its own contention, the realm of science is the realm of what is, not the realm of what should be; as a normative declaration, ecosystem “health” is a prescriptive, not a descriptive concept, and it is not necessarily grounded in any one biophysical condition (there is no obligatory connection between sign and referent). Note too, that the problem is even more complex: the determination of “what is”—the establishment of something as something, as being—is ultimately grounded in linguistics: something doesn’t exist until we say/think it does. And further, remember that science itself is inescapably linguistic, and is subject to the

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20 The FS is not alone in its efforts to overcome the fact-value distinction: both J. B. Callicott and late E. O. Wilson (cf Consilience) struggle with and purport to make this same move without resorting to human values.
same sorts of ambiguities that any other discursive practice is. Science, in all its variations and permutations, does and will continue to play a critical role in framing both the ecosystem concept and the forest health discourse. There is no question of not using science: rather, the more pressing questions are which (and whose) sciences do we use, what are their limits, and how can we make up for those by accessing other knowledge frameworks.

Kierkegaard might argue, that ecosystems, like humans and like life itself, consist in the accidents, the details, the contradictions, the situation, the myriad ever-changing particulars of lived existence, many of which are not "law" abiding. If one abstracts from the heterogeneous multiplicity of the situation, one abstracts from life itself. Flannery O'Connor once said of fiction, of stories, that

> When you can state the theme of a story, when you can separate it from the story itself, then you can be sure the story is not a very good one. The meaning of a story has to be embodied in it, has to be made concrete in it. A story is a way to say something that can't be said any other way, and it takes every word in the story to say what the meaning is. You tell a story because a statement would be inadequate. ... The meaning of fiction is not abstract meaning but experienced meaning,... (O'Connor, 147).

21 I would not go so far as Latour and Woolgar do in their highly controversial book *Laboratory Life: The Social Construction of Scientific Facts* (Beverly Hills, 1979) to say that science is nothing other than a power struggle with no reference to the outside world, but rather that it is a culturally determined practice, and a language, that is designed to help us make sense of what is out there.
A judgement of health—for both humans and for ecosystems—will depend very much on all the particulars of the circumstances, it depends as much on the past and the present as on what we expect of ourselves or that ecosystem in the future. To tell the whole story, we have to keep all the parts. In Chapter Four, we will look at how changing conceptions of human identity have lead to changes in what it means to be healthy, and how these have in turn affected medical practice and theory. In Chapter Five, we will revisit the forest health debate armed with knowledge gleaned from our examination of the human health debate.
Chapter Four

Medicine

Thank god most of them get better on their own...!

- Overheard in the doctor’s lounge

Medicine, and by association, human health and disease, is currently considered to be the
domain of physicians and other health professionals trained in scientific methodology and
in the techniques of bioscience (Cassell 1997). The hegemony of the “biomedical” model
of health is not a long standing tradition—it dates from about 200 years ago to the advent
of modern medicine and the professionalization of physicians and health care workers
(see Foucault’s The Birth of the Clinic, Cassell’s Doctoring, Porter’s Health,
Civilization, and the State)—but it has been and continues to be the dominant force in the
determination of what it means to be healthy and in the character of health care. Today
the biomedical model of health (and along with it, physician authority as the sole arbiter
of health) is being challenged by Health Maintenance Organizations, hospital bureaucrats
and administrators, insurance companies, pharmaceutical companies, and government
agencies. For the most part, these organizations and institutions challenge only the
exclusivity of the physicians’ control of diagnosis and patient care, not the structures of
knowledge on which that control is predicated or the concept of health that it reifies.
Perhaps the most formidable challenges to both physician authority and the dominance of
medical science in health care, however, are coming from two unlikely sources: patients
and physicians themselves. Patients are questioning the categories of thought by which
physicians and the modern medical community as a whole construct disease and health, and formulate options for treatment—treatments that tend most often to address the disease (as a biological entity or process) not the illness (the disease as it manifests itself in situ, in the person) (Wright 1982, Engel 1979, Cassell 1997). That is, patients (or more generally, the public) are questioning the institutionalization of the disease-oriented ideology of modern biomedicine to the exclusion of other experientially derived narratives of health and illness. As we shall see, physicians too, increasingly dissatisfied with the objectivity requirements and technical nature of their profession and the limitations that it imposes, are also seeking alternative conceptual models that permit of a wider range of patient-physician interactions (e.g., more person directed relationships), diagnostic techniques (e.g., the incorporation of patient narratives, for example, in explaining etiology and vectors of disease), and treatment options (e.g., exploring palliative care options as opposed to focussing on “cures” that treat “derangements of biological function”). What we discover upon closer examination, is that at bottom, our ideas of health and illness are intimately tied to our ideas of ourselves; that is, to our identity (Could it be that our notions of forest health are also tied up with our identity?).

The praxis of modern western medicine has generated dozens of sophisticated “meta-medical” discourses in philosophy, sociology, history, anthropology, ethics, business, politics, geography, biology, economics, and law. The motive for developing these metabdiscourses is the premise that the concept of health (especially as it is being reinterpreted in today’s society), and the related ones of disease and illness, have buried within them
legal, biological, aesthetic, social, political, philosophical, historical, psychological, economic, and moral assumptions that are more or less problematic in contemporary culture. Perhaps the most telling example of the multi-faceted nature of “health” is the World Health Organization’s definition in which health is defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO 1976). Contrast this with the president of the American Association of Physicians plea for a very narrow understanding of medicine’s boundaries, and by association, for a very narrow understanding of health and illness in the medical model: “the central goal of medicine may be defined as the relief of pain, the prevention of disability, and the postponement of death by the application of the theoretical knowledge incorporated in medical science to individual patients” (Seldin (JAMA), in Henderson 1997, 251). And further, illness and disease are to be viewed only as “deranged biomedical function.” while “health is not synonymous with happiness or tranquility or a noble life or citizenship”— all the things that the WHO definition seems to imply that it is (Seldin in Henderson 1997, 251, 252). Curiously, while Seldin is quick to define the parameters of medicine and those of disease, he refuses to offer a positive definition of health. As we shall see, he does not disagree with the WHO’s definition of health, but instead argues that the only aspects of health with which medicine should be concerned are disease and infirmity, both of which he understands as strictly biophysical conditions.

These two radically opposed definitions capture the essence of the debate over health, and health care, in late twentieth-century America. They represent what Will Wright in The Social Logic of Health terms the basic dilemma between whether “health is a concept
that can be defined objectively and technically by medical scientists or whether it is a concept that refers finally and decisively to a quality of human experience that cannot be reduced to physiological processes" (Wright 1982, 12). Each formulation leads to entirely different sorts of knowledges and practices. And as we shall see, understandings of human health are neither unambiguous nor uncontested; even when we do try to stick with the narrower biomedical model proposed by Seldin the ambiguity inherent in the terms themselves fosters internal contradictions and prevents complete control.

I will first examine the biophysical model of health and its use of the “conceptual framework and tools of biomedical science” (Seldin 1997, 251). This is the “medicine as a natural science” approach to health, disease, and health care or “health management.” I will then lay out the alternative “biopsychosocial” (Engel 1979, Cassell 1997) model of health and of health care. Generally, this is the “medicine as social science” (note that biology is included, but it’s sociocultural roots or commitments are examined and questioned) approach to health and health care.\(^2\) Again, as with the forest health debate, I will examine how the different definitions of health lead to potential contradictions, how these definitions support or necessitate the use of particular types of knowledge—among them science, and how the different understandings of health affect and/or are affected by how we identify ourselves as selves. Thus, once again, I will look at the object

\(^2\) Social science as it is used here includes research done using a quantitative approach that favors surveys, but incorporates a stronger qualitative component that favors ethnographic and anthropological approaches that produce thick descriptions in the form of narratives. In other words, many of the social science methodologies used in medical sociology tend toward those used in the humanities. One could say, then, that science in this instance is interpreted somewhat along the lines of its “original” Latin sense of “to know” by whatever method knowledge might be produced.
(be it body or person), the objective (health), and the knowledge framework(s) within which we produce and reproduce both object and objective.

**Medicine as natural science/Health as a biological condition**

Within medicine there is a bifurcation between physicians who see themselves “narrowly as biomedical scientists” and physicians who see “the social problems of their community as part of the legitimate scope of their medical practice” (Henderson et al. 1997, 244). In his presidential address to the American Association of Physicians in 1981, Donald W. Seldin makes the case for the biological definition of health and a concomitant narrowing of the duties of physicians in accordance with this definition. As noted above, Seldin argues that medicine is—or should be—a very narrow discipline whose goals are “the relief of pain, the prevention of disability, and the postponement of death by the application of the theoretical knowledge incorporated in medical science to the individual patient” (Seldin in Henderson et al. 1997, 245). Seldin’s stated intent is to forge a link between medicine and the biomedical sciences in order that “basic sciences ... such as biochemistry, physiology, cell biology are seen to furnish the theoretical framework of clinical medicine” (Seldin, 251). His goal is not only to achieve a higher level of certainty when it comes to diagnosing and treating biophysical illnesses, but also—and perhaps most importantly—to remove medicine once and for all from the dangerous realm of social engineering. (He cites the use of medicine—medical knowledge and physician authority—by the Nazi regime in the service of racial cleansing as the most profound example of what happens when medicine ventures beyond the bounds of the strictly
scientific into the realm of politics and culture.) To Seldin, and for the many others who agree with him, a retreat to objective science offers the only secure, defensible footing for medical practice (Seldin in Henderson 1997; Cassell 1997). Ironically, for all his insistence upon medicine as a scientific enterprise, he admits (without further elaboration on his meaning) that medicine is a “comparatively weak scientific discipline”— but one whose “powerful instrumentality” is conclusively demonstrated in the successful “mitigation of biomedical derangements” (e.g., pain, disability, and premature death) (Seldin, 245). The success of medicine then, is wholly dependent upon a very narrow construal of health that effectively limits its application (and thus its criteria of success or failure) to biologic malfunction. Or, even if one wants to define health more broadly, as does the WHO, then the only “pertinent question” for the physician is which aspects of this more complex notion of health fall under the purview of medicine as a science (Seldin, 252).

Seldin and others who subscribe to this narrower view of medicine’s function and of its role in achieving health, do not like the World Health Organization’s definition of health because it includes the possibility that everything from “personal maladjustments to social conflicts” will suddenly fall under the purview of medicine. Physicians will be forced to consider not only the biophysical factors, but also the social, political, economic, and cultural institutions and relations that affect or potentially affect a person’s physical and mental health (Seldin, 252). This broad definition, Seldin argues—an argument echoed by many others, including Foucault, (cf *Madness and Civilization, The*
Birth of the Clinic. Foucault, Health, and Medicine)—has the effect of making everything a matter of health, and thus by extension, every aspect of human existence becomes a medical matter, and every social aberration or political deviation a pretext for medical intervention. This phenomenon is what some have called the “medicalization” of everyday life (Ben-Sira 1988, Shuval 1992, Seldin 1997, Wright 1982, Henderson et al. 1997, Cassell 1997). Those who advocate a strict biophysical interpretation of health, who limit scientific medicine’s application to the relief of pain, the prevention of disability, and the postponement of death—to biomedical derangements—fear that if health is defined too broadly, then medicine will have too great an access to areas of life that are best left to legislators, judges, educators, psychologists, priests, and parents. Simply put, for the supporters of medicine as a natural science and health as a biophysical phenomena, beyond the narrow bounds of biology (which is itself highly complex), medicine and physicians are out their depths. Any attempt to “medicalize” those aspects of human experience that fall beyond biology (giving due notice to those who would argue that there is nothing that is not explainable by biology…) tends to result in an “enormous hypertrophy of personnel and facilities, massive financial expenditures, and … frustration and disillusionment when medical intervention fails to eventuate in tranquility, quiescence, and happiness (Seldin, 245). For Seldin the only purview of a properly scientific medicine is the narrowly biophysical; these other aspects of health—the social, economic, political, cultural, mental, etc.—even one might say, health itself, do not fall under the auspices of biomedical science and must be dealt with by other conceptual frameworks, institutions, and practices.
There is considerable merit in Seldin's argument and the subtleties of his concerns are not really in conflict with the WHO's definition. He is committed to the project of scientific medicine, and he is aware that his science works best when applied to clearly identified and well delimited, isolated things or conditions that have already been defined by other discourses or cultural traditions as derangements or dysfunctions. He pointedly refuses to ally medicine with the pursuit of health, and instead is clear that the goal of medicine is to treat only what appear to be objectively identifiable "deranged" conditions with clear and unambiguous biological causes or roots. Medicine, as a science, can and should deal only with those biophysical things that it can clearly and unambiguously identify and define; those things that it can see and quantify; that it can manipulate and test repeatedly in controlled clinical or laboratory settings (Balshem in Henderson et al. 1997, 39, and Cassell 1997). According to this view, the practice of medicine, when applied to patients must limit its interventions to alleviating pain, preventing disability, and postponing death—but only insofar as these are biophysical conditions that have been identified by the patient and the cultural milieu as undesirable; and then, only in so far as they are manifested in the body. Naturally, despite even this very narrow conceptualization of the role of medicine and the physician, there is considerable disagreement about exactly what may or may not be done in pursuit of these seemingly incontestable goals. The bottom line is that there may in fact be more to human health than biology. Seldin is silent on this point. But if there are, then those things are beyond the purview of medical science and beyond the expertise of physicians.
The whole point of a narrow biophysical definition of disease (and perhaps by silent association, health) is to carve out some sort of a territory within which the knowledge and the techniques of medical science can be effective, and in which professional health care workers can enjoy a sense of expertise and the prestige that comes along with it—not necessarily to produce all-round healthy people (Ben-Sira 1988, 1, Seldin in Henderson et al. 1997, 251-2). Under ideal circumstances, modern Western medicine would thus focus exclusively on the body, as separate from the person, and concentrate on mapping its individual functions and structures. Medicine, as biomedicine, would confine itself to a search for the ultimate chemical and biophysical—bacteria, viruses, genetic variations, injury, etc.—causes of both health and disease, and would then develop material or technical treatments that address that particular organic metabolic or structural “derangement.” It would be up to society to determine what health was, what disease was, and what treatments would be acceptable. For the moment, we will accept the narrow “objective” scientific approach to health—or more precisely, to disease, and see how medical science fares within these narrow confines. (As mentioned above in the discussion on forest health, almost invariably the discourse on health gives way to a discussion of diseases or deviations from the norm. It may be because health is simply too ambiguous to “operationalize.” We find it easier to speak of deviations from the norm than to define the norm.)

Even within the parameters of this very narrow understanding of disease—as some sort of biophysical or biochemical derangement—science has considerable difficulty establishing
with complete certainty the etiology of an *embodied* disease. Isolated microorganisms in controlled laboratory conditions behave well and predictably. Embodied things—microorganisms in bodies—don’t. In his book *How Scientists Explain Disease* (1999) Paul Thagard chronicles the somewhat serendipitous discovery of an apparent correlation between the presence of a bacteria (Helicobacter pylori) and ulcers. His object is to use the H. pylori case study to examine how science is used to change the beliefs of medical practitioners about diseases and their causes, but his account also offers some insight into the limitations of science and the apparently unavoidable presence of uncertainty when we are speaking of large complex organisms with limitless interactions. The discovery of the correlation between H. pylori and some ulcers is significant because for decades ulcers were assumed to be caused solely by psychosocial factors such as stress or anxiety that produced chemical changes in the stomach which in turn caused the eruption of ulcers. In the absence of any definitive evidence of a biophysical *material* cause, clinicians were forced to locate the ultimate causes of most types of ulcers in psychological or environmental, i.e., non-medical, factors. Biomedicine’s treatment of ulcers was thus limited to mitigating the symptoms and suggesting lifestyle changes. Thagard’s account of how the connection was discovered, how the hypothesis was (not always successfully) tested and retested under both laboratory conditions and in clinical trials illuminates both the strengths and weaknesses of the biophysical model of disease (the theory that a biological entity or function can fully and exhaustively explain the presence of illness or disease in persons). Early on it became clear to the researchers that there is not a necessary direct correlation between ulcers and the bacteria. The bacteria are
not present in all cases of ulceration; nor are ulcers always present when the bacteria are.

In other words, not all people that have the bacteria have ulcers and not all people that have ulcers have the bacteria. To further complicate matters, differing levels of bacterial "infection" do not correspond to different "intensities" of ulceration. Moreover, treating the bacteria does not guarantee that either the bacteria or the ulcers will disappear, even though under controlled laboratory conditions, the bacteria does disappear when treated with appropriate antibiotics. And in some cases, the bacteria continue to reappear even after they have been eradicated. In the end, researchers have managed to persuade the medical community that there is a correlation between some ulcers and H. pylori, and that in some instances, eradicating the bacteria will indeed eradicate the ulcers, but neither physicians nor researchers can speak with absolute certainty on a cause-effect relationships between the bacteria and the disease. In this case, science has shed light upon yet another vector of disease (bacteria as a potential, sometime, cause (used loosely) of some ulcers...) without necessarily increasing our level of certainty or contributing to an increase in the health of the person.

Similarly, because available technology permits us to visualize previously invisible things we tend to believe that if a certain microorganism (a pathogen) or condition (pathophysiology or pathoanatomy) is present, a disease will also be present. But in his influential and provocative book *Doctoring* (1997), Eric J. Cassell, a practicing physician and Clinical Professor of Public Health at Cornell University, presents evidence to the effect that, for example, the presence of blocked coronary arteries (atherosclerosis) does
not necessarily mean that the person has coronary heart disease. As in the case of H. pylori, there is an observed correlation between the presence of the one and the onset of the other, but blockages in and of themselves are neither necessary nor sufficient to account for disease. Furthermore, a patient who tests positive (based upon previously determined criteria) for blocked arteries but who is otherwise asymptomatic, who then undergoes various interventions and/or medical procedures (like angioplasty) to reduce the blockages, does “no better than patients who are not so treated.” From this Cassell concludes that there is “no good evidence that the outcome of this chain of events makes a positive difference in the life of ... the patient” who underwent the procedure (Cassell 1999, 68). Cassell is making several points here, one of which is about the nature of the relationship between medical technology and the practice of medicine, but one of which is that the “relationship between what is considered good and bad in the test results and what is best for the patient is, at the very least, obscure, and at the worst, just plain wrong” (Cassell 1999, 68). One cannot infer from the empirically observed presence of an organism (previously agreed upon as pathological) or from a structure or process or condition (also previously defined as abnormal or deviant) that a person—or even his or her body—is ill or unhealthy.

Medical literature is full of case studies of “the exceptions” to the rule, those patients in whom diseases (as objective entities) fail to manifest themselves in expected ways or who manifest biophysical symptoms with absolutely no identifiable biological cause or whose conditions respond in unexpected ways to conventional treatments. (It is worth restating
that there is a “rule,” that many people do respond as expected to therapies and treatments. and are “healthier” as a result.) A patient complains of pain or of experiencing certain symptoms, but neither the doctor nor the most sensitive diagnostic technology is able to detect a material condition that can account for the pain or the symptoms. Because no underlying biological condition can be detected (that is, the “tests come back negative”) the patient is assured that there is nothing wrong. Similarly, there are instances in which coronary heart disease exists (the “tests come back positive”), but no underlying material cause—such as blocked arteries—can be found (Cassell 1999, 69-71). Cassell cites the case of a diabetic who exhibits not only every single sign of diabetes, but a host of other physical “derangements” that have nothing to do with the diabetes and for which the only cure seems to be her work (Cassell 1999, 53-4). The mechanisms of disease in humans tend to defy quantification and reduction; we don’t live life by the numbers that medical science assures us are indicators of normal functioning. The precision and sensitivity of our technology is such that it permits us to glimpse things we never saw before, but we are not yet sure of the significance of our observations: we don’t know what these things mean. We can now detect, for example, an “abnormal” developmental condition in horses called osteochondrosis (OCD). Its discovery caused a ruckus. Suddenly every yearling had to be tested for this “defect.” Those found to possess it were immediately deemed unsaleable, doomed no doubt to chronic lameness. The forecasted mass lameness has not materialized. It seems that our technology outstripped our knowledge; we have no idea how to interpret this sign, how to fill the signifier (or more properly, what meaning to attach to the sign). For all we know, the “abnormality” is
something that has always been there. That is, it may be "normal." The attempt to explain
the presence or absence of health or disease in the human body (leaving aside for a
moment the human being) by recourse only to the presence or absence of particular
microorganisms, genetic sequences, conditions, or structures has met brilliant, if limited
success. Think of such diseases or conditions as post-traumatic stress syndrome, chronic
fatigue syndrome, for which no apparent biological or chemical cause can be found. The
strict bioscientificiation of health and disease (or conversely, the medicalization of
everyday life) is defied by the sheer number of biological and non-biological contributing
factors and the complexity of the interrelationships between these factors that constrain
and determine the possibility of any one particular biophysical condition manifesting
itself in some given, predetermined wholly predictable way in any one unique body. If we
cannot hope for absolute success in applying scientific methodology to the benefit of
something as well delineated and overly researched as the human body, one wonders
what hope we might have of using that science to the benefit of infinitely complex
ecosystems composed of a countless numbers of such bodies each occurring in a
particular circumstance—the nexus of countless biotic and abiotic relations in time and
space.

We can assent, for the most part, to the marvels of medical science at the close of the
twentieth century. But if patient dissatisfaction, declining physician morale, and the
accounts of medical ethicists, historians, sociologists, and anthropologists are to be given
credence, we might be less optimistic of medical sciences' contributions to improvements
in human health as a quality of life or its ability to deal with the person as a whole. It is not even clear that it has done a good job of alleviating pain, preventing disability, and postponing death—or that these things are unqualified goods to be pursued at all costs (Bill Moyer's Living With Dying, PBS, aired in Phoenix on 2-4-01). For all of medical sciences' attempts to pretend otherwise, diseases, disabilities, pain, death—in short, biophysical derangements—are not objectively occurring phenomena, "objects that have somehow entered the body and made the person sick" (Cassell 1997, 85).

Microorganisms behave predictably in controlled laboratory conditions; they behave unexpectedly when introduced into living systems—that is, when in situ (one might speak here of "ecological validity"). A disability for one body (the loss of a pinkie finger for a concert pianist) is not necessarily a disability for another (the loss of the same digit for a longshoreman). And this doesn't even begin to take into account the meaning of this "disability" for the person. Unfortunately for medical science, diseases are only diseases, disabilities disabilities, and pain pain when they are manifested in a living organism or system. Beyond the confines of the human body, the small pox virus becomes an endangered species, not a disease. Physicians don't treat disembodied diseases; they treat individual humans in whom biophysical conditions that we call diseases manifest themselves in unexpected ways and with differing consequences (Cassell 1999, 24).

Uncertainty in medicine, like uncertainty in land management, is not simply a matter of a lack of knowledge, either at the personal level on the part of the individual physician, or at the professional level on the part of the whole medical field or discourse. Improving medicine, increasing survival rates or longevity are not simply matters of improving or
increasing scientific knowledge (see McKeown cite below). We are not unhealthy and we
don’t die just because we lack good, scientific knowledge and advanced technology. The
science of medicine can and should continue to concern itself with the molecular
biological causes of disease and to search for treatments at the molecular biological level
(as well as at the macro level!); but the practice of medicine deals not with “objective”
diseases or states of health but with healthy or ill persons who constitute or construct
themselves. their health and their diseases in non-scientific ways.

Thus, even in dealing with one fairly well-delimited biological organism (which is not the
same as saying “person”) with which we are intimately familiar, we are unable to speak
with absolute certainty on the precise nature of the biological components of either health
or even the much smaller category of disease. We have spent billions upon billions of
dollars and hours, days, years, lifetimes beyond count on investigating and articulating the
biology of human health and disease; i.e., on collecting data. The financial, political,
social, ethical, philosophical, scientific, technological, and intellectual resources brought
to bear on the problems of human health far exceed those which have been or can be
applied to the study of any other organism, much less to a community of them. In the
West, we have committed ourselves to the scientific model of disease and medicine for
nearly 200 years and this course of study has yielded wondrous insights into molecular
biology that have contributed to astounding technical successes in medicine. But as many
historians of medicine point out the success is limited, and the great advancements in
scientific knowledge and in technology have not contributed substantially to increases in
longevity (some estimates put it at five additional years), to the reduction of pain and suffering (cf. Bill Moyer's PBS special on *Living with Dying, Death and Dying*, and Cassell's *Doctoring* for narrative accounts of how the medical community seems unable to deal effectively with pain and suffering) or to an increase in the quality of life (there are studies that indicate that most increases in the quality of life and decreases in the incidence of epidemics are attributable to changes in social, economic, and political organizations rather than to advances in medical science) (McKeown et al 1975; Bunker *et al.* in Wilkinson 1993, 30-31; Mackenbach *et al.* 1990 in Wilkinson 1993, 31). Let me be precise here: historians, sociologists and physicians are not saying that scientific medicine has been of no value whatsoever. It has changed the lives of millions of people, often, though not always, for the better: it has produced therapies that can alleviate pain; it has engineered procedures that prevent or at least minimize disability; and it has (not always happily) postponed death. What they are saying, however, is that neither the depth of knowledge acquired in molecular biology nor the advancements in medical technology correlate directly to equal advancements in human health. Many scientific advancements seem to create as many problems as solutions (Australian scientists in search of a way to control rat fertility through genetic manipulation inadvertently created a virus that totally

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23 McKeown et al (1975) present evidence to the effect that modern medical science played only a minor role in the dramatic decline of death rates (from infectious diseases) since the last century if for no other reason than that immunizations were not yet developed or widely used. However, just because "medical science cannot explain most of the decline in mortality from the infections is of course evidence that medical science is ineffective...estimates of the current contribution of modern medical care to the growth of life expectancy in the developed world do not suggest that it can explain very much of the continuing increase in life expectancy" In fact, the "most generous recent estimate...suggests that the whole modern medical effort adds no more than about five years' difference to modern life expectancy (Bunker *et al.* in Wilkinson, 30-31). Wilkinson and others conclude that the social and economic determinants of health and mortality remain substantially more powerful (Mackenbach *et al.* 1990 in Wilkinson, 31).
compromises the rats' immune systems; bypass surgery, one of the crown jewels of modern medicine, appears to have a strong correlation to substantially decreased cognitive functions in post-operative patients; chemotherapy is sometimes successful in slowing or stopping the advance of cancer and other diseases, but almost invariably the quality of the person’s life is radically reduced, etc.). Achieving health in the human body (or even just treating “biophysical malfunctions” as Seldin and other medical bioscientists would have us do) is not just a matter of gathering more data or developing more sophisticated technologies. Every time we push back the frontiers of ignorance at the molecular level, we add yet another level of complexity at the macro or experienced level of health or illness: in many ways, then, science and scientific knowledge adds to uncertainty rather than reducing it. As the old adage cautions us, in an age of ever-increasing specialization, we know ever more about ever less until we eventually know everything there is to know about nothing at all. At some point one has to be able to put all the minutiae back together again and make a decision about what to do based on the bigger picture (the person)—a picture which is always incomplete and always changing.

At this point, it is important to point out three additional things. First, Seldin leaves his key concepts—pain, disability, death—undefined and unexamined. By way of clarification, he offers us the terms “biomedical derangement” (or “disturbance”), and “biophysical malfunction,” but they too are left unexamined and undefined. We are left, possibly intentionally, with the impression that their meanings are clear, their objectivity firmly established, and their acceptability as basic criteria of (or as contributors to or
inhibitors of) health unproblematic and uncontested. The impression is that these are scientifically verifiable conditions, or at least objective conditions to which scientific criteria and methods can be applied, that carry with them no hint of normativity or subjectivity that would force medical science to retreat from its objectivity. This seems to me a huge lapse. Each term signifies a departure from some previous, presumably normal condition that is defined as good, or at least as not-bad, since we seek to prevent, postpone, and alleviate the deviations and to restore the body to its former conditions. Generally, we would probably all agree that having no pain is better than having pain, having an able-body is better than having a disability, being alive better than being dead, being biophysically functional or undisturbed better than its opposite. But in what precisely does "malfunction" consist? What is a "disturbance" and who gets to define it? At what point is death actually more desirable than life at any cost? And what constitutes "life" or "living"? What are the costs of pain reduction (decreased cognitive function, limited mobility, etc.)? What exactly is a "disability"? None of these questions is answerable by recourse to science. Thus, the scientific model of disease conceals a wealth of value judgements and is in fact premised upon non-scientific norms that will sooner or later require examination because their meanings and desirability will be contested. Second, Seldin and other biomedical scientists (like foresters and natural scientists) proceed as if science itself were not a cultural phenomena. They are quick to distance themselves from definitions of health that carry too much cultural baggage, but seem unaware that their conceptual framework itself, along with the tendency to value it above all others, arises out of this same cultural environment. And finally, it is clear that even if
we assent (with reservations) to a strictly biological interpretation of “biophysical
derangements.” (disease, disability, death, etc.) we are still left without an account of
human health, scientific or otherwise, and with no way to explain physical manifestations
of “psychosomatic” illnesses or diseases. And if we additionally assent to Seldin’s and
other’s claim that medicine is a narrow scientific discipline that is ill-equipped to deal
with the larger issue of health, then we will also have to search elsewhere for a conceptual
framework in which to understand health and another practice by which to achieve it. It
would appear that if our enquiry is into health, then we must look elsewhere than medical
science, perhaps to other social and cultural frameworks and activities in which both the
body and the person are embedded and from which they derive their identity.

The social economy of health

Even as the demands of a medicine based in natural sciences drives its practitioners
toward ever greater scientification and specialization, there is a concomitant counter
movement—both from within and without the medical field—to reconceptualize the
objective, the object, the discourse and the practice as cultural entities and enterprises that
accept both ambiguity and uncertainty as part of the process, and broadens the sorts of
knowledges brought to bear in the search for solutions to intractable health problems.
Even as some physicians and researchers attempt to constrain medicine and medical
practice to a narrow, biological interpretation of health (one defined primarily as freedom
from disease, disability, pain, or death) and to make doctors into scientists, others are
advocating the extension of the concept of health and the inclusion of alternative forms of
knowledge—some of them derived from patient narratives—that, while messy and not easily quantifiable, are nonetheless critical when treating *people* and not just organisms or diseases. In a system that treats the person holistically and not just the illness or the body, patients' ideas of illness and health are considered on a par with physicians' (Henderson et al. 1997, 3). Medicine conceived in this way treats both the biophysical body and the person: health is still about achieving and maintaining certain biophysical structures, functions, and processes but the overriding goal is to maintain the person, and this goal opens the door to all manner of different interpretations of health. This, of course, begins to sound more like the WHO definition of health.

According to the World Health Organization, "health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Other contemporary definitions of health include all of these aspects in some form or another, but sometimes with significant differences. For example, Dr. Eric Cassell, Clinical Professor of Public Health at Cornell University Medical College, suggests that new definitions of health have arisen that emphasize the "ability of persons to reach social, emotional, and economic goals despite illness, impairment, and functional limitations" (Cassell 1997, 18). These reconceptualizations are, he says, based upon an "ecological theory" of health in which illness is seen as "arising from disturbances in the biological, psychological, and social relationships of individuals with themselves and others" (Cassell 1997, 18-19). The WHO definition and Cassell's formulation are not exactly the same: in fact, they are quite different in at least one key aspect: Cassell's formulation...
implies that illness, impairment, and functional limitations are not "unhealthy" per se unless they interfere with one's social, emotional, and economic goals, whereas the WHO definition considers health to be a matter not only of freedom from disease/infirmity, but also a state of complete mental, physical and social well-being.) Despite the radical differences, the one feature they do share is that health is not solely a matter of biophysicality. and in at least one case, a person may be deemed healthy despite the presence of "illness, impairment, or functional limitations." Clearly, we are well beyond the boundaries of what biomedical science can hope to achieve, and well beyond the conception of health as a condition of the body. Thus, we either must retreat from the broader definition of health. or we must accept that science alone is inadequate to the task of achieving health. and maybe even to the task of "alleviating pain, preventing disability, and postponing death." Since this broader definition of health takes the person rather than the body as its focus. and since people tend to experience themselves as persons rather than only as bodies. advocates of the "medicine as a social science/health as a psychosocial phenomenon" view suggest that it is more reasonable to accept the limitations of scientific medicine (some of which are inherent, others of which are due to social. economic. ethical. and political institutions) and make up for its deficiencies in promoting health by including other knowledge frameworks within the health discourse. This broader approach is also supported by the earlier observation that the reductionist approach to diagnosing and treating many chronic conditions (the "single disease - single risk factor" approach that has fueled much of scientific medical advancement in the past
(Wilkinson 1993, 2) is yielding somewhat less spectacular results (even with the breakthroughs in bio- or gene-technology) in treating chronic, life-long conditions.

In the nineteenth century, scientific medicine was seen as an antidote to social ills caused by industrialization (Henderson et al 1997, ix; Porter 1999), but it was seen as a social science not just a biophysical one (Virchow, in Henderson et al. 1997, ix). Today, as we saw above, many prefer to think of medicine as a bioscience. But sociologists, etc. argue that because “biomedicine is produced, learned, and practiced” in a cultural context we must learn to “understand health, illness, and medical practice as both product and producer of larger social and cultural domains” (Henderson et al 1997, 6, 7). As we shall see, the object or focus of biomedicine (the person and even the body) is also “produced, learned, and practiced” in a network of cultural and biophysical interrelations. There are several important points here. First, biology, like ecology or any other logos that is produced in the pursuit of scientia is a conceptual framework—a product of the human mind—used to make sense of the sensory data that bombard us. Second, categories of illness, like those of health, are also thought categories that change over time and space (this is not to say that health and illness are only figments of the mind, but that the categories we use to designate and know of them are of the mind) (Henderson et al. 1997, 8). And third, health is an ineluctably complex and normative concept that brings into play a variety of critical frameworks—many of which are non-scientific and whose “information” is difficult, if not impossible to quantify and/or reconcile with modern medical theory and practice. For medical sociologists, as well as for many physicians and
patients, illness and health occur in particular people, not just bodies, people that live in particular times and places that demand different sorts of structures, functions, and interactions of the persons that live within them. With this way of thinking, there is no such thing as an objective disease or an objective health; one cannot think of health or disease in the abstract since in all cases they must be instantiated in the flesh of a living being in order to be manifest. Definitions of health that arise out of this new way of thinking emphasize “the ability of persons to reach social, emotional, and economic goals despite illness, impairment, and functional limitations” (Cassell 1997. 18). Health, then, is not an “ideal state of well-being, achieved through the complete elimination of disease. but ... a modus vivendi enabling imperfect men to achieve a rewarding and not too painful existence while they cope with an imperfect world. In this light, health cannot be defined in the absolute, because different persons expect such different things from life (Dubos 1968. 88). In other words, health is understood as “ecological” or even “ecosystemic” involving as it does an intricate and inextricable interaction between body, mind, and environment, between the symbolic and the biophysical. Thus, for these people medicine is not an objective practice with an objectively determined objective and a value neutral. “Formulaic” means of achieving that objective, but a situated discourse and a practice embedded within a complex biological and symbolic (cultural) matrix that practices upon humans beings who are themselves embedded within biological and cultural matrices of their own. Understanding disease, like understanding health, becomes an interdisciplinary endeavor in which there is room for the specialist with highly esoteric

24 Dr. Donald Seldin (in Henderson et al 1997) rejects this broad idea of health because it tends to equate health with happiness.
knowledge (be it of philosophy, ethics, politics, psychology, or science), the generalist who is better able to see the many parts that contribute to the whole, and the lay-person who brings to the table him- or herself and the unique knowledge of what it is to be ill or well. Achieving a healthy life—whatever that turns out to be—requires all forms of knowledge.

One significant reason for the recent shift in understandings of health and the disillusionment with modern medicine is the increasing prevalence of chronic, life-long "diseases" or "biological derangements" that cannot be cured, and whose symptoms can only be "managed." In most instances, the biomedical approach works extraordinarily well for acute cases of injury or illness. But these cases make up only a fraction of the population who seeks medical attention or attempts self-care for some condition. A person who experiences a chronic "derangement" is not dying of a disease—at least not any more than the rest of us are dying of anything—but is instead living with it and through it. For this person, a state of health is inextricably linked to the presence of a biological derangement; they coexist. This coexistence creates considerable difficulties for the medical practitioner trained to treat the disease and not the person (Cassell 1997, 18). This one fact changes everything. The challenge is to develop conceptual frameworks or knowledge systems that enable patients—as people—to come to terms with their particular version of health within their cultural context, and that enable the physician and the patient together to develop a therapy or care regime that mitigates as many undesirable symptoms (from the patient’s perspective) as possible without
compromising the identity of the person the patient believes him or herself to be. In this instance, we are no longer treating the disease, but the person, a person who wishes to retain some of those basic features that they consider integral to their identity. If the physician is no longer treating a disease, but looking to help a person achieve health (as defined for example by the WHO) then a different approach may be needed.

In all cases, but particularly with respect to chronic health problems, the structural and cultural attributes of a society profoundly affect the practice of medicine and perceptions of health and illness (Shuval 1992, 171). In a book compiled for use in a course taught to first year medical students at the University of North Carolina School of Medicine, the editors/authors (professors and practitioners from a wide range of disciplines and professions) are intent upon introducing future doctors to the cultural, ethical, linguistic, philosophical, political, and economic roots of the science of medicine and our ideas of health. The authors contend that

modern science presumes the pursuit of knowledge can and should be conducted with a minimal bias. Yet medical knowledge and practice, like all knowledge and practice, are shaped by political, cultural, and economic forces, within which doctors’ ideas about disease—in fact, their very definitions of disease—depend on the role science plays in particular cultures, as well as on the culture of science. … [D]iseases are not immutable; they are shaped by person, time, and place, and are identified and endowed with significance only within social and cultural contexts (Henderson et al. 1997, 3-4).
Thus, Henderson et al. see several ways in which the practice of medicine is dictated and constrained by the historical, social context in which the patient lives and the physician practices. It is their belief (shared by many others) that medicine must become aware of its own situatedness if it is to successfully treat not only embodied diseases, but situated persons. To that end, the book is filled with case studies—employing a variety of theoretical and methodological techniques—, patient and physician narratives, and even poetry all of which demonstrate the ways in which lived health has transgressed the bounds of the narrow biophysical model that has dominated modern medicine for more than a century.

I will look first at their contention that medical knowledge, even scientific medical knowledge, is not unbiased or objective. In our society, we have learned to value "objectivity" and thus tend to seek out "unbiased" knowledge: it is to science and scientists that we attribute objectivity and neutrality (see Cassell's discussion of this on pp. 43-53 for an elaboration). (I discuss some of the critiques of this notion of objectivity in science in the section "On Doing Science in the Shadow of CP"). For our purposes, it is more important to note that neither physicians nor patients experience themselves or their health or diseases objectively and without bias. The medical community, and the physicians and health care workers who people that community, has long struggled with the imposed requirement of distance and neutrality that they are told should govern the patient-doctor relationship. The physician is thought to be more effective if he or she
avoids personal entanglement with the patient as a person and concerns him or herself only with the biophysical phenomena (Cassell 1997, 45-46). (This same logic is the partial impetus behind the FS’ efforts to avoid “ranger capture” by regularly moving their field personnel from forest to forest. It also has the effect of maintaining loyalty to the center—Washington, D.C.).) Not only is such “objectivity” now consider impossible, but it is increasingly clear that it may not be desirable, and may even hinder the quality of care that a physician can deliver and may hinder patient recovery. There are a variety of diagnostic “tools” that become available to the physician if he or she permits him or herself to acknowledge his or her own humanity, and to empathize—that is, to use his or her own embodied humanity as a diagnostic tool (Cassell 1997, 45). For better or worse, both physician and patient are situated beings. Thus, because the science of medicine, the scientists (physicians), and the objects (patients) are integrally informed by the political and cultural milieu in which they occur, the diseases themselves will also be culturally determined to some degree. In other words, not only is there a sociological component to the biological category of disease, but disease itself as disease is a category of thought that does not exist outside of the cultural system that invests it with meaning and significance. To diagnose a condition of “the real” (as in the body) as a disease or a derangement one must have a framework of thought that enables one to distinguish between different conditions, to identify one such condition as a disease, disability, derangement, or deviation and then one must have a normative framework that enables one to ascribe to this newly identified condition a value or meaning. It is the meaning and significance thus attributed to this condition that then determines the sorts of actions that
we might take either to eliminate it, mitigate its effects, ignore it, or celebrate it. What we find when we view health and disease in this way is that “the bodies we expect—and hope—to have,” like the people that we hope to be, the things we hope to do, “are imagined within cultural parameters” that have a profound impact on what we define as disease or deviation and what we expect medicine and health care providers to do (Henderson et al. 1997, 9).

In yet another example of the cultural nature of disease and health, the authors present numerous case studies, some conducted over the course of two decades, which detail the ways in which peoples’ lived histories—their material circumstances—determine not only the nature and course of their illness, but also determine the sorts of knowledges that they will bring to bear in coming to terms with that illness and the sorts of therapies that they will deem acceptable. People who become sick produce “narratives of illness,” “pathographies” (Ann Hunsaker Hawkins) that tell the story “about how and why they got sick, how and why they think they will get better or not, and what they feel when in pain or hope for in recovery” (Henderson et al. 1997, 61). Generally, these narrative accounts bear no resemblance to the accounts produced by doctors or by medical science. And in many instances, researchers find that the narratives indicate a “resistance to medical authority, [based on] an assertion of the validity of local knowledge and experience” that stands over against the medical knowledge of the professional care giver (Henderson et al. 1997, 12; Balshem in Henderson, 38-9). It is not that the patient does not understand the medical terminology, it is that the patient does not believe or accept the scientific
explanation of disease especially if it runs counter to their experience of the illness (Balshem. 38). Patients may produce “indigenous etiologies” of an illness often accompanied and supported by “indigenous models of health and disease” (Mathews, Lannin. and Mitchell in Henderson, 59, 44). (Forests, of course, cannot produce “indigenous etiologies” or “indigenous narratives of health.”) Treating these patients, if at all possible, can happen only when the physician learns to listen to and understand the patients’ account of his or her condition, how that account will affect the person’s acceptance or rejection of the biomedical model of their disease, and how that condition affects his or her life and hopes for a future.

For example, a study begun in 1988 by the Department of Surgery at the East Carolina University School of Medicine to determine the reasons why black women tended to seek medical help only in the advanced stages of breast cancer, is illustrative of this point. Researchers found that the conceptual frameworks (stories) erected and employed by the women did not include the possibility of recourse to modern medicine either for explanatory purposes or treatment options. The professional physician was the last resort. Their stories were acts of verbalization that functioned to organize the world and make sense of the new experience of illness, as well as to incorporate this illness or condition into their everyday lives. In other words, they were intent upon producing accounts of their condition that normalized it. These women are not concerned with what science tells them about the pathology of the cancer because such an account is irrelevant to their lived experience and often to the decisions they will make about treatment.
The act of verbalization implies an attempt not only to conceptualize the experience, but also to define it so that the real work of understanding can begin.

... The narratives ... draw on multiple sources of knowledge in order to come to terms with a diagnosis of advanced breast cancer—a biomedically-defined disease entity that they [the narrators] often refuse to acknowledge or accept. The narratives represent a debate over whose terms will be used to label and describe a disease” (Matthews, Lannin, and Mitchell in Henderson et al., 44).

These women are not wrong (especially given the cost of health care), any more than they are stupid. This is how they choose to organize their world, to explain what is happening to them, and to cope with impending impairment, disability, and/or death.

Similar narratives are produced by people who “suffer” from what in the past we called “disabilities” or “retardation.” What appears today to be an argument over semantics (differently-abled, impaired, disabled, challenged, special, etc.) is actually an attempt to rethink what it might mean to be “normal” or “healthy.” It could be that it is only within the dominant social, economic, ethical, and political arrangements—postulated as “normal”—that these peoples’ differences become disabilities, impairments, or derangements. One could imagine other arrangements that might produce entirely different types of “disabilities” or illnesses. Take for example “deaf culture’s” resistance to cochlear implants, technological devices that would enable the deaf to hear the spoken
word. In a PBS *News Hour* report, deaf students and professors at a university for the deaf overwhelmingly rejected the implants, citing them as threats not only to their culture, but to their very identity. They do not experience themselves as disabled, or even as different, but simply as they are, and they resent the implication that they need to be "fixed" in order to better fit the norms established by a speaking society (PBS, *The News Hour*, February 19, 2001).

It is not that people with various conditions are denying that they are different, and in many cases people even state outright that they have a disability or a disease or some sort of physical or mental limitation: that is, there is a real condition. But exactly what it is, what causes it, what it means to have it, the value we assign to it, and the sorts of things we will do with and/or about it are all culturally negotiated.

Echoing the conclusions of other researchers, Henderson *et al.* also note that "despite the power of the biomedical model of disease and the increasing specificity of molecular and genetic knowledge, social factors have always influenced the occurrence and course of most diseases" (Henderson *et al.* 1997, 4). In this assertion they are supported by a not inconsiderable body of literature that investigates the correlation between advances in biomedicine and advances in health. It is not a one-to-one correspondence (McKeown 1976, Wilkinson 1996, Porter 1999, Peterson 1997, Cassell 1997). Increases in knowledge do not necessarily translate into increases in health. The lack of correlation between bioscientific advances and health lead medical historians, sociologists,
anthropologists, and even doctors themselves to investigate other causal factors, to propose other definitions of health, and to seek out alternative treatments or therapies that may treat something other than the biophysical organism. Generally, they have found that “people’s social and economically structured life processes remain the most powerful influences on health in the modern world” (Wilkinson 1996,13). This insight, they contend, “turns the exploration of determinants of health into a social science” (Wilkinson 1996, 13). Medical science still plays an important role in so far as it can address the biological pathways involved in the production of disease and develop appropriate treatments that attack those pathways. But many who favor the “psychosocial pathway” understanding of health claim that further advances in understandings of health will only be made as a result of research into the social and economic organizations and institutions that produce perceptions of health, of self, and the body, as well as producing the material conditions thereof (Wilkinson, 13-14). In keeping with this reconceptualization of health, medical sociologists tend to focus “less on individuals’ biological state, behavior, and attitudes [and more] on issues of social organization, cultural assumptions, and political processes” in the belief that major gains to health are more likely to occur because of changes in social and political processes and institutions than from advances in biotechnology and scientific medicine (Shuval 1992, 1).

Then too, the social and economic conditions of people constrain the availability of treatment options and determine the likelihood that a person might choose to access them (Henderson et al., 4). Biomedical technology has produced a wide array of possible
"cures" or therapies, some of which are deemed socially unacceptable or at the very least problematic (genetic engineering, cloning, the use of tissue and cells from aborted fetuses, the use of animal organs for human transplants, the use of artificial organs to replace "defective" organic ones, etc.). Economics plays a critical role here as well: if the cost of the treatment or procedure is prohibitively high, it isn't used, no matter how good it is, or at least not by all of those who may need it. Additionally, physicians, HMO's, patient's, and hospital administrators question the therapeutic value of many high-cost medical interventions. Critics of escalating costs associated with high-tech treatments and interventions note that even though "spending on health care in the U.S. has long outstripped that of other industrialized nations. ... that spending has not resulted in healthier populations" as measured by things like life expectancy, infant mortality, etc. (Henderson et al., 4: Wilkinson 1996). In fact, physicians themselves consider many of the procedures and tests to be of limited or even dubious medical value, since we can do nothing with the information learned from them (Cassell, Good 1995. pers com. C. Carlson, M.D.). In many instances, expensive diagnostic and monitoring equipment does not significantly alter the course of the disease, the patients' life, or the physicians' treatment. It simply imparts knowledge about a biophysical condition that may or may not have any effect whatsoever on a person's health.

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25 The tests are nonetheless prescribed for several reasons, among them the "cover your ass" culture fostered by a litigious public and to pay the hefty cost of the machines.
So what does all this mean and where are we? We have learned several things about the "medicine as a social science/health as a cultural, psychological, biophysical phenomena" model. Under this model, science itself is a culturally determined (or at least informed) enterprise; health and disease are biophysical conditions and cultural (or symbolic) categories of thought (that is, health and disease appear to be complex phenomena that cannot be reduced to either culture or nature); and, the meaning and values of various health conditions are culturally negotiated. Additionally, the material circumstances—economic, social, political, technological, etc.—have profound impacts on the presence, course, quality, intensity, frequency, etc. of health and/or diseases. Then too, insofar as health or disease is a condition of a particular person (not just a body)—one with a history and with expectations of a future, a person who also has intimate knowledge of what it means to live as this well or ill person—the criteria by which we identify health and/or disease/impairment/derangement, etc. will have to be modified to include accounts other than those proposed by medical science and disinterested physicians. And finally, we must consider the value and meaning of the sorts of explanatory, diagnostic, and therapeutic options proffered by medical science, and compare them with options made available to people through other knowledge systems and health-care practices (Chinese herbal medicine, homeopathy, Ayurvedic medicine, chiropractic, naturopathy, aromatherapy, visualization, acupuncture and acupressure, etc.). Bioscience is ill-equipped to deal with any of the non-biophysical aspects of health, even if we limit ourselves to the narrow definition of health as a biophysical phenomena for the simple
reason that the biophysical state is intimately affected by and in turn affects the cultural and symbolic networks within which a person constructs his or her body and identity.

The critical point of departure in the “medicine as social science” paradigm then seems to hinge on the reconceptualization of the object or focus of medicine. Essentially, the broader understandings of health put forth by the social science/psychosocial model requires that we conceive of the healthy person as a complex whole, not just as a healthy body. We began with an examination of an expanded idea of health, and end by confronting the question of identity. What I mean is this: the object or focus of modern medicine’s gaze has been the body (or more properly, the disease in the body); the social science view of health shifts that focus from the body as object to the person as a participating subject in an ongoing construction or experience of health (Cassell 1997, Peterson 1997, Wright 1982, Henderson et al. 1997, Foucault). This changes the level of analysis which has the effect of producing “different pictures of the determinants of health”(Wilkinson 1996, 18; also cf. Foucault). Health so defined, encompasses the entirety of one’s being and existence, both through time and across space—physical as well as meta-physical. This shift necessitates, as one physician admits, a shift in the criteria of health and illness:

Patients are the ones who tell us that doctors do not communicate well, that they do not really listen, that they seem insensitive to personal needs and individual differences, that they often neglect the person in their zeal to pursue diagnostic
and treatment procedures. ... These complaints, and others, bespeak the public’s awareness of the grave deficiencies in the medical establishment’s knowledge of and ability to handle rationally the human experience of being ill.

A primary contributor to this gap between the medical profession and the public it is meant to serve is the fundamental difference between the patient’s criteria for health and well-being and those of the physician, a difference which exists even though culturally and intellectually both patient and physician share a cultural inheritance which includes the biomedical model of disease. For the patient, the ultimate criteria are psychosocial, even when the complaint is physical. Patient’s criteria have to do with how one feels. how one functions, how one relates with others: with the ability to love, to work, to struggle, to seek options and make choices. The physician, in contrast, while ostensibly attentive to such concerns, nonetheless is wont to consider such criteria as “merely subjective.” For the physician, the real criteria for status and outcome of health and disease are physical measures, for whose determination increasingly elegant and sensitive instruments are available (Engel 1979, 261).

In other words, “the interests of patients can be very different from physicians’ judgements of what is best for patients” (Henderson et al.,4). Essentially, then, what patients are requiring of doctors and medicine, is that they recognize that health and illness are ineluctably subjective, social experiences and that the patient’s criteria of health, their experiences thereof, their expectations for a future, in short, their identity,
must somehow be given due weight in the decision-making process—not as “ideas” or “opinions” or “feelings” but as knowledge.

The issue of illness or impairment and it's relationship to identity has always been problematic. Recall the euphemism for being ill: “I am not quite myself today.” Or Virginia Woolf’s provocative metaphor in which the experience of being ill is likened to being in an “undiscovered country.” The body, with which one’s identity is inextricably, intimately bound (but not limited), is suddenly foreign, unfamiliar, strange (Henderson et al. 61). One becomes a stranger to oneself when one is ill. Recall too, an even more provocative label: the person who is sick is an invalid. Illness makes one invalid, as in not valid, not sound. One cannot escape the connotative meanings: without force, strength, or power, indefensible, weak, deficient, void (OED 1475, 76). Ideas of health are also intimately tied to ideas of integrity; illness entails disintegration and the sense of losing control of one’s self can be profoundly disturbing (Cassell, in Henderson et al. 15). What are we to make of the meanings of these terms when applied to humans? Each conveys a sense of deviation from some predetermined norm that is somehow coincident with one’s identity: that norm is assigned a higher value (as “good” or “better” or more “self-like”) than the deviant state. While we might readily assent to the idea of acute illness or injury as a threat to or negation of our identity (defined as healthy by default), this experience or understanding of illness as impending disintegration, as altered or negated identity becomes problematic when we begin to look at long term—as in life long—conditions that are defined by mainstream medicine as “deranged.” How can we justify (without
becoming Nazis) calling invalid or unsound, deficient or void, the person whose whole
self—as a biophysical and a symbolic being— is this “not-healthy” condition? When
identity is intimately linked to health and health is defined by reference to a biophysical
or cultural norm, a departure from full health can signal a departure from identity and
from self.

Importantly, then, it is not only physicians or the medical establishment which is being
asked to come to (new) terms with health, but society and individuals as well. “From a
social perspective, illness entails ‘deviance’— that is, discrepancies in behavior and
appearance from what is expected or ‘normal’ (Henderson et al., 76). We are surrounded
by images of what we ought to be, of what our bodies and thoughts and behaviors ought
to look like. be or do; we construct ourselves and our ideas of self and health using the
images supplied. we measure our health against the objective measures established for us
by society and by the medical community, as well as by those internal measures that we
establish for ourselves: who and what we hope to be now and in the future. Failure to
achieve the norm can sometimes be as destructive to the person as the disease or
derangement itself.

It is impossible to offer a pat and simple “definition” of a person or of an identity; what is
clear though is that being a person, having an identity is more than just having a body.
and that one’s body is more than just an accident, a biophysical organism in which we
schlep around the planet, a housing unit for a soul or a mind. We have a body, but we also
have ideas of that body; in the same way, we have an identity and we have ideas of that
identity. The body and the identity (in large part inseparable—but not identical), like our ideas of each are the result of a complex interaction between multiple discourses and multiple biophysicalities. Control of the terms of the discourses on health (like medicine), that shape and construct both body and identity are critical; patient narratives are often ways of resisting “colonization” of the (sick) body by physicians and the medical institution. It is an attempt to maintain some sort of identity apart from that of being a “patient in a [sick] body,” especially when the disease or impairment is a life-long condition (Arthur Frank, in Henderson et al., 62).

Concluding remarks

There is an inherent tension between the conceptual models that medical science constructs to frame issues of health and those that we as persons develop based upon lived experiences thereof. The differences at the conceptual level (informed in part by those at the level of experience) lead to significant differences at the practical level and are based upon different foci (the biophysical body vs. the biophysical and cultural person). On the one hand, medicine interpreted as a science, seeks to closely limit the definition of health and disease to bodily phenomena because physicians recognize immediately that medical science is ill-equipped to deal with the more amorphous, ambiguous cultural aspects of “well-being” (which looks suspiciously like “happiness”) that are explicitly included in “ecological” theories of health. These ecological theories of health are themselves founded upon ecological theories of persons—i.e., persons as
"ecosystems" that are comprised not only of biotic and abiotic elements but also of symbolic elements). The narrower the definition of health, and the narrower the focus or object of health, the fewer the variables that go into "causing" any one particular condition, and the greater the illusion of physician certainty. Within its narrow bounds modern medicine has been undeniably successful: it has done remarkable things for the human body. On the other hand, even as the successes of modern medicine mount, there is a concomitant sense that advances in human health are not keeping pace; in other words, the science of medicine is advancing (along with the technologies), but health—even biophysical health—is not. Bodies are (arguably) kept in better condition (often this means treating or masking symptoms of chronic diseases that cannot be cured) and life is prolonged, but we would be disinclined, on the larger view of health, to say that this necessarily translates into healthier persons.

This sense that the biomedical model is somehow missing the boat is shared by the patient population as well as by a growing number of physicians: neither patients nor doctors are able to abstract themselves from the particularity of their "actually existing" selves or to reduce themselves to parts and pieces that can be dealt with in isolation (Cassell, Engel, Henderson). The bottom line is that the bodies we have and hope to have are shaped by nature as well as by our culture; that the criteria by which we judge health or disease are products of culture; that the conceptual frameworks of the sciences we bring to bear in investigating disease and health are culturally determined; that the incidence, frequency, and intensity of illnesses (spread across a population) are the results
of social, economic, political, ethical, etc. arrangements; that because we live in our bodies and because these bodies constrain (or conversely enable) our experience of life as actually living beings, our identity is deeply implicated in our ideas of health or illness; that because we identify ourselves with our bodies as well as with our and our culture’s ideas about them, health is a highly complex, qualitative, contingent, variable biophysical-psychosocial experience that we make sense of through symbolic or linguistic frameworks. The limitation of health to considerations of “biophysical derangement” fits well with the model of medicine as a science. It does not however, fit well with the human experience of health or of self or with a policy of improving health generally. The push to redefine health as a state of existence that happens sometimes in the midst of a whole host of “derangements” is rooted in an effort to assert the primacy of the person as a whole and not just a body. If one accepts the “ecosystemic” non-reductive version of person then one must also accept the ecological version of health. In other words, one must retreat from an exclusive focus on the biomedical model of health which then necessitates a retreat from the exclusive use of scientific methodology. Achieving or negotiating the health of persons, not just bodies, requires the inclusion of other discursive practices through which we make sense of and construct our social, political, moral, economic, and religious selves.
So what does all this have to do with forest health and with forestry (or ecosystem management) in general? In this section, I “reread” forest health through the refocused lens of medical discourse. As with the management of nature (or ecosystems), the management of the person (or human body) is hotly contested and has generated countless counter-narratives and conceptual frameworks that privilege different types of knowledge and ways of knowing. Again, the comparison is not meant to indicate some essential connection based upon similarities between nature and body, but only to suggest that the discursive traditions or conceptual frameworks designed to deal with each share certain values as well as institutional, ontological, and epistemological commitments.

With this qualification in mind, critiques of the modern medical discourse on health like the discourse itself, may offer new insights into forestry praxes, some of which may not yet be readily apparent in the burgeoning field of meta-forestry literature.

My enquiry into the discourse on health in the forestry and medical fields produced unexpected complications—contradictions even—and took me in surprising directions. The contradictions arise at different levels, the most striking being between ontology (what is) and epistemology (how we know it). The problem of language, and meaning, its slipperiness and ambiguity, adds yet another layer of complication to the entire enterprise; the gap between sign and referent, signifier and signified, the symbolic and
the real, mind and matter. And therein lies the real problem for both medicine and forestry: in both cases we are trying to find the words, the concepts, that make sense (so to speak...) of the experiences we have of/in the real so that we can intervene effectively in whatever it is that is going on out there (or in the case of the body, "in there.") What makes both forestry and medicine so interesting and so incredibly complex is that their object (forest or person) and their objective (health) straddle the divide between the real and the symbolic: they partake of both worlds simultaneously. What we say about each is absolutely critical because our words determine what we will do in or with each.

So what have we said about each? Simply put, forest managers wish to produce healthy forests or ecosystems. They wish to use science as the predominant conceptual framework for knowing both the object (forests) and the objective (forest health). Similarly, physicians wish to produce healthy bodies, and science is the preferred conceptual framework through which the object and the objective are identified and known. However, both forestry and medicine are confronting challenges on multiple fronts: challenges posed by new broader understandings of their objects—ecosystems, rather than just “cutting units” trees, or particular wildlife species, persons, rather than just bodies, organs, or tissues; challenges posed by the ineluctably normative, and thus perhaps ultimately non-scientific, character of “health;” challenges posed by competing theories of knowledge (theories that include critiques of science) and of language that have profoundly impacted conceptions of self and other; and finally, challenges posed by the dispersion of knowledge throughout society via a variety of technologies and media.
The focus of both forest management and medicine shifts from a well-delimited, strictly biophysical (albeit ideal and abstract) entity that dutifully follows the "laws of nature," to an ambiguous, unbounded, "cybernetic organism" that exists (or is constituted) at the always shifting nexus of countless biophysical and symbolic networks. As we have seen, there are several provocative complications that arise from this "ecosystemic" understanding of self and forests, the first of which is that a broadening of the identity of the object or focus of the practice necessitates a more ecological understanding of health. But health itself also appears to require the explicit establishment and articulation of norms, or prescriptions. And since, especially in the case of forest ecosystems, absolutely no structural, functional, or relational limitations are identified (that is, an ecosystem has no identity from which it might be perceived to "deviate"), then the definition of a healthy forest becomes an almost exclusively symbolic enterprise that is then mapped back out on the real and "tested." Peoples' needs and desires are no longer adjuncts, qualifiers, or secondary to some primary or a priori objective "health;" instead, these human desires — articulated in terms like capability, productivity, renewal, robustness, resiliency—are the essence of forest health. These terms are prescriptive not descriptive. Thought of in this way, the definition of forest health is looking more like those conceived under the "social science" version of human health....and we have seen that if one accepts these "ecological" definitions of health as more in keeping with our experience thereof, then one must also accede to the limitations of the scientific methodology and approach and accept as necessary the admission of other knowledge frameworks. The exclusive reliance on science (be it of the social or the natural version) is also limited by the...
reconceptualization of the object itself: scientific methodology does not deal well with large complex wholes, nor with ambiguity at the level of language or with the fuzziness of the “out there.”

The object

We begin with a reexamination of the object or focus of forest management in light of a similar refocusing which occurred in medicine. The USFS made a deliberate choice to reconceptualize the unit of concern to an ecosystem: the appearances and the failure to achieve certain management goals, among other things, seem to warrant the change. Our focus is now on “a unit comprising interacting organisms considered together with their environment” (USDA FS/FEMAT 1993, IX-10); “all the organisms in a given place interacting with their nonliving environment” (USDA FS 1994. Vol: II, 369); or “an arrangement of living and non-living things and the forces that move among them” (USDA FS 2000. www.fs.fed.us/land/emterms.html). Clearly, at the level of ontology, we are given carte blanche, so to speak, in conceptualizing ecosystems; and herein lies the problem. Basically, we have a unit of concern that includes everything: all processes, all structures, all things, all happenings or events. All is ecosystemic, even, we might venture to speculate, the non-systemic, the chaotic and unpredictable, the pathogenic and pathological, the much maligned disturbance and diseased.... As noted earlier, it is of course, hard to establish an identity if there is nothing with which something is non-identical: there is no outside, no other, no difference, no deference (as in delayed in time) from which to get a perspective on the thing itself. And if there is no identity, there is no
“normal state” from which something might deviate, no predetermined course from which it might be deterred, no disturbance that is not essential to the system. In other words, we would not be able to say of an ecosystem that it is “not itself.”

But there are other potential interpretations that come along with this broad idea of the object. Land managers have candidly admitted that ecosystems include humans and human artifacts—things like cities, farms, ranches, etc. But if ecosystems include humans and human artifacts, we might venture to speculate that they will also include human systems of knowledge; cultural systems; social, economic, and political institutions and systems; even symbolic and linguistic systems. This of course complicates things tremendously. Following this line of thinking, everything becomes ecosystemic and we run the risk of the “ecologization” of everyday life and thought. One could offer as evidence of this phenomenon the dispersion of ecology throughout every facet of Western culture. The prefix “eco-” is affixed to every conceivable root, and the term “ecology” seems sufficiently ambiguous that it can be conjoined to pretty much any sort of endeavor or discipline (see Ecology list on next page). Not only has the Forest Service lost control of the ecosystem signifier (or conversely, I suppose, one could say that it has actually sought to gain control of the world by virtue of having left the ecosystem term undefined) but it has lost control of the discourse (and perhaps the practice?) of ecology.
Ecology list

deep ecology
radical ecology
social ecology
political ecology
human ecology
landscape ecology
industrial ecology
transpersonal ecology
evolutionary ecology
natural ecology
cultural ecology
feminist ecology
ecosystem ecology
population ecology
community ecology
forest ecology
plant ecology
plant ecophysiology
avian ecology
(and all those other "ecological sciences....")

ecological physics
environmental ecology
ecology of hope
ecology of mind
ecology of spirit
liberation ecologies
ecological geology
ecological chemistry
centralized ecological planning
global ecological zoning

ecological self
ecological consciousness
ecological humanism
ecological feminism
ecological economics
eco(logical) municipality
ecological science
ecological sensibility
ecological literacy
ecological history
ecochallenge
ecosocialism
ecology
ecopolitics
ecotopia
ecothon
ecotourism
ecoterrorism
ecofeminism
ecosophy
ecocosm
ecofascism
ecocentrism
ecosophy
ecosystem
ecotage
ecovillage
ecopsychology
economics
ecocide
ecofreak
The ecologization of everyday life takes the Forest Service well beyond the forest and foresters well beyond the realm of their present expertise. This notion sounds somewhat farfetched but physicians and other individuals involved in the medical field have noted, not always positively, what they call the increasing medicalization of everyday life (Seldin, Cassell, Wright, Ben-Sira, etc.). By this they mean that there is a growing tendency to interpret a host of widely varied biophysical and psychosocial conditions as medical conditions with medical solutions. If you doubt the veracity of this characterization, spend an evening cruising channels for commercials; you will be astounded by the number of advertisements for drugs that treat everything from shyness and obesity to impotence and unhappiness. You are, of course, advised to "Ask your doctor..." But it goes beyond even this: the dispersion of the medical discourse and medical terminology throughout popular culture, via books, journals, popular magazines, TV, the internet (index medicus, webmd, etc.), enables and encourages people to frame perceived problems or conditions in medical terminology and to seek solutions within the medical field. This trend is supported in part by the tendency to attribute all facets of humanity to the gene and the genetic code, but also by the extension of the meaning of health to all aspects of being, as is done with the WHO definition of health. The trend toward medicalization is thus supported by two complementary, if contradictory moves: the reduction of all aspects of human life to the body (in the ultimate form of the gene, the code) and the simultaneous extension of the body (again in the form of the gene) to all aspects of life or personhood. Everything about the person is a matter for medicine. This.
as Seldin sees it, is hugely problematic and is precisely why he argues against the broader understanding of health. But I am getting ahead of myself.

There is one other point with respect to identity that I wish to investigate. In issues of human health, the physician has the advantage (or some might call it a disadvantage) of being able to interrogate the referent and have it answer in a language the physician understands. (We are speaking here not of a strict interrogation of the body, which can answer only in the words we supply, and always with tremendous ambiguity, but of the interrogation of the person in the body who can report experiences and feelings to which the physician can relate because he or she is also embodied.) With respect to humans, we can frame questions of health in terms of identity and departures there from because a person can tell the physician who they are, or who they believe themselves to be, or who they wish to be. This of course, does not always mean that there are clear solutions—in fact, more often than not the patient’s understandings of his or her identity and the patient’s understanding of the impacts of various conditions upon that identity tend to make health care immeasurably complex—but at least the physician as a human being him or herself has some frame of reference by which to evaluate the meanings of the signs. Foresters interrogating forests or ecosystems have no such luxury— unless we invent or assign to the forest an identity of our own making, or recognize a different mode of responding or knowing. What we know of the object of concern is inferred; we have experiences and sensations the meanings of which we then interpret based upon a value scale that we ourselves invent with reference to ourselves.
Yet another possible outcome of the ecologization of everyday life, one that adds a whole new dimension, we could conceive of a situation in which foresters are forced into the realm of medicine, doctors into ecology, and both into society because there are people whose identities are intimately informed by—even inextricably intertwined with—forests or ecosystems. Not, actually, a very farfetched notion if one recalls that a person is a physical, social, and psychological being and that a forest (or ecosystem) is a social, symbolic, and physical “unit” or “arrangement.” What then to do when the identity of a person—who constitutes him-or herself through a myriad different, sometimes conflicting, discursive practices—is threatened by particular land management practices?

It isn’t just that his or her livelihood is threatened—the material circumstances, or that the person’s body is threatened (by air quality, holes in the ozone, water quality, etc.), or even that his or her sense of aesthetics or ethics is compromised: it is that the person’s identity, as a person, is compromised in some important way by that management activity. (This “identification” with or essential “relationship” to the out there is reminiscent of (though not necessarily coincident with) the ontology of some deep ecologists, ecofeminists, and others who conceive of identity as something that doesn’t stop at the skin or even at the end of culture, but extends all the way to the ends of the universe). We can even retreat from this metaphysical conception of the self and instead think on more direct, material terms: the logger, the miner, the hiker, the river guide, the naturalist, the farmer, the watcher of Nature all constitute themselves in relation to some idea of the “out there”—some more essentially than others (recall Roderick Nash’s suggestion that American identity is inextricably bound up with the landscape in his influential book Wilderness.
And if we accept that human health is as the WHO and others argue it is, then human health is deeply implicated in forest health for the simple reason that human identity is in some way, at some level, intimately tied to that of the forest. The obvious problem is that as humans we each tend to construct, to the extent we are able, a unique identity, something that makes us non-identical with others, and this means that our identities may be tied to radically different ideas of what a forest is or does.

Understanding ecosystems broadly, like understanding persons broadly seems to be the "right" thing to do. We sense that there is a problem when we abstract from the particular material, historic, or symbolic circumstances or when we reduce a complex organism, system, or situation to its simplest parts: we wish to deal, in so far as possible, in complex wholes, because we tend to live in complex wholes. At the same time, our minds and our language and our knowledge systems, to say nothing of our social, economic, and political institutions, don't seem well equipped to deal in undifferentiated, unmediated "ecosystemic" wholes: we tend to break them down into manageable parts. Where do we draw the lines, and more importantly, how do we justify having drawn them at that place rather than another? These are the very difficult questions that science alone cannot answer and these are precisely the questions that the USFS has implicitly answered for itself, without benefit of public input, and upon which the USFS has built its forest health discourse.
The objective

The USFS defines forest health in several different ways, as does the medical community. We have noted that in both instances, but more so in forestry than in medicine, conflicts arise when we move from our understandings of the object to our definitions of the objective—health. Medical practitioners and philosophers are acutely aware that if they are going to expand the concept of what it means to be human, then they are going to have to expand the concept of health (or vice versa…). They also realize that by doing so they have catapulted themselves right out of the deceptively transparent world of natural science and into the quagmire of culture and the symbolic. Foresters have not fully grasped the nature of their dilemma, nor noticed (at least not publicly) that they have glossed over some fundamental issues, like how one gets from an ecosystem to a healthy ecosystem without committing inconceivable acts of violence that while perhaps necessary, are neither sanctioned nor legitimated by the ecosystem concept or by the thing we are referring to when we use the word. Recall that, according to the USFS, forest health is

a condition wherein a forest has the capacity across the landscape for renewal, for recovery from a wide range of disturbances, and for retention of its ecological resiliency while meeting current and future needs of people for desired levels of values, uses, products, and services (emphasis added, USDA FS 1997).

Or if you prefer, forest health is
a measure of the robustness of forest ecosystems. Aspects of forest health include biological diversity; soil, air, and water productivity; natural disturbances; and the capacity of the forest to provide a sustaining flow of goods and services for people (emphasis added, USDA FS National HQ web site).

Now recall our definitions of an ecosystem. It is impossible to get from an ecosystem to ecosystem health without the intervention of human desires. There is nothing in our ecosystem concept that indicates it is essentially resilient, diverse, productive, or robust; no indication that it must be able to recover or renew itself, that it must retain any particular thing, that it must have some capacity, in and of itself in order to be an ecosystem: that is, in order to have an identity.

Lost or buried within the apparently objective signifiers of health and disease are the critical value judgements that define one thing or state or process as valuable and desirable and healthful—as in contributing to or sustaining the identity of a forest ecosystem, and another as valueless (or destructive of value), undesirable, and unhealthful. One might wonder why “these things” (and not “those things”) are considered indicators of health (or illness) and why one state, process, structure, or function is healthy (and by association, desirable) and another not. By what criteria are the criteria by which health is judged chosen? Devastation, catastrophe, deterioration, disease, malaise, decline, pests, tragedy, mortality, morbidity, unproductive, infestation,
vulnerability...all of these terms are used frequently in the FS discourse on health and all of them carry a negative value; they are all meant to indicate undesirable occurrences or states or organisms. Using these terms rather than others betrays an implied commitment to some already identified preferred state or norm from which things have deviated. The words are used deliberately, but without much explicit analysis of why the USFS (or we as a society) use them. Why, for example, do we use these terms to refer to certain insects (like bark beetles) and not to ponderosa pine trees? We speak of pest infestation, even of Douglas fir infestation, but rarely if ever of Ponderosa pine infestation. What is the difference between a population that is flourishing and one that constitutes an infestation? Why are some species considered pathogenic and others necessary and desirable? (Recall the socially unacceptable metaphor employed by some environmentalists of likening humans to roaches or rats and our population as constituting an infestation...) And even more perplexing, when does one become the other? Why are fires no longer the "'enemy.'" but the ecological 'friend' of a healthy, vital forested ecosystem" (USDA FS 1991. IV-11) and when does a "friendly" fire become an "enemy"? Why is a fire or wind event that levels thousands of acres of forest, a water event that carries away tons of soil and reshapes the landscape, considered a catastrophe, a "disturbance," rather than something that just happens, one of those "forces that moves among" the biotic and abiotic "arrangements." neither positive nor negative? Why do we speak of catastrophic fires or devastating winds or ravaging pests? Why are these events or states considered destructive (abnormal) rather than "normal" or as part and parcel of the ecosystem? (cf. Holling (1992). and in Clark and Munn (1986)). (Cassell contends, for example, that "an
illness is not an event, but part of a process" (1997, 37). And why do we cast our own actions against these events in terms of prevention, protection, restoration?

At this point it is worth quoting at length a passage from the *Blue Mountains Forest Health Report* because it speaks to exactly this issue.

It is important to note that not all damage or mortality resulting from insect infestations is bad, nor is it always undesirable. Insects play a key role in providing natural diversity in riparian areas and old-growth stands through the creation of dead and dying woody material which serves to enhance site productivity and promote species diversity and richness by providing new habitats for animals. Insects also help to increase the standing dead tree component of these stands which are important as habitat for snag-dependent wildlife species. Similarly, streams and creeks are enhanced by the formation of new pools, ripples, and habitat for aquatic vertebrate and invertebrate species as insect-killed trees eventually fall over into these water courses. The level of insect-related tree mortality which occurs under these circumstances is both acceptable and desirable, and in fact is a good indicator (and progenitor) of healthy riparian and old growth ecosystems.

On the other hand, concern regarding insects arises when they increase to outbreak numbers, or when stands have developed to a state in which they are predisposed

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to potentially catastrophic insect damage. Both situations significantly threaten our ability to manage the resource in a way that is consistent with the Forest Plans" (USDA FS 1991, II-1).

The passage indicates that the Forest Service believes that forest health is in some essential way connected to the presence of disease and death, that is to "unhealth." The problem is that we move from the good, the desirable, the acceptable, the healthy level of disease to the bad, the catastrophic, the threatening, the outbreak, and the unhealthy without benefit of an objective mechanism or a marker that might enable us to distinguish between the two. How do we know when we cross the line?

Forest health in essence is defined by those conditions that make life (as we humans know it) possible. That is, we would consider as "unhealthy" any forest (or ecosystem) condition that presents a threat to the continued existence of the human race: a judgement of "forest health" is motivated solely by human self-interest, not that of the forest itself. Other conditions, conditions that exist beyond what scientists call ecological limits, may or may not permit of human existence, and would at the very least change our existence in ways we cannot predict. Ecological limits are really knowledge (and perhaps desire?) limits: when our conceptual system (the ecosystem) exceeds the boundaries we establish for it, when it goes beyond the categorical restraints we posit (those things that make it systematic), we can no longer hope to predict or control its trajectory because we cannot think what is beyond thought. The reflexive and backward looking tenor of "health" is
indicative of our fear of the unknown that is the future, our resistance to mortality (be it our own or that of nature). It is an implicit rejection of the irreducible ignorance that lies at the limits of knowledge, it is what drives the collection of data, all of which is always already obsolete—markers of a never to be returned to historical state—before it is even turned into information or knowledge.

The comparison to ideas of human health from the social science perspective is instructive, even if it does not necessarily resolve anything. Recall that in one case being healthy meant that one enjoyed a “state of complete physical, mental, and social well-being” (not merely the absence of disease or infirmity) and that in another, health was conceived of as the “ability … to reach social, emotional, and economic goals despite illness, impairment, or functional limitations.” The health described in the first definition is really more of an ideal, and a highly subjective and ambiguous one at that. The second definition, however, seems much more workable, and to coincide more closely with how it is that we ourselves might experience health. Though considerably less ideal than the one offered by the WHO, it is equally subjective (or situated) and highly ambiguous. As noted above, what is most provocative about this idea of health is that it does not by definition exclude those things or conditions that we have traditionally learned to consider as attributes or signs of “ill health.” It normalizes all those aspects, states, or qualities that we have learned to think of as deviant; it suggests that disease, dysfunction, and impairment are not signs of ill health in and of themselves, but are only considered as detracting from health when they prevent a person from realizing some goal. This means
that one cannot establish fully objective criteria for evaluating human health because the impact of particular diseases, impairments, or dysfunctions is differently assimilated by each person depending upon their goals, their hopes and expectations, and how closely these goals are tied to their identity. A discourse developed around this definition of health would have to confront the difficult questions about how it is that we continue to live as healthy, goal driven people in the presence of those conditions that we label as sickness, disease, impairment, or derangement. Under this rubric, one gets to entertain, for example, the presently politically incorrect thought that aging and death are part of, even the essence of, a "healthy" life; to ask the question, "When is dying the best way to live?"

These questions are even more central—and their answers even less obvious—in the discourse of forest health because we are dealing with countless organisms that will live either as "diseases" themselves or with disease, organisms that will age and die, and do so in environments that will be disturbing and eventful. Unlike in the case of human health in which we are concerned not only with population health (the health of the species), but also with the health of the individual, in forestry, too great a concern for the health of the individual can produce an unhealthy forest: "we have protected trees at the expense of the forest and its long term health" (USDA FS/Monnig and Byler, 1992). Both the passage from the Blue Mountains Report and the definition of health offered on the USFS National Headquarters web site (which includes natural disturbances as healthy).
internalize the contradiction, embrace the irreducible tension of the either-or, construct health in terms of its no-longer opposite "unhealth." What is most remarkable about these passages and definitions is that, having made the statement, the Forest Service then proceeds to identify, measure, analyze, and interpret baseline conditions of forest health as if they were somehow given. In other words, having said that insects, for example, can be good, healthy, they then list them under the category of "threats" to forest health as if doing so did not require overcoming a tremendous cognitive gulf.

In spite of Leopold’s wish to the contrary, we do not have a science of forest health; "art" intervenes at every stage in the process. The language we use to describe disease (like the term "disease" itself), is not scientific, at least not in the objective, value neutral sense that scientists generally prefer or require. Like health, our perception of disease as disease is always already colored by value judgments: decline, catastrophe, disturbance, etc. these are not objective states; they are weighted concepts or categories of thought that we use to interpret designated external conditions, signifiers whose meanings and values are constantly renegotiated within the social contexts and discursive networks within which they are circulated and reified. The value of the terms is relational, just as the conditions signified are relational (i.e., to say something is damaged presumes some prior condition that was defined as undamaged). The criteria we use to distinguish between a pest and an insect, a flourishing population and an infestation, a function and a catastrophe, a process

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24 It is not politically correct, but one could conceivably argue that too much concern for individual human health has in fact contributed to a decrease in population health (depending on how you define health, of course) and this in turn has led to decreases in individual health.
and a disturbance are mutable, subject to change across time and space, and are rarely exhausted by an exclusively scientific epistemology. Neither, however, are they reducible to mere mental constructs. But he who gets to decide what to call the item (flourishing or infestation) controls the discourse—at least temporarily!

The mere presence or absence of a particular entity or phenomena is in and of itself not an indicator of health or disease. Even a measurement of the frequency or intensity of an event or an entity is not sufficient to differentiate between disease or health. Western dwarf mistletoe and rust red stringy rot are not objectively speaking, diseases; they are distinguishable differences from the not-mistletoe and the not-rust red stringy rot, but they only become diseases when they get in the way of what we want the forest to look like or how we want an ecosystem to perform. Disease and/or health are time and place specific, but are also fully dependent upon human desires: they are contingent, emergent, relational, situated, particular, and premised upon some (often unstated) notion of teleology. An ecosystem is only unhealthy if it cannot reach some state or goal—one that is not essential or integral to the ecosystem itself (or at least not in the way the FS has presently defined an ecosystem....) but only to the ideas and desires that humans have of or for that ecosystem.

One begins to get the uncomfortable feeling that pursuing a program designed to promote ecosystem health might require acts of violence: we will be required to make value-laden distinctions where none seem to exist at the ontological level—or the presumed level of
the real. We will have to exclude, to eradicate, to manipulate, to perform some sort of
"-ectomy," in order to produce a "healthy" ecosystem. Health is an undeniably normative
term in both human medicine and forestry; we choose those conditions or states or
functions that we like and we define them as healthy. The rest we define as aberrant,
deviant, unhealthy. This is what frightens doctors like Seldin who believe that if
conceived of in this way, and extended to all aspects of human life, health as a norm can
lead to medically sanctioned fascism; and it is what frightens humanists when they accuse
environmentalists of eco-fascism (Zimmerman 1994). This is probably the impetus
behind appending the human needs and desires clause to the "objective" biophysical
clause in health definition. But if it is true that health is a normative (not just an
objective) concept from the outset, then it becomes a matter of competing desires, or if
you prefer competing identities, from the very beginning; that is, it's turtles all the way
down.27 Unless the Forest Service can produce an unambiguous and incontestable
definition of an ecosystem and can irrevocably bind that definition (those words) to some
specific condition in the real that will sanction and validate that norm as an objectively
healthy state, then it, like the rest of us, will be forced to play language games.
We have now encountered problems at multiple levels: it seems our object (the forest) as
presently defined, gives us no objective grounds for establishing "health." Furthermore,
our definition of health, despite grammatical gymnastics to make it appear otherwise, is
suspiciously dependent upon unexamined ideas (human ideas) of what a forest ought to

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27 I don't know the origins of the anecdote, but as the story goes, "it's turtles all the way down" is the
answer given by an Indian (?) woman to the query of "what holds the world up?" She said the world sat on
the back of a great turtle. And what does that turtle stand upon? Upon the back of another turtle. And that
one? It's turtles all the way down. The deeper you look, you just get more of the same.
be or do—that is, it begins to look as though we have framed forest health in terms of human desires, not appended them afterwards as qualifiers. Along the way we have also encountered other intractable difficulties, those of knowledge, language, and meaning. In forestry, as in medicine, we have chosen the “out there” as our focus of concern, yet we can only know it through our logoi, our conceptual structures, which are, for better or worse, linguistically bound and determined. As concrete actually existing beings we live in “the flux,” “the real.” But as knowing beings, we live in the symbolic; we know of ourselves as selves and of the real as the other by virtue of concepts that enable us to make sense of the barrage of sensory perceptions with which we are bombarded at every moment: that is, by “the posterior reconstruction of existence by the process of conceptualization” (Einstein 1994, 47). Science and the natural sciences in particular are but one of the conceptual structures that we use to make sense of, to interpret “our interactions with the flux” not with the flux itself (Hayles in Soulé 1995, 53). This is a critical point of departure for those who do science in the shadow of continental philosophy; it is not clear, however, that forestry has fully understood or internalized the impact of this alternative conceptualization of what we do when we do science.

On Doing Science in the Shadow of CP

In a correspondence conducted in 1932 at the suggestion of the League of Nations between Albert Einstein and Sigmund Freud, Freud defends the theoretical nature of his work (psychoanalysis) with this argument:
It may perhaps seem to you as though our theories are a kind of mythology and, in
the present case [an examination of the causes of war], not even an agreeable one.
But does not every science come in the end to a kind of mythology like this?
Cannot the same be said today of your own Physics? (Freud, 15)

The question for us is, at least in part, "Can it be said of science that it does, in the end,
come a kind of mythology?" Or, alternatively, can it be said of science that it does not
carry within it the terms or conditions of its own legitimation? Does it require an outside
source, a narrative account, of how and why it is that we accept its findings and methods
as knowledge? To these questions, scientists themselves as well as philosophers of
science and more recently critical theorists, anthropologists, sociologists, and multi-
culturalists have responded yes. The works of Thomas Kuhn, Albert Einstein, Karl
Popper, David Bohm, Stuart Kauffman, Paul Feyerabend, W.V.O. Quine, Jean-Francois
Lyotard, Godel, Michael Polanyi, and Richard Rorty (to name but a very few) all engage
with this problem of legitimation, and invariably it is admitted that one must go beyond
or outside of science itself, to culture or language or religion or some account of
psychology or cognition or perception, to seek the explanation for science itself.

I will not here investigate to any depth the intricacies and subtleties of the science
question. For my purposes, I am interested only in briefly stating the arguments that
support the contention that science is not an uncontested or unproblematic methodology
or framework that the FS or the medical establishment can use as an ultimate and unassailable defense against criticism.

The “fate” of science and the role of scientific knowledge in a post modern world has been thoroughly evaluated and critiqued (and those evaluations and critiques have themselves been evaluated and critiqued...) by numerous scholars and practitioners in numerous fields, including the sciences themselves. In addition to the “classic” texts mentioned above there are contemporary texts that engage with the problem of science, language, gender, race, power, knowledge, etc.: Levins and Lewontin in biology and ecology; Donna Haraway, Sandra Harding, and other feminists and ecofeminists in biology and medicine; Ilya Prigogine and Isabelle Stengers in physics and chemistry. Tom Sorrell, N. Kathryn Hayles, Evelyn Fox Keller, Will Wright, Robert Almeder, Larry Laudin, A.F. Chalmers, J. Marchessault et al., etc. Therefore, I will sketch out only the bare bones of how some of the insights of CP into knowledge, language and the self affect the modern scientific project as they apply to this particular project. For the most part, I am interested in only two specific points: first, how the redefinition of the object makes applying rigorous scientific methodology virtually impossible; and second, how the new understanding of the ultimately normative or prescriptive character of the objective (forest health) suggested above pushes back the point at which we may legitimately invoke the name of science in defense of any one particular analysis or evaluation of forest conditions.
As discussed above in Chapter Two, continental philosophy rejects the idea of an all-knowing subject that can stand outside of not only his or her own body, but outside of his or her own time and place, culture and history. Generally, the subject in continental philosophy is inescapably embodied, historical, and situated: we are, at least in part, a product of our culture and our language. This subject is never fully present (omnipresent)—either to or for him or herself, or to or for the flux—; it is always emergent, differed and deferred because it does not experience itself in the real (without recourse to symbolic structures), but only experiences itself experiencing itself as a "self."

The same is true for how it relates to the real. Because presence is not perfect (transparent), knowledge is not perfect (omniscient); like the knowing subject knowledge is partial, contingent, fissured, fragmented, and mediated; it is historically and culturally dependent, just as the knowing subject is. Knowledge—even scientific knowledge—is inextricably bound to language, and to logos, to the organizing conceptual frameworks of the human mind. But words are slippery; meaning is not fixed and cannot be controlled because every discourse is fissured, open: there is no obligatory or temporally stable connection between the words we use and the meanings conveyed, no necessary connection between the images and meanings produced and circulated in the symbolic and their referents in the real. "What we know" then, seems to tell us at least as much about how our minds work (which we can’t know directly...), about how our sensory organs work, about where and what we are in time and space, about our relations to other humans, and about how our language works (grammar, syntax, logic) as about what is "out there." Because we are embodied, however, we are saved from the "aristocratic
illusion" of pure thought, of abstraction, or radical constructivism; and, because we think, we are (supposedly) saved from the "the plebian illusion of naïve realism, according to which things 'are' as they are perceived by us through our senses" (Einstein 1994, 21). This latter "illusion," however, "dominates the daily life of men and of animals; it is also the point of departure in all of the sciences, especially of the natural sciences" (emphasis added. Einstein 1994, 21). Despite the convenience of this "short cut" (assumed transparency), it is perhaps time to change this point of departure.

We can say of science that it yields invaluable, useful, and unique, if contingent and partial, insights into what we think is "out there." We test these (scientific) ideas of the real (hypotheses) not against the real itself but against our gathered experiences thereof. We articulate our discoveries, our findings, in language that is inherently ambiguous and ineluctably slippery. Not unexpectedly, many scientists are themselves keenly aware of the limitations of their endeavor if for no other reason than science itself has discovered them. Bertrand Russell, according to Einstein, articulates the inherent contradiction nicely:

We think that grass is green, that stones are hard, and that snow is cold. But physics assures us that the greenness of the grass, the hardness of the stones, and the coldness of snow are not the greenness, hardness, and coldness that we know in our own experience, but something very different. The observer, when he seems to himself to be observing a stone, is really, if physics is to be believed,
observing the effects of the stone upon himself. Thus science seems to be at war with itself: when it most means to be objective, it finds itself plunged into subjectivity against its will. Naïve realism leads to physics, and physics, if true, shows that naïve realism is false. Therefore naïve realism, if true, is false; therefore it is false (Russell quoted in Einstein 1994, 21-23).

Einstein also grapples with the problems of language—its slipperiness, its ambiguity, and its apparent lack of obligatory correspondence to some definitive referent—which for better or worse is the primary vehicle by which we know of ourselves and of the out there:

...the concepts which arise in our thoughts and in our linguistic expressions are all—when viewed logically—the free creations of thought which cannot inductively be gained from sense experiences. This is not so easily noticed only because we have the habit of combining certain concepts and conceptual relations (propositions) so definitely with certain sense experiences that we do not become conscious of the gulf—logically unbridgeable—which separates the world of sensory experiences from the world of concepts and propositions (Einstein 1994, 24).

Concealing, or at least “forgetting,” this “unbridgeable gulf” is one of the things that science (and/or reports of scientific discoveries in the media) does so well, and one of the
ways it does so is by defining its terms. But, recall if you will the Forest Health Science Panel's refusal to define forest health because of its inherent ambiguity and instability; remember the prescriptive terms (masquerading as descriptive terms) that appeared in USFS definitions of health; recall too that we define terms by recourse to other terms, and those by recourse to others and so on and so on—we thus never get out of language or escape ambiguity; and finally, recall that in one definition (the USDA FS Nat'l HQ website) and in more than one text (USDA FS/Monnig and Byler 1992; USDA FS 1991, *Blue Mountains Report*) health was inextricably linked to “unhealthy.” Remember too, the USFS definition of an ecosystem: “an arrangement of living and non-living things and the forces that move among them.” The signifier is so full—perfectly so, in fact—as to signify nothing. It is perfectly meaningless. We are having trouble developing new “habits of combining certain concepts [ecosystems] and conceptual relations [forest health]” ... “with certain sense experiences” and we are thus painfully “conscious of the gulf—logically unbridgeable—which separates the world of sensory experiences from the world of concepts and propositions.” This is as true of medicine as it is of forestry and it bodes ill for the exclusive use of science in either one.

The basic methods of positivist/reductive science—testability (or falsifiability) based upon repeatability and absolute control of all variables—work well for isolated, well-defined, thoroughly controlled entities or conditions. Scientists admit that they work considerably less well with large, complex, multivariable, uncontrollable open entities or processes. As Einstein puts it: “when the number of factors coming into play in a
phenomenological complex is too large, scientific method in most cases fails us” (Einstein 1994, 51). A person is just such a multi-factorial phenomenological complex—a “complex” which is complicated many times over by the addition of a “noumenological” complex. The definition of an ecosystem also fits Einstein’s description of a too-large, multi-factorial phenomenological complex that exceeds scientific method. Neither persons nor ecosystems are well-defined, isolated entities that exist in controlled conditions. Just as physicians are learning to incorporate other forms of knowledge into their diagnostic and therapeutic regimes, so foresters will likely have to do the same: different discursive practices (as knowledge practices, not as mere opinion) account for different variables in the complex.

And finally, it is commonly accepted that science deals as well as anything can with questions of what is (or what we think is), but is not at all well suited to dealing with questions of what should be (both Hume’s is-ought dichotomy and Moore’s “naturalistic fallacy”). The problem is, that since ecosystems, like persons, seem to come with no definitive objectively “healthy” conditions, arrangements, processes, or functions—at least not according to our definitions—then forest health, like human health, turns out to be a normative, highly subjective, easily contested signifier that gets filled differently by different persons with different agendas and a different set of criteria. And this is important: people fill the forest health signifier by referring to their sometimes different experiences of different ecosystems. Unlike persons (as patients), ecosystems do not get to fill their own signifier, any more than they get to fill the “forest health” signifier.
Patients get to speak, to at least contend with the physicians professional account, for the right to define the terms of own health. Such is not the case for ecosystems.

The debates over what constitutes forest health are keen, and in part, the debate centers on the role of science as well as whose science. One man’s forest health is another man’s forest disaster: The cover of the Summer 1996 issue of Defender’s magazine sported the provocative title “Lawless Logging: The ‘Forest Health’ Scam” accompanied by an aerial view of a clearcut. The article claims that the FS is using its “phony” version of “forest health” as a means to log more heavily (Durbin 1996, 15-24). Then too, one man’s good science is another’s bad science (“Science and Community Knowledge” Forest Trust 21: January 2000. “Rep. Charles Taylor’s Bogus Forest Health Science Report.” a “memo” published by the Western Ancient Forest Campaign. April 9, 1997). Part of the problem stems from the fact that neither the questions asked nor the criteria chosen, the variables excluded or included, or the interpretations of collected data are obligatory (and are often concealed). Change the values that drive the observations, alter the technology that permits access—that enhances one’s sensory capacities or in turn makes one “blind” to other possibilities—and the outcomes of science change. Change the questions, propose new criteria, select different variables, choose another interpretation: one gets different answers. Awareness of this prompted the Forest Health Science Panel to state at the outset that “as with any analytical and scientific study, differences in grouping, averaging, analyzing, and interpreting data lead to variations. Each condition, effect, and number

25 For example, Lee, R.G. (1994) reports that “FEMAT did not want or would not use any information that would not support the long-term goal of restoring forests to their pre-settlement conditions” (31).
reported could be contested and refined" (FHSP 1997, Preface, 1). And it is, by other scientists with other interests and by other interests with other knowledges. The limitations of science and of expertise in resolving these larger issues of forests and forest health is due in part to the complexity of the real, in part to the "unbridgeable gulf" between our knowledge of it and it itself, in part to the unbridgeable gulf between our sensory data and our concepts/ideas (that constitute knowledge) (Einstein), and in part to the fact that we know of forests and of forest health through different conceptual frameworks, many of which are non-scientific.

The Forest Ecosystem Management Assessment Team, an interdisciplinary group of scientists and experts (weighted heavily toward the natural sciences) responsible for preparing an ecological, economic, and social assessment of EM for the Forest Service notes that

in the past 5 years, four major scientific task forces have attempted to resolve issues of old-growth forests and endangered species protection. Yet, despite unprecedented levels of expertise and effort brought to bear on these issues, their resolution seems as far away as ever. Moreover, despite the profound consequences these issues hold for people, both in the region and elsewhere, only limited attention has been given to their human aspects, at least in any explicit and systematic fashion (FEMAT 1993, VII-3-4).
Which brings us to one final point that must be touched upon before leaving this section: the relationship between knowledge, expertise, and power. Knowledge is power, and in our culture, scientific knowledge is still one of the most powerful totems that one can invoke in defense of a point or a position, particularly when one wishes to give the impression of disinterestedness and objectivity. For example, when queried on the role he envisions for the federal government in setting the environmental agenda in the October 11, 2000 presidential debate, G. W. Bush responded that he was perfectly willing to endorse various environmentally friendly policies and practices “so long as they’re based on science and they’re reasonable.” He went on to say that there “are a lot of different opinions [presumably about what we ought to do “about the environment”]. We need a full accounting before we make decisions.” Similarly, when Dr. Jane Henney, Commissioner of Food and Drugs, was asked to defend her decision to allow the use of RU-486 (the abortion pill or mifepristone) in the United States she responds that “the approval of mifepristone is the result of the FDA’s careful evaluation of the scientific evidence related to the safe and effective use of this drug. ... The FDA’s review and approval of this drug has adhered strictly to our legal mandate and mission as a science-based public health regulatory agency” (http://www.cnn.com/2000/HEALTH/women/09/28/abortion.pill/index.html). In an interview on the ABC Evening News with Peter Jennings she reiterates once more that the decision was based “purely on science” and had nothing to do with politics (ABC, 9-28-00). The impression conveyed is that the science is unassailable, that it’s findings are (or will be) unanimous and
incontestable, and that the data will tell us unequivocally what to do. Science, therefore, is a politically powerful instrument provided one can conceal its political and cultural connections. Philosophers and sociologists contend that the some political and social forces that operate outside of the community of scientists to reify it also operate within the community of researchers to effectively constrain research agendas (cf. Latour and Woolgar (1979), Thagard (1999), Klee (1997), etc.).

Ultimately, the power of scientific knowledge accrues to those who can use its tools and speak its language. Science fosters a culture of expertise, and this expertise tends to exclude other sorts of knowledges in an effort to maintain authority and to control the terms of the discourse.

It is perhaps even deeper than this, however, in a culture such as ours that venerates science. Medical anthropologists and sociologists have noted that “members of a dominant culture are inclined to view their own ways as logical and natural, to see culture as something that others have. In this case, we have science and knowledge, they have traditions and myths” (Henderson 1997, 7). This attitude permeates both forest culture and medical culture: scientific knowledge is naturalized or “canonized” in ways that marginalize other conceptual frameworks, and effectively disempower those that use them. In both medicine and forestry, the public is invited to the table (as patient or as stake holder) but in neither case is it given a voice with which to speak—at least, not a voice that can speak with the power of scientific knowledge. Take for example, a sampling of a text dealing specifically with the social aspects of forest health issues in the
USDA Forest Service's *Blue Mountains* report. The authors state that "just how these Forest Health questions [insects, diseases, fires] affect the public is a matter for sociological inquiry. What are the attitudes, the beliefs, the values society holds toward management of these resources?..." (USDA FS 1991, iii). The authors go on to state that the public suffers from "a general misunderstanding of multiple-use concepts and integrated resource planning" (USDA FS 1991, I-1), as well as "a general misunderstanding of how forest health relates to all forest resources" (USDA FS 1991, I-2); and again "the general public does not understand forest ecosystem dynamics ... and is further confused by the differing opinions of experts" (USDA FS 1991, II-146). The job of the FS is to "disseminate information that will help to develop an understanding..." "to undertake a proactive campaign to share our understanding of forest health..." to engage in "community outreach and education" in order "to promote an understanding..." "to inform the public..." to provide information to 'our publics' that "can serve to foster a better understanding..." "to communicate to the public the nature and scope of the problem and the realities of continuing forest ecosystem decline..." (e.g., USDA FS 1991, throughout). The implication is that while public attitudes, beliefs, opinions, and perceptions of forest health are a matter for sociological investigations and are incorrect (that is, as beliefs, attitudes and values they are subjective and messy with little in the way of knowledge content), the Forest Service itself is immune to such subjective pressures and is in possession of knowledge regarding forest health and disease. The public is an appropriate curious object for sociological study; the scientific Forest Service is not.
The more esoteric the terminology, the more specialized the requisite knowledge, the more narrowly delimited the object and the objective, the more control one ought to be able to exert over the discourse and the practice. The Forest Service’s efforts to articulate a strictly biophysical (ecological) model of health and the medical communities’ efforts to narrowly define human health as bodily health, and their subsequent attempts to privilege scientific discourse and methodology as the predominant conceptual framework could be (and have been) interpreted as an effort to retain power (cf. Foucault *Madness... and Birth of the Clinic*; Cassell 1997; Feyerabend 1993, 130; Ben-Sira 1988; Shuval 1992; Seldin 1997; etc.). However, as we have noted, both foresters and physicians are fighting a battle that is increasingly harder to win, if for no other reason than that their objects defy reduction and circumscription within the constraints of a single, narrow conceptual framework. There are, however, other reasons, and those we have noted above. We will only mention one final factor that works against FS and the medical establishment’s efforts to control the terms: dispersion. We live in an age when knowledge—even the most esoteric knowledge—is available through a variety of discursive venues. As a result, control of the terms is more tenuous than ever. One can access health information, even scientific medical information, directly from books and the world wide web. The same is true for environmental knowledge. Interested parties have access to the terminology, to the science(s), the critiques of the science(s), and to other knowledge frameworks that pose different questions, propose different categories, and privilege different perspectives. The terms of the discourses, like the discourses of forest and human health themselves, are produced and reproduced, read and reread in the public
domain. If knowledge is power, and knowledge is dispersed, then power too is dispersed—unless there is some other way to protect power—like a guild or some authority that confers the label “expert.”

In closing, I would add that the same critique that is here leveled against science could also be leveled against other disciplines, discursive frameworks, or institutions. The humanities are no more immune to power struggles and tendencies toward reification by virtue of being humanities than the sciences are. The point of this discussion on the cultural roots of science is not to lay grounds for its rejection but simply to say that those who use science can no longer hide their findings behind the mask of objectivity, and can no longer assert authority based on some privileged access to the real that science supposedly grants them.

29 The university system in the U.S. is conventionally divided into the humanities and the sciences. I have reproduced that bifurcation here.
Chapter Six
Conclusion

It was clear what the survey results said, but not what they meant.

-Martha Balshem
Cancer, Control, and Causality

After you have finished your true stories sometime, why don't you make up a story and the people to go with it? Only then will you understand what happened and why.

-Norman MacLean
A River Runs Through It

The fit between forest health and human health, between forestry and medicine is not exact, but it is instructive even in its differences. They are both social endeavors in the usual, obvious material ways: funding constraints, organizational and knowledge structures that create or constrain opportunities and dictate information flow and communication, political and legal restraints, technological limitations (or opportunities), the weight of public opinion, etc. Additionally, within forestry as in medicine, there is a palpable and as yet unresolved tension between those who consider the object as “given,” a pre-discursive, value-neutral site of investigation and activity (the body or the forest) and those who see it as “constructed,” as value-laden and contested. Accordingly, these two camps differentiate between the appropriate objectives and activities: those who see forestry as a natural science with objectives that are “given” (as in the case of “health” as an objective condition of the forest) and those who see it as a cultural endeavor that includes scientific knowledge with explicitly culturally produced objectives. These
aspects are important; but there are other more subtle differences and similarities that are equally important and interesting, if considerably less tractable and amenable to solution.

As individual humans, we expect to age, to become “infirm,” to die (even though as a species we hope to persist). Most of our life is spent coming to terms with the changes in our physical and mental capacities and constructing narratives for assimilating and normalizing those changes; i.e., we attempt to sustain an identity in the face of sometimes dramatic flux. We have the advantage of being a single organism that is (deceptively) well-bounded (deceptive, because not only are we dependent upon our environment for our very lives, but because we are a symbolic species whose limitless mental and/or spiritual life appears to have a profound effect on our physical existence and on our perceptions thereof). Ecosystems, or forests, are (obviously) not like humans; we expect them to persist despite the loss of particular species or individuals, structures, processes, functions, or events. And herein lies the problem: how does one establish a “norm,” a “baseline condition” for such an amorphous, unbounded, infinitely complex, “out there” (that is organic but is not an organism) that is not only constantly changing itself but about which our ideas are also constantly changing in accordance with our changing perspectives, our science, and our expectations? What is the “identity” of this ecosystem that we wish to sustain and does it (the identity, or “ecosystem”) exist independently of our thought categories? In the same way that our knowledge of our bodies and our ideas of health and illness are constructed and described through cultural networks, through narratives, so too are our knowledge of the biophysical forest and our ideas of forest
health and disease. Forestry, like medicine, becomes an exercise not just in the collection of material data or in the manipulation of physical features, but in a negotiation or quest for meaning, for explanation—not in any essential or foundational sense, but rather in the provisional and contingent sense of Lyotard’s language games (Lyotard 1984, 9-10). Foresters must also be able to build “stories” around, about, and with (and even before) the data, stories that make sense of, that lend significance, to “facts” (the signs) and thereby give the FS a purpose. In the same way, the stories that are necessary to legitimate certain types of knowledge (science) and power structures (the FS, for example) and to invest persons or managerial bodies with authority are not found within the knowledge, the structure, or the persons and institutions themselves, but rather in narratives constructed outside of them (Lyotard 1984. 10. 30-1). The skills and the tools necessary to build stories, to interpret data (as data and not noise), to invest signs with meaning are found in the humanities.

Humans tend to measure health in terms of what we hope to be able to do; that is, judgements of health tend to be cast against some hoped for future condition or ability (recall the “old” subjective USFS definition (#1) of health). To judge our present health against our past health would doom most of us to “unhealthy” lives in perpetuity (this assumes, perhaps not correctly, that health is often associated with youth....!). For our forests on the other hand, we look toward history—or prehistory—for our measure of health at the same time that we expect it to meet (not entirely clear) future needs and desires. Current FS definitions of health produce and reify a tension between a mythical,
supposedly objective, past forest (our knowledge of which is very far from perfect) and
unknown, subjective, future needs and desires. But in the same way that we are
apparently morally opposed to the possibility that advancements in medical knowledge
and techniques might enable us to produce a super-human race—a race of physically (and
mentally) “perfect” beings, so too might we find ourselves opposed to such a “healthy”
forest that it would entail the extermination of humans. The “pre-European” forest that
we like to use as our “gold standard” of health is pre-European, pre-contact, and perhaps
even “pre-lapseran” (i.e., Edenic). We live in a post-European, post-contact America; we
have lost our innocence. As humans, our ideas of health are adaptive, progressive, and
highly situational or subjective; they have more to do with our hopes and dreams than
with our past. We go to great lengths to accommodate and normalize “differences.” It is
likely that our ideas of forest health, despite the rhetoric and the claim to objectivity, are
also more firmly anchored in human desires and cultural constructs than is readily
apparent. and it is equally likely that a significant portion of the population will go to
great lengths to protect those differences that for others represent “disease.”

In the same way that physicians are learning to “speak many languages” in order to
negotiate a meaning of “health” that is acceptable to the individual patient, so too must
foresters learn to speak many languages in order to negotiate a meaning of health that
takes into consideration the multiple and often conflicting identities that people assign to
forests. The language of bioscience is as inadequate to address the totality of the human
being as the language of the natural sciences is to address the totality of the forest. For
better or worse, the forest, like our bodies, are not only things out there, but things about which we have ideas and emotions, and in which we have invested meanings. Our understandings and experiences of the objects in question in each field exceed the bounds of one knowledge system or practice; it is thus inevitable that our judgements of health will also exceed the bounds of one praxis.

Like medicine, forestry must deal with the loss of control of the object, its objective, and the terms of its discourse on both. The loss is attributable at bottom to the inherent and inescapable slipperiness of language (which all the science and knowledge in the world will not reduce), to the dispersion of the medical and forestry discourses in the culture at large and the concomitant production of alternative discourses, and to the appropriation and redeployment of the terms of the discourses in other frameworks that construct different meanings and interpretations. Insofar as forestry and medicine are both language based practices—praxes—they cannot escape these problems.

But the broader understandings—the "ecologization"—of both the Forest Services' and the medical communities' objects—ecosystems and persons—also impose significant limitations on the possibility that one organization, one theory or methodology, or one praxis can fully control the knowledge that is produced about either one. The same holds true for our judgements of health: the more multi-faceted and complex the entity under consideration, the more difficult it is to establish definitive, stable criteria for measuring the health of that entity. This does not mean that nothing can be done, that nothing can be
said, but only that one must develop new (or maybe just other?) words, new categories and habits of thought that permit one to think and to speak across the multiple discursive boundaries that constitute an “ecosystem.”

Foresters are not alone in this endeavor. Clifford Geertz, an anthropologist who tackles the unenviable task of rethinking anthropology—its justification, mission, and assumptions—in an age in which the explanatory power of the grand narrative of human progress has failed and along with it the authority that this conceptual framework grants to the objective anthropologist, suggests that anthropology must move from “structure and causality” toward “meaning and interpretation” (Geertz 1973.5). This modern day anthropologist sees “man [a]s an animal suspended in webs of significance he himself has spun” and anthropology is thus no longer “an experimental science in search of a law but an interpretive one in search of a meaning” (Geertz 1973.5). Foresters might consider doing something similar: we can consider forests as real “things,” but things that are also “suspended in webs of significance.” Forestry would thus be not just “an experimental science” in search of structure, causality, and the laws of nature, but also an interpretive exercise in which foresters fully and directly engage in the difficult, never-ending task of interpreting and assigning meaning to the myriad and conflicting sense data that we “get” from these forests and ecosystems.

This means going beyond “adaptive management” to adaptive interpretation—to adaptive knowledge systems and discursive networks that permit of multiple ontologies.
epistemologies and axiologies. Under this rubric, simply defining a term, or eradicating the variables or accidents of time and place, will no longer suffice. Ambiguity at the level of language is as inescapable as uncertainty at the level of "the real:" it is not something to be defined permanently away, but is the fundamental condition of knowing (as an ongoing action rather than a fait accompli). Thus, in addition to trying to define its terms, the Forest Service might do well to unpack them, to examine them not just in so far as they are meant to point to some extralinguistic biophysical state, function, relationship, or process, but also, and more importantly, to see how the same terms are deployed and negotiated in the network of signification that we call culture. As these networks shift—and they do with each new speech or writing act—meaning slips, new values are suggested and old associations revealed. Words are markers, nodes of meaning—constantly shifting nexi in a dispersed web of information. In a postmodern world, one informed by the precepts of Continental philosophy, no single person or power structure can ever completely control the terms of its own discourse: something always escapes. There is always a remainder, always an outside that disrupts the internal unity of the inside. Terms, especially in the natural science discourses, do refer outward but they are also situated within a discourse which itself is situated within (and permeated by) countless other discourses. In the postmodern world, it is no longer the case that "undefined" terms or axioms—inevitable in any theory, scientific or otherwise—sit there "quietly" and unobtrusively; instead they disrupt the theory (or theorem),—like an irritating itch or sneezing fit (cf. Gödel's theorem).
Traditional forestry education has done a fine job of teaching potential foresters to interrogate the referent (the forest, the species, etc.). It teaches them to do field research, to collect and manipulate data, to use the technologies, and even to interpret that data in some limited way; in short, forestry education teaches foresters to do science. It says little if anything at all, of the assumptions about knowledge, language, and self that are concealed within the theories and methods of science. It does even less to teach future foresters to speak in other languages, to know in other ways, and to value these other knowledges and discursive formations as legitimate. It is perhaps time for forestry to become self-reflexive: to investigate the conditions of its own possibility, the meanings of its terms, and the real complexity (symbolically speaking) of its object. To do this, it will need to step out of itself and use the tools provided by other disciplines and other perspectives. More than 300 years ago, John Locke suggested that there are three faults that inhibit our thinking, the third of which is committed by

those who readily and sincerely follow reason, but for want of having that which one may call large, sound, round-about sense have not the full view of all that relates to the question ... We are all short-sighted and often see but one side of a matter: our views are not extended to all that has a connection with it. From this defect I think no man is free (Locke, 56).
In attempting to free ourselves from this defect (or at least minimize it!) we may take another page from the book of medicine. Nearly two decades ago the University of North Carolina at Chapel Hill began to require a year-long course for all first-year medical students taught by humanities scholars, social scientists, and practicing physicians. The rationale for the expansion and for making the course a requirement was the recognition on the part of physicians and health care workers (to say nothing of patients) that medicine, for better or worse, was about more than just restoring biophysical health, and furthermore that achieving health itself involved more than just treating the body in isolation (Henderson et al. 1997, 1). But even more compelling was the realization on the part of practitioners that even the most “technical” medical sciences, like genetics or molecular biology, are inextricably bound to politics and culture (Henderson x).

Resistance to these courses on the part of students is high: like the rest of us, medical students “seek certainty and avoid ambiguity,” and professors find it difficult to make “poetry compete with pathology” and “social issues as important as anatomy”—to make “soft, subjective” knowledge compete with “hard, objective science” (Henderson ix. 1). But neither the ambiguity nor the uncertainty are caused by the inclusion of these other disciplines or ways of knowing; it is rather, because doctors and patients (and scientists) experience ambiguity and uncertainty, because knowledge is always incomplete, and because the choices one makes about treatments cannot be based solely on the best available science, that the inclusion of non-scientific knowledges are essential.
Thus, one way to better prepare future foresters for the inherently symbolic nature of their work is to broaden the curriculum so that forestry students take courses in the philosophy of science as well as in science; courses in political studies as well as in policy; in linguistics, anthropology, literature, art, philosophy, and history as well as in social science and economics. The social sciences are well represented in forestry; the humanities, however, are largely absent.

At the level of practice, the USFS might reconsider its exclusive commitment (at least at the level of rhetoric) to a scientific explication of forests and ecosystems. It might instead “diversify” its rhetorical and knowledge “portfolio” and invest in other languages and ways of knowing that permit of a wider access to its diverse and heterogeneous public(s).

It might consider, for example, hiring specialists in other fields—i.e., becoming really interdisciplinary by hiring philosophers, artists, and people versed in literature and anthropology, etc.. But in an effort to avoid the problem of excessive specialization in which “the craft improves, [but] the craftsman [and perhaps his creation?] slips back” (de Tocqueville), the USFS might consider hiring generalists—people who can speak many languages and thus can communicate across discursive and conceptual boundaries.

Forestry does and should apply science; but forestry itself is not a science, either pure or applied.

Ultimately, the contest over forest management is a contest over meaning: who dictates the terms of the discourse and who defines those terms. One cannot dismiss the terms of
the debate over forest health as mere rhetoric or scoff at the arguments over the
definitions as quibbling over semantics. The fact is that the person or group who comes
closest to “controlling” (if only temporarily and tenuously) the language controls the
action in forests. If health, for example, is defined exclusively in scientific biophysical
terms, only those conversant in the applicable scientific discourses will have a say in the
way we conduct business on the forests [which will not stop the others from “squealing”].
Language, like knowledge, is power, and the argument over definition is a contest of
power. Managers would prefer to see the terms expressed in managerial or administrative
language; policymakers prefer language that sustains their own interests and furthers their
agendas. Scientists prefer the debate to be expressed in clearly and rigorously defined
scientific terminology. Ethicists argue that the terms, be they political or scientific, are
ultimately value laden in a moral sense. Sociologists (of both the scientific and the
philosophical bent) insist upon the social character or use-value of terms and the primacy
of popular understandings and participation in crafting forest plans.

In all cases, the goal is to attempt to control the terms of the debate so as to control the
decision making power. The average lay person, the “public” that the USFS is so keen on
bringing to the negotiation and planning table, while not naïve is nonetheless unversed in
the academic, political, or scientific esoterica necessary to weigh in as a serious contender
for decision making and consequently can add little to the discussion in its current milieu.
The public is given a seat at the table, but given no words with which to speak.
Consequently, it speaks elsewhere—in the Congress, the courts, and the media—both the
popular press and the minority activist press of all complexions (environmental or commodity oriented). By taking the speech outside of the USFS forum (end-running around the agency, or attempting to), it renders the USFS ineffective. Hence to be effective, an agency must regain control of the discourse and, in our democratic, pluralistic and multi-cultural society, it cannot do this by fiat or authority. It can, therefore, only do it by enlarging the terms of its own discourse—by expanding its understanding of forestry to match that extant in the culture—which entails becoming self-reflective and self-reflexive and acknowledging the context of its own discourse.

In closing, it is worth remembering Derrida's insistence that deconstruction furnishes the grounds upon which justice and democracy are founded: without the will to question our own and others' implicit assumptions, to critically examine the value judgments concealed within our concepts and conceptual frameworks, to look honestly at our motives and agendas, we cannot make a claim to either justice or democracy. We have, in essence, as members of a species that considers itself concerned with matters of justice, of right and wrong, an obligation to question, to seek out and deconstruct those conceptual frameworks that some would establish as unsurpassable a priori limits—frameworks that silence the voices of the Others. Deconstructing the Forest Service discourse on forest health and centering science as the arbiter of the real does not lead inevitably to nihilism or to unbridled relativism, nor does it leave the Forest Service without a leg to stand on. On the contrary, as Derrida insists, the project of deconstruction demands from each of us the utmost care and commitment: we must guard, to the best of
our ability, the interests of the Other, in whatever form it takes. Ultimately, because we
must live in this world, we make a stand for something. But we must do so knowing full
well that we stand on shifting and uncertain ground and that in making that stand for one
thing and in acting on that stance, we irrevocably foreclose options, for someone or
something somewhere.
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