A post-structuralist viewpoint on evidence-based medicine

by

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Abstract

BACKGROUND: Evidence-based medicine has made a remarkable contribution by organizing and processing overwhelming amounts of information. Furthermore, some tests and treatments have been shown by EBM to be inappropriate. However, evidence-based medicine (EBM) has been criticised on four fronts.

1. It is reductive.
2. It is undertheorised.
3. It lacks RCT evidence for the method as a whole.
4. It was, at first, totalising.

AIM: This work aims to provide a viewpoint on EBM from the writings of three twentieth century French philosophers, often described as “post-structuralist”.

METHOD: Employing discourse analysis, I use A Thousand Plateaus and Anti-Oedipus, written by Gilles Deleuze and Felix Guattari, to develop a post-structuralist viewpoint on EBM. In Part Two I use The Birth of the Clinic and Power/Knowledge by Michel Foucault to provide a slightly different post-structuralist viewpoint on EBM.

RESULTS: The Deleuzian teaching on smooth space (versus striated space) and nomadic science (versus State science) celebrates a less structured approach to medicine than that provided by EBM. This latter is viewed as part of a State science discourse in which knowledge and power are combined in a regime of truth. According to EBM, although medicine has a number of disciplines contributing to it, epidemiology provides the best evidence. But this work draws on the distinction between State science and nomadic science to feature the struggle in which the voices of disciplines other than epidemiology are quietened with regard to what constitutes “evidence”. Post-structuralist philosophers view all this as a partly successful striation of smooth space by a complex of powerful institutions.

EBM only partly fills disease's numerous conceptual spaces. An instrument of power, the medical gaze is complex, but anything which is excluded from this beam is
thereby excluded from medical research and knowledge. The gaze arguably does not engage with the post-structuralist subject, and makes a poor job of dealing with those aspects of medicine in which biology interacts with culture. Although EBM leaders have published a paper on their philosophy in 2009, I consider that they have rushed over some very complex issues. These include representational thinking, with its shaky matching of the signifier with the ephemeral signified, massaging the trial results for consumption by clinical doctors, limitations of probabilistic thinking imposed from outside the profession, the complexities of subjectivation which is rife in EBM, the ethics of compliance with EBM as distinct from the ethics of authentic practice, and the effects of the signifying regime of signs on propositions passing through it. Although in 2008 EBM leaders gave detailed advice about applying the results of research on groups of experimental subjects to the next patient, the gap has been reduced but not canceled. This work provides a Deleuzian analysis of the problem, but not a solution.
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Introduction

Some authors view EBM is a monolithic edifice in which medicine has been infused with epidemiology. In the 1990s the Randomised Controlled Trial (RCT) was featured as providing the best evidence for the decisions of a doctor. By the second decade the observational studies were also featured. Responding to the overwhelming amount of research, the EBM leaders have streamlined the results of clinical trials for the busy doctor. However, philosophers and doctors have prised EBM open for debate. The early part of this work will bring together some of the distortions of which EBM has been accused. These are: inadequate evidence that EBM works, inadequate underlying theory, narrowness, and an overbearing attitude to other medical knowledge.

Drawing on Anti-Oedipus and A Thousand Plateaus--(both subtitled Capitalism and Schizophrenia, and written in response to structuralism and the revolt of French students in 1968)-- and The Birth of the Clinic and Power/Knowledge, I develop a post-structuralist image of EBM and its alleged distortions, particularly through an analysis of the workings of power. Papers articulating this post-structuralist viewpoint on EBM have already been published by one group of scholars. This work

1 They moved the explanation from molar level to molecular level. Partly because the students were more prominent than the workers, they considered that an explanation in terms of social class did not work.

supports their work and adds to it in several ways. I relate my own work to this corpus later in this chapter. However, to some extent my Deleuzian viewpoint on EBM will swerve away from the philosophical critique advanced early in the work. I will argue that the post-structuralist viewpoint on EBM is not authoritative: Deleuze does not consider that one scholarly field, such as medicine, is beholden to another, such as philosophy.

*The research takes the form of an analysis and critique of a movement in thought and its application in practice.*

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Chapter 1: Research Problem

1.1. Statement of the problem

EBM has a narrow focus: the application of the results of RCTs and observational studies in clinical medicine, health services policy and management. It is also used in teaching about medical decision making and in audit of clinical practice. It is a tool most suited to the scientific attitude to medicine as a domain of narrow inquiry obeying the canons of experimental and natural (as distinct from social and moral) science. It is an aspect of biomedicine, a generic term for the scientific construction of a regime of truth focused on medicine as a domain of biomedical science rather than a somewhat broader and more polyglot space of inquiry. However, in spite of its emphasis on scientific inquiry, EBM has not been content simply to publish research results for scholars and doctors. It has used an elaborate array of marketing strategies to increase its market share of clinical medicine and health services policy and management. Since the proponents of EBM have provided neither evidence for its effectiveness nor a theory as to how RCTs and observational studies provide a

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3 There is a limited sense in which this statement is wrong. Many studies have shown that merit or demerit of certain tests or treatments. For example, the use of beta-blockers after myocardial infarction has been shown by systematic review of RCTs to improve survival. My statement means that EBM as a whole has not been shown to improve patient care.
superior path to truth, it amounts to an ideology. In placing emphasis on observation as distinct from theory it separates itself out from medicine: allopathy has gained status over complementary and alternative medicine by basing itself on theory from biochemistry, physiology, pathology and other medical sciences. By contrast, the note struck by EBM is empiricism. EBMers have little concern for the lowered status of non-evidentiary aspects of medicine and their spokespeople. In summary, EBM has four distortions: EBM is narrow, totalising and lacking in evidence and theory.

1. 2. Literature review

1. 2. 1. Review from post-structuralism

Murray et al. regard the EBM movement as “outrageously exclusionary and dangerously normative with regards to scientific knowledge”. These authors go on to label the EBM movement as “fascist” and they call upon scholars to deconstruct the EBM power regime, for scientific and ethical reasons. They draw on Sartre, alleging bad faith, because protagonists of EBM know that there is no evidence for it, but persist in developing EBM, but not its theory. This is trenchant criticism, but it has been argued that we are all guilty of bad faith and that it is unfair to single out EBM protagonists for Sartrean treatment. Murray et al. bring theory from post-structuralist philosophy to EBM, seeking to expose any hidden politics of evidence. They suspect they have struck oil, judging from the heat with which proponents of EBM have reacted. Replies do not seriously engage with the writings of Derrida, Foucault or Deleuze and seem to indicate that here we are not free to follow reason, but continue in a minitorian state of tutelage. The power lies with a complex of market (with its ethics and logic), State science, pharmaceutical industry, insurance

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5 Buetow 2007.
6 2007.
7 This means that doctors are to behave as if they were under-age, and practice EBM whether they believe in this or not.
8 Murray et al. 2007.
industry, judiciary, RCTs and observational studies, systematic reviews, guidelines, so on. This seems insightful criticism, if subversive. Quoting Foucault in support of a complex of power/knowledge/ethics, Murray and colleagues conclude by stressing the need for scholars to be ethical, and so to enter political and ethical debate with those who hide behind the banner of “tireless evidence”. Holmes, Perron and O'Byrne\(^9\) writing about Evidence-based Nursing (EBN), complain about the increasing domination of nursing by the evidence-based movement using arguments equally applicable to EBM. Their major point is that this particular approach to research and practice is overshadowing other forms of research and practice and is not content to be one among several ways of knowing. It constructs itself as a superior way of knowing. For example research about care is inferior to the modern, epidemiological studies, believed to be objective. These authors tell us that the domination of nursing by EBN, whose research methods are “purely post-positivist, quantified and rational”,\(^10\) oversimplifies the complexity of nursing practice, and marginalises the contribution made to nursing research and practice by other disciplines, often using methods other than the RCT and observational studies. They ask whether “a person's social, political and legal context is not a contributing factor in his or her understanding of health experiences?”\(^11\) They are particularly unhappy about the way in which EBM stresses evidence from large trials at the expense of the viewpoint/experience of the individual patient and/or nurse. The micro and singular aspects of nursing practice may well, for instance, influence the ability of the patient to heal and their feeling that life is worth living.

Holmes, Perron and O'Byrne\(^12\) draw on Foucault to describe EBN as a “regime of truth”. Dogma, as ideology, functions by excluding alternative ways of seeing,\(^13\) thereby dictating what can be done, written, said, or believed.\(^14\) The problem with a regime of truth, as I have noted, is the withering effect it has on other ways of

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9 2006.
10 Holmes, Perron & O'Byrne 2006, p. 100.
11 Holmes, Perron & O'Byrne 2006, p. 100.
12 2006, p. 96.
13 Arendt 1995.
knowing. Holmes, Perron and O’Byrne\textsuperscript{15} are concerned that traditional ways of knowing \textit{how to nurse} will lack prestige and will go onto decline and they deplore the fact that the Cochrane Collaboration does not accept papers based on qualitative research, despite, they say, no convincing evidence that qualitative research is inferior to quantitative studies.\textsuperscript{16} However, Cochrane Collaboration consider that they have a very demanding task in maintaining a register of published and unpublished trials, and in preparing meta-analyses and systematic reviews and that qualitative research would detract from their almost overwhelming task.\textsuperscript{17} Much of the work is done by volunteers who are interested in quantitative research. Even so, the Cochrane Collaboration has set up a group to consider this issue. Holmes et al.\textsuperscript{18} aver that some aspects of nursing care are better investigated with qualitative studies, rather than with studies focusing on objective data. They argue that nursing practice should be elucidated by a number of research paradigms, as in the past. (Carper, in 1978, tells us that there are four ways of knowing in nursing: aesthetic, empirical, personal and ethical.\textsuperscript{19}) They claim that most of these ways of knowing are losing ground, since evidence from RCTs and observational studies is becoming dominant. Are we to conclude that previous nursing research was inferior? Holmes et al.\textsuperscript{19} argue that the skewing of nursing knowledge under EBN must be serving someone's needs and that governments use this form on knowledge to cut costs (but they offer no hard data to support their claims).

1. 2. 2. Literature on evidence

Biswas et al.\textsuperscript{20} state that the present system of EBM places the information gathered from the individual patient at the very lowest rung of the evidence ladder.\textsuperscript{21} By

\textsuperscript{15} 2006.
\textsuperscript{16} The distinction between qualitative and quantitative research is blurred. Some studies involve both.
\textsuperscript{17} Daly 2005, p. 174.
\textsuperscript{18} 2006.
\textsuperscript{19} Holmes, Perron and O’Byrne 2006.
\textsuperscript{20} 2007.
\textsuperscript{21} Of course, of the histories of a large number of patients are collected, the body of information begins to rank higher in EBM terms. This would then be suitable for qualitative or quantitative research.
contrast, it seems to me that doctors gain most of their diagnostic information from the medical history. Furthermore, the consultation could be seen as an interaction, in the mind of the doctor, between the patient narrative and the medical knowledge narrative, taking place in psycho-social space. A humble, courteous doctor will value the narrative of the patient, who has knowledge which the doctor does not possess, who probably initiates the consultation, and who may pay some or all of the fee. Bear in mind that the outcome of the consultation is uncertain, and that the patient will bear the consequences.22 With regard to the EBM insistence on using epidemiological evidence, when the use of knowledge resources and the understanding of EBM terms were assessed in the staff of a teaching hospital in Iran, the authors found that the knowledge of EBM among faculty, fellows and residents was disappointing, and that the use of EBM papers as sources of knowledge was particularly limited.23

EBM focuses on scientific evidence needed to practice medicine. “Evidence” here means “research-based findings transparently compiled, analysed and interpreted according to rigorous methodological processes and standards.”24 This is the approach of “normal science”, which “defines the world in probabilistic and collective terms”, which tends to be recalcitrant to epistemic challenges and to acknowledging its own inadequacies until a change of paradigm is forced upon it.25 Buetow26 explains that it omits much of the fuller picture of the healing intended by medicine, along with why doctors practice, ethics, the world view of patient and doctor, and whether these latter two coalesce.27 Whereas EBM may be suitable for acute illness involving diseases of

22 Silva and Wyer 2009 provide an epistemological scheme in the form of a triangle, then they invert it. In the first triangle the apex is formed by clinical research. Below this, successively, come basic science then clinical expertise. This, they tell us, is the scheme for EBM in the pilot paper of 1992. With small changes, the second triangle is the inverse of the first. Here the base, at the top, is formed by integrated clinical knowledge. Below this comes integrated medical science. At the narrow bottom comes epidemiological information. This is the scheme they recommend.

23 Nooraie et al. 2007.

24 Lewis 2007, p. 166.

25 Lewis 2007, p. 166.

26 2002.

27 I am indebted to an essay (van den Brink, Evidence-based Practice in relation to MindBody Healthcare, unpublished paper 2008) by van den Brink, a general practitioner training as a
one organ, it is less suitable for chronic illness, which becomes complicated with psychosocial features. It is not entirely suitable in cultures, such as those of Maori and Pacific peoples, where “individuals” are more connected, where whanau is more important than the individual, and a wider connectedness to one's context is an important factor in health and disease. These and some other patients may want a relationship-based therapy. This eludes EBM, as does the importance of the patient's experience of illness, and the issue of healing and its evaluation and evidence base. There is now research which explores the interrelationships between therapist, therapy and the consumer of health care. These issues are too broad for EBM, “the reductionist medical model which seeks to objectify symptoms away from the person experiencing the disease”, and which tries to separate out the illness from the patient.

EBM protagonists write as if there is agreement on such epistemological issues as what constitutes evidence: but such agreement does not exist. However, EBM writers are recently setting out details of the various disagreements over evidence. The word “evidence” has picked up emotional, moral and rhetorical overtones. This makes it hard to defend non-evidentiary warrants, especially to funders and those deciding the medical curriculum. A decision made on “evidence” is “good” decision.

1. 2. 3. Relatively new viewpoints on EBM

There are two relatively new concepts which conflict with EBM. The first is called Practice-based Evidence (PBE), which sets up an interactive environment between practitioners and scientists. Practitioners work with research scientists to decide what the questions are and what type of research is best, in their clinical situation. The resulting data apply to a particular clinical unit, whereas EBM often pretends to a degree of generalisation. PBE, then, recognises the limits of EBM and tries to engage

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28 Ibid.
31 Djulbegovic, Guyatt and Ashcroft 2009.
its strengths. The second concept is called “Whole Systems Research” (WSR). This is used to evaluate the work of a multidisciplinary team which aspires to holistic healing, using consultants (each skilled in qualitative and quantitative research) in six areas (socio-cultural, behavioural, clinical, bio-informatics, social and conflict knowledge, and information and data analysis) to oversee the study. Surely WSR is better than EBM in including “emergent properties of complex systems when those system components lose their power if separated into component parts.”

EBM omits the healing benefits of a strong therapeutic relationship. The PBE model disrupts the EBM model in which, typically, one variable is allowed to vary while others are held constant. PBE has multiple variables which are synergistic and brings up the possibility of a new paradigm in which the variables are not teased out from one another. Even so, the EBM method might be good for marketable interventions.

In a similar vein, but using the terms slightly differently, Palmer, Naccarella and Gunn enter the debate about generalism versus specialism in medicine. Like several other authors, they suggest that EBM is more suited to specialism (in the sense of specialist practice focused on delineated organ systems) than to primary care medicine or generalism. Specialism focuses on elimination of disease in one organ system or body part. Typically, the specialist works with a single causal chain which can be corrected, and the tracking of statistically significant changes consequent upon that intervention. However, generalism is difficult to define. This approach aims to provide person-centred care, and sometimes needs to take account of changes in several organ systems. The generalist is likely to work, in part, with the patient's construction of her illness. Patients value a caring, doctor who is communicative and accessible. “The push to evidence-based medicine (EBM) tends to emphasise cost-effective outcomes rather than qualitative dimensions of care.” It also marginalises the patient's construction of her illness in favour of more person-neutral or objective categories suited to taxonomy of diseases as species existing independent

32 van den Brink 2008, p. 12.
33 2007.
34 Palmer, Naccarella, & Gunn 2007, p. 396.
35 Palmer, Naccarella, &Gunn 2007, p. 396.
(conceptually, at any rate) of the person affected. The prevailing emphasis on evidence for the results of treating an episode of acute illness allows longitudinal care, provided by the generalist, to slide out of focus. By contrast with the emphasis accorded to evidence when EBM evaluates the effect of using a certain treatment in an acute illness, these authors draw attention to “the ethical questions of how to best articulate generalism as a philosophy of practice, how best to provide care that contributes to better societies, improved well-being and community connectivity”. Generalism, then, views the organism as a harmoniously functioning complex whole in a context where the impairment can be seen interactively and relationally.

1.2.4. Literature on other problems with EBM

EBM fails by its own standards in that it has not provided evidence for its own superiority with regard to patient outcome. As recently as August 2007, Miles, Loughlin and Polychronis aver that teaching EBM concepts and methods to clinicians successfully... is one thing. Whether such knowledge and its application will, make such colleagues better doctors is quite another. Apart from the n-of-1 RCT, EBM provides evidence from population studies. The applicability of this evidence to clinical work bristles with issues. The doctor needs to interpret the relevance of the research results to her patient. She must learn about her patient then find studies whose paradigm research subjects are judged by her to resemble her patient. As the level of education of consumers rises, it is likely that they will want individual medicine (and may even litigate) rather than population medicine (What works for me?, not, What works for people like me?). There is a lack of guidance as to how to integrate the various streams of input into the clinical decision. (Tonelli calls these “warrants for decision”). Each warrant is composed of reason(s) and fact(s). This

36 Palmer, Naccarella, & Gunn 2007, p. 397.
37 Miles, Loughlin & Polychronis 2007, p. 493.
38 Miles, Loughlin & Polychronis 2007, p. 489.
39 This is explained in the Appendix.
40 More recently, Bassler, D., Busse, J.W., Karanicolas, P.J., & Guyatt, G.H., 2008 and Bassler, D., Karanicolas, P.J., Busse, J.W., & Guyatt, G.H., 2008, have provided detailed explanation how to do this.
means it is appropriate to draw on these five areas of knowledge when making a clinical decision, as detailed in Chapter 2. Lewis highlights the issue of a conflict between the research evidence and the clinical judgment of the doctor. He quotes EBM authors as stating that the clinician must use experience to decide if the research is relevant. Lewis reads this as giving equivocal support for EBM. There is a lack of guidance as to how to handle multiple morbidity. It is not clear whether EBM lends itself to working in a multidisciplinary team, where a doctor may have to compromise. Many doctors lack time or skill to sift the results of studies for themselves. They rely on experts in EBM to provide a digest of the research for the busy clinician. But this starts to hark back from research to expert opinion. I have mentioned, then, a range of issues with EBM including the shortage of philosophical or scientific support for EBM which, some argue, implies that it smacks of dogma.

1. 2. 5. EBM responds to criticism. More literature on evidence

In response to all this criticism EBM protagonists have twice softened their stance. In the early 1990s they wanted a doctor to prioritise evidence derived from formal, systematic, clinical research. The paradigm example is the RCT, or Randomised Controlled Trial. This stream of input into clinical decision-making was prioritized over the other considerations which a doctor might include. (These are: clinical experience, pathophysiological reasoning, patient preference, and system features This last term refers to the accessibility, legality, even ethicality, of a test or form of treatment.) The early doctrine was modified (at least) twice, lowering the status of research evidence in the formula for decision making, and altering its position in this

42 2007.
43 Sackett, Rosenberg, Gray, Haynes, & Richardson 1996.
44 Miles et al. 2007.
45 Buetow 2006.
46 The various types of research design are explained in the Appendix..
47 For example, abortion in the first trimester, and this may differ from abortion in the second trimester.
recipe. The very earliest arrangement\textsuperscript{49} depicted research evidence as trumping other warrants for decision. The first change (in response to criticism) depicted clinical decision making at the intersection of research evidence, clinical experience and patient preferences.\textsuperscript{50} Three warrants for decision might have varying levels of influence. After the second change (in response to criticism) clinical expertise integrates 1) clinical state and circumstances, 2) research evidence and 3) patient preferences and actions.\textsuperscript{51} But this prescription for decision making is presented to us by pseudo authority. Even so, we can welcome the relative change in status of the component parts, including the increased importance of clinical expertise (experience and skills) and patient preferences, which latter, some consider, come ahead of the “adjunct” research evidence.\textsuperscript{52,53}

To some extent my work carries echoes of the past, since not all writers have entirely grasped the fact that EBM has eased the pressure to prioritise clinical trials\textsuperscript{54} so that a number of authoritative papers reflect the earlier understanding of EBM: the prioritizing of the results of formal clinical research in clinical decision making. In fact there is a discrepancy between two groups of authors.\textsuperscript{55} The first group states that EBM protagonists have twice altered their stance (while the second bases criticism on the earliest formulation of EBM). EBM has moved in two stages from prioritizing knowledge from clinical trials to prioritizing clinical expertise, which now draws on knowledge from clinical trials along with patient preferences and actions, and clinical state and circumstances. I adopt the position that the first group of authors write with

\begin{itemize}
\item \textsuperscript{49} The Evidence-Based Medicine Working Group 1992.
\item \textsuperscript{50} Haynes et al. 1996.
\item \textsuperscript{51} Haynes et al. 2002.
\item \textsuperscript{52} Buetow 2006.
\item \textsuperscript{53} Buetow 2006.
\item \textsuperscript{54} This mixed picture of what EBM acolytes are saying is also referred to by Silva and Wyer 2009, p. 901. “Sensing that the pilot article had overstepped, members of the EBM coalition subsequently produced models that represented clinical research on an equal plane with patient values clinical circumstances as criterion sources for decision making. …. Despite this, the hierarchical pyramids \ldots continued to appear in the standard EBM textbooks…
\end{itemize}
authority, but that even leading writers, such as Miles, Loughlin & Polychronis, are still complaining loudly in August 2007 about the persistence of the earlier stance of EBM. It seems that the EBM literature speaks with a range of voices regarding the status of evidence derived from clinical trials in clinical decision making. I return to this in my Discussion.

(Although EBM has changed its stance, it is still uses an arborescent model: a core of knowledge, and branches that develop it in increasing detail, but arising from a common theoretical and coherent trunk. Deleuze and Guattari would view EBM as a book. This gives a picture of the world, as it (objectively) is. There is still an emphasis on rationality. Foundationalism underlies the science: this involves a basic layer of beliefs on observation. So the thrust of my post-structuralist analysis of EBM still applies, even though they have changed their stance twice.)

EBM proponents have included clinical experience and pathophysiological reasoning as evidence, but not expert opinion: the common bond between empirical evidence, clinical experience and pathophysiological reasoning is presumably not that these are streams of input into decision-making. In fact the distinction between evidence and warrants for decision is not clear.

This approach, however, conflates evidence with warrants. In a clinical decision, one is not attempting to determine the truth of a particular inference, but rather the rightness of a particular decision or recommendation. Warrants in support of a particular choice, I would argue, do not constitute evidence solely on that basis, but rather on their applicability to other cases of a similar nature. Evidence construes a certain generalizability, and non-evidentiary warrants apply to the particular.

In fact, there is a fundamental distinction between 1) empirical evidence and 2) clinical experience and 3) pathophysiological reasoning in that clinical experience is “direct and personal” whereas research evidence is “indirect and general.”

Pathophysiological reasoning is dependent on the mental processes of the doctor, and

56 2007.
57 Tonelli 2007, p. 505.
58 Tonelli 2006, p. 4.
harks back more to theory derived from experiments than to the physiological or pathological experiments themselves.

The proponents of EBM have latterly classified clinical experience and pathophysiological reasoning as forms of evidence. This means that the status of clinical experience and pathophysiological reasoning has changed from 1) different in kind from empirical evidence to 2) different in degree from empirical evidence.\(^{59}\) Now a doctor can be practicing EBM while considering clinical experience and pathophysiological reasoning. She should generally prioritize empirical evidence if this is available, relevant, and understood: the doctor using clinical experience and pathophysiological reasoning is still practicing EBM if there is no empirical evidence. If the latter is available then this would be best evidence, placed above clinical experience and pathophysiological reasoning. In fact, if the empirical evidence is of high quality, relevant, etc., there is no need to consider clinical experience and pathophysiological reasoning. However, the decision to include clinical experience and pathophysiological reasoning as forms of evidence, and to allot them a certain place in a hierarchy of evidence, is not evidence-based.\(^{60}\) Evidence from clinical studies is intended to be free from bias. Often, large numbers of experimental subjects are studied. The major limitation of empirical evidence is the need to evaluate its relevance to the individual patient. What is happening here is that the RCT averages out differences so that a real effect in a subgroup can be hidden in a non-effect in a wider group within which the subgroup is hidden. Therefore the trial requires a good characterisation of the condition to be treated that is not tendentious with respect to the scientific model being applied. The doctor's clinical experience is a guide in decision-making. The value of this increases with the amount of relevant experience, and can be augmented by drawing on the experience of other clinicians, especially those who have had extensive experience in the relevant area. However, the doctor's clinical experience is prey to cognitive bias, and is almost certain to have been developed unsystematically. The results of pathophysiological reasoning depend on the quality of the physiology and pathology on which it draws. The

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\(^{59}\) A different root cluster and set of connections.

\(^{60}\) This is a meta-epistemological issue in the sense that it prescribes the form that truth can take.
content of these basic sciences may have altered since the doctor studied them, her memory can fail, and so can her reasoning. This approach has the limitations of the biomedical model (paying little attention to emotional, interpersonal and cultural issues). The knowledge derived from pathophysiological reasoning is subject to the framing hypotheses and constructions of disease that inform the whole set of categories in play.

1. 2. 6. Hierarchies. Evidence again

By this stage of the work we have met two hierarchies. Knowledge used by a doctor in decision-making has been classified as evidential or non-evidential whereby evidence based on formal clinical research is preferred to clinical experience and pathophysiological reasoning. All of the above are preferred to patient preference and knowledge derived from system features. However, there is a third hierarchy. Evidence derived from formal research has been stratified.\textsuperscript{61}

It has been suggested\textsuperscript{62} that all these hierarchies are misconceived because there is a lack of evidence for this stratification of the forms of knowledge which a doctor uses,

\textsuperscript{61} The Appendix explains the following terms: N-of-1 RCT, systematic review, meta-analysis, RCT, case-control study, cohort study and survey. Djulbegovic 2006 tells us that 106 different systems for ranking the quality of the evidence have been published. A fraction of the variance in these lists is due to the differing research questions asked. (And it is all within a regime of truth with certain basic commitments which are unquestioned.) I here enclose a more recent Hierarchy of Strength of Evidence for Prevention and Treatment Decisions

\begin{itemize}
\item N-of-1 randomised trial. (One patient receives alternately the active and placebo conditions, and the experiment stops when it is clear that there is or is not a difference in effectiveness.)
\item Systematic reviews of randomized trials
\item Single randomized trial
\item Systematic review of observational studies addressing patient--important outcomes
\item Single observational study addressing patient-important outcomes
\item Physiologic studies (studies of blood pressure, cardiac output, exercise capacity, bone density and so forth)
\item Unsystematic clinical observations
\end{itemize}

\textsuperscript{62} Tonelli 2006.
and these hierarchies rest on problematic epistemology.63

1. 3. Research objective

The objective of my research is to develop an analysis of EBM from the philosophy in _Anti-Oedipus_ and _A Thousand Plateaus_ (together known as Capitalism and Schizophrenia), by Deleuze and Guattari, and from the philosophy in _The Birth of the Clinic_ and _Power/Knowledge_, both by Michel Foucault.

1. 4. Research questions

Part 1

1) How does EBM look through the Deleuzian theme of _faciality_?
2) How does EBM look through Deleuzian teaching on _desire, difference, immanence, Oedipus and capitalism_?
3) How does EBM look through the Deleuzian depiction of the _postulates of linguistics_ and the _signifying regime of signs_?
4) How does EBM look through the Deleuzian metaphors of _the rhizome, State science and nomadic science, segmentarity, and striated space and smooth space_?

Part 2

5) What is the impact of the Foucaldian writing on _spatialization of disease_ on our view of EBM?
6) What is the impact of the Foucaldian writing on _discourse, discursive practices_ and _regime of truth_ on our view of EBM?
7) What is the impact of the Foucaldian writing on _power—knowledge_ on our view of EBM?

63 Miles et al. 2007, p. 496, point out that the hierarchy of evidence comes from biostatistical thinking rather than from epistemology or the daily life of clinical practice, where the clinician is as interested in subjective as objective issues. Furthermore, the GRADE committee has eventually softened the sharp etching of the early list.
8) What is the impact of the Foucauldian writing on *the normal and the pathological* on our view of EBM?
9) What is the impact of the Foucauldian writing on *the subject* on our view of EBM?

1. 5. Previous research and how this work relates to it

The major contributors to the field of post-structuralist critique of EBM64 see their critique as lying outside of science, and argue that EBM rests in an episteme, a way of viewing the world, that is unacknowledged. To say that *seeing is believing* is to neglect to examine the vision and the viewer. “In what philosophy is EBM embedded?” It is couched in post-positivism.65 According to Foucault, power and knowledge function as a dyad. The emphasis moves from, “Is EBM right?” to “What does EBM do, and how?” EBM has developed momentum with too much focus on “the evidence”. There are limitations to “State science”, so ordered, with only a set number of ways of proceeding. This contrasts with nomadic science, in which, as explained by Deleuze and Guattari, there are an infinite number of ways of proceeding, as in traveling in a desert rather than in a city. In nursing, at any rate, sources of knowledge other than EBN66 are becoming neglected. Several nursing discourses should compete. There is no justification for one discourse to dominate, as if it had an “inside running” on the truth. Such aspects of nursing as caring, the *experience of patient and/or nurse* are likely to be sidelined by the new regime. EBM emphasizes science as distinct from the influence of patient and/or nurse, but health care takes place in a social environment. The meaning of illness and treatment is important, but tends to be overshadowed by the objectivity which EBM prizes. It is not automatic that the results of scientific research have authority when a nurse (or

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64 There is a group of Canadian scholars who write together—Murray, S., Holmes, D., Rail, G., Perron, A., McCabe, J., Gastaldo, D., Roy, B., and O'Byrne, P. The lead author is Murray or Holmes. Some of their papers are cited in my reference list.

65 The major philosophers are: Popper, Feyerabend, Lakatos, and Kuhn (Silva and Wyer 2009 p. 905).

66 Evidence-based Nursing.
doctor) treats a sick patient.

*The subject*, buried and unexamined in EBM, is challenged. The *subject of knowledge* is white, male, Western, and has the moral authority to carry out investigations and to decide what to recommend from science to the patient. The integrity and constancy of this subject is challenged, and a post-structuralist depiction of the subject is provided as an alternative. This is less clear as a *subject of enunciation* and a *subject of the statement*: the “person” or “entity” *making a statement* (subject of the enunciation) is fragmented, inconstant, even broken. And the subject *depicted in the statement* (for example: the patient) is also less intact and self-identical than EBM advocates assume. Thus the rational, self-identical subject, able to make use of *autonomy* and to function in the space in the decision calculus set up by EBM leaders for “patient values and preferences”\(^67\) is challenged. One threat to the traditional intact, rational subject comes from genomics, from biomedicine itself. How so? In the nineteenth century, alcoholism was a moral problem. But scientists have discovered genes for various behaviours and we could argue that these discoveries fragment the subject and problematise her rationality.

This *earlier research* addresses the question, “If not EBM, then what?” But the question has too many assumptions, chief of which is that another system is anticipated. A monolithic system is likely to repeat most of the mistakes of EBM. Rather, this earlier research suggests a tentative approach, involving competing models and debate, and calls for openness.\(^68\) I return to this in my Discussion.

The *current work* supports but softens the polemical tone of these authors because EBM leaders have softened their stance and have defended EBM against this

\(^{67}\) Murray, Holmes, Perron and Rail 2008.

\(^{68}\) Three alternatives are advanced by Kerridge 2010, p. 370. There are: 1) values-based medicine; 2) training doctors in a social model of criticism; and 3) keeping various ways of knowing apart. In this third approach, exemplified by Tonelli’s 2006, 2007 casuistic medicine, EBM could assist with the processing of one form of knowledge—that from clinical research. I return to this in section 3 of my Discussion.
critique.\textsuperscript{69} It draws on \textit{A Thousand Plateaus} and develops a detailed account of how each theme, \textit{taken singly}, “illuminates” EBM. The work does the same with Foucault, \textit{taking several of his themes singly}, and develops a viewpoint on EBM from the points of view of Foucauldian teaching on the medical gaze, subjectivity, discourse, power/knowledge, and the distinction between normal and pathological. The present work draws on related strands of Deleuzian philosophy to develop themes not addressed by Murray et al. viz. the Deleuzian teaching on desire, flux, and rhizomatic thinking. I also argue that EBM can contribute to the philosophy (of medicine), and I delineate the slightly differing viewpoints of Deleuze and Guattari, on the one hand, and of Foucault, on the other, and compare and contrast these philosophers of difference, or, more accurately, my accounts of EBM based on my understanding of their works taken separately.

1. 6. Epistemic stance

1. 6. 1. EBM and epistemology

EBM's epistemological theory is, arguably, a form of foundationalism, in which the beliefs rest on observations, and aims at discovering objective truths about the real world, "out there", in a universe in which the signifiers, such as blood pressure and pulse rate, indicate the objective reality of the health of experimental subjects.\textsuperscript{70} This type of “scientific realism” sees the relationship between our description and reality as transparent and verifiable so that Science discloses the facts about human health and disease.\textsuperscript{71}

\textsuperscript{69} I refer, then, to papers which may well have followed the challenges put forward by Murray et al. and by other contributors to such journals as \textit{The Journal of Evaluation in Clinical Practice}. My work reflects this more recent literature. I refer in particular to the published work of the GRADE committee, and to a paper on EBM epistemology by Djulbegovic, Guyatt and Ashcroft 2009, and the seven responses to Djulbegovic et al. in the \textit{Journal of Evaluation in Clinical Practice}, v. 15 (6). A third difference between my work and the writings of Murray et al. lies in the scale of the work. I have nearly 100,000 words to develop my post-structuralist viewpoint on EBM.

\textsuperscript{70} Buetow 2006.

\textsuperscript{71} Gillett 2006.
Those who are wedded to the idea of 'evidence' in the health sciences maintain what is essentially a Newtonian, mechanistic world view: they tend to believe that reality is objective, which is to say that it exists, 'out there', absolutely independent of the human observer, and the observer's intentions and observations. They fondly point to 'facts', while they are forced to dismiss 'values' as somehow unscientific.\footnote{So far I have written about the “spectator view of knowledge”. By contrast, “We are interested parties” (Magee 2001, p. 187).}

If that is correct, EBM posits an essentially Newtonian universe (in which the health of the experimental subjects is objective reality, "out there"). Post-structuralist thinkers, such as Deleuze and Guattari, raise the possibility that the subject/object distinction fundamental to this kind of realism may function for only a period, albeit a long and important period of history. Thus: EBM is a “regime of truth” resting on philosophical foundations which are historically relative and have been endlessly and inconclusively debated. EBM seems to have skated across the surface of these unresolved issues.

Not all of these problematisations of EBM epistemology are fully acknowledged even though EBM leaders\footnote{Djulbegovic, Guyatt and Ashcroft 2009.} relate EBM epistemology to modern philosophy of science. They explain that they draw on several epistemological theories and do not propose one specific to EBM, which they tell us is a method. These authors explain how modern medical scientists draw on three theories of epistemology in their work: 1) induction (inductivism) (data-driven approach), 2) deduction (falsificationism) (theory-driven approach) and 3) explanationism (holism) (“inference to best explanation”). They explain that the epistemological theory chosen by a scientist determines the method of investigation. For example, the first theory mentioned, inductivism, needs many facts from which to predict what has not been observed. This fits with advanced technology and computerisation. They explain that the third approach involves relating clinical research evidence to “the totality of our beliefs and knowledge”.\footnote{According to scientific realism, all the evidence coheres, ideally.} They point out that at the Cochrane Collaboration, a wide range of results is synthesised, leading to the trademark systematic reviews. They also tell us that, contra popular belief that EBM revolves around RCTs, they often develop systematic
reviews of substantial numbers of observational studies on diagnosis and prognosis, and that they frequently draw on disciplines other than medicine before reaching conclusions.  

So by 2009 EBM epistemology is more nuanced. The issue of whether observations are theory-laden is at least canvassed in this paper, and the authors tell us that EBM has not reached a definite view. Interestingly, they tell us that RCT evidence in favour of homeopathy was overruled by the weakness of homeopathic theory. They are aware of Quine's point that science is under determined by evidence so that evidence is compatible with more than one theory (and evidence alone is not enough to settle disputes about theories). They explain that reality is unknowable, and that theory is intended not to tell us about reality but to predict from observations that which has not, as yet, been observed. If the theory does the job it is acceptable, even if wrong. Thus they tell us that scientific truth is fallible. Their approach to hypothesis-testing is also nuanced. They do not accept the widespread approach of disproving the null hypothesis then leaping to the conclusion that the alternative hypothesis has thereby been established.

Djulbegovic, Guyatt and Ashcroft (2009) refer to papers which modify the well-known hierarchies of evidence. Epistemically, these writers tell us that none of the 106 hierarchies completely meet the criteria of reproducibility and logical coherence (GRADE Working Group 2004, p. 165). Modern EBM, they tell us, emphasizes “transparency and explicitness” (p. 165). Even so they continue to emphasize the importance of evidence. In particular, they explain that evidence is an excellent arbiter between competing views. Whatever definition of EBM is adopted, EBM must cohere with the best evidence there is, however this is obtained.

The Journal of Evaluation in Clinical Practice commissioned seven papers responding to this paper by Djulbegovic et al., and these are published in succession in Vol. 15(6). One of these authors, Sturmberg (2009), tells us that Djulbegovic, Guyatt and Ashcroft (2009) state that they have used a specific relationship between theory, evidence and knowledge. However, Sturmberg is not clear what this is. Sturmberg also tells us that Djulbegovic et al. canvas a range of theories in philosophy of science but do not specify just exactly what is their own epistemology, allowing free range. This author goes on to reason that, if, as explained clearly in the paper by Djulbegovic et al., EBM is a heuristic for clinical practice, how is it that EBM has moral authority? How is it that EBM makes normative claims about knowledge and medical practice? Sturmberg explains that knowledge is a multidimensional construct and that EBM's method of producing evidence is too narrow: the observing of one variable necessitates the non-observing of other variables, the
Rather, EBM encourages an estimation approach: trying to determine the most likely effect, and the range within which the effect plausibly lies (typically as represented by the 95% confidence intervals).\textsuperscript{76}

The identity of the knower is discussed by authors such as Paolo Freire, who challenge the idea that knowledge is a transferable commodity reflecting reality as it is.\textsuperscript{77} According to this approach, people develop knowledge together, and this process is influenced by the changing dominance in the dyad. In this model both patient and doctor bring in tacit knowledge, and patient brings in experience of illness in herself and others, along with experience with health care professionals.\textsuperscript{78} This model disrupts the EBM model in which, in spite of recent inclusion of patient preferences and actions, the decision is made in \textit{the mind of the doctor}. Then it is marketed to the patient, hopefully for ratification.

I have, then, documented a major difference between the assertions of Buetow and Holmes et al. (2006), and those of Djulbegovic et al. (2009). The earlier papers, written by EBM critics, tell us that EBM deals with reality but the more recent paper tells us that reality is ultimately unknowable. Their emphasis is on securing good predictions.

My own careful reading of three seminal EBM papers\textsuperscript{79} and of Rorty,\textsuperscript{80} a neo-pragmatist, leads me to the following assessment of the difference between 1) Buetow and Homes et al. and 2) the 1992, 2002 and 2009 EBM papers. There is, in the EBM demonstration of a small effect could be viewed as the absence of a substantial effect, and the production of research results from populations and its use for the next patient assumes a linear cause-and-effect model. Continuing with his critique of the epistemology in the paper by Djulbegovic et al., Sturmberg argues that the doctor's theoretical knowledge of a disease does not mean that she knows more than the patient, who has a rich experience of the disease in context. We face the question, “Who is the knower?” The EBM model assumes this is the doctor.

\textsuperscript{76} Djulbegovic, Guyatt & Ashcroft 2009, p. 163.
\textsuperscript{77} Silva and Wyer 2009.
\textsuperscript{78} Obviously, the doctor brings in professional knowledge.
\textsuperscript{80} 1999.
papers, a reflection of reality, but it is only in the background, and Djulbegovic et al. deny that it is ultimately knowable. There is a neo-pragmatist flavour in these seminal EBM papers. The emphasis in EBM is on practicing medicine. 

Our findings indicate that EBM should not be construed as a new scientific or philosophical theory that changes the nature of medicine or our understanding thereof. Rather, we should consider EBM as a continuously evolving heuristic structure for optimizing clinical practice.84

Some of the emphasis is on a method of predicting the unobserved from the observed. For example, observation of what helped, say, 10,000 women with breast cancer are

81 For example in the first of the three seminal papers there is occasional mention of pathophysiology. Even so, this is an abstraction. Death almost gets a mention: actually they write of preventing death. Physical examination gets a mention. But this is a process, a human activity. There is a very striking emphasis on method, and this is why I make a close connection with neo-pragmatism. Even in the (early) case of the man with one seizure in the 1992 paper, the entire emphasis is on which of two methods should be used to predict his chance of another seizure. What is not mentioned is his brain. There is mention of paradigms, and these authors consider that EBM is a paradigm. But this also falls short of reality. They explain that a paradigm is a way of viewing the world. In other words a human activity. The point I am arguing is that there interest in reality is en passant. They are overwhelmingly interested in method.

82 Rorty 1999.
83 I provide an extract from the entry on Richard Rorty in the Cambridge Dictionary of Philosophy, 2nd Edn, edited by Robert Audi, p. 798.

On Rorty's reading, pragmatism involves a rejection of the representationalism that has dominated modern philosophy from Descartes through logical positivism. According to representationalism, we have direct access only to ideas that represent the world, not to the world itself. Philosophy has the privileged role of determining the criteria for judging that our representations are adequate to reality.

A main thrust of Philosophy and the Mirror of Nature is to discredit representationalism, first by showing how it functioned as an unjustified presupposition in classical modern philosophers such as Descartes, Locke and Kant, and second by showing how analytic philosophers such as Wilfrid Sellars and Quine have revealed the incoherence of representationalist assumptions in contemporary epistemology. Since on Rorty's view, representationalism defines the epistemological project of modern philosophy, its failure requires that we abandon this project and, with it, traditional pretensions to a privileged cognitive role for philosophy. Rorty sees no point in seeking a non-representationalist basis for justification or the truth of our knowledge claims. It is enough to accept as justified beliefs those on which our epistemic community agrees and to use 'true' as an honorific term for beliefs that we see as "justified to the hilt".

84 Conclusion to abstract of Djulbegovic, Guyatt & Ashcroft 2009, p. 158.
used to predict how to help the next patient. Linking the observed to the unobserved is the business of theory. Djulbegovic et al. tell us that there is no guarantee that the theory is right. Even so, I take care not to overemphasize the vagueness of the relationship of EBM to reality: the 2008 GRADE paper maintains quite close contact with the harm (especially death) or benefit which treatment will do to patients.

1.6.2. One account of epistemology in traditional medical practice

There is a distinction between the epistemology of traditional medical practitioners and that of EBM. This involves the outcome movement of which EBM is a part. Experience and individuality define the medical encounter; broadly construed, these also figure in the definition of professionalism, generally. They do not, however, contribute much to the outcomes ideal. But first, what is this outcomes movement?

The outcomes movement has coalesced around beliefs that health care outcomes are poorly attended to, that probabilistic studies are the best evidence of what works, and that better medical practice will result from the direct application of research findings by individual physicians. (The term “outcomes” subsumes efficacy and effectiveness. The former refers to successful intervention under controlled conditions and the latter to successful intervention under conditions of medical practice. Thus, the outcomes are health care results in the broadest sense).

The outcome movement continues the empirical tradition in medicine whereby value is placed on observable and measurable phenomena. Probabilistic models are built around the likelihood of relationships between variables. However, Tanenbaum claims that in medicine there is a deeper tradition which builds models depicting cause and effect relationships between variables. This is the realist tradition. She tells us that this tradition in medicine attempts to ascertain what actually is the case. Tanenbaum makes a fascinating link between the empirical and realist traditions: “Their findings that some outcomes were more likely with some treatments, were interpreted as meaning that some therapies were better than others.”

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85 This line of thinking has been developed from Tanenbaum 1999.
86 Tanenbaum 1999, p.760.
87 Tanenbaum 1999, p.758.
88 p. 758.
paper Tanenbaum explains that the outcome movement research is not as tightly controlled as is the RCT, since it attempts to evaluate the use of research results in clinical practice. There are five ways in which the outcomes movement challenges the professional knowledge of doctors.

First, the outcomes movement promotes probabilistic knowledge, as distinct from cause-and-effect reasoning, intuition and experience. However, conclusions drawn from statistical analysis of large numbers of experimental subjects fail to inform doctors on 1) “why a particular relationship exists”, and 2) whether the relationship between, say two, variables, exists in the case of any one individual. Professionals are realists more fundamentally than they are empiricists. They think in terms of cause and effect in preference to thinking in terms of observables. Rewording this, professionals try to conceptualize what the relationships between phenomena actually are rather than what can be observed. This translates to preferring pathophysiology to clinical epidemiology, although not eschewing the latter.

Secondly, the outcomes movement favours objective knowledge over subjective. But this objective knowledge does not come from within the professional relationship. It is provided from outside. Surely the term “subjective” should not be used disparagingly with regard to a doctor's knowledge. The doctor derives knowledge from experience, and (subjectively) organises it into patterns. Professional practice functions in terms of direct experience. Objective knowledge, derived from a system in which knowledge is deliberately separated out from experience is welcome; but the professional person has to know when and how to integrate it.

The third point is that the outcomes movement aims for more certainty. More research gives more certainty. This movement assumes that a more certain doctor is a better doctor. Yet this movement, which works in probabilities, can achieve only a degree of certainty about a degree of probability. Of course, this work does not weigh in against this. I observe that doctors are professionals and that professionals expect to function with uncertainty and actually aim not for certainty but for wisdom in

89 Tanenbaum 1999, p. 760.
uncertainty. They make a commitment to see the patient through what cannot be known in advance.

Fourthly, as has been noted many times, the outcome movement wants the clinician to leap from the population of research subjects to the individual patient. Both are assumed to be (knowable) known and comparable;

“...it is presumed that the calculated probability of an outcome is directly meaningful for the next individual patient. Professionals, in contrast, do not use application to join knowledge to practice”. 90

Whereas applied science applies findings, professionals interpret. They work between the general and the particular and among particulars. This interpretation involves comparing and contrasting the individual with the population; but it focuses largely on comparison with other individuals.

Lastly, the outcomes movement recommends that in many situations doctors should follow rules, as in clinical guidelines, protocol-based practice and critical pathways. Of course, these rules are based on probabilistic research and are intended to reduce uncertainty and variation in medical practice. There is a tension, though, between rule-based treatment and individualized treatment. These two approaches move in opposing directions. One approach tries to eliminate the individual in context but the other tries to cater for the individual in her situation. Of course, the professional must decide whether to engage a rule-based protocol. Furthermore, it is logically nonsensical to require a rule which guides the doctor about whether to use a rule, and, if so, which.

1. 6. 3. The application of post-structuralist philosophy to epistemology, particularly with regard to EBM

Foucault moves away from a progressive theory of history: 91 he challenges the older idea that a newer scientific theory is better. (I myself am thinking here of EBM as a presumably better theory than traditional medicine.) Some philosophers of science

90 Tanenbaum 1999, p. 761.
91 I am indebted to McHoul and Grace 1998, especially pp. 9-10, for this line of thinking.
have replaced the notion of one theory being better than another with the notion of different theories. They reason like this. If two theories purport to describe reality, we cannot use reality as a yardstick to decide which is better: reality as a yardstick is simply not available. Some of these philosophers of science have adopted the view that each of the theories described or referred to a different reality. I consider this applicable to EBM. I now illustrate this by working through the five warrants for decision in clinical medicine, described by Tonelli. Clinical research provides information on experimental subjects (I explain later why I consider that researchers have set up their own objects). The experience of traditional doctors relates to patients; or more precisely, to the doctor's memory of patients, as she experienced them. Pathophysiological reasoning relates to a hypothetical model associated with an environment and laboratories. Patient preference uses a model which the patient has of herself, while system features use a model set up by administrators (for example, some expensive treatment might be available to an uninsured man from Fiji, at a cost.). These five streams of input into clinical decision making relate to five overlapping models of reality. You could say that there are five objects. For example, the system features object will have lines of geography crossing it. The object in the patient values model might be unwittingly depressed and wishing to die. The research object will bristle with data ascertained through measurement. The pathophysiological object will neglect existential issues. And the experienced doctor's object will have been set up through the medical gaze (explained later), altered by selective memory. I assert that the existence of five objects weakens the claims of EBM to provide the best evidence: the object differs from the objects on which other knowledge is based.

Post-structuralists consider that knowledge is influenced by culture, and inseparable from power, which is viewed positively. Medical science, which is connected with the pharmaceutical industry, university and government, has moved towards objective knowledge. Observations are carried out, theory is developed from which predictions are made, then further observations are conducted to refine theory. However, post-structuralist philosophy adopts the view that all this evaluation is embedded in a

92 2006.
system of belief, and that it is not possible to anchor this system of belief into reality. This is because post-structuralists aver that reality is simply not available as a foundation because it, too, is set up by belief.

With this foundation for knowledge, epistemology is wide open to pressure from those people who say which statements count as true, and which do not. Of immense importance is this: the EBM juggernaut, infiltrated with capitalism, continues to flourish despite still not having solved some epistemological problems two decades after it was launched as a restructuring of medical knowledge, as well as rarely taking part in published scholarly debate. I explain that these problems include the dichotomy between population research results and the knowledge needed for clinical decisions, a lack of guidance as to what the EBM epistemology is, a lack of clarity as to how to recognize evidence for the clinical decision, a lack of guidance as to how to integrate several streams of knowledge, and the limitation of using the doctor as knower. Post-structuralist philosophy seeks explanation as to why the EBM juggernaut, marketed as a restructuring of medical knowledge, pushes ahead over such a seriously problematised epistemological base.

Deleuze and Guattari move epistemology away from the knowing subject. Thought, they tell us, is an electrochemical activity, a flow, a flux, and is not attributed to any particular subjectivity. Indeed, the perceiving person and the object perceived are secondary, not primary, in the perceptual process. They are effects, not sources. This is explained in Chapter 3.

Contra Levi-Strauss and Lacan (and especially Freud), Deleuze and Guattari de-emphasize representation. Most strikingly, they explain phenomena in terms of desire/flow/flux, an energy system which entirely omits any attempt to “explain” human activity in terms of an ancient Greek myth. There is ONE layer, not two (connected by people, mainly men). To accommodate to our limitations we slow the flow of activity to create extensions, which can be subjects or objects. This allows us

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93 I devote Chapter 9 to the relationship between power and knowledge, as set out by Foucault. I explain how power facilitates the development and dispersion of knowledge. I comment on who can teach in universities, and on which papers and texts can be published.
to think we deal with constant phenomena. For example, if I am spending a month deciding whether to buy a house in Sydney, I may cope poorly with a changing me trying to buy a changing house with changing exchange rate. Deleuze and Guattari claim that we slow the flux to create a constant image of the self and another of the house, and another of the value of the currency. This is explained in Chapter 3.

These authors favour a theory of immanence. There is only one layer: this layer. They do not support a privileged position for perception in another layer. For example, they cannot understand why we judge life from the (decentred) perspective of morality. Similarly with the abstraction called “God”. Transcendence, they tell us, is the Western world's number one illusion. Actually there are numerous “transcendental signifiers”, and Deleuze and Guattari use none of them. The list includes reality, truth, reason, God, morality, the absolute, the categorical imperative and objectivity. All these have been set up by people, and themselves need explaining. Deleuze and Guattari base explanations on a more fundamental set (such as intensities). This prevents an explanation from being distorted by an intermediate step, such as the absolute (whatever that is). Rorty94 says that these may have helped structure our discourse in the past, but many people today do not use this framework.

Medical science makes extensive use of the subject/object distinction. Of particular interest to epistemology is that Deleuze and Guattari depict this distinction as a complex part of perception. The alternative is to depict the world in prehuman terms and to see that the viewpoint of the human subject, extensively used by other writers, is moved to an effect. The human subject is not fundamental. This approach challenges the entire concept of the subject, as a foundation for human thought, as in Descartes: I think, therefore I am. The Cartesian point of view depicts the human subject as transcending the world, and purely rational, and therefore, among the perceptions occurring in nature, the perception occurring from the position of human subject is privileged, and, along with it, the object; these are a package. I argue that the whole subject-object phenomenon is a privileged position in perception and that the subject and object are effects, not fundamental.95 This gives them a confused role

94 1999.
95 This is explained in Chapter 3.
in explanations, since they themselves need explanation.

Post-structuralists value multiplicity. As there is doubt about the authenticity of our knowledge, these philosophers argue for more than one knowledge discourse. None should dominate. I will detail the importance of *difference* as distinct from totalizing both in the philosophy of Deleuze and Guattari, and that of Foucault.

Post-structuralist philosophy postulates a layer deeper than knowledge. In his early writings, Foucault called this the *episteme*. This is the set of subterranean and contextual conditions which allow a statement or set of statements to be *true*. (Foucault uses the term *archeology* to describe the excavation of these conditions.) To explain what I mean by “episteme”, I draw on Rorty. The theory of evolution challenged theology and philosophy as it was taught when the *Origin of Species* was published in 1859. By late in the nineteenth century many educated people were thinking of man as a complex animal. The essential distinction, such as an affinity for the divine, or reason, between man and the animals, was sliding into the past. It would not have been possible in Europe in 1500 for this new view of man to become established truth, partly because of the influence of religion. Between 1500 and 1859 the changes in society included 1) the enlightenment, which moved some of the power from God to reason, 2) the industrial revolution and 3) the establishment of democracies. All of these changes further encouraged man that he could partly alter his environment, with or without God. And he could see himself as an animal without needing a divine dimension or a quasi-divine dimension, such as reason. My point is that the enlightenment, the industrial revolution and the establishment of democracies, were among the underlying conditions which made it possible for the essential distinction between man and animals to be dropped after 1859. The enlightenment, the industrial revolution and the establishment of democracies are part of what Foucault called the *episteme*. The *knowledge*, that man is a complex animal, needed underlying or surrounding conditions of a socio-historical kind.

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96 1999.
Summary of chapter 1

The research problem is this: *EBM, which has contributed substantially to the management of overwhelming amounts of information, and has become widespread in medicine, is narrow, totalising, lacks theory, and lacks evidence (of the kind it valorises) for its effectiveness. In spite of these conceptual problems, the EBM complex continues to expand, billed as a restructuring of medical knowledge.* A post-structuralist critique of EBM has been published by a group of Canadian scholars. I review this and explain how I extend this critique. I canvass a range of epistemologies. The *research objective* is to develop an analysis of EBM from the post structuralism of both *Anti-Oedipus*, and, more particularly, *A Thousand Plateaus* (Deleuze and Guattari), and *The Birth of the Clinic* and *Power/Knowledge* (Foucault). To that end I divide the task into 9 research questions (e.g. How does EBM look through the Deleuzian depiction of the *postulates of linguistics* and the *signifying regime of signs*?).
Chapter 2: Introduction to EBM then a contrasting approach

2. 1. EBM

2. 1. 1. The beginning

As the term "scientific medicine" offended some members of Faculty at McMaster University in Hamilton, Ontario, when the new director of internal medicine residency training, Dr. Gordon Guyatt, was appointed to train residents in a new way of reaching clinical decisions, he replaced this term with "evidence-based medicine" in the spring of 1990. The term first appeared in print in 1991 in Guyatt's editorial in

97 A possibly confusing issue needs clarification early in the work. In what sense am I using the expression “EBM”?

First, there is no single agreed-upon definition of “EBM”. To any individual, the phrase “Evidence-Based Medicine” may refer to one, several or all of: a hierarchy of clinical research methods for generating evidence, a way of evaluating existing clinical research, a method of translating research evidence (and perhaps clinical expertise and patient values) into clinical and public health practice or more abstractly, as a social movement or philosophical construct privileging some forms of knowledge and judgment over others (Ankeny and Mackenzie 2003). (Lipworth, Carter & Kerridge 2008, p. 429.)

This work engages all four meanings. However, not equally: the second is used rarely and the fourth frequently.
the ACP Journal Club and then in JAMA: The Evidence-based Medicine Working Group. 'Evidence-based medicine: a new approach to teaching the practice of medicine'.

However, earlier on, through the 1980s, Sackett and others at McMaster University had been introducing doctors and students to epidemiology. Postgraduate and undergraduate students were being encouraged to take a journal article and assess its merit. Considerable teaching was given regarding the assessment of the design of the studies. This was called "critical appraisal". Their aim was to train doctors and students to base clinical decisions on the best evidence which could be found in the literature. Part of the strategy for disseminating these concepts was the publication of readers' guides in the Canadian Medical Association Journal, then users' guides in the Journal of the American Medical Association. So Evidence-based Medicine was functioning, but not under this name, by 1990, in accordance with the principles set out in Clinical Epidemiology.

The goal is to be aware of the evidence on which one's practice is based, the soundness of the evidence, and the strength of inference the evidence permits. The strategy employed requires a clear delineation of the relevant question(s); a thorough search of the literature relating to the questions; a critical appraisal of the evidence, and its applicability to the clinical situation; a balanced application of the conclusions to the clinical problem.

Guyatt and his colleagues at McMaster University regarded this as a fundamentally different way of practising. These early leaders aimed to alter the behaviour of their colleagues, not to set up a new philosophy of medicine.

2.1.2. How they saw it

Early advocates saw EBM competing against the combination of patho-physiological reasoning and expert opinion, including panel expert opinion. They saw reasoning from bench science as mechanistic. They favoured, instead, the probabilities coming

98 JAMA 1992;268:2420-2425.
100 Guyatt 2008, "personal communication."
from clinical research: doctors must not be seduced by the "certainties" of the basic sciences. Knowledge of pathophysiological mechanisms may be a poor match for the results of clinical research conducted in multifactorial, naturalistic situations. With regard to expert opinion, including the opinion of a group of experts, early EBM protagonists alleged a likely gap between this expert opinion and the results of current clinical research. Thus they partly replaced the review article with the systematic review. This latter has a clearly-stated formal structure into which research results are inserted. By 1995, preparations were completed for the English Minister of Health to open the Cochrane Database of Systematic Reviews in London. The stage was set for EBM to provide us with “objectivity, impartiality, consistency, rationality, truth and certainty”.

From the outset protagonists of EBM realised that the hypothesis that the new method of practising gave better patient outcomes than the old, was unproven. These authors consider that it soon became too late, regrettably, to set up an RCT to assess the effectiveness of EBM. This is because of the difficulty in setting up a control group, in which there was no EBM influence. It would also be regarded as unethical. At least, before too long, they would enjoy support from the "Year in Review" of the *New York Times* magazine, which hailed EBM as one of the most influential ideas of 2001.

2.1.3 The formula changes

Although EBM has always emphasised the results of clinical research in decisions made by doctors regarding tests, treatment and prognosis, by 2002 Haynes, Devereaux and Guyatt are telling us that EBM uses clinical expertise to integrate 1)
clinical state and circumstances, 2) research evidence and 3) patient's preferences and actions, as stated above. Haynes and Guyatt explain that clinical research is more complex than basic science research, which uses observation and inductive logic. Furthermore, clinical research often requires experimentation, so measures to reduce bias are needed. Clinical science usually employs groups of patients, and uses probabilities to judge truth, rather than expecting certainty. Haynes and Guyatt explain that clinical research uses deductive logic and Bayesian logic (Kuhn's {1962} "normal science"). Although the early EBM leaders proclaim a shift in paradigm (which they explain is a world view delineating which problems could be worked on and what counts as evidence), Haynes and Guyatt raise the likelihood that basic science research and clinical experimental research would be better seen as complementary ways of knowing. For example (mine), through neuroscience we learn that Parkinson's disease is caused by a reduction in brain dopamine. From clinical research we learn that the introduction of ependymal cells into a lateral ventricle is followed by the reduction in Parkinsonian symptoms.105

105 As time went on, EBM leaders identified a number of complex issues for doctors trying to stay up-to-date with research evidence. Below the surface of this appealing idea—doctors keeping abreast of current clinical research—lurked 1) the validity of the research, 2) what constitutes the best results?, 3) the readiness of the results for clinical application, 4) to whom do these results apply?, and 5) how does the doctor apply them? They realised that the situations in which doctors apply the research vary widely. EBM leaders also tried to come to terms with the differing results from RCTs, and the frequent matching of RCT results by less cumbersome research designs.

So, aiming for a “knowledge transition”, EBM introduces epidemiology into medicine. A catalogue of benefits for EBM is set out by Maier (2006, pp. 326-7). It is now hard to introduce obscure, idiosyncratic testing or treatment, so it is likely that individual patients are less at risk of inappropriate test or treatment. The availability of evidence allows doctors to justify their methods to non-medical organisations, such as the law. EBM has combined with increasing understanding of the decision-making process to emphasise and support rationality in making clinical decisions. Along with this goes increasing rationality in the choice of research projects. EBM has inserted itself into education and discipline in the making of medical decisions and the forming of doctor's opinions. Through modern technology, especially the computer/worldwide web, and through education at undergraduate and postgraduate levels, EBM has rendered medical knowledge more transparent, uniform and widely shared. This democratises medicine, since modern knowledge, based on research, is accessible to many students and doctors, and is no longer locked up in the minds of a few experts whose affiliations may be unknown.
2.1.4. Their biggest contribution

EBM can be proud of its accomplishments. EBM was developed at a time when clinical research was increasing and the amount of information for doctors to absorb was becoming unmanageable. The world wide net was materializing. EBM leaders, such as Brian Haynes, developed systems for processing this information, and instructed doctors how to use these systems and assess the quality of the study design and other features of the information, as stated above. It had become no longer possible for a doctor “to keep up to date”, and the medical profession would be unable to deal with the vast array of published research if EBM or someone else had not structured it and assisted clinical doctors with assessment and interpretation. This has been explained by Wyer and Silva\textsuperscript{106} who use the term information literacy. “The critically important content and achievements of EBM are fully explained within the confines of the information literacy model”.\textsuperscript{107}

2.1.5. Criticism

This quote will now be more fully explicated. I have, in the previous paragraph, explained that the systematisation of information and its preparation for the clinical doctor, who was then instructed in finding, interpreting and using it, constitutes the towering achievement of EBM. I now go on to a detailed explanation of the phrase “...fully explained within the confines...”. EBM claims to be a new method of practising medicine. \textit{This is an exaggeration.} It is, I argue (with Wyer and Silva\textsuperscript{108}), a method of practising medicine in which \textit{only one} change has been made. The only change is that a doctor has to consider one more field of information: clinical research. She should now use clinical experience to integrate clinical research evidence, patient preferences and actions, and clinical state and circumstances. Note that all of this, including patient preferences and actions, constitutes \textit{pieces of information}. EBM has not told us how to integrate these different linear streams of

\textsuperscript{106} 2009.
\textsuperscript{107} Wyer & Silva 2009, p. 891.
\textsuperscript{108} 2009.
information. They have simply introduced one more. These change agents have not clarified the relationship between this new stream of knowledge and ethics. EBM is not well constructed to deal with ethics. EBM has made little contribution to telling us whether our care of the patient has improved, or even what is, and what is not, good care.

Much of the criticism has been leveled at the importance attached to the clinical research component. It has been alleged that this is largely about therapy. Therapy is important to doctor and patient. But EBM's new way of practising medicine has not developed the other aspects of practice. These include the meaning of it all to the suffering patient, and the effect, if any, on health after the therapy has been applied to this patient. Wyer and Silva\textsuperscript{109} point out that this huge emphasis on therapy has not included the relationship between doctor and patient, and that the much-vaunted inclusion of “patient preferences and actions” had been done at the level of one more item of information which the evidence-based doctor should consider. The patient, in full, does not really get into this model until all has been processed in the mind of the doctor, who finally markets it to the patient. Wyer and Silva\textsuperscript{110} point out that the knowledge is that of the doctor, rather than that of the doctor--patient dyad.

2. 1. 6. Ongoing change

By 2004 and 2008 the GRADE Working Committee is making further changes in EBM. The committee explains that some RCTs have design features which downgrade the quality of the evidence which they provide, and that some observational studies have outstanding features which improve the quality of their evidence. This is a softening of the earlier, rigid hierarchy of evidence. The GRADE Committee clarifies that sometimes the evidence makes it clear that the intervention is harmful or helpful, and so a strong recommendation can be made. However, they explain, sometimes it is less than clear whether an intervention is harmful or helpful, and in these cases a weak recommendation should follow. Thirdly, the committee

\textsuperscript{109} 2009.
\textsuperscript{110} 2009.
incorporates patient preferences and actions before reaching its recommendation, along with (fourthly) system features. In this last matter the committee realises that using one treatment may preclude the use of another, because of limited resources. And, of course, some treatments and tests are unavailable, unethical, very expensive or cheap, or even illegal, as in the case of abortion in various societies.

2.2. Casuistic-Based Medicine (CBM)--an approach alternative to EBM

By contrast with EBM, a physician has suggested that a clinical doctor might try to integrate knowledge from about five sources, weighing the strengths and limitations of each.\textsuperscript{111} These are: results of clinical research, pathophysiological reasoning, clinical experience including that of experts, patient values and preferences, and system features (“resource availability, societal and professional values, legal and cultural concerns”\textsuperscript{112}). This is congruent with the rhizomatic structure proposed whereby different sources of grounding in experience each make a contribution to the layer of knowledge that we discern as important for the area of praxis involved. This has been called a casuistic approach\textsuperscript{113} and it moves the emphasis from the population referred to in formal research to the individual case. A casuistic approach is bottom-up: it starts with the individual case, links it to a series of cases that have been encountered in the past and the decisions that were made in those cases, and considers the various “warrants for decision” (reasons supported by facts).

However, CBM is open to two criticisms levelled at EBM. Kerridge\textsuperscript{114} draws attention to the merits of the casuistic approach, but regards it as undertheorised. For example, we are not told how to integrate the five streams of information.\textsuperscript{115} Tonelli, who proposed CBM, accepts this. Secondly, as with EBM, the knowledge is computed in the mind of the doctor.

\textsuperscript{111} Tonelli 2006, 2007.
\textsuperscript{112} Kerridge 2010, p. 371.
\textsuperscript{113} Tonelli 2006; Buetow 2006.
\textsuperscript{114} 2010.
\textsuperscript{115} This is my example.
Summary of chapter 2

The EBM doctor is trained to ask the relevant clinical question, search the literature, assess of the evidence and its suitability for the clinical situation, and carefully apply the conclusion to the clinical problem. Because some randomised controlled trials lack power, and because there are often conflicting results, meta-analyses of trials are conducted. Systematic reviews of trials and meta-analyses are developed. In time, three more transformations of the results are set up for the clinician: clinical practice guidelines, protocol-based practices and critical pathways. Even so, I argue that EBM's claim to a new method of practice is too comprehensive: EBM introduces (to the clinical decision-making process) another body of knowledge, but falls short of teaching doctors how to integrate this with the traditional knowledge. Furthermore, the knowledge is that of the doctor rather than of the doctor-patient dyad. EBM offers no help with the doctor-patient relationship. We are not told, in the new system, whether the needs of the suffering patient are met.
PART 1: DELEUZE AND GUATTARI

Chapter 3: The philosophy of Deleuze and Guattari

3. 1. First introduction

Deleuze (1925--1995) was a philosopher, Guattari (1930--1992) a psychoanalyst, political activist, and philosopher. Their best-known oeuvre is a two-volume work called Capitalism and Schizophrenia, of which the first volume is called Anti-Oedipus and the second volume A Thousand Plateaus.

In medieval times, common sense dictated that the world was comprised of meaningful things, each differing from the other in essence, set up by God or by nature, and so constituting the truth of reality. However, modern thought saw the world or the image of it we call reality, as constructed by us. From the eighteenth century it was our concepts and the differences and similarities that they mark that set

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116 God and nature were conceived of as unitary, coherent wholes. (This is my addition).
117 Colebrook 2002, p. 27.
up the world. To the extent that this view - structuralism-- was accepted in the twentieth century we adopted a different way of conceiving our organum of knowledge “... as a structure of signifiers. The structuralists argued that we couldn't even have concepts without some material system (of sounds or marks) that enabled us to conceptualise”\textsuperscript{118} and that those concepts were not the actuality being depicted. Let me explain.

3.2. Structuralism

The game of chess is based on positions on the board and the possible range of positions which the rook, castle and the other pieces can occupy. In a structure, any object or symbol is defined for what it is by the structure in which it appears and the relationships it is given or has to other items of its kind. In addition, there is another dimension to the \textit{spatium}. The enormously complex \textit{combinations} of moves facilitates the development of the game to the level achieved by the grand masters. Moving these thoughts into philosophy, we can emphasise the importance of structure rather than of the occupants by suggesting that the space occupied by "God" was later occupied by "man" as he became able to gain knowledge, set up democracies and partly control the elements. Any further change of occupant in this space will occur by mutation (and within the structure). This approach allows Foucault to point up the imaginary character of man, and it allows Althusser to bring out the ideological character of humanism, and as God and man are replaceable, structuralism is clearly atheistic and anti-humanistic.\textsuperscript{119}

By now the reader realises that structuralism involves a transcendental philosophy in which the structure is more important than the occupants: God for many centuries, then man for a while--who or what next? In his depiction of structuralism, Deleuze (1967) discusses who are considered structuralist writers, what language they use, and what they themselves recognize as structuralism. In this way Deleuze takes us through seven criteria for recognizing structuralism. These are: 1) the symbolic, 2)

\textsuperscript{118} Colebrook 2002, p. 27.
\textsuperscript{119} Deleuze 1998, p. 264.
the local or positional, 3) the differential and the singular, 4) the *differenciator* and *differenciation*, 5) the serial, 6) the empty square, and 7) and 8) the passage from the subject to practice. The remainder of section 3.2 teases out these aspects of structuralism, serially.

Deleuze explains that structure is unconscious and virtual. This structure is real but not actual or imaginary. You could think of it as an ideal reservoir. In this structure, elements, their relationships and relationship values cohere. Take society as an example. The structure is virtual in general but there are instances in which it forms an aspect of an incarnate entity, or it could do in the future. This occurs through "partial combinations and unconscious choices". Capitalism would be an example of an incarnate, or actual, aspect of a virtual society. It involves the structure, elements, relationships between them and relational values.

Reviewing the very diverse writings, in a wide range of scholarly fields, of people called "structuralist", Deleuze (1967) notes that the symbolic supplements the more common real and imaginary, and is not allowed to be submerged into them. Thus Foucault discovers an object mined by the archaeology of thought, and Althusser, writing on Marxism, postulates an object--"Behind real men and their real relations, behind ideologies and their imaginary relations, Louis Althusser discovers a deeper domain as object of science and of philosophy."121 "In Lacan's work, and in the work of other structuralists as well, the symbolic as element of the structure constitutes the principle of a genesis: structure is incarnate in realities and images according to determinable series. Moreover, the structure constitutes series in incarnating itself, but is not derived from them since it is deeper than them, being the substratum for all the strata of the real as for all the heights (ciels) of imagination".122 Here Deleuze conveys the subtle relationship among the real, the imaginary and the symbolic. Of great importance is his identification of the symbolic with structure. The structure is a *theoretical* object. As already mentioned, Foucault has postulated a structure / theory at the basis of his archaeology of thought, and Althusser (writing on Marxism) has

120 Deleuze 1998, p. 267, last line.
invoked a theoretical object as the basis of science and of philosophy. Later, I postulate a theoretical object which EBM uses for its patient. This is biomedical, as studied by science (and does not include the Heideggerian self-interpretation, for example). It is a theme in my work that EBM scarcely notices the symbolic. For example, in addition to the well-known real father and imaginary father, Lacan discovered "Name-of-the-father" (symbolic). I consider that medical students and doctors are influenced by "the Name-of-the-father." I mean that EBM thinks it deals with the results of clinical trials. But, I aver, all this develops such prestige that that a medical student thinks she had better follow "the evidence" or she will be a bad girl and the patient my die. Before 1990 a young doctor aimed to practice obstetrics as taught by the Professor of Obstetrics. EBM pitted itself against this. But has EBM noticed that today it is the Professor of Obstetrics who teaches the student to practice according to "the evidence"? Eminence medicine is still with us--"Name-of-the-father", as in Lacan, the symbolic.

Places in structural or topological space are, or can be, occupied by real things or people, and, sooner or later imaginary entities become associated with them. However, the places or sites in topological space do not, themselves, signify or designate. A key idea here is proximity, and a key word is subject. Deleuze tells us that the positions in this theoretical space are occupied by subjects and are ordinal (involve the order of things), not cardinal. Foucault sets up a symbolic space involving determinations like playful or dying. These apply to real people who come to occupy this topological space. Althusser (writing on Marxism) describes an economic space in which relations of production are occupied by real people, secondarily. In social space, father, mother, and daughter are sites in a theoretical structure before they are occupied by specific people.

Deleuze goes on to examine the singularity of the elements of position in the topographical space. Not surprisingly, he draws on language. "Pitch" and "bitch" are distinguished by letter, sound and meaning, but are not reducible to them. However,

123 "Space is what is structural, but an unextended, preextensive space, pure spatium constituted bit by bit as an order of proximity, in which the notion of proximity [voisinage] first of all has precisely an ordinal sense and not a signification in extension." (Deleuze 1998, p. 262.)
the phoneme, or distinguishing unit of linguistics, is greater than this particular p/b
distinction. Even so, the phoneme cannot function as a unit of structure without the
other phonemes. This singularity, the phoneme, takes its place in among structured
relationships, which determine each other.

Differential calculus provides an example of the symbolic nature of structural
relations. Whereas in the fraction 1/10 the 1 and 10 are independent of each other,
and real, and whereas a quadratic equation involves relationships (between variables)
which are imaginary but determinable, the expression dx/dy determines the
relationship between whatever values of x and y are inserted. The singularities
constitute a major aspect of the symbolic structure, complementing the differential
relationships. Continuing with the example provided by differential calculus, a curve
embodies relationships: the points on the curve are the singularities. Empirically, this
transcendental structure might, for example, correspond to a U-turn in politics.

When Levi-Strauss describes the kinship structure of a tribe, he includes symbolic
elements, relationships and points. For example, in the Oedipus myth, Levi-Strauss
describes kinemes, kinship phonemes. These are the building blocks of the social
structure. They include brother/sister, husband/wife and maternal uncle/sister's son.
These kinship names are complemented by kinship attitudes to effect the singularities
in the social system. However, Levi-Strauss can equally approach the analysis in the
other direction: he can draw on the singularities (Oedipus marries his mother, kills his
father, immolates the sphinx, etc), to determine the relations between mythemes, such
as persistence of aboriginality and its reciprocally-determined negation of
aboriginality. These mythemes are the building blocks of the myths, which,
according to Levi-Strauss, are the underlying determinants of social structure.

... symbolic elements and their relations always determine the nature of
beings and objects that come to complete them, while the singularities form an
order of positions that simultaneously determines the roles and the attitudes of
these beings insofar as they occupy them.124

The structure is unconscious and virtual, but not actual or imaginary. The reality of
the virtual is not the same as the reality of the actual. The virtual also has its own

124 Deleuze 1998, p. 266.
ideality; this is not the same as a possible image or abstract idea. The structure of a
language system is virtual, actualized in parts. What is actual is not the structure but
that which it incarnates. This actualization occurs using "partial combinations and
unconscious choices," Deleuze tells us. We have, then, the coexistence of a virtual
structure and an actualized structure. The virtual structure is symbolic and is
differentiated. "What is actualized, here and now, are particular relations, relational
values and distributions of singularities; others are actualized elsewhere or at other
times." With regard to language(s), for example, there is a general (virtual)
language system whose relations, relational values and distributions of singularities
are differenced into various languages. These latter can be regarded as
substructures. Deleuze tells us that the relations, relational values and distributions of
singularities in the virtual structure are perfectly differentiated. However, he uses a
"c" rather than a "t" to convey that, in going from the structure to the substructure,
these relations, relational values and singularities are actualized according to specific
rules. He tells us that the virtual system is differenced into the particular language,
such as French. Thus he describes "a universally determined phonemic
relationship"--t/c--with the "t" taking part in the virtual system and the "c" partaking
in the actualized system. This differenciation applies to 1) species and 2) parts and
extended figures, corresponding to 1) differential relations and 2) singularities, and
involves temporality, both global and internal.

Deleuze goes on to explain that the elements of the structure so far described
constitute a series. "Indeed, the symbolic elements that we have previously defined,
taken in their differential relations, are organized necessarily in series." Levi-

Strauss argues that totemism is poorly understood if explained in terms of imaginative
identification of a man with an animal. However, understood symbolically, it is quite
different. "...but the structural homology of two series of terms: on the one hand, a
series of animal species taken as elements of differential relations, on the other hand,
a series of social positions themselves caught symbolically in their own relations"

However, they do not function without at least one other series. For example, a series of phonemes is adjacent to a series of morphemes, while in Althusser/ Marxist theory, economic series elements impinge on a social series and vice versa. There is an interaction between two sets of differential relations. An important aspect of structure is the choice of one or more adjacent series with which to interact.

Deleuze, in explaining how the final determination of the singularities does not even occur through their relationships within the structure, but through the relationships between two or more series (For simplicity, I will not deal with instances of several series). Deleuze draws on Lacan's account of the Edgar Allen Poe story "The Purloined Letter". Lacan identifies two, interacting, series.

First series: the king who does not see the letter, the queen who is thrilled at having so cleverly hidden it by leaving it out in the open, the minister who sees everything and takes possession of the letter. Second series: the police who find nothing at the minister's hotel; the minister who is thrilled at having so cleverly hidden the letter by leaving it out in the open; Dupin who sees everything and takes back possession of the letter (Lacan 1966, 15; 1972, 44).

Here in The Purloined Letter, as depicted by Lacan, there is an interaction between the elements of the two series. Note, for example, how the first, second and third elements of the first series bear remarkable resemblance to those in the second series—"showing how the 'structure' puts into play two series, the places of which are occupied by variable subjects". Deleuze explains that metaphor and metonymy play a large part in structuralism. Note the homology involved between the two aspects of the metaphor or metonymy. "Wellington" and "Canberra", used metaphorically, have a moiety in geography and another in politics. The Australasian geography is a structure and so is the Australasian politics. Both involve the incarnation of symbolic structure. There is also metonymy here. We are not really thinking of all of Wellington, but of the House of Representatives, or even of an influential aspect thereof, such as the Cabinet or Prime Minister.

In The Purloined Letter, as depicted by Lacan, the letter floats about with agility and

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130 Think of a world leader speaking to key people in Wellington then in Canberra.
is not actually locked into either of the two series. It is symbolic, and is the key factor in effecting the distribution of the elements in both series. Similarly with a song, viewed here as a structure. The refrain is in the chorus and verses. It is immanent in both and so is able to control the structure of the song. The refrain is not locked into the chorus or any one verse (being always absent from its place) but effects the distribution of all elements in the song. Deleuze writes of object=x. This is his name for the purloined letter, the handkerchief in Othello, the refrain in a song, the crown in Henry the Fourth Part One, in which Prince Hal's trying on of the crown links the significance of the crown in the light-hearted world of Falstaff with the serious reality of the great kingdom in which his father is ill, but still alive. Here the crown is symbolic, not imaginative. In fact, Deleuze tells us, this trying on of the father's crown stops the two series (Falstaff and his frivolity and Henry Bollinger and the responsibilities of the monarch) from falling back into each other (which can happen with two imaginative series). This controlling, paradoxical object=x is an essential feature of structuralism, controlling the interaction of two adjacent series. Actually, Deleuze usually refers to it as an empty space. This fits well with chess. Here the empty space, which changes (and so can be considered to lack identity), is an essential feature of the game, controlling the white and black series. Structuralism needs this ground zero. In such a space can be inserted "God", later "man", and who knows what next? Thinking is facilitated, as stated above.

The way in which various structures interrelate is described by Deleuze. All structures are infrastructures. Although linguistic structure paved the way for the whole field of structuralism, it does not constitute an underlying structure for other systems, such as sexuality, or economics. Rather these various structures interrelate through their paradoxical object-xs--their empty squares. One example is provided by psychoanalysis and ethnography. Sometimes there are slots in the social structure for the activity of a specific person; and sometimes there are several people who could fill a space in the structure, as in job applications.

This paradoxical, symbolic object=x traverses both series, linking them. It is always

131 Deleuze 1998, p. 278.
displaced from itself, as in chess, where the empty square is temporarily filled by a pawn, for example, so that another empty square takes up the symbolic function. Deleuze accords it the role of differenciating difference--it influences two series of differential relationships between the series. Numerous other instances of this "empty square", are detailed by Deleuze (1998). (Some authors, such as Lewis Carroll and James Joyce [in Finnegans Wake], use portmanteau words. These empty squares feature in two series. In Lewis Carroll a portmanteau word enters both the verbal and alimentary series and hollows out the space between.) Lacan postulates the phallus.

But the phallus appears not as a sexual organ or as the empirical determination of one of the sexes. It appears rather as a symbolic organ that founds sexuality in its entirety as a system or structure, and in relation to which the places occupied variously by men and women are distributed, as also the series of images and realities. 132

To equate this with penis or with an image, is to misunderstand Lacan's writing. The phallus is symbolic and establishes the entire sexual system. It is always displaced from its position beside the mother. "The relations vary as a function of the displacements of the object=x, as relations between partial drives constitutive of sexuality." 133 In economics the empty square is value, not identifiable with any of the elements (in the structure), such as exchange relations.

Profound changes in the structure result from 1) the filling of the empty space or 2) the maintenance of its empty status. These changes are called "accidents". (One would be that God makes the desert grow, hollowing out the earth, or man fills it. These are the two sicknesses of the earth, God and man, structurally speaking.) They are internal to the (symbolic) structure: they are not (fundamentally) real or imaginary (ideological). Deleuze explains that the circumstances in which these accidents occur, within an order such as the economic order, are important. It is through this empty square that mutations or transitions in a structure occur. As stated above, the empty square must remain available, not blocked or permanently evacuated. This is so that the nomadic subject can occupy the empty square intermittently and bring about

change in the structure of an order, such as sexuality. (Then can follow the real and imaginary [or ideological] changes which are based on the [symbolic] structural change.) Here Deleuze introduces not only structure, but praxis:

This mutation point precisely defines a praxis, or rather the very site where praxis must take hold. For structuralism is not only inseparable from the works that it creates, but also from a practice in relation to the products that it interprets. Whether this practice is therapeutic or political, it designates a point of permanent revolution, or of permanent transfer.  

3. 3. The philosophy of Deleuze and Guattari

3. 3. 1. Second introduction

Deleuze and Guattari explain phenomena from a more elementary base than do most writers. The usual base for explanations itself requires explanation. For example, the subject, the object, God, a purpose in evolution or history, man, human nature, nature and morality are are seen by Deleuze and Guattari as partly constructed, and so unsuitable for basing explanations of other phenomena. These authors use a plane of immanence, this plane, and avoid the transcendental plane, in providing explanations. They focus on the molecular, not the molar. They were unable to provide an explanation of the student uprising in 1968 in molar terms, such as social classes at odds with each other. From macro politics they turned to micro politics--to singularities, intensities, and molecules.

Whereas many philosophers have argued about forms and structures, like language, and have tried to work out the correct correlation between thought and the world it represents, Deleuze and Guattari map forces. (A map of forces is called a diagram.) A major focus of their philosophy is the encounter, which stimulates thought to solve problems. Such thought interacts with the world and is creative of difference. Thought is active. Deleuze and Guattari do not use the common model of getting thought to map or reflect the real world, thus setting up knowledge. They regard such

thought as passive, reflecting reality. They break out of any (fixed) image of thought.

3. 3. 2. Difference

It is widely thought that structuralism represents a radical break with identity thinking. This means that structuralism regards difference, not identity, as primary. But Deleuze and Guattari do not consider that this is a substantial break. They point out that the whole system of thought still rested on a structure, such as the rational human subject and the language s/he had set up. The difference that the structuralists said was primary, rested on a solid foundation! Deleuze and Guattari do not base their difference on this 'sound foundation'—difference really is primary. They explain many phenomena in terms of prehuman activity such as the activities of molecules. Molecules interact with each other. Deleuze and Guattari say they perceive each other, then change, or interact. For example, when a calcium chloride molecule perceives a molecule of sulphuric acid, electrons are interchanged to produce a molecule of calcium sulphate and two molecules of hydrochloric acid135. Deleuze and Guattari say that chemical substances choose other substances to interact with, from a wide range of possibilities. This involves perceiving. These authors take this molecular approach right through to thinking, which they see in terms of prehuman activities. Instead of saying that Jonathan Swift created minuscule men for Gulliver's Travels, Deleuze and Guattari say that electrochemical activity in the brain of Swift produced minuscule men. They shift the emphasis from human thought to thinking. This is an activity, intertwined with other aspects of living. (For example, when I prune a tree, there is an intertwining of my thinking and the movement of my scissors). One such experience is happiness. This is not my happiness, or hers. Deleuze and Guattari do not centre their thinking/writing around the human subject. Thinking/living is depicted in terms of differentiating flows, as explained below.

A major part of the teaching of Deleuze and Guattari concerns difference. I explain above that the medieval difference was secondary to firmly established entities, that the eighteenth century thought depicted these entities as resulting from our concepts,

135 This is my example.
and that twentieth century structuralists taught that we could not have concepts without sounds and marks on paper: difference was set up through signifiers. Deleuze and Guattari continue some of this approach: difference, rather than identity, is primary. However, they do not see difference as a system, such as a system of relations. Difference, for Deleuze and Guattari, differs from itself: each affirmation of difference is different. The difference between two genes differs from the difference between two bars of music. Combining difference with flow and time, Deleuze and Guattari give us a picture of endless development in which difference precedes entities. The living being is a state of differentiation or becoming. Furthermore, each life event differentiates itself differently. There is also a fundamental difference in that thought participates in the symbolic order, whereas in the other order—at least in its brute causal actuality—it doesn't.

The approach taken by Deleuze and Guattari differs from that of traditional metaphysics, in that traditionally, to be is to be one of a kind. Matter has form, and different kinds of matter have different forms. So the tree has certain essential characteristics which distinguish it from grass. Then again, within one kind, there are differences between individuals. So there are individual trees and individual weeds. The differences between kinds are differences between essences, whereas, within one kind, the differences between individuals are differences in matter but they are not differences in essence. By contrast with the traditional view and the structuralist view, in which to be is to be one, Deleuze and Guattari, avoiding Platonic and other forms, argue that to be is to be different. Deleuze and Guattari set up the individual through difference.

3. 3. 3. Desire

Involved in this differing flow or flux is desire, which desires to function/express itself unconditionally. In a reversal of most previous theorizing, Deleuze and Guattari depict desire as a positive force, rather than as a lack. In Deleuzian theory, the desire relates to the desiring self rather than to a wanted external object. Furthermore, they emphasize the importance of desire, seeing it as productive, always differentiating, differing from other flows, differing from what it was and will be. They depict, then,
a flow of desire which differs from another flow of desire but interacts with it, the interaction modifying both. When these two flows meet they form a connection.

Deleuze and Guattari depict all these desires as virtual in the first instance. Deleuze and Guattari do not begin with an actual world and then add on desire. The actual world is formed from the numerous possible interactions of various flows. In the previous paragraph I mention two hypothetical flows connecting. Two connecting flows form a partial object, or “extended term”. Deleuze and Guattari explain perception as a flow between two poles. At one end is the entity being perceived, and at the other end or pole is the perceiver. This is, however, an oversimplification. Actually, Deleuze and Guattari theorise that this process or flow called “perception” is between two flows, rather than two entities. More complex again, it is actually between the intersection of two flows and the intersection of two other flows. It is when we think about the perception that we develop an image of an entity at each pole, rather than an intersection of flows at each pole. This is how we develop the subject, which perceives, and the object. Perception creates a relation. From the flux which is life we solidify, setting up recognizable entities, which enter the social calculus. Thus out of the virtual (flow of forces) emerges the actual (extended term).

In the theory of Deleuze and Guattari, desire displaces Oedipus. Deleuze and Guattari write extensively along the lines that the unconscious is an active force, a desiring machine. They ridicule the Freudian attempt to introduce an ancient Greek myth to explain unconscious activity. They draw attention to the fact that the Oedipus myth is a representation, into which Freudian psychoanalysts try to push all unconscious

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136 Think of it like this: From the flows, perhaps two extended terms are cut out. These might be the bodies of John and June as prehuman flows of desire interact. We come to view these as June wanting John. Deleuze and Guattari instance the mouth and the breast. Think of these as solidifying out of the flows. I provide some quotes to help illustrate how these flows seem to produce extended terms. “Distinct terms—such as the human—emerge only in the organization of desire: that is, the coding of flows of desire into distinct organisms” (Colebrook 2002, p. 100). “Desire begins not as the desire for some object by some person—rather, there is a flow of life, an impersonal differentiating 'sexuality', which produces bodies and organisms. So, before there are any objects who desire, there is the production of desire” (Colebrook 2002, p. 100).
phenomena. Deleuze and Guattari regard the Oedipus myth as far-fetched, and its relevance to modern European psyche as hypothetical. They criticise the representation as being in another order of phenomena from the energetic activity of the unconscious: the Oedipal deliberation of the psychoanalyst is not where the action is. To push the dynamic activity of the unconscious into the Oedipal triangle is a distortion, a contrivance. Freudian psychoanalysts behave as if the representation is the real world.

Even so, the issue of Oedipus is more complex than this. Deleuze and Guattari take some of the blame off the shoulders of the psychoanalysts. Our (imperial) society was already infiltrated with Oedipus when Freud gave it a specific task. The family has the role of transmitting to the child the Oedipal structure of society. This means, in part, that throughout our society, the expression of desire is constrained by a complex, composite phenomenon: law, father, authority, God, tradition, reason. “From the moment desire is welded again to the law—we needn't point out what is known since time began: that there is no desire without law—the eternal operation of eternal repression recommences, ...”  

The child has to grapple with, or live in the shadow of, the Lacanian transformation into the name of the father, the legitimated, authoritative source of truth and recognition in the world at large. In a similar way we need to find a way of coping with the messy world around us that is conductive to our feeling that we belong and are not alienated.

3. 3. 4. Perception

I introduce, above, the concept of perception, and explain that Deleuze and Guattari apply the concept throughout being. I introduce the concept of the human subject, and indicate that this is traditionally one pole of the process of perception. Nietzsche and other writers realise that different vantage points produce different percepts (perspectivalism). Deleuze and Guattari complain that, in among all these flows/perceptions, Western thought has elevated certain vantage points to privileged positions. They are critical of two such vantage points—the egocentric view that

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137 Deleuze and Guattari 2004, p. 122.
reifies the human subject as subject and the "view from nowhere" that reifies the object producing a dichotomy whereby the subject views the object. Deleuze and Guattari do not support this mixture of concept (subject and object) and substantive (lived subjectivity in a context), yet on this dichotomy rests science, including EBM. Most writers describe a range of phenomena, such as politics, from the human vantage point. Writers in the human sciences and in fiction look out on the world from the secure egocentric position of the human subject, usually considered stable, self-identical, and rational. (The human subject is also considered, in terms of the "view from nowhere", as an object that can be delineated according to the posits/tenets of science.) But Deleuze and Guattari do not consider that the human subject should receive such a prominent position. One thing they dislike about this position is that the human subject appears to be a fixed, indubitable and immutable foundation for thought, as in the cogito. They regard the human subject and the object (the other part of the dichotomy) as effects of the dichotomy, rather than a source or beginning point. Prehuman activities, such as chemical and physical reactions, produce the human subject, through ongoing development involving flow and endless differentiation but also through evolving to the point where the emergent product engages with the mirror world of logic/symbolism/signification. Thus the whole idea of the objective world and variably subjective knowledge about it is an idealized construct. Note that the entire edifice of EBM, with its RCTs set up to reduce bias and achieve objectivity, rests very pointedly on this construct: objectivity.

In the writings of Deleuze and Guattari time is not just the time elapsing between two events. Time is virtual, and the actual is a contraction of the virtual by selecting one version of the virtual as privileged or real. Deleuze and Guattari place emphasis on the slowing down of the stimulus/response in human brains. This contraction happens through the limitations of our minds and the need to proceed through an orderly sequence of thoughts each of which is clear, complete and distinct. Delays occur in the perceptual process. This is a neurological phenomenon allowing firstly, perceptual processing of inputs, and secondarily, time for decisions as to how to react. Deleuze and Guattari say that this produces the subject and introduces a political dimension into perception. By this they mean that the momentary pause during neural
processing of perceptual data allow a choice of ways of reacting, and according to a particular response, individuality is established and so is politics (i.e. the selection and privileging of a particular reification of the flow of life. In this delay, the direct observation is matched with memory and sense to produce an image, such as a cat. There is also time to hesitate and decide. Deleuze and Guattari place the face, freedom and politics in this interval, through Levinas and post-Levinasian realisations about position and power in constructing conceptions of phenomena. An observer can see a reflection of that thinking process in which a vulnerable person attempts to render the world in a tractable way: this is a facial expression or face and it makes an appeal to us to consider its subjectivity as being worth something.

These are difficult ideas. The essential point is that the reification of perception punctuates or artificially divides up the continuous flow of interaction between the flow that is human thinking and the flow that is world events – both are parsed with respect to our quasi-fixed categories that create an illusion of stable knowledge and categories according to which we treat people and situations in certain ways.

With regard to the “image”, Deleuze and Guattari do not see the world as being divided into an actual world and a copy. In fact they use the word “image” as actual-virtual. Life is appearance. Everything is image. We perceive and interact with the thing, not its representation. Deleuze and Guattari explain that man accommodates to his limitations by slowing the cerebral activities to image some of these pathways as extensions, as explained above. “It is through the human assemblages or territorialisations that perception slows down; the vast flux of data is coded into extended bodies and things”.\(^\text{138}\) It seems to us humans that some of these flows/changes/differentiations are static—objects, in fact. We need constant objects to act on: we find it difficult to act on fluxes. However, once we have converted flux to an extension, we have set up something different from the flux: an image. Furthermore, not only do we slow the flow to produce objects, but we slow the flow of cerebral activity to produce the subject. We need stability and we hold everything constant so we can function as perceiving subject. But this is also an image that both

\(^{138}\) Colebrook 2002, p.147.
empowers and disempowers.

The other vantage point which worries Deleuze and Guattari is any point outside life ("the view from nowhere"). They produce a theory of immanence, which they support, and they outline a theory of transcendence, which they do not support. According to the theory of immanence, all aspects of life are in one plane: this plane. Deleuze and Guattari find it incoherent to view life from some point outside of life. This is what they mean by "transcendence" and it detaches us from the concern and engagement that is a corrective to abstracted conceptions or imaginary objectifications. We often set up moral standards from this disengaged position. Then we assess life by comparing daily activities with such standards. Or we set up "God", and from this representation we assess and modulate human life. They cannot endorse judging life from a point of abstraction from life.

In contrast to the two privileged points of perception described in previous paragraphs, Deleuze and Guattari urge us to view all of life as perceiving through engaging/participating. Admittedly, a human can perceive in a complex and relatively fulsome fashion and with the help of the structures of thought and meaning that we have created for ourselves. However, as stated above, molecules, plant and animals can all perceive at perhaps lesser levels without that help. And they react to their environment, thus taking part in life. An example would be the tendency of plants to bend towards the sun. Deleuze and Guattari regard the emphasis on the perceiving human subject, along with the perception of life from representations of life, as forced or contrived distortions, although no less real for that. They see these distortions as facilitating morality and a stance towards a situation, as distinct from ethics. This means that morality views life from one position (even from a position of deliberate abstraction or objectification, a de-centred position) whereas ethics arises from a point of concern or care. The abstract position they view as a distortion.

As stated above, one of the problems they have with representations is that there

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139 We are using a theory of transcendence here in this explanation but we are in part transcending it with a theory of immanence.
seems to be another privileged position for perception. The actual entity is privileged over its copy, or representation. That is, the actual entity is in the privileged position, and copies are rated according to their similarity to the actual entity. (How accurately does the copy resemble the original?) But Deleuze and Guattari do not understand why one is primary and the other secondary. This would be privileging the actual over the virtual, or one idealised representation over another in virtue of what?

Deleuze and Guattari argue that there is one plane of life and there is not a distinction between actual and virtual, two orders of being. To avoid these two orders of being, they begin with the virtual as the only point that a reflective being can occupy to do thinking. There is a very large number of possible outcomes as numerous molecules interact. Some of the possibilities become actual. Deleuze and Guattari regard both the virtual and the actual as real but the one allows interrogation and critical reflection and the other “demands” interaction (it is not negotiable).

Another of the problems they have with representation is that it nourishes the question, “What does it mean?” This means: starting with the signifier, what aspect of the signified corresponds to it?” This is, of course, a major theme in Freudian psychoanalysis where representations are reified and used to explain everything about the subject as if s/he merely acts out the effects of predictably working or pre-structured mechanisms rather than being a flux of desire and symbolic or imaginary construction changing through time. But it is idle to sit around and ask what it means because the meaning is in the psychic or imagistic and representational world. The signifier can mean this or that, but Deleuze and Guattari aver that the real question is “What does it do?” “What is the social purpose of the sign?” “What use is made of it?” In the cinema, “Does this film widen or narrow our thought?” not “What does this film mean?” Behind the Deleuzian perspective is a war image as distinct from an image of structure. This means that they do not sit around and analyse structures, like language or the unconscious postulated by Lacan or as, from Plato on, philosophers have contemplated forms and structures. Deleuze and Guattari use an image of struggle in their philosophical endeavors to convey that we cannot stand outside the world but must grapple with it as it besets us. The issue is the change in the struggle. *Forces*, in Deleuze, rather than forms or structures, are foregrounded.
3. 3. 5. Concepts

In accordance with their emphasis on multiplicity, Deleuze and Guattari do not support commonly held forms of epistemology in which knowledge comprises concepts which represent the forms into which reality fits. Because they do not believe in groups of similar things, they have no use for concepts which represent this pretense at similarity. These authors believe that universals tell us nothing, but themselves require explaining. Therefore Deleuze and Guattari do not search for truth, if this means finding those concepts which match categorised reality exactly. (Rather, they search for that which maintains a signification or epistemic production in its privileged or name-of-the-father position as determining the truth of the matter in a domain of human activity.) The concept, for Deleuze and Guattari, “…is rather a continuum of variations in several dimensions, embracing the numerous relations among the varying elements but providing no overall sense of order to them”. 140

So if concepts are not used for matching some aspect of the world, what are they for? Deleuze and Guattari use concepts creatively and argue that we do the same. They extend and develop the virtual world. In addition to experiencing the world of our senses, philosophers can modify the virtual world. Cause and being are two such concepts. 141 I provide two examples: when a billiards player uses a cue and white ball to sink a red ball, the player usually uses a concept of cause: the momentum of the white ball moves the red ball. Using this concept, billiards players can develop a whole game along similar lines. A philosopher may look outside her window and see 27 plants and three birds and thereby categorise or act on the things separately. She may, on the other hand, develop a notion or concept of being, which has a complex inclusive and dynamically unfolding relationship with these plants and animals, and others. Heidegger sets the stage for many post-modern authors to explore the relationship between being and beings. The reification of beings is all conceptual, extending our understanding of our world, and facilitating the development of

140 Gutting 2001, p. 337.
predictions. The creation of concepts, for these authors, is an activity of life, opening up new possibilities.

Deleuze and Guattari do not consider that the concepts they inherited were necessarily good: philosophers should mistrust concepts. Nor do they consider the inherited concepts to be a complete set. Concepts do not await us, ready-made, simply waiting to be polished and admired. A philosopher, being a friend of the concept (although there are others), and able to distinguish a good concept from a bad, needs to invent, fabricate or rather create new concepts because the world is changing and our understanding of the world is changing. Some old concepts are inadequate, and, furthermore, they anchor our thinking, being involved in previous schemata, some of which are despotic. There is a pressing need to create concepts, some of which replace bad ones. Deleuze and Guattari do this freely. Readers of *Capitalism and Schizophrenia* sometimes complain about a “dizzying panoply of new concepts”, such as “body without organs”, “becoming woman”, “becoming animal” and “geology of morals”. (More than half of these new concepts are highly relevant to EBM.)

3. 3. 6. Transition from structuralism to the philosophy of Deleuze and Guattari

I now bring into focus just which aspects of structuralism Deleuze and Guattari retain, and which aspects of structuralism these post-structuralist philosophers change. They retain the primacy of difference but they make it really primary, by removing the basic human subject and the language which s/he sets up. The structuralists have their difference sitting on a solid foundation: the human subject and the language, a structured difference, which the subjects develop. Deleuze and Guattari have no solid foundation under their difference, which really is primary. Thus they disagree with Lacan, who emphasizes the importance of the unconscious, which, he tells us, is structured like a language, a system of difference. The point here is that Deleuzian difference really is primary, and occurs prior to the unconscious/language. In like vein they disagree with Levi-Strauss, who postulates an important unconscious in which the myths of our society influence the behaviour of the individual, as explained above. The same Deleuzian criticism applies: the difference in Deleuze occurs before
the myth-infiltrated unconscious, a stem of differences. In contrast to both Lacan and Levi-Strauss, Deleuze and Guattari decentre the subject. This is the reason why they disagree with the imago, a self postulated by Lacan as a unified conception of a being that inhabits and develops ideas about the world.

They reverse desire from lack (as in Lacan) to \textit{positive difference}, an energy, a flux, weighing in against desire being Oedipal.\footnote{This means: desire is transferred from the unobtainable mother, with guilt, to the father/culture/law, a desire to be allied or included or accepted that is never fully secure and therefore unobtainable like all desire and like the oedipal mother.} Desire becomes positive, but never fulfilled, constantly casting and recasting the world into forms that include the flow of desire itself in various ways. As stated above, they remove the privileged vantage point for perception, the subject, and also another privileged vantage point: they make no sense out of a two layer universe in which some vantage point outside of life is used to monitor life, as stated above. They move from the structuralist signifier/signified, two layer system, in which the meaning is obtained by matching of some aspect of the signified (the meaning) with the signifier to hand, to a one-layer in the midst of an activity of signifying construction that has to be looked at awry.\footnote{They write extensively on the mutually dependent form of content and form of expression. This duality is not a substitute for the duality of signifier and signified. It applies to nomadic science. In State science the form and matter have to fit each other.} Thus they eliminate transcendence/representation, bringing in \textit{univocity}. They soften the distinction between actual and virtual. As a result they distrust concepts, especially when these threaten to displace actual engagement with reality with a falsely objective, reified image.

\textbf{3. 3. 7. Arborescent and rhizomatic models of truth}

Deleuze and Guattari advocate a way of thinking which is not centered but which involves a diffuse array of developing, diverse links.\footnote{Colebrook 2002, p. xix.} \textit{A Thousand Plateaus}\footnote{Deleuze and Guattari 1987.} begins with an introductory chapter on the rhizome, a metaphor alternative to that of
the tree. Deleuze and Guattari\textsuperscript{146} bring to the surface a certain idealist position which has not always been made extant. For centuries truth has been considered to have the shape of a tree.\textsuperscript{147} This metaphor involves hierarchy and duality: for example higher-lower, trunk and branches above ground, root system below. Things are connected in an orderly, progressive and growing way that immediately makes intuitive sense as a quasi-organic totality. Various positions in the tree can be identified and allotted status. In \textit{A Thousand Plateaus},\textsuperscript{148} we read that the book uses the tree as an image of truth. The words in the book signify the world “out there” a coherent structure evincing a certain intelligible form. Deleuze and Guattari\textsuperscript{149} here explain that the root (of the tree) image is associated with binarisation—in the dividing root, one becomes two, two become four. (This structure then enables a tree of knowledge in which basic founding axioms and a core of inter-related and essential truths allows the arborisation of detailed knowledge sharing that basis—e.g. causality and natural science, logic and mathematical sciences.) For Deleuze and Guattari, the tree image involves a constellation of interrelated characteristics, identifiable in earlier metaphysics. These include unity, the deification of reason, God, nature, the Platonic good, the objective nature of truth, Judaism, Christianity, and the logos. The tree, then, is a unified, harmonious structure. The detailed knowledges growing here are those consistent with the idea of the human being is ordered from head down, governed by reason, where reason or calculation is the highest order of his/her being and everything else flows from and supports that higher function.

By contrast, the rhizome is a subterranean system of roots spreading in seemingly any direction, breaking ground. It is confined to one plane. Tubers, as in the potato plant, are regions of higher intensity, scattered through the root system. If a rupture occurs, the several sections continue to develop. Above the ground are patches of grass, even trees. The image is one of plasticity and multiplicity: there are neither hierarchies nor dualities. There is no “correct place” to start or finish in the rhizome. Deleuze and Guattari use this rhizomatic image for thought and knowledge. It suits the addition, subtraction and modification of knowledge, although I prefer the

\textsuperscript{146} 1987, Chapters 1 and 12
\textsuperscript{147} Colebrook 2002, p. xxvii.
\textsuperscript{148} Deleuze and Guattari 1987, p. 5.
\textsuperscript{149} 1987.
arborescent model for teaching, because certain knowledge and concepts are more
easily grasped if others have been taught first—a hierarchical approach—although the
rhizome fits the modern problem-solving approach. There is, of course, a close
correlation between 1) knowledge and 2) language and other forms of
communication. Deleuze and Guattari consider that the rhizome suits not only
language, but also semiotics and gesturing. “...semiotic chains of every nature are
connected to very diverse modes of coding (biological, political, economic, etc.) that
bring into play not only different regimes of signs but also states of things of differing
status”. The links between semiotic chains and power structures, arts, science, and
politics are rhizomatic. Furthermore, a semiotic chain relates rhizomatically to a
spectrum of acts, such as gesture, speaking, writing, mimesis and thinking.

3. 3. 8. State science and minor science. Nomadology and the war machine.
Striated space and smooth space

Deleuze and Guattari draw on mythology to depict political sovereignty. What is
not part of the State is the war machine, which acts against the virtual or actual State.
This comes from outside, from the nomads, and has its own style. Often cruel, it can
be kind, as in releasing people from the control of the despotic king. “Rather he is like
a pure and immeasurable multiplicity, the pack, an irruption of the ephemeral and the
power of metamorphosis. He unties the bond, just as he betrays the pact”.

Deleuze and Guattari explain that, from the point of view of the State apparatus, the
war machine appears in negative form: “stupidity, deformity, madness, illegitimacy,
usurpation, sin.” The war machine betrays everything. Deleuze and Guattari go on to
explain the difficulty in conceiving of the war machine. It is everywhere exteriority –
the unfamiliar and wild or unstructured - , whereas the State apparatus is everywhere
interiority, what we are accustomed to, and from which we take our point of view.
They depict the war machine in terms of the expression of feeling which then

150 Deleuze and Guattari 1987, p. 7.
151 Some scientific advances have been rhizomatic.
152 See Chapter 12 or A Thousand Plateaus.
becomes affect. Projected with velocity, this affect of love or hate becomes exterior. To express the dynamic, creativity of these strong affects, Deleuze and Guattari write of “becoming women, ... becoming animal...”. So it is not surprising that the war machine is not marked by discipline. There is a “questioning of hierarchy...blackmail, ...betrayal...a volatile sense of honor”. Adapting most of this picture of the war machine from Kleist, Deleuze and Guattari tell us that the war machine is doomed to failure.

The development of the State is the setting up of a structure such that power will reside in a system, rather than in the hands of the current ruler. Hopefully, the latter vacates peacefully at some stage, at which time the arborescent power structure will remain to support and limit the next incumbent. The structure provides for the development of large-scale projects and surpluses. I myself consider that long-term plans can be made, as there is a degree of permanence about its processes and structures.

While the State must, of course, change, it maintains a certain character and remains clearly recognisable. By contrast, the war machine is more amorphous, vague, and hard to conceptualise. This is partly because its structure, to the extent that it has one, is rhizomatic. The war machine metamorphoses, involving technological change, financial innovation, restructuring of its own politics, spiritual movement, and change in various other spheres of life. Not destined to a glorious future, the war machine can even be scattered into components.

Could it be that it is at the moment that the war machine ceases to exist, conquered by the State, that it displays to the utmost its irreducibility, that it scatters into thinking, loving, dying or creating machines that have at their disposal vital or revolutionary powers capable of challenging the conquering State?

The one field involves 1) the State in its interiority, and 2) the war machine escaping

154 1987, p. 356.
155 1987, p. 358.
156 Deleuze and Guattari 1987, p. 356.
the converting and ingesting efforts of the state, with which it is in ongoing interaction, competing and confronting. In a similar way, nomadic medicine always escapes and disrupts the ordered hierarchy of EBM and its guidelines, or tries to.

Deleuze and Guattari actually introduce epistemology here. There is, they tell us, a scientific dimension to the conflict between 1) the State/interiority and 2) the war machine/exteriority. Deleuze and Guattari distinguish a State science, from a minor science, or at least a way of treating science. The former is the traditional science, hallowed by the State, but the latter is not supported by history, law, or royal authority. Because nomadic science does not develop from a recognized centre, Deleuze and Guattari refer to it as “eccentric science”, and set out four characteristics. It posits a fluid model rather than a solid/fluid model--“Flux is reality itself”.

Secondly, the eccentric scientific model depicts becoming and heterogeneity, rather than fixed scientifically investigable types with their “homogeneity” within categories for the purpose of grouping and generalizing. This contrasts with the stability and constancy in the State science model. Thirdly, rather than occupying a rectangular, striated space, the eccentric science involves a vortical (like a vortex) movement in open space. There are flows in smooth space. This contrasts with State science in striated space, which is set out in matrix form before use. Fourthly, the eccentric science is occupied with problems produced by affect – the restless desire to be able to do certain things. Working towards their solutions is the task of the war machine. The pathway is punctuated by accidents, movements, change, and is typified by events, rather than essences. The nomad signifier is essentially disruptive, and is like a tent—temporary, shifting, adjusting to local conditions, but providing a kind of shelter within which state-like processes can go on. By contrast, the State science is immersed in rationality – like a house or castle or farm with fences.

The war machine is projected into an abstract knowledge which is developing away from the centre of the State science, and which is formalised differently from the State science. (For example, this eccentric science relates differently to technology.) The

158 Deleuze and Guattari 1987, p. 361.
State science has a complex relationship with the nomad or minor science. The State science partly excludes and belittles the minor science, (describing it as a “prescientific, parascientific or subscientific agency”) but otherwise dominates it, siphoning off some of its results and its thinkers. These latter are then in a state of imbalance between being 1) energised by the war machine and 2) saturated with rationality. The minor science pressurises the State science, which sometimes yields, to a degree, incorporating some of the viewpoint of the minor science, structuring this new material in its own fashion. Symmetrically, the minor science detaches aspects of the State science. The upshot of these gains and losses is that the border is always changing, as is the uneasy relationship between EBM, academic medicine, dissenters from the dominant paradigm, and real practice.

One of the discordant differences between State science and minor science lies in the division of labour, which is largely determined by the pattern of scientific activity. State science and minor science divide their labour differently. For example, there are differences in the type and level of skill, and in the numbers of workers, and their geographic distribution. This is one of the reasons why State science resists minor science. Any gain in ground made by minor science involves a change in the distribution of labour. This can have profound economic and social implications, and is likely to be resisted with all the might of capitalism. An example would be the promotion of meditation as a substitute for tranquillizers.

State science has been developed around gravity, seriousness and rectitude. This is

159 Nomadic science is science which cannot firmly plant its roots in any particular well structured scientific discourse because the ontology or metaphysics of those discourses do not adequately capture the things, explanations and phenomena that one needs to be able to understand. Nomadic science therefore takes resources where it can and uses them in ways that the contributing disciplines would find undisciplined because it asks poorly formed questions that do not properly respect the current contours of debate. For instance, when one asks how the legislative context and the political emancipation of women affects the biology of the HIV virus this sounds like an illegitimate question. Or if one asks how the MAO levels available in the amygdala of the right temporal lobe are influenced by a history of colonization, that sounds equally flaky and disruptive or destructive in terms of orderly, striated science (“Personal Communication”, Gillett, 2010).

related to the arborescent form of knowledge and the structuring logos of rectitude. This vertical force has led the way to the concepts of “parallel” and “horizontal”. These are derived from the vertical force of gravity.

Homogeneous space is in no way a smooth space; on the contrary, it is the form of striated space. The space of pillars. It is striated by the fall of bodies, the verticals of gravity, the distribution of matter into parallel layers, the lamellar and laminar movement of flows.  

Over the centuries scientists and mathematicians have developed a striated space, bringing in Euclidian geometry. They have identified the straight line as the shortest path between two points, and the “multiplicities termed metric or arborescent”. By now we have a space which is homogeneous, and visual. Of great importance is the universal attraction between two bodies. With these principles, any part of the world can be a striated space, the striation not being tied to any one part of the earth. Whenever a new field of science arises, royal science tries to mould the new science into this homogeneous structure. Deleuze and Guattari state that chemistry moved forward once the concept of weight had been elaborated.

Nomadic science is not like this. While it does not refute gravity and its associated phenomena, it is not dependent on them, and cannot be reduced to them. It lodges in a supplement or excess, over and above gravity and is correlates. A fundamental departure was the slightest excess of angle, the slightest deviation from the straight line. Take, for example, a body which falls along a curved path. This freedom allows nomadic science to reach into unstructured areas. By now we have the space of the smallest deviation, and this is smooth space.

...therefore it has no homogeneity, except between infinite proximate points, and the linking of proximities is effected independently of any determined path. It is a space of contact, of small tactile or manual actions of contact, rather than a visual space like Euclid's striated space.

161 Deleuze and Guattari 1987, p. 370.
162 Deleuze and Guattari 1987, p. 370.
164 The use of a straight line to limn a curve is well characterized mathematically by means of
Smooth space is heterogeneous and occupied by different multiplicities. These are acentred and rhizomatic. Deleuze and Guattari apply the words *rapidity* and *celerity*\(^{165}\) to movement which deviates even minimally. This movement is vortical (as in a vortex or spiral) and actually draws smooth space. “All the points of space are simultaneously occupied according to the laws of frequency or of accumulation, distribution; these laws are distinct from the so-called laminar distribution corresponding to the striation of parallels”.\(^{166}\) In chapter 5 I will argue that EBM, so structured, cannot reach into all of smooth space, and so cannot relate adequately to the partly disorganized world of human health, with its polyglot forces. In fact, the qualitative opposition gravity-celerity, slow-rapid, heavy-light is coextensive with science but does not constitute a quantitative part of it. Rather it provides a space for distinguishing between striated space and smooth space, and it regulates their interaction, including the domination of one by the other.

Royal science is characterised by reproduction, while nomad science allows thought to get away from the traditional base, such as the *subject*, or *humanity*, and to wander freely, to create new areas.\(^{167}\) In royal science, then, there is enough lattice-work to provide for constant relations between variables and continuity between competing representations. Deduction and induction are possible. For reproduction to occur, a fixed point of reference is available from which to view the process. These are not the processes of itinerant or nomadic science, which moves in smooth space, in search of singularities of matter or material, rather than form. The meaning of the world changes. This is because the deterritorialization creates the territory. Instead of calculating constants which bind variables, nomad science tracks the variations of the variables, as in language.

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\(^{165}\) Swiftness.

\(^{166}\) Deleuze and Guattari 1987, p. 489.

\(^{167}\) Colebrook 2002, p. xxvii.
The State science is always trying to strate the smooth space. A multiplicity in smooth space is at risk of having a grid of parallel vectors superimposed. Then it can be visualised from a vantage point. By contrast, nomadic science would have followed the multiplicity “in an ‘exploration by legwork’”. The nomad science tries to retain or regain its smooth space, where it can follow the singularities in vortical flows. State science is often interacting in complex ways with the leaders of nomadic science, sometimes conferring a minor position in its system upon one of them.

State science, including experimental science, have considerable conceptual equipment and metric power, but ambulant sciences are not able to evolve autonomy. Always in problematic mode, they draw, and link up, smooth space. They follow the flow of matter, and so stay with reality. However, the modus operandi of State science is to extract operations from intuition, setting up categorised structures. Some resources are devoted to safety, as in the building of a bridge from diagrams. By contrast, nomadic science's problem-solving modus operandi often takes it into uncharted territory as it moves from singularity to singularity. With regard to the inattention to safety as nomadic science proceeds, it is likely to have to sort out the consequences in real life. Deleuze and Guattari explain that nomadic science works, often intuitively, among problems, but often needs the resources of State science to structure and solve these.

Underlying these considerations is the layer of reality called “thought”. Bear in mind that Deleuze and Guattari consider thought to be an active ingredient of life. (So it would be more accurate to place thought “within these considerations”.) These authors depict a circular relationship between the State and thought. All thought conforms to a model of thought produced by the State. But surely we have a way of thinking about the State? But we are told how to do that. So which comes first? They proceed to describe two heads of thought. “There is an imperium of true thinking.....constituting the efficacy of a foundation (mythos); a republic of free

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168 Deleuze and Guattari 1987, p. 373.
170 Deleuze and Guattari 1987, p. 374.
spirits proceeding by pact or contract...(logos). For example, an organism has a lawlike operation that can be studied within its own boundaries as a homeostatic system. (This is related to the episteme of ideal rationality which neglects the relationship between power and knowledge.)

Deleuze and Guattari go on to explain the benefits of this symbiosis. From the State, thought gains gravity. Actually, its heaviness takes thought out of the daily arena, to some extent. Then it goes unchallenged, and with it the benefits to the State. Perhaps it goes unnoticed that the State-form has a consensus. How, without thought, could we fabricate a notion of a State possessed of “de jure universality”. So the State alone divides subjects into “rebel” and “supportive”. Taking advantage of the status of reason, the State characterises itself as “the rational and reasonable organization of the community”. Drawing on the power of the State, reason is fleshed out as the State. “It was all over the moment the State-form inspired an image of thought. With full reciprocity.

Deleuze and Guattari amalgamate exterior thought and the war machine, in their model. Describing noology as the study of thought images, they explain that “outside thought can disturb the results of this endeavour. They explain that relating these nomadic, scattered thoughts to forces, is not straightforward. For example, Nietzsche's aphorisms, as distinct from maxims, await being operationalized by forces (people). The are calculatedly disruptive and challenging.

You shall be such for me that your eye is always seeking an enemy—your enemy. And with some of you there is hate at first sight.
You shall seek your enemy, you shall wage your war—and for your own thoughts!

171 Deleuze and Guattari 1987, p. 375.
172 p. 375.
173 p. 375.
174 An example of this reciprocity would be between the funding of research and the biomedical model, such that more wild and singular explorations are marginalised.
176 Nietzsche 2005, p 41.
Certain forces (people) will convert these thoughts into a war machine. Thus Deleuze and Guattari introduce a diachronic dimension to the amalgamation of nomadic thought into a war machine. Occupying smooth space, these outside thoughts do not function in a method, as in striated space. The arrow (thought) does not move from point to point. It is taken up at any point to be sent to any other point. The points are determined by the change in direction of the thought, or the creation of one thought from another, not vice versa. The thoughts are primary, the points secondary. This resembles the movement of nomads.

*States must gain control of smooth space, if possible.* For example, they set up systems to control the movement of ships on the sea, especially the Suez canal, because that is a vital junction that controls movement among major domains of opportunity and they police the airways. During the cold war, it was unacceptable for a Russian fighter plane to fly through the air above the USA. As part of this process of extending its communication channels safely through smooth space, the State acts against nomadic movements. This is all part of their aim to control all flows, everywhere. Those movements which are allowed are assessed on several parameters, such as proximity to striated space, speed and direction. These are relativized to the striated space. Here Deleuze and Guattari write of deterritorialization of the earth: when States acquire control over smooth space, they pay little attention to the details of the subordinated nomads, who may themselves be attuned to the reality of the smooth space. An example would be the use of intravenous Vitamin C in the critical zone of the Intensive Care Unit (ICU).\(^{177}\)

Deleuze and Guattari explain that the matter-movement (“machinic phylum”) relates to the nomadic non-system and the State system. They say that the machinic phylum (the flow of matter) connects to the nomadic assemblage but is conjugated into the State assemblage. On the one side, then, it is rhizomatic, “with its gaps, detours, subterranean passages, stems, openings, traits, holes, etc.”\(^{178}\) On the other side the State assemblage structures the machinic phylum in its usual style. There is an

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177 Gillett 2011, p. 8.
178 Deleuze and Guattari 1987, p. 415.
arborescent structure. The technological model is orientated to work, and expressiveness is shaped as a code or form. This is exemplified by the RCTs followed by meta-analyses and Systematic Reviews, and the prohibition of such things as Vitamin C or the human spirit from the highly machinic tree of intensive care knowledge.

Deleuze and Guattari provide an account of the relationship between the State, the war machine, war and the battle. With regard to the war machine, war is a supplement to the war machine, which aims to damage the State or State-form. Furthermore, war is pursued by a wider range of activities than the battle only. The nomadic war machine, having war as only a supplement, is hesitant and often does not know what to do with its gains. Sometimes a truce is reached with the state, the nomads maintaining some contact with smooth space as they partially amalgamate with the State. An example would be a chaplain in the ICU or army. Often, however, the hesitation is fatal to the nomads. Deleuze and Guattari tell us that ancient states managed with police and prisons, and that a war machine is not fundamental to the State. States soon learn. In time states are stimulated to provide a war machine or takeover that of the nomads. However, in the hands of the state, this war machine is often cumbersome and expensive. One example is provided by the requirement of the Medical Council that a doctor who works without vocational registration should work in a collegial relationship with someone so registered. In Accident and Medical Practice, a new field, there are a small number of doctors supervising a large number of colleagues. There is an issue as to who pays the supervisors. And whatever do we do when spiritual health becomes part of life and death?

Deleuze and Guattari tell us that the war machine is very difficult to define because of an extremely variable relationship to war. They try to identify two poles of the war machine. One is its destructive power. However, this is not the same thing as the machine itself. The other pole is its essence. Lacking large quantities, this pole sets up a line of flight. It creates smooth space to provide an alternative from the thrust of

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179 This does raise the question of where we go for rigour and usefulness if EBM is disrupted.
180 1987, p. 422.
the State. It facilitates the movement of people into and in nomadic space. It
develops new social relationships in smooth space. Note the incommensurable nature
of the two aspects of the war machine: destructive and creative. Deleuze and Guattari
tell us that these aspects of the war machine nourish each other.

In *A Thousand Plateaus* Deleuze and Guattari provide an account of the segmentation
of our culture. This involves binarisation, such as division into adults and children. It
also involves circularity. If the circles are concentric, centralisation is enhanced. We
are also segmented linearly. For example, cities are often divided into blocks. Of
course, segmentarity facilitates territorialisation, which, along with deterritorialisation
and reterritorialisation, is a major theme in this book.\(^{181}\) Segmentation is also
associated with hierarchisation: not all segments are equal. For example, disease is
segmented: congenital, inflammatory, traumatic, neoplastic, etc. There is further
segmentation within these groups. For example, infection is segmented. Bacterial
diseases are more worrying than viral, although there are exceptions. Then, can the
doctor place the patient's illness into the correct category? Yes or no? Has the doctor
got an Annual Practicing Certificate? Yes or No. Is she competent or not competent?
Binarisation all related to the correct placement of the individual subject presenting in
the clinic as a self-contained organism.

Deleuze and Guattari provide an account of their division of the universe into the
smooth space of the nomad, the war machine and minor science, and the striated
space instituted by the State apparatus. What might appear a straightforward division
quickly reveals a number of complexities. Smooth space and striated space are mixed
together and have a moving borderline. The desert becomes mapped, and a city in a
decaying empire drifts into desert. This transfer from smooth to striated space is a
different movement from the transfer from striated to smooth space. By now we can
picture a de jure distinction between smooth and striated spaces, and a de facto
distinction. The former is abstract. In characterising the two kinds of space, Deleuze
and Guattari explain that we occupy smooth space without counting. By contrast, we
count in order to occupy striated space. Thus we structure the city before living in it.

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\(^{181}\) A complex account of these terms is provided on pp. 503-4.
An example might be the medical thinking of a previous decade in which certain divisions that seemed exclusive and fixed are now blurred – living versus non-living – where do you put prions, parasite versus inclusion – where should we put the viruses that have incorporated themselves into human DNA through the eons of human evolution?

They explain that minor science, the science of smooth space, often contributes to major science, renewing it. Even so, minor science would be insipid without the rigour of major or State science. The striation of smooth space is a complex issue. It cannot be done very well: try striating infinity, or the slightest angle of declination. (This is like the concept of entanglement, where equations and calculations become impossibly complex when you alter the axes taken as the basis for calculation). This means that striation is done by verticals and tangents: these cannot gain control of a very small angle. Nor can lamination, the process used in striation, control smooth space at a macroscopic level. At the other pole, it escapes them by the spiral or vortex, in other words, a figure in which all the points of space are simultaneously occupied according to the laws of frequency or of accumulation, distribution; these laws are distinct from the so-called laminar distribution corresponding to the striation of parallels.182 Using a mathematical model, they tell us that the striation of smooth space “...is an operation that undoubtedly consists in subjugating, overcoding, metricising smooth space, in neutralising it, but also in giving it a milieu of propagation, extension, refraction, renewal, and impulse without which it would perhaps die of its own accord:...”.183 In chapter 6 I explain that EBM, an aspect of State science, tries to striate the smooth space of medical practice, and I argue that this can be done only incompletely.

3. 3. 9. Postulates of linguistics

Let us suppose that a doctor is attending a lecture about a study. You might think the doctor is being instructed how to treat a certain disease. Deleuze and Guattari say that

182 Deleuze and Guattari 1987, p. 489.
183 Deleuze and Guattari 1987, p. 486.
there are other issues here. One issue is that the lecture constitutes what they call an “incorporeal transformation”. In explaining this term, they point out that when a judge declares someone guilty, the judge performs and incorporeal transformation in which the person at the bar changes from “accused” to “criminal”. Similarly, as the lecture begins, the lecturer performs and incorporeal transformation in which the audience is converted from practicing doctors to postgraduate students; and the doctors are subjectified to the EBM lecturer. I suggest that, during the lecture, there is a covert order to structure thought and practice along EBM lines. One ought to be thinking in terms of disease, pathology, demonstration of significant effects, understood as interventions in a mechanistic (albeit biological) system rather than the complex illness affecting Mrs M and Mr N Miss P Master Q and Ms R. One learns that good medical thinking involves rigour and clarification in terms of the biomedical model and the estimation of the direction and magnitude of effects.

You will construct grammatically correct sentences, you will divide each statement into a noun phrase and a verb phrase... Our criticism of these linguistic models is not... but that they are not abstract enough, that they do not reach the abstract machine that connects a language to the semantic and programmatic contents of statements,..., to a whole micro politics of the social field.184

Language/speech is socially situated. It is infiltrated by the structure of the society of which it is a function. Post-structuralist philosophers185 point up subjectifications, such as lecturer/student, doctor/patient, male/female. This social structure/subjectification is imposed on the student (along with the binary oppositions, the principle of logical exclusion and the principle of priority, on which Western thought is built). As the teacher explains, say, grammar, or subtraction, the student is unwittingly instructed in her position in society, and how she should behave (and which philosophy of language she is to adopt). Two expressions used in A Thousand Plateaus186 are: “social obligations” and “implicit presuppositions”. These come along with the speech/language, as the doctor is resubjectified as a learner who learns the proper scientific medicine that the experts teach.

184 Deleuze and Guattari 1987, p. 7.  
185 And some other philosophers! One such is C. S. Peirce.  
186 p. 79.
Deleuze and Guattari explain that “the elementary unit of language—the statement—is an order-word”; “language is made not to be believed but obeyed”; “let the people say...”. “A rule of grammar is a power marker before it is a syntactical marker”. In short, knowledge conveyed by lecture, article or internet, is transmitted with order-words. Deleuze and Guattari are not referring to the imperative mood only. After mentioning the indicative and imperative, they discuss Austin's performatives – ways of doing things with words such as diagnosing, testing, prescribing, and so on. Deleuze and Guattari explain that certain acts are accomplished by saying them. They draw attention to the intrinsic relations here between speech and certain actions. They explain that these are but a limited set of examples of the illocutionary, a wider phenomenon in which intrinsic relations between speech and actions are accomplished by speaking... “These acts internal to speech, these immanent relations between statements and acts, have been termed implicit or non-discursive presuppositions...”.

We can no longer regard language as only the communication of information/knowledge. Lacan has helped us to understand that we are formed to obey the word (of the father) as law, not just accept the word as label or informative description. Picture the medical student. Everything she is taught is the word of the father, the law. She needs to learn it and practice it or she is a bad doctor and the patient may die. So she needs to formulate a diagnosis for the patient in front of her and to confirm or disconfirm that diagnosis by testing before prescribing – all acts which are interpretations of certain exchanges and what goes on in them.

3. 3. 10. Several regimes of signs

Deleuze and Guattari highlight the fact that a proposition does not function as such until it is fleshed out in one or another regime of signs. They explain that one proposition can be embodied in several different statements. “What regime of signs is the proposition taken up by and without which its syntactical, semantic, and logical

187 1987, p. 76.
188 Deleuze and Guattari 1987, p. 77.
elements would remain totally empty universal conditions?” The regime of signs converts a proposition into a statement. There are several possible regimes of signs. The meaning of the proposition will depend on which regime of signs it traverses. They explain an instance: “I am jealous” is a different delusion in the paranoid regime of signs (that of a stable paranoid system in which every movement, no matter how slight, needs explanation in some way or another) from what it is in the passional regime of subjectification. In the former, the delusion is ideational, leaving intellectual function intact. Such a person seems to be mad, but is not. She can manage her affairs, and does not require detention in a psychiatric hospital. In the second or passional regime of signs, the delusion is a monomania. This person does not seem mad, but is: she is likely to do something dangerous like burn a house down, and may require detention.

Of the four regimes of signs set out by Deleuze and Guattari, I consider that the signifying regime of signs is the one used by EBM. I make this choice largely because of the unsuitability for the task of the other three semiotics set out by Deleuze and Guattari. 1) The presignifying semiotic uses codings such as “forms of corporeality, gesturality, rhythm, dance, and rite...vocal forms...the camp, the bush, the moving of the camp”. This is a way of conveying immediately in the act of communication what is being communicated – iconic or gestural communication that has a pre-signifying effect on the addressee which then becomes reshaped into a form apt for formal construction of normalised entities – we still have these flinches on examination for instance – the look of desperation on a patient’s face – this is part of the smooth terrain of the clinic. By contrast, EBM uses a highly representational structure, suitable for publication as “knowledge” around the world to distant doctors.

189 Deleuze and Guattari 1987, p. 147.
190 Deleuze and Guattari 1987, p. 120.
191 Late in 2010, a retired senior policeman on Auckland's North Shore went overseas and left his house in the care of his neighbor. She burned it to the ground.
192 Signification always proceeds within an episteme, a system for evaluation and valorisation of signs and statements. EBM fits this role.
194 Deleuze and Guattari 1987, p. 117.
for treating distant patients. While the presignifying semiotic was used by the hunter nomads, the 2) *countersignifying semiotic* was used by the “fearsome, warlike and animal-raising nomads.”

This semiotic is impregnated with arithmetic and numeration. However, this numeration is with the numbering number. This is unlike the signifying regime of signs, in which the number is produced by something other than itself. In the countersignifying regime the numerical sign itself “determines functions and relations”. “Its numerical organization into tens, fifties, hundreds, thousands, etc., and associated spatial organization were obviously adopted by State armies, but basically bear witness to a military system specific to the great nomads of the steppes...”. 3) The third semiotic, the *postsignifying regime*, is described as passional or subjective, and authoritarian. i.e. not open to democratic questioning and egalitarian debate where the terms are dissociated from any power structure or hierarchy. Deleuze and Guattari use this regime to characterise the Jewish people, with whom “a group of signs detaches from the Egyptian imperial network of which it was a part, and sets off down a line of flight into the desert,....”

Deleuze and Guattari write of a double turning away of two faces, and the subjectification of one at the beginning of a (positive) line of flight, along which the subjectified person or group proceeds in discrete steps.

Deleuze and Guattari state that in practice, there is more than one semiotic: a mixture. Gillett suggests that the presignifying semiotic figures in EBM as “unstated within the unwritten law that we are seeking to address human suffering in its protean guises.” I struggle to identify the place of large numbers determining relations, as in the countersignifying semiotic, in EBM, unless the multicentre trials could be so construed. I hesitate to make this leap: the function of number in the countersignifying semiotic is the reverse of that in the signifying semiotic. In the latter the number is dependent on some more fundamental phenomenon. In the countersignifying semiotic the numbers determine relations, distributions. Even so, the statistical analysis does tend to develop a momentum, of its own, in EBM. 

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195 Deleuze and Guattari 1987, p. 118.
196 Deleuze and Guattari 1987, p. 118.
197 Deleuze and Guattari 1987, p. 122.
198 Personal communication 2010.
example, an early Head of Department at the Department of Clinical Epidemiology and Biostatistics at the McMaster University was a statistician. The analyses can be so complex that it is not always easy to keep in mind the experimental subjects being studied, and certain decisions can be largely influenced by the numbers. I therefore allow that the countersignifying semiotic figures in EBM. With regard to the post-signifying semiotic, it is difficult to identify in EBM the double turning away of faces, the betrayal, the subjectification of one party as it decides to regard its departure along of segmented line of flight as positive. But perhaps the adoption and support of EBM by an exclusive and highly funded biomedical science machine manufacturing and selecting evidence does this. In summary, I focus on the signifying regime of signs as matching EBM, but, since Deleuze and Guattari say that a mixed semiotic is usual, I allow three other semiotics into the mixture. Even so, these will not be treated in this work.

Deleuze and Guattari describe this signifying regime of signs as “despotic, paranoid-interpretive”. (It seeks for a unified theory of scientific meaning and within that imposes a hyper-inclusive order on all events, much as a paranoid schizophrenic might do.) In this regime there is a substantial emphasis on the signifier, or network of signifiers, which interrelate with one-another. One feature is the circular, even spiral, pathways in which the signifiers return to one-another. The expansion of the circles is achieved by the interaction between the signifier and the signified: the priests of the regime decide which piece of the signified matches which signifier, thus making the signified known. Deleuze and Guattari state that this is one place where the despot and deception enter. However, they can be dislocated and subverted by the chaotic movements of the real that do not conform to the order imposed on them. This is where the system imposes a form on what counts as real knowledge that is in fact detached from real (messy) practice and constrained in certain ways by the categories of evidence ordained by the system.

Deleuze and Guattari explain that, in the signifying regime of signs, every sign refers

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to another sign (as in structuralism). Each sign functions as a signifier. Thus no sign is of overwhelming importance in itself: the emphasis actually shifts to the whole signifying system, which is a signifier. These authors withdraw weight from the traditional role of the signifier, usually considered to point to the signified. For example, “There is a simple general formula for the signifying regime of the sign (the signifying system): every sign refers to another sign, and only to another sign, ad infinitum.”201 “Thus the sign has already attained a high degree of relative deterritorialisation; it is thought of as a symbol in constant movement of referral from sign to sign”.

Not only do signs form an infinite network, but the network of signs is infinitely circular. The statement survives its object, the name survives its owner. Whether it it passes into other signs or is kept in reserve for a time, the sign survives both its state of things and its signified; it leaps like an animal or a dead person to regain its place in the chain and invest a new state, a new signified, from which it will in turn extricate itself.202

And so the path from signifier to signified is tenuous, and the signified is blurred (imprecise). I have indicated that Deleuze and Guattari203 perceive a signifying system in which every sign refers to another sign. The idea of a signifier referring directly to a signified is challenged by Deleuze and Guattari. These authors tell us that the network of signs projects its shadow onto an amorphous atmospheric continuum. It is this amorphous continuum that for the moment plays the role of the 'signified', but it continually glides beneath the signifier, for which it serves only as a medium or wall: the specific forms of all contents dissolve in it. The atmospherization or mundanization of contents. Contents are abstracted.204

There is an unstable interaction between the layer of signification and the layer of signifiers in which both layers are holistic; this arrangement affects not only things within them horizontally but also vertical relationships or the way the shadows are cast. Thus if the layer of signification becomes despotic then the intransigence of the signified is lost sight of and becomes inarticulate.

201 Deleuze and Guattari 1987, p. 112.
202 Deleuze and Guattari 1987, p. 113.
204 p. 112.
I now discuss word “interpretive” in Deleuze and Guattari’s characterisation of the signifying regime of signs as “despotic, paranoid-interpretive ideal regime of signification”.  Deleuze and Guattari,\textsuperscript{205} consider that interpretation increases the supply of signifier, coping with the entropy in the system. They aver that every interpretation is an interpretation of an interpretation: nothing is interpreted that is not an interpretation itself. What I understand here is that if you provide G as an interpretation of F, and if F is an interpretation of E, ultimately we get back to a signifier which some priest has decided represents a signified, a part of the amorphous continuum in which contents have been dissolved. Thus a portion of the signified is taken from is amorphous continuum and rendered “known”; that is, the interpreter links it with some signifier. An example would be the matching of hallucinations and delusions with the diagnosis of schizophrenia. This is reminiscent of the interpretations of client statements provided by Freud. Deleuze and Guattari\textsuperscript{206} explain their dissatisfaction with Freud's interpretations. Deleuze and Guattari are critical of the way Freud converts multiplicities to molar unities: most of the pack of wolves is superfluous and the remaining wolf signifies the father and the father becomes the centre of a causal complex in the psyche/brain that has effects obeying the laws of psychoanalytic theory. They are also critical of the paranoid claim that there are no accidents or coincidences.

I have been discussing Chapter 5 of \textit{A Thousand Plateaus}. However, the foreword to \textit{A Thousand Plateaus} provides an explanation of representational thinking. I introduce this here because it amplifies and elucidates the comments I have made about the priests of the regime making a link between some portion of the (“amorphous continuum”) signified and the signifier, so that the signified can be known. (What is allowed to be significant is determined rather than being responsive to the shifts in interaction at the point where the flow of the doctor’s thinking meets the flow of the patient’s suffering.)

\textsuperscript{205} Deleuze and Guattari 1987, p. 114.  
\textsuperscript{206} 1987, Ch. 2.
Representational thinking is analogical. It aims to set up a correspondence between two “symmetrically structured domains”. Judgment, Massumi explains, polices the matching, which uses negation: a matches b, not c. Representational thinking sits astride 1) a subject, who is self-identical and constant, and 2) the concepts used by this thinking subject to match the objective world. These concepts and objects are also self-identical and constant. Rewording this, the thinking subject, the concepts and objects have a shared essence: self-resemblance and constancy. Representational thinking aims for truth and justice according to systems in which definitions are stable and order thought. This system of thinking integrates the thinking subject into State philosophy. Brian Massumi summarises: identity, resemblance, truth, justice and negation comprise the rational basis for the established order. (Massumi points out the philosophers have usually been state employees.)

In EBM, I suggest, that to the extent that EBM takes over the medical profession, it does so by taking over one doctor (or student) at a time. Even then, each doctor makes an almost endless stream of smaller decisions. In each of these she does or does not use EBM. To the extent that she is pressurised to favour EBM over alternatives (a “good” doctor is an evidence-based doctor), microfascism, a theme of Deleuze and Guattari, operates. These authors see power operating at every level. Wherever there is segmentarity, energy flows across the borders and the patient with dementia might also be anxious or desperate and performing badly for reasons that have nothing to do with cognitive competence in her normal niche of adaptation.

3. 3. 11. Faciality

Deleuze and Guattari develop a theme they call Faciality. The face is not a part of the body, any more than its counterpart, the landscape, is a part of the milieu, or nature. “A jump is made from the organic strata to the strata of signifiance and subjectification”. In the regime of signs operating today, the face moves out of the

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207 Massumi’s foreword to A Thousand Plateaus, p. xi.
208 More particularly in the first decade of EBM there was considerable pressure to prioritize one form of evidence.
organism to set up another order of being. Deleuze and Guattari\textsuperscript{210} depict the face as a white wall perforated by two black holes. As if crystalising out from a vague film, this white wall/black hole system becomes the locus of signification and subjectification. On the white wall occurs signification, and this is intersected by the black holes, in the dark depths of which subjectification takes place. Signification and subjectification are semiotic systems. They can, alternatively, be classed as axes, or, again, as strata. Deleuze and Guattari tell us that signification always has a white wall on which to inscribe signs, and that subjectification always has a black hole into which to insert passion and consciousness.

Some examples of faces are: maternal power operating through the face during breast feeding, passional power operating through the face of the loved one, and political power operating through the face of the political leader. It is not the individuality of the face that counts but the ciphering of power that the face makes possible. It is not so much that you have a face as that you slide into one. There is the face of the policeman, stopping you for speeding. His face is the intersection of the law, your speeding and his mental activity. He slides into another face when he plays with his son after work, and another when he makes love. We watch a person's face for an interpretation of what he or she is saying.

3. 3. 12. Capitalism

Deleuze and Guattari aver that science has to bow to capitalism. “...and it can allow the passage of socially decoded flows of code that these scientists organise into axiomatics of research that are said to be basic. But the true axiomatic is elsewhere”.\textsuperscript{211} Deleuze and Guattari go on to explain that the scientists can be indulged for a while but when things get serious the social machine will organise the codes as required for capitalism. “An innovation will be adopted only from the perspective of the rate of profit its investment will offer...” Deleuze and Guattari refer frequently to antiproduction. They tell us that this is frequently inseparably mixed

\textsuperscript{210} 1987, Chapter 7.

\textsuperscript{211} Deleuze and Guattari 2004, p. 254.
with production. Here they instance the making of war weapons, gearing up for another model of car, and equipping television to control minds. I myself note that nations emphasise Gross Domestic Product (GDP). It is of little interest whether the economic activity is in the area of confectionery or of educational books. Deleuze and Guattari explain that the currency, such as the dollar, has attained a momentum of its own, beyond its purchasing power. Just as in a health system measurable outcomes which equate to dollars earned or justified in terms of a budget become the driving category of what the system delivers – as in US medicine – where community based care is hard to measure and track and ICU deliverables are easy and consequently, funded. Furthermore, what is really important goes beyond that: attention is mainly focused on the movement of the dollar, as in GDP. You could easily believe that the world is held in the thrall of whether there is an economic recession. The entire emphasis is on economic activity, or the movement of the dollar. It is of little interest whether this involves a war or successful treatment for dementia. Whether a new drug is significantly better than its generic equivalent is irrelevant and whether either can legitimately be compared with a caring and culturally sensitive domain of activity that allows the person genuine personhood becomes a question that is sidelined.

Deleuze and Guattari explain that capitalism decodes, and is cynical: whereas in earlier dispensations, certain people, certain activities, certain places, had value, in capitalism the only issue is, “Does it sell”? Capitalism frees up all the other values: it decodes. They also explain that in capitalism power is immanent. It is not capitalism that has the power—this would be a transcendent theory. It is the dollar, or yuan. Note that the exchange rate has power. In the earlier dispensations, a king or a despot, to some extent removed from daily life (transcendent), exercised power. However, the dollar is immanent, and has power. That is, the power, has moved into the everyday life. The dollar is one of the cogs in the machine. We work to keep the flow of capital going, and so avoid a recession or depression. We all participate in and have an investment in the power that dominates the system—a very vivid outworking of Foucault's' dispersed power, explained in Chapter 9.
Summary of chapter 3.

In Chapter 3 I provide the philosophy I need to develop a Deleuzian viewpoint on EBM. In particular, in Chapter 3 I take pains to explain State science and nomadic science, striated space and smooth space, arborescent thinking and rhizomatic thinking. This prepares the reader for a major aspect of my critique in Chapter 7, in which I explain that EBM shows no regard for nomadic science and tries to striate smooth space, unaware of the fact that much of smooth space cannot be lamellated. Take infinity, for example, or the wild suffering and wellness that escapes medical surveillance because its flows of energy are not easily categorized into the diagnoses and tests that yield currency for EBM. In fact EBM sets itself against nomadic science---it tries to improve on clinical judgment/intuition. And I draw on Chapter 3 in Chapter 10, where I argue that there is no rational way of integrating epidemiological evidence with clinical intuition. In that chapter I draw on the above depictions of striated space and smooth space and argue that they cannot mesh.
Chapter 4: A view of EBM through the Deleuzian teaching on desire, difference, immanence, Oedipus and capitalism

4.1. Desire is more fundamental than the rationality of EBM

At first glance it might be thought that EBM is a rational method brought in to reduce subjectivity. In this chapter I argue that the Deleuzian concept of desire is very important and actually underlies all this rationality, and that the concept of desire provides an explanation for some of the surprising aspects of EBM-- the various ways in which this clever new system seems to lie skew to the practice of medicine. Deleuze and Guattari argue that desire constructs an object with a valence. As desire is not interested in objectivity, why not frame the object to fit the agenda? The agenda is to replace “eminence medicine” with “evidence medicine”, reduce the uncertainty between basic science and clinical decisions, give the individual patient a better deal, and to provide support to policy makers and managers wishing to overcome provider resistance in moving funds to more cost-effective services. The object constructed is high importance attributed to clinical research, along with its downstream products: meta-analyses, systematic reviews, clinical guidelines, and the instruction of evidence-users in the interpretation of a research publication. This
project involves framing the world as a large number of variables which can be operationalised as independent or dependent, so that some of these can be manipulated and the effect of the manipulation measured. The respected disciplines of statistics and economics are drawn on. After all, the product MUST work: it must sell, and a necessary aspect of this is image. Charismatic people must front the movement at home and abroad, and medical leaders must be invited to attend well-run seminars.

EBM innovators deserve credit for enthusiastically tackling the problems of medicine in the latter part of the twentieth century. However, there is an issue over the baseline here. There has emerged a lack of agreement as to what the problems were, and how bad. For example, some EBM literature states that the main basis for clinical decisions prior to the development of EBM was “subjective experience”. This would not be widely agreed. After all, there had previously been some clinical research and some pathophysiological research. Not only is there disagreement about the baseline from which EBM starts, but I challenge their estimation of the finish point. I explain in Chapter 2 that EBM's claim to a new method of practicing medicine, a new paradigm, has been cut back to a new stream of information to be built, somehow, into the decision process.

I continue to argue for desire, as distinct from objectivity, in pointing out that Andrew Miles complains year after year of the way in which EBM protagonists do not enter debate, though they try to change the way in which sick people are treated. In fact, when, in 2009, Djulbegovic, Guyatt and Ashcroft announced their epistemology, Miles treated this as spring in a desert and commissioned seven papers in reply. And so this landmark paper was met with the challenge that EBM still had not told us why we should believe that the new information leads to better knowledge for the

212 Miles 2009b p. 925.
213 Wyer and Silva 2009.
214 Editor in Chief of the Journal of Evaluation in Clinical Practice.
215 Miles cannot understand why they published this in Cancer Control, rather than in the Journal of Evaluation in Clinical Practice.
treatment of patients. There is still not a specific epistemological theory. Rather we are told that EBM has not decided whether observations are based on theory, and we are invited to draw on inductivism, deductivism and/or explanationism (all known last millennium): choose one, or more. I am invoking desire, as distinct from collaboration among scientists or doctors, in the sparsity of EBM participation in scholarly debate, surely a *sine qua non* in the development of science.

4. 2. Economics

It has been suggested that economics is a major driver of EBM. Archie Cochrane, one of the Great Men, aimed to help the National Heath Service (NHS) in Britain to move funding from less cost-effective to more cost-effective services. In clinical medicine the clinical guidelines aim to replace tests and treatments with tests and treatments which are more effective or less expensive or both. So, from the Deleuzian perspective, there is a desire/economic thread in EBM. But it has been argued that EBM has increased the amount of life which is medicalised, and that this has increased the costs of health care. Secondly, it has been suggested that EBM-compliant doctors, using off-the-shelf treatments, cost more. As stated above, it has been suggested that the combination of technology/doctors/hospital /research/positivism (associated with spiraling costs) needs review in favour of other approaches to healing, as might be found, for example, in the relationship between doctor and patient.

4. 3. The positivity of desire

However, my account of the relationship between EBM and the Deleuzian theory of desire has been somewhat negative. Surely, in Deleuze and Guattari, life is creative flux. Through a Deleuzian lens we can see the emergence of EBM positively. A major feature of the development of EBM is the energetic, enthusiastic drive into a

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216 Sturmberg 2009.
new world. This is Deleuzian: the desire to place clinical practice and HSR on a firmer footing than that provided by the status of leading clinicians and managers, along with the (reductive) pathophysiological reasoning, swept in a bolus of researched evidence on which to base decisions. Along with this was the EBM superstructure: the aids to clinicians and other users of evidence-- structuring of a clinical question, databases, meta-analyses, systematic reviews, practice guidelines, articles on how to assess articles, new EBM journals, the Cochrane Collaboration, and the upgraded style of teaching and modeling all this to students and doctors.

4. 4. What about philosophy?

From a Deleuzian perspective, the introduction of the new system of making decisions involves flux, desire, change, thought and life flowing together, social and political change, all Deleuzean themes. A major Deleuzian feature of the introduction of EBM is the much bemoaned absence of philosophy. These pioneers focus on immanence, another Deleuzean theme, and neglect to check the development against the mirror world, where the correct principles are enshrined. Deleuze does not accept that life should be checked against representations. I state in numerous places in this work that theory has been scanty in the introduction of EBM. From a Deleuzian perspective, the theory and action are moulded together. Such theory as there is in action: evidence, - RCTs and observational studies, then help the users - and teach/model it properly too! Their's is an action philosophy. And although many doctors and philosophers have bemoaned the failure to work out a satisfactory epistemology for this “advance”, Deleuze would argue that no field of learning, such as philosophy, has authority over another, such as medicine. Indeed, he may be looking for EBM to contribute to philosophy and for philosophy to contribute to EBM, not squash it

(Even so, when the philosophy is critical -- identifying assumptions and revealing the ways in which they might be flawed or produce self-validating data -- then one ought to take note and either meet the critique with a counter-critique or eliminate the
aspects that require critique because they are flawed. To critique the critique may be to show that what you do “works” in some sense but what is it for a system to work, and does “working” constitute a closed system of questioning and confirmation of biases? For instance, one might argue that General Practice does not provide validatable, evidentially-based interventions and then arbitrarily categorize encounters as to whether they do or do not fit into a recognisable single diagnosis and effective response model, and then castigate it because such events are not the most common, but that is only a critique if it is taken as read that such interventions are the best way to manage malaise as it occurs in the smooth space of health care in the wild rather than in a striated space of secondary interventions for objectively determined and clear cut conditions (according to our current classification).

4. 5. Difference

Another major Deleuzian theme is “multiplicity”. Certainly the EBM protagonists broke ranks with some aspects of traditional medicine and traditional epistemology. Those who bemoan this are pitting themselves against some critical aspects of Deleuzian philosophy. Totalising is inimical to him. He would not want these energised men and women, bent on easing the problems of unmanageable amounts of data, uncertainty, bias, perpetuation of tests and treatments that may be doing more harm than good, constrained by a totalising philosophy. This latter might, for example, require a properly constructed theory, complete with epistemology in the basement, empirical corroboration in the first floor, and, on the top floor, explanations of some aspect of clinical medicine or Health Services Research which improved on existing explanations. Another requirement of the new regime might be a proper respect for non-evidential warrants for decision, such as intuition, patient narratives and goals, and expert opinion. Proper respect should also be paid to the various disciplines contributing to medical practice, such as ethics, language, and law. A totalising philosophy, so disliked by Deleuze, might not allow EBM to function until all these boxes had been ticked. Then these enthusiastic creative people could scarcely tackle the rising costs, a range of approaches to similar clinical problems, and
hunches that patient would be better off if some health care services were discontinued in favour of new ones.

4. 6. Oedipus

Deleuzian desire is anti-Oedipal. Oedipal desire is suppressed because of a transcendent principle: out and beyond the here-and-now is a principle which dictates how we should behave. To enter medical society, these highly motivated people, desiring to improve the medical situation, should have suppressed their desires until they could square off with the requirements mentioned above. This set of principles is stifling. It is not realistic to expect RCT evidence in favour of EBM. Let me explain why.

4. 7. The "lack of philosophy and evidence" viewed as part of a war

The introduction of EBM took place over time. So the first problem is that the introduction of EBM is insidious. The second is that EBM soon became ubiquitous. Choose a date, such as 1996, and decide how you could find a doctor (for a control group) whose practice had not been influenced by reading a research paper, or attending a lecture by someone who had. Furthermore, the research would take place in a climate where normalising power or hegemony dictates what looks like well constructed treatment is *a la* dominant model. The third problem is ethical. Would an ethics committee agree to deprive patients of treatment supported by RCTs and observational studies?

And what about the much-lamented, scanty epistemology? Numerous writers have argued that EBM protagonists should provide a theory which sets out the amalgamation of, say, five warrants for decision, of which one is clinical research evidence. And why is evidence derived from RCTs and observational studies a better basis for decision than clinical experience? Why is knowledge obtained through one
channel better than knowledge obtained through another channel? And what about foundationalism and positivism? Are these not as dated as the authority of clinical doctors, so doubted by EBM? I give an answer to these questions. The task is too difficult. Taking together, the demand for evidence of the superiority of EBM along with an epistemological rationale, I consider that these demands are unrealistic, and could be viewed as part of a war, since it is not very realistic to trot these out. From a Deleuzian perspective, we can see two or more groups struggling for ascendancy in medicine, one using the impossible demand for an epistemological base and empirical corroboration as a weapon. If we regard the demand for epistemological rationale and evidence of effectiveness as “philosophy”, this is not how Deleuze does philosophy.

4. 8. Immanence

As stated above, using a theory of immanence, Deleuze and Guattari move the emphasis from clarifying the signifier/signified relationship in a sign to the social function of the sign. This is a move away from, “What does EBM mean? Deleuze and Guattari would ask, “What does EBM do?” “How does it work?”

For reading a text is never a scholarly exercise in search of what is signified, still less a highly textual exercise in search of a signifier. Rather it is a productive use of the literary machine, a montage of desiring-machines, a schizoid exercise that extracts from the text its revolutionary force.217 “It represents nothing, but it produces. It means nothing, but it works. Desire makes its entry with the general collapse of the question, “What does it mean?”218 (italics mine).

The answer to the question, “What does it do?” would be cashed out in terms of change in balance of power (young doctors gain, academics and biostatisticians gain, general practitioners lose), movements of money, curriculum changes for undergraduate and postgraduate students, impact on publishing houses (as in papers published/rejected and the attraction of advertising revenue and the sale of reprints of RCTs), libraries, computer services, and so on. One would expect a decrease in certain activities. This would be reflected in lecturing style, and the style of papers

218 Deleuze and Guattari 2004, p. 119.
and books published. For the patient, there would be a number of consequences. Tests and treatments would generally be those supported by published research. The patient is empowered by the change in emphasis from expert to published research, and can consult the World Wide Web and access the results of trials. The patient would be compared more with paradigmatic research cases rather than seen as an individual--indeed, she would be seen as a conglomerate of variables which could be separated out from one-another. The doctor would face the computer and the consultation would shadow research. For research, designs other than RCT and observational studies would be discriminated against. We would be prey to fraudulent research and to publication bias, especially in association with commercial interests. For health care services as a whole, there would be a move towards those services considered cost-effective after examination through RCT or observational studies.

EBM provides the clinician with evidence on which to base clinical decisions. In the process of providing this, it has extensively developed the medical information system. It is a force in medicine altering the bases of decisions, altering the balance of authority, altering the style and topics for research, altering the emphases in medical journals, in pharmaceutical trials, in teaching and examining medical students, both undergraduate and postgraduate. Aimed at reducing eminence medicine, cost and variation in medical practice, and geared to dealing with the modern distrust in professionals, it reduces clinical autonomy and devalues pathophysiological reasoning, intuition, clinical experience, expert opinion and review, and subjugated knowledges. It spreads to health services management and policy, and across to physiotherapy, occupational therapy, nursing, complementary and alternative medicine, and has been looked at with envy by people in fields distant from medicine. Along its path it has put some people out of jobs and others in. And it has altered the financial structure medicine, as in research, for example. As stated above, Deleuze and Guattari are critical not just of the use of the Oedipal myth in psychoanalysis, but throughout Western society, of which EBM is a part. The oedipalization of society, which Deleuze and Guattari are unhappy about, involves the squashing of desire in favour of the rule of law, logic, authority. This latter is male
dominated, imperial. How does this relate to EBM? Starting last century as a revolutionary movement, EBM quickly became established in State science. I depict EBM as requiring a structured system, in harmony with law and male domination. This is intended to reduce the influence of intuition and the variation caused by doctors practising according to their own experience. Here we see State science versus nomadic science, law versus desire, the reticulation of smooth space, the development and imposition of a paranoid system, and the word of the father, rather than the care and nurture of the archetypal mother.

4. 9. Capitalism

I argue above that EBM expansion proceeds apace despite problematisation of its conceptual structure by numerous authors, to which there have been few responses. It does not matter what the philosophy of a product, such as EBM, is, so long as it sells. Never mind that Maier has drawn attention to the weaknesses with diagnosis, on which most EBM is based. EBM is a huge superstructure giving an incomplete account of its soft foundations. I cash out the relationship between EBM and capitalism in terms of the sale of reprints of the results of RCTs, medical journals, DVDs, and books. It is also cashed out in terms of the salaries/promotion of the EBM protagonists, financial viability of seminars and conferences, and whether the research gains funding. Does our medical school attract students, including overseas (high-paying) students, or do they go elsewhere, so that we need to downsize our school? EBM is popular with managers/funders of health care services, who dislike committing resources to methods of diagnosis or treatment for which there is inadequate evidence. (If there is no evidence that it works then it is of no value.) So

219 Suzanne Fletcher was almost the only woman among the EBM pioneers (Daly 2005).
220 2006.
221 Maier discusses the issue of whether psychiatric diagnostic entities are like a veterinary diagnostic entities, such as bovine tuberculosis, or “theoretical conceptions describing complex cognitive, behavioral and emotional processes” (Maier 2006, p. 329). My point is that such philosophical issues are of secondary importance in a capitalist world. The medical insurance companies require a diagnosis.
222 Maier 2006
evidence from trials pays its way with managers/funders. Deleuze and Guattari integrate their theory of desire with their views on capitalism. I explain above that capitalism hallows the flow of dollars. Desire becomes sublimated into this. What matters is not enjoyment but the movement of capital. Applying this to EBM, if there is a conflict between what a medical scientist desires to investigate and what will sell, she needs to subject her desires to the latter. It is necessary to consider tenure, promotion, and what kind of report will help sell the journal. (Journals ideally publish the results of RCTs and observational studies, which attract advertising revenue.) Some elderly general practitioner may have always wondered if the inhalations of medicated steam, prescribed by her for 40 years, actually relieve symptoms. I doubt that she could gain funding. We do not know whether these inhalations work or not. The truth, or the nearest we can get, is provided by what the funders will investigate. As there is no question of a patent on this inexpensive medication, it will not attract pharmaceutical company funding.

The pharmaceutical industry is where the RCT flourishes. These people have the funds to reject the use of less prestigious, less expensive research designs, which other people may feel under pressure to use. They have the money to promote the results of these trials, whereas people wishing to promote eating fruit and learning to meditate are not as well resourced. These latter groups cannot fund well trained, articulate graduates to drive late-model cars and call on doctors in perpetuo. With regard to the Deleuzian theme of antiproduction, I suggest that the expensive development of a generic drug approaches this. Furthermore, it could be argued that life is becoming medicalised, in fact pharmaceuticalised, so that analgesics and tranquillisers are alternatives to lifestyle changes such as reduction in working hours.

As articulated by Foucault, there is a giant complex into which both capitalism and

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223 In 2010 Goldman Sachs were accused of recommending investments they were betting would fail.
224 A social machine is formed when the excess of production, such as the productions of the hand that are not consumed, or the enjoyment of body parts that exceed the needs of life, are 'drawn off' by a locus of antiproduction: the chiefton who enjoys the labor of bodies while not producing. (Colebrook 2002, p. 112).
EBM are integrated. As well as the pharmaceutical companies, there are also universities (which teach philosophy of science), governments, insurance companies, the armed forces, the law, District Health Boards, the advertising industry, the transport industry, the makers of medical and surgical equipment, and the news media. So EBM is part of State science: grants, publications and so on.

Those people/institutions who run the society have a vested interest in health. A recent survey revealed that 14% of applicants for the armed forces in the USA were too heavy (to fight). The major societal institutions want people healthy for three reasons. They want to be able to win wars. Next, they want people to produce. (There is a faltering recovery from the economic recession.) And last, healthy people cost less than sick people. For these three reasons I submit that the major institutions, which are infiltrated with capitalism, support evidence-based medicine, believing it will deliver a healthy society. After all, it is scientific. It is based on “evidence”.

Whereas the bulk of my Deleuzian viewpoint on EBM has been derived from *A Thousand Plateaus*, in this chapter I draw on *Anti-Oedipus* to make three points about EBM. These are: 1) EBM is integrated with capitalism; 2) Deleuze wants us to ask, not “What does it mean”? but “What does it do”?; and 3) EBM takes its part in the Oedipalization of society. I now quote from a modern, authoritative, 800-page exposition of EBM, and I invite the reader into a Deleuzian reading of this quote.

As an example of one type of CDSS, the Antibiotic Assistant is a CDSS that implements guidelines to assist physicians in ordering antibiotic agents. This system recommends the most cost-effective antibiotic regimen while taking into account the site of infection, the epidemiology of organisms in patients with this infection at the particular hospital, the efficacy of the chosen antibiotic regimen, the patient's renal function and drug allergies, and the cost of therapy.

The primary reason to invest in computer support is to improve quality of care and, ultimately, health outcomes. If a computer system purports to aid clinical decisions, enhance patient care, and improve outcomes, then it should be subject to the same rules of testing as any other health care intervention. In this chapter, we describe how to use articles that evaluate the influence of a CDSS. We limit our discussion to CDSSs that are designed to alter clinical behavior.

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225 Foucault 1980, Chapter 9.
226 Deleuze and Guattari 2004.
and thereby patient outcomes and in which initial evaluation has been completed and implementation has begun.\textsuperscript{227} I note that the cost factor is built into the recommendation, so that the patient is probably not involved in the separation of economic and medical aspects of the recommendation. What does the text do? Among other things, it sets up subjectivities: note the positions of the clinician, the patient and the author of the text. It also tends to set into motion the uses of computer decision support systems (CDSS), and certain tests and/or treatments which may differ from those which the doctor/patient dyad would have wanted. For example, perhaps the patient wants the doctor to use a cephalosporin.\textsuperscript{228} However, the doctor/patient dyad is instructed by the CDSS to suppress what they want to do, because penicillin is much cheaper, and almost as effective. Note the oedipalization of society: \textit{the word of the father.}

Summary of Chapter 4

The EBM pioneers were determined to succeed, and \textit{image} and \textit{acceptability of the product} were important. The results of numerous clinical trials were expertly massaged for the clinician. This could be viewed as a transformation of the results for sale. But these early enthusiasts may have had a distorted idea as to what was wrong with medicine, as well as an exaggerated assessment of their product. There are many criticisms about EBM's lack of attention to theory, lack of evidence, narrowness and totalising. However, in a departure from the usual criticism, I draw attention to the positive aspects of this new approach (to old problems), viewing it in terms of energy. \textit{I draw attention to the major part played by desire, in contrast to rationality.} Furthermore, the Deleuzian theory of immanence, as distinct from transcendence, is mirrored in this energized drive with neglect of the philosophical issues. The Deleuzian theories of difference and multiplicity are mirrored in the \textit{early} days of EBM, when they broke with tradition. And all this heady desire was integrated with capitalist economics, especially in Britain where Cochrane wanted to replace poor tests and treatments with better ones, giving better value for money.

\textsuperscript{227} Guyatt, Rennie, Meade & Cook 2008, p. 196.

\textsuperscript{228} Cephalosporins are antibiotics which have been prescribable by medical specialists only.
Chapter 5: A view of EBM through the Deleuzian depiction of the postulates of linguistics and of the signifying regime of signs

5. 1. The postulates of linguistics

I allude to a study\textsuperscript{229} in which the knowledge of key terms, such as “number needed to treat” and “confidence interval” is assessed in doctors at various levels of seniority. These terms are part of the EBM language. Surely there is a note of regret in this paper regarding the incomplete penetrance of these basic terms. Deleuze and Guattari\textsuperscript{230} explain that language is political. After they have referred to the linguists' wanting to turn language into a science through homogenizing what is, they aver, heterogeneous, they go on to tell us that not only science, but also politics, homogenizes language—“But the scientific model taking language as an object of study is one with the political model by which language is homogenized, centralized, standardized, becoming a language of power, a major or dominant language.”\textsuperscript{231} They use the phrase “order-words” to convey that every word or statement is inseparable from implicit presuppositions. “Order-words do not concern commands only, but every act that is linked to statements by a 'social obligation.’”\textsuperscript{232}

\begin{footnotesize}
\textsuperscript{229} Nooraie et al. 2007.
\textsuperscript{230} 1987, p. 101.
\textsuperscript{231} p.101.
\textsuperscript{232} Deleuze and Guattari 1987, p. 79.
\end{footnotesize}
It has been argued\(^{233}\) that EBM will lead to less creativity and to the atrophy of non-evidentiary warrants for clinical decision-making, along with the language in which they are couched. This is mirrored in *A Thousand Plateaus*. “Order-words bring immediate death to those who receive the order, or potential death if they do not obey,...” \(^{234}\) Deleuze and Guattari go on to say that the order-word “...is like a warning cry or a message to flee.”\(^{235}\) Indeed Deleuze and Guattari state that the order-word contains the flight as its other face.

5. 2. The signifying regime of signs

5. 2. 1. Introduction

Of the four regimes of signs set out by Deleuze and Guattari, I consider that the *signifying regime of signs* is the one used by EBM, as explained in chapter 3. Deleuze and Guattari\(^ {236}\) describe this signifying regime of signs as “despotic, paranoid-interpretive”. I relate this description to EBM. The centre of signifiance is the Cochrane Collaboration. This is a compilation of papers reporting high-quality clinical research. Figuring prominently are the RCT and the meta--analysis. Surrounding this centre are an array of channels, such as publications, reaching to the clinical doctor. Along the path are experts in EBM who interpret the results of research for those doctors whose understanding of research methodology and statistics is limited. I draw on Deleuze and Guattari\(^ {237}\) to show that the passage of notional EBM propositions through the signifying regime of signs distorts them. These propositions are influenced by despotic power issues to do with the imposition of a totalising order of signifiance aligned along a single axis of warrant for the evidence involved as the trunk or arborescent centre of any enterprise in clinical medicine and by interpretation of research results. *I aver that EBM protagonists have not factored this distortion into their evidence.*

\(^{233}\) Holmes et al. 2006.

\(^{234}\) p. 107.

\(^{235}\) p.107.

\(^{236}\) 1987.

\(^{237}\) 1987.
5. 2. 2. The momentum developed by the signifiers. Representational thinking. Despotism. Paranoia

With regard to the despotic, paranoid adjectives in the description of this signifying regime of signs, Holmes et al.\(^\text{238}\) describe a totalitarian takeover of medicine by EBM. They refer to academic positions and grants being allotted to EBM proponents. There is an attempt to send non-evidentiary sources of knowledge, and their advocates, along a line of flight out of the medical arena: they are scapegoated. An example (mine) is provided by a postgraduate or undergraduate medical student failing because of her lack of knowledge of EBM. EBM proponents set out the conceptual system and terminology which should be used. There is a need to take action on moral grounds against this dominant regime, lest it indirectly cause other forms of knowledge (such as pathophysiological reasoning or synthesis of the case in terms of the genesis of the patient's actual suffering) to suffer from disuse atrophy.\(^\text{239}\) Such an impoverishment of knowledge may lead on to a decrease in the use of some medical language, and, associated with this, a decrease in the thought which such language facilitates. As stated above,\(^\text{240}\) the despotic, paranoid approach of EBM intimidates spokespeople for qualitative research and the various forms of knowing medicine which do not fit the EBM model.

As explained Chapter 3, in this signifying regime of signs there is a substantial emphasis on the signifier, or network of signifiers, which interrelate with one-another. One feature is the circular, even spiral, pathways in which the signifiers return to one-another. Take, for example, evidence, evidentiary, non-evidentiary, efficacy, effectiveness, proven benefit, beneficial, beneficent etc). The expansion of the circles is achieved by the interaction between the signifier and the signified: the priests (read: “researchers”) of the regime decide which piece of the signified matches which signifier, thus making the signified known. For example, the health of the subjects is cashed out in numerous variables such as self-report measures of well-being, along with physiological variables like respiratory rate and pulse rate, and biochemical

\(^{238}\) Holmes et al. 2006.
\(^{239}\) Holmes et al. 2006.
\(^{240}\) See my review of Holmes et al. 2006.
variables such as blood sugar level. This decision by the researchers to match off sections of the signified with specific signifiers seriously undermines EBM's claim to objective evidence or truth. Deleuze and Guattari would see despotic power entering here, and the feminist philosophers would see male dominance shaping the choice of signifier. The reader is virtually powerless to unravel any subjective factors which might play into the selection of signifier to represent the all-important signified, such as the health of the experimental subject. Furthermore, the complex of interwoven, mutually dependent meanings that provides the link between signifier, signified and the point of application are so hard to hold in the head that one is swept along with the commendations of the presenters. One might think of false negatives, false positives, the sensitivity and specificity of a given test in relation to a given condition and have to collate these with significance levels and possible consequences for the patient and find the internal rational/evidential path of thought too convoluted to follow.

As explained in Chapter 3, this matching of a part of the signified with a signifier is an example of representational thinking, critiqued by Deleuze and Guattari. Representational thinking rests astride the thinking subject and the concepts she or he uses to match the “objective world” and rests on assumptions that the thinking subject, the concepts used and the objects postulated share the same essence. After all these assumptions have been made (read: not even thought about), the researcher has the onerous task of ensuring that the moiety in one register is as it is pictured to be and so is the moiety in the other register, and that each is stable over time. The researcher has to check the properties of one moiety and the properties of the other moiety and select the element from one register (or order of being) which best represents an element in the other register. There are far too many human assumptions and judgments operating in representational thinking for EBM to claim that the words written in the published paper correspond to objective reality, whether this is part of the Newtonian universe, or the intersubjective agreement of a group of experts.241

241 Referred to by Djulbegovic, Guyatt and Ashcroft 2009, p. 166.
Deleuze and Guattari explain that, in the signifying regime of signs, every sign refers to another sign. For instance, “sensitivity” and “specificity” refer to a complex balance between statistical determinations, and if it is a test that has normal range and a margin of error then it all becomes too difficult to process quickly. Deleuze and Guattari withdraw weight from the traditional role of the signifier, usually considered to point to the signified. This matches the rhizomatic, complex system of signifiers in EBM. For example, a study might be about future cardiovascular health of experimental subjects. The researchers might use the following signifiers: blood pressure, smoking status, and serum lipid levels. The percentage of the cohort having a myocardial infarction in the next ten years could be a proxy measure for the signified, the cardiovascular health of the cohort. The study results are published, as are many others. And so we read of data, various types of studies, statistics, papers, journals, systematic reviews, meta-analyses, guidelines and numerous other terms associated with EBM. This body of signifiers and associated paraphernalia is so extensive that studies have pointed up the limited knowledge which doctors have with regard to the meaning of some of these terms. A whole industry has developed around these EBM terms. Various papers cite other papers. Today you can ascertain who has cited a paper. There is a complex procedure for publication of results. As the EBM protagonists work towards what they call “knowledge transition”, researchers and teachers must master the terms, and students and doctors must try. There is a world within a world. EBM proponents assume their signifiers, such as pulse rate and blood pressure, refer to the signified, the health of the experimental subjects. The body of signifiers has developed its own momentum. And, as indicated above, I am likening this situation to the circles of signifiers, with weak links to the signified.

The known risk factors for developing coronary heart disease, account for only some of the variance in the incidence of myocardial infarction, which, in turn, conveys only limited information about the health of the subject. The incidence of myocardial infarction in some members of the cohort provides an incomplete picture of the health of the whole cohort. Furthermore, “health” is an imprecise term. Harari explains that the concepts “health” and “disease” “reflect the reciprocal influences
between scientific interpretation and a socially constructed reality”. And so the path from signifier to signified is tenuous, and the signified is blurred (imprecise). (In the last resort, is “health” another sign? Do we ever reach the “signified”?)

By now I have explained that Deleuze and Guattari challenge the common idea of a signifier referring directly to a signified. The signified is vague and so is the relationship between signifier and signified. I now compare this with EBM, which uses the paraphernalia of signifiers (such as meta-analysis of RCTs and observational studies) to refer to the health of experimental subjects. Buetow (2006) argues that EBM proponents regard this as objective reality. And from these analyses of studies EBM believes it derives secure knowledge, in fact, the truth. However, by 2009, at any rate, EBM leaders are striking a different note --“ scientific knowledge is never complete and ultimately fallible”. We read that “EBM today has exposed a central tension in epistemology regarding the relationship between observed reality and unobserved reality”. They tell us that “Both EBM and logical-positivism suggest that the role of theories is not to accurately describe the world but to accurately predict empirical observations.” “Reality, however, remains ultimately unknowable”. (This humility is virtually indiscernible in applied EBM practice.)

Furthermore, as noted, signifiers function in a circular pathway. They lose their function with a particular signified and become available for another. This matches what I observe in EBM: research terms are recirculated from one cohort of experimental subjects to another. “The statement survives its object”: the medical journal may outlast the research subject. Whereas EBM thinks it derives secure knowledge from studies in which the signifiers are thought to relate directly to the signified, Deleuze and Guattari see the signified as chimera, depict the priests as deciding what the signifiers point to, across a sea of assumptions common to all representational thinking, view the link between the signifier and signified as tenuous,

242 Harari 2001, p. 728
244 Ibid, p. 161.
245 Gillett, G. “Personal communication.”, May 2011.
246 Deleuze and Guattari 1987, p. 113.
247 p.113
and see the paraphernalia of signifiers as constituting a world of its own. The signifier is more at home with other signifiers than with the signified. Debates within medical research sometimes focus more on the signifiers and slide unwittingly across the referents.

With regard to the adjective “despotic”, EBM promotes itself despite failing by its own criteria.\textsuperscript{248} There is a need for clinicians to make decisions backed by evidence, but they cannot point to convincing studies favouring EBM over alternatives. Furthermore, it has been argued that EBM is an intervention which has not justified its expense in a tightly budgeted health care environment.\textsuperscript{249} This smacks of power. EBM protagonists often have good academic positions, grants, accolades, publications and so on so that some writers refer to “coercion”. Loughlin cannot see any relationship between EBM, permeated by deductivism, and “management science”.\textsuperscript{250} So why are these two groups bedfellows? Loughlin argues that we need to look outside science and philosophy to see the reason for their alliance. He thinks that both groups meet under the umbrella of controlling professionals. He also thinks they gain ownership of the certain terms. “To be opposed to EBM is to be opposed to science, reason, evidence and all things sensible”.\textsuperscript{251} This is what Deleuze and Guattari mean by reterritorialisation and overcoding. This conceptual area, previously owned by someone else, is now owned by EBM, which now codes the area. For example, the term “evidence” is complex\textsuperscript{252} and associated with a literature debating its meaning, but EBM tells us what it means. However, by 2009 Djulbegovic, Guyatt and Ashcroft\textsuperscript{253} are giving an account of the “complexity of the concept of evidence”.

There are more papers published from EBM than from clinical medicine and EBM seems short on plans to address this bias towards EBM.\textsuperscript{254} Furthermore, the despotism of EBM proponents is evidenced by their emphasis on the strengths of EBM while

\begin{itemize}
\item 248 Miles, Loughlin & Polychronis 2007.
\item 249 Ibid.
\item 250 Loughlin 2007, p. 521..
\item 251 Loughlin 2007, p. 522.
\item 252 Loughlin 2003.
\item 253 2009, pp. 160-1.
\item 254 Miles et al. 2007.
\end{itemize}
writing little about its limitations. Why is there not more research to evaluate their research-based approach? Should we conclude that the EBM criteria are too restrictive,\textsuperscript{255} and cannot be applied universally? Or does it reflect a bias in the funding philosophy? Or is this an example of the deception which Deleuze and Guattari regard as an integral part of the signifying regime of signs?\textsuperscript{256} Furthermore, different RCTs and observational studies produce different results, otherwise why do we need systematic reviews? Even these latter are considered to involve interpretation of the research results. So expert opinion, which EBM was intended to replace, is back, sheltered under “the evidence”.

As stated above, it has been argued\textsuperscript{257} that EBM was operationalised before it was conceptualised: that the founders gave little attention to the underlying philosophy. It has also been suggested\textsuperscript{258} that EBM has perpetuated a modern tendency to dichotomise practice and theory, to the neglect of the latter. These same authors also argue, following a widely accepted philosophical position, that theory-free observation is not possible: they state that “...there can be no meaningful observations in the absence of an intellectual agenda as human beings attempt to understand the world that confronts them.”

\begin{quote}
...the lack of an adequate theoretical base has led directly to the specter of EBM's driving of a “routinised, quantifiable practice driven by utility, 'best practices’ and reductive performance indicators where (it) functions in an ideologically driven practice that ignores the content of experience.”
\end{quote}

However, by 2009, EBM protagonists\textsuperscript{260} are addressing some of these theoretical issues, describing EBM as a practice with an evolving theoretical base that ideally would include the place of patient preferences and actions. Surveying inductivism, falsificationism and explanationism, as mentioned above, they tell us that EBM uses all these forms of scientific reasoning, and that EBM does not have a specific epistemology of its own. They also address the issue of whether an observation is

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{255} Norman 2003, p. 130.
\item \textsuperscript{256} 1987, pps.114, 117.
\item \textsuperscript{257} Miles, Loughlin & Polychronis 2007.
\item \textsuperscript{258} Miles, Loughlin & Polychronis 2007, p. 494.
\item \textsuperscript{259} Miles, Loughlin & Polychronis 2007, p. 494.
\item \textsuperscript{260} Djulbegovic, Guyatt and Ashcroft 2009.
\end{itemize}
\end{footnotesize}
independent of the theory in which it is embedded and state that EBM does not appear to have a position on this issue. They also refer to Quine's assertion that a theory is underdetermined by evidence, i.e. that it embeds a framework of assumptions and categories that give form to the entities and significances it is prepared to find in the data presented to the observer. I assume they agree.\textsuperscript{261}

There is, however, a more subtle way in which the signifying regime of signs is despotic. “If both \textit{Anti-Oedipus} and \textit{A Thousand Plateaus} refer to the 'despotism' of the signifier, this is because the signifier requires and institutes certain regime of vision”.\textsuperscript{262} Readers of EBM are subjected to the world view, including power struggles, biases and ignorance, of whoever developed the language. Centuries of metaphysics, including Plato's hallowing of Forms as distinct from concrete examples, and his dislike for art, are visited on the unsuspecting reader. What has Plato to do with EBM? There is a link in terms of idealisation and purely logical relationships between clearly defined entities and the categories to which they belong comprising the virtual universe, where reason is adequate to all the problems of knowledge. The reader of EBM is subjected to a system of thought featuring representation, with its implied two-level universe (actual and virtual) and the prioritisation of the actual. Furthermore, our culture has often subjected actual living to the tyranny of the virtual. Any moral code provides an example, “God” is another, and the God-like world view of unitary truth and meaning the secular equivalent. Deleuze and Guattari regard it as indefensible to subject life to a virtual viewpoint outside of it. Users of today's language are subjected to the Oedipalisation of Western thought, interpreting desire as lack, and the law or an approved system of signs (father) over desire (mother). (In the Greek myth, Oedipus’ partial knowledge of the world combined with his belief in his own understanding of the literal truth of what he was hearing from the divinely omniscient oracle, led him to a disaster, in terms of patricide and incest, that was constituted as such in terms of the prevailing moral code.) The reader's mind, according to Deleuze and Guattari, is distorted with subject-object division, and by phallogocentrism - the bias in our language towards the male and the system of

\textsuperscript{261} p.163.

\textsuperscript{262} Colebrook 2002, p. 144.
logic (a regulatory system designed to preserve a certain rectitude), as distinct from the female and the mythical (welcoming, earthly and nurturing—realistic to the actual world of engagement with others). And not only the mythical, but the smooth, the unstriated, the reality that is not analogous to anything. In this paragraph I have suggested a number of features of our language which add up to a heavy burden for the hapless modern reader to bear, and hence the term “despotic” with regard to the signifying regime of signs.

The EBM lecturer is necessarily subjugated to the striated terrain. When she addresses students at undergraduate or postgraduate level, the EBM discourse (which she must use) strait-jackets her emanations with the baggage of its structure and presuppositions. She must use the EBM language when she lectures even if that is not what she wants. The power of the EBM movement is operating on and through her. Barthes worries about the bourgeois ideology presenting itself as just another “natural” fact in the world, and his words are nowhere more evident than in our understanding of the natural science of biomedicine. “He wished to reveal the necessary contrivances required to stifle social contradictions and tensions in the interests of legitimation”.

For example, the emphasis on the results of clinical trials of diagnostic tests and treatments conveys to the student that intuition, longitudinal care, qualitative research and the patient's knowledge of her illness, are of lesser importance. The message is in the medium.

He realised that language (langue) is not exhausted by the message engendered by it. He saw that language (langue) can survive this messages and make understood within it, with a frequently terrible resonance, something other than what it says, superimposing on the subject's conscious, reasonable voice the dominating, stubborn, implacable voice of structure, i.e. of the species insofar as that species speaks.

When a researcher writes her report, supposedly about reality, power and language combine to constrain what she can say. She uses existing signs, which bring their etymology. They are integrated into the power structure which adopts a position on 1) will to truth, 2) methods of ascertaining truth, and 3) what can count as truth. She

is not free to explain her findings as she desires. Furthermore, as I state elsewhere in this work, Barthes argues that the written report of a researcher cannot adequately represent reality which, as a pluridimensional phenomenon, cannot be squeezed into unidimensional writing. After she has published, others may cite her results, take over her findings, and send them in a direction she did not intend, as has happened with the writings of Nietzsche and Marx. By the time a sign has been taken over by an ideology, there is lack of awareness and therefore of clarity about its variegated meaning. Barthes’ worry applies widely through EBM, and especially to such terms as “knowledge”, “objective”, “man”, “woman”, “health”, “fact” and “ethical”. It also subjugates the undergraduate and postgraduate students to a delimiting regime of truth.

5. 2. 3. Interpretation

The word “interpretive” in Deleuze and Guattari's characterizes the signifying regime of signs. You might think that EBM provides the clinician with evidence to guide her in clinical decision making. Shahar\textsuperscript{265} tells us

The trail of interpretation of medical research never reaches a logical end. We can interpret the results of a single study ('discussion' of 'commentary'); we can interpret a collection of studies (and call it 'review' or 'meta-analysis'); we can interpret a collection of meta-analyses; an so on. At each stage we may also interpret the interpretation at hand, just in case it was not clear enough.

As explained above, Deleuze and Guattari\textsuperscript{266} consider that interpretation increases the supply of signifiers.\textsuperscript{267} They aver that every interpretation is an interpretation of an interpretation: nothing is interpreted that is not an interpretation itself. Ultimately, meaning is always deferred to other signs and different from reality as we are caught up in it. A published review of 1016 interpretations called “Cochrane systematic reviews of randomized controlled trials”\textsuperscript{268} alleges that, in 96% of cases further

\textsuperscript{265} 2007, p. 693.
\textsuperscript{266} 1987, p. 114.
\textsuperscript{267} Difference and the deference of meaning.
\textsuperscript{268} El Dib, Atallah & Andriolo 2007.
research was recommended: there was no clear recommendation to the clinician. The authors conclude that most Cochrane reviews point up “the absence or poor evidence around questions of health care that have been covered by them.”

(Each interpretation required interpretation through further research. The knowledge was not usable in the form in which it satisfied the rigors of inquiry that it had established.)

As stated above, in the twenty first century, the use of interpretation in EBM has been increased by the recently set up GRADE committee, which has softened the clear distinction in the quality of the evidence flowing from the RCT or observational study—certain design faults in the RCT can reduce the quality of the evidence, while certain features of some observational studies can increase the quality of evidence. Then, if the studies are clear about the harm of help of an intervention, a strong recommendation follows. If the studies are not clear, a weak recommendation is made. By the time patient preferences and actions and system factors are woven into the decision calculus (by people), the data from the study has been interpreted several times.

Deleuze and Guattari explain their dissatisfaction with the way Freud converts multiplicities to molar unities, and dynamic and shifting material into a striated mechanism. They argue that interpretation depends on the world view of the interpreter, a fact which Freud failed to appreciate and which continues in the “word as law” of EBM. Yet readers are told only a limited amount about the identity, and nearly nothing about the world view, of the experts who interpret the findings of studies for the clinician. Although readers can scarcely expect a statement in every medical paper, they are not told that the world view used in interpreting the evidence is a reductionist, biomedical model. Readers are not told that someone breathes into the system a mechanistic, physiological model, involving coherence and harmony (as did Freud). The researchers are the priests of the despotic regime -- they catechize rather than creating the methodology of critique. We are not told how they are

269 p. 691.

270 Are we still asked to believe that "The evidence says"...?

271 1987, Ch. 2.
(s)elected, where are they coming from, or who monitors their power.

5. 2. 4. Both

Both the despotic element and the interpretive element in the signifying regime operate in the preparation of a paper for publication. The article must adopt a certain style: aims, methodology, results, discussion (IMRaD).\textsuperscript{272} This is despotic: excellent research results may not be published if the manuscript does not conform to the correct format. There is also an interpretive element here. The authors must decide how to present their results, discussion etc. For example, they must steer between two extremes. These are: 1) a claim to have reached a definitive solution to the issue; and 2) the discrediting of the research results because of flaws in the design. \textit{A balance must be striven for.}

Summary of chapter 5

EBM protagonists do not take into account the despotic, paranoid-interpretive influences which the proposition picks up. The signifying regime is despotic. The user is constrained by centuries of metaphysics, much of which was challenged by Nietzsche in the nineteenth century. There is too much distortion, control, complexity and uncertainty in this signifying process for EBM to be so sure that epidemiological evidence is the best. The relationship between the signifier and the signified is problematic, and the system of signifiers develops its own momentum, and tends to overshadow the signified, problematising the neat-and-tidy model of the sign. The signifying regime of signs is impregnated with interpretation. Every signifier refers to another, ad infinitum. This matches EBM, where there is layer after layer of interpretation, now sheltering in the deified edifice of \textit{evidence.}

\textsuperscript{272} So what does one do with a critical discussion like this work, which analyses, in an original way, an area of our supposed knowledge?
Chapter 6: A view of EBM through the Deleuzian metaphors of the rhizome, smooth space and striated space, segmentarity, and nomadic science and State science

6. 1. The rhizome

Tonelli\textsuperscript{273} catches the right note in advancing what he calls a casuistic approach to decision-making. Each case makes use of various types of knowledge. EBM, however, uses the tree (or arborescent) model. There are pre-established paths for the development of knowledge. Then there is a stratification of the knowledge which a doctor should use. By contrast, Tonelli argues that the five streams of knowledge mentioned above are potentially relevant to any clinical decision. Tonelli's approach is congruent with the rhizome, described by Deleuze and Guattari.\textsuperscript{274}

In the casuistic/rhizomatic model, no single topic has a general priority over any other topic and the relevant importance of a topic will depend upon the circumstances of the case. The clinician weighs these potentially-conflicting warrants for action, using both practical and theoretical reasoning, in order to arrive at a plan for the patient.\textsuperscript{275}

The rhizome is a better model for decision making than the tree because the rhizome allows entry to numerous, unstratified, inputs. However, there is another advantage to the rhizome. The tree stratifies the various forms of knowledge, but provides no

\textsuperscript{273} Tonelli 2007.
\textsuperscript{274} 1987, p. 14.
\textsuperscript{275} Tonelli 2006, pp. 248-9.
guidance about how to use these in making a decision. The tree heirarchicizes. By contrast, the complexity of the rhizome is better suited to the process of sifting these sources and drawing on them for a decision. Furthermore, after decision comes action, or non-action. I suggest that the rhizome models this stage better than the tree, because of its complexity and flexibility. Tonelli\textsuperscript{276} remarks “I remain doubtful that any tool developed by the proponents of EBM will replace the skills of a compassionate and skilled clinician in best understanding the needs and the personal context of the individual patient”. He alludes to clinical attributes which draw on diverse kinds of knowledge: knowledge of how to care and develop rapport, knowledge of the patient and her social, occupational and other circumstances, knowledge of her ethics, knowledge of how to take a history and conduct a physical examination, knowledge of how to select, arrange and interpret special investigations, knowledge of the social milieu in which the consultation is embedded including the style of doctor/patient relating in that place and time, along with an understanding of issues related to funders and organisers. It is difficult to see EBM providing all this knowledge from RCTs and observational studies, partly because it is difficult for the RCT or the observational study to incorporate subtle detail arising in many different contexts of signification where the signifiers applied and the signifieds thereby indicated draw on different modes of meaning and tendencies to action. Rhizomatic thinking despairs of unifying, and acknowledges difference of signifying networks which all combine in myriad ways to engender events in various ways, as in Foucault's analysis of history and the events making it up.

The problem is at once to distinguish among events, to differentiate the networks and levels to which they belong, and to reconstitute the lines along which they are connected and engender one another. From this follows a refusal of analyses couched in terms of the symbolic field or the domain of signifying structures and a recourse to analyses in terms of the of the genealogy of relations of force, strategic developments, and tactics.\textsuperscript{277}

Tonelli\textsuperscript{278} also alludes to the importance of reasoning, argument and analogy in

\textsuperscript{276} 2007, p.506.
\textsuperscript{277} Foucault in Paul Rabinow, ed., 1991, p. 56.
\textsuperscript{278} 2007.
clinical decision making. Again, the rhizome is a more apt model for these processes than the tree, because, as Deleuze and Guattari explain, thought is not arborescent. The tree model involves authority, signifiance and subjectification. They make a link between the rhizomatic arrangement of the dendrites, synapses, axons etc., and thought that develops through multifarious links and movements. It has been argued that EBM omits ethics and the matching of the world view of patient and doctor. The rhizome allows this. Nevertheless, Deleuze and Guattari do not eliminate trees. Their rhizome model accommodates a few trees rising from the rhizomatic root system, and their trees have rhizomatic sections. They emphasise multiplicity, not a dualism between the rhizome and the tree.

Psychological medicine may be at least in part unsuitable for the EBM approach for various reasons: the diagnosis often changes; the complexity of the multidisciplinary team, and the varying co-operation of the unstable patient (whose mental state, use of substances, and social and geographic circumstances may vary) with the treatment regime, both prove awkward for the EBM model; the model assumes correct and stable diagnosis and a decision by the doctor (and the case is almost solved). Maier explains that EBM uses initial conditions to predict the outcome of treatment. But in psychiatry and psychotherapy the initial conditions are not entirely apparent, and the course of the illness and treatment can follow unpredicted paths. Clinician and patient frequently reassess and negotiate changes in management. Sometimes unwanted effects of drugs, sabotage of treatment, and self-mutilation, admission to hospital, arrest by police, all complicate the case management.

Although psychological medicine is a telling example, these issues operate, with less force, in other treatment situations. In an emergency, a doctor may need to assist breathing before there is time for a diagnosis to be made. Patients entering hospital may require days of care before a diagnosis is established. Patients go in and out of hospital, or change their general practitioner: the diagnosis and treatment for some of

279 Buetow 2006.
280 Maier 2006.
281 Maier 2006.
several conditions are likely to change, and change again. New treatment may influence the diagnosis (for example, drug toxicity). General practitioners, at any rate, work not only with diagnosis: they also work with the patient's construction of the diagnosis. All this complexity fits well with the rhizomatic, casuistic model, with its multiple entry points and an endless array of possible connections and patterns. The rhizome accommodates analogy, argument, and diverse styles of reasoning in making decisions and recommendations. There is room for creativity.

So far I have applied the image of the rhizome to knowledge, and later to clinical decision-making. However, the image can be applied even more broadly to the practice of medicine, by examining generalism versus specialism. As stated above, EBM seems to fit specialism better than generalism. EBM places emphasis in quantification and the elimination of disease. Palmer, Naccarella and Gunn suggest that patients care more about the quality of their everyday interactions with health professionals than about how the service is organised. They want people with good interpersonal and communication skills, people who are interested in their lives, people who give them attention and who provide fast, accessible, affordable, safe, quality, universally covered, responsive and flexible health care.

The plasticity of the rhizome facilitates modeling this very broad conception of health care better than does the tree: harmony, functionality and coherence of form do not fit well with the sometimes messy human situation.

In my section on segmentarity (below), I portray EBM as segmented and somewhat arborescent. Nevertheless, there are many respects in which EBM resembles the rhizome. Consider the worldwide movement of equipment and of the techniques and varieties of knowledge that are implicit in the equipment. Multicentre research provides another instance of rhizomatic behaviour, with the centres corresponding to

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284 Palmer, Nacarella and Gunn 2007, p. 396.
tubers. There is the world wide web. This is integrally related to EBM and is surely rhizomatic, with its sharing of information. Think also of the way in which various journals carry citations of other journals. I consider that the way in which one group of writers publishes in several journals is rhizomatic, as is the way in which some reviewers work for several journals. The springing up of fresh ideas in various situations (even in the minds of students) fits with the image of a rhizomatic plant, with shoots in numerous places. There is nothing to stop a demographer from linking her research into EBM. Sometimes a research group will break off. This is typical of the behaviour of a rhizomatic plant.

Deleuze and Guattari emphasise multiplicity. “There are knots of arborescence in rhizomes and rhizomatic offshoots in roots”. In the rhizomatic system I have portrayed for EBM, there are tree-like sections. One is the university, with its faculties and departments, and so on. The research team has some hierarchical structure from the director of the study to the research assistant, and the photocopy technician. A syllabus or set of rules for student examinations or for applications for ethical approval may be grafted onto the activities of the department. Deleuze and Guattari call this a trace, as distinct from a map in that it effects rather than lays out a picture of or guide to what is going on. Inversely, the trees have some rhizomatic elements. Each department in the university could be regarded as a rhizome, with sharing of information, several people working on a study, ideas springing up and the development of bonds among staff members. Where is the department in the School of Medicine going? Some seem to “have another way of traveling and moving; proceeding from the middle, through the middle, coming and going rather than finishing”. The departmental research follows the rhizomatic style: “and...and...and”. And where are the boundaries of the department? Staff members have ongoing relationships with people outside, with books, internet, journals. In any class of students learning EBM there develop bonds among students, small groupings, the sprouting of new ideas and sharing of information. Intellectually, the student class shows “all manner of becomings”.

286 Deleuze and Guattari 1987, p. 25.
287 Deleuze and Guattari 1987, p. 21.
syllabus, in numerous directions.

6. 2. Smooth and striated spaces

The smooth and striated spaces, discussed by Deleuze and Guattari, have been used to provide a perspective on evidence-based nursing, giving a partial description of the desert in which a nomad can go any distance in any direction. By contrast, in a city, a person goes finite distances according to a grid. In the urban setting you get to a named place or you leave the city limits for the wild world out there, beyond the reach of proper design. The distinction is taken to another level: thought and knowledge development. A researcher using the desert model can go in any direction or directions, traversing any distance or distances, to think and develop knowledge—any knowledge. By contrast, the evidence-based approach sets limits to the distance traversed and provides a limited number of patterns of traverse. The structure is necessarily despotic. But who gains from this segmented approach to knowledge development in nursing, and can evidence-based nursing answer the questions nurses want answered?

As noted early in this work, the gaining of market share is something over and above the simple conducting of research and publication of results for scholarly doctors, managers and policy-makers. In this paragraph I depict this entire process as the striating of smooth space.

Directed or not, and especially in the latter case, smooth space is directional rather than dimensional or metric. Smooth space is filled by events or haecceities, far more than by formed and perceived things. It is a space of affects, more than one of properties. It is haptic rather than optical perception. Whereas in the striated forms organize a matter, in the smooth materials signal forces and serve as symptoms for them. It is an intensive rather than extensive space, one of distances, not of measures and properties. Intense Spatium instead of Extensio. A Body without Organs instead of an organism and organization. Perception in it is based on symptoms and evaluations rather than measures and properties. That is why smooth space is occupied by intensities, wind and noise, forces, and sonorous and tactile qualities, as in the

288 Holmes et al. 2006
Intuition, the patient's knowledge of her body, the meaning of her illness to her, the value attached to the interaction between doctor and patient—all this has been partly subjugated. Now we have careful selection of treatment and control group, perhaps double blinding, stipulation of various parameters and hypotheses, the intervention, followed by measurement and the computerisation of the data extracted from people, its statistical analysis according to a highly structured mathematical model, and the structuring of decisions after the reading of meta-analyses, systematic reviews and guidelines. Anxiety is partly replaced with certainty, with progress, perhaps with more cost-effective treatment. Hopefully, variation in practice is reduced. In various places in this work I indicate that there is resistance to this determined striation of clinical space. Human interactions between doctor and patient, lack of fit between patient and paradigmatic research subject, the patient being an outlier, human perversity, all function to limit the striation of smooth space. Other limiting factors are lack of diagnosis, change in diagnosis, variations within one diagnosis, multiple morbidity, multidisciplinary team approach and indigenous “other” (non-Western, liberal, politically organised) groups and the relational clusters within them (such as the whanau) wanting relationship-based treatment. Another site of resistance is the modern person who wants individual treatment as distinct from group treatment. There are smooth spaces in striated space and there are striated areas in smooth space. Furthermore, there is an ebb and flow, with smooth space sometimes increasing ground at the expense of striated space. For example, some doctors may have backlash against EBM, favouring the older experience, intuition, expert opinion and so forth. Decisions will involve an ever-changing mixture of both types of input. They occur together.

6.3. Segmentarity

Deleuze and Guattari 1987, p. 479.

The variation in practice can be seen from more than one angle. A value can be placed on it. From the outset EBM has valued it negatively.
Segmentarity is an aspect of striation, a major theme in this work, and across each division into segments, Deleuze and Guattari tell us, flows energy, power. Segmentation has a dynamic aspect, and the background image is struggle. The segmentarity (or binary judgmental divisions), referred to in *A Thousand Plateaus* is easily seen in EBM. For the last 20 years, warrants for decision have been divided into evidential and non-evidential, and substantial superstructure of theory and practice is developed on this segmentation. This division sweeps across the minefield of what constitutes evidence, and it discriminates against the non-evidentiary (according to the EBM canon) forms of knowledge, used by doctors in numerous cultures for centuries.

Another segmentation evident in EBM is the division between the object (the health of the experimental subject) and the knowing subject. This latter is a portable clinician, white, adult, and equipped with educational/cultural norms (of his own base society), who knows (or can find out) the results of clinical trials, and how to apply them to the patient. *A Thousand Plateaus* tries to avoid the subject/object division, using a different model, as explained in my section on perception.

There is a segmentation in the clinical trials. There are various types of study (such as RCT, cohort—see Appendix 1). The experimental subject pool is segmented, according to numerous criteria, such as age, gender, diagnosis, medication and so on. Commonly, there is a treatment group and a control group. The evidence flowing from clinical trials varies in quality along a continuum, yet is segmented into grades, depending on such factors as the rigour of the study design. The recommendation flowing from the evidence is segmented according to strength: “strong” or “weak”. When the paper is submitted for publication the reviewers categorize it as: 1) Accept, or 2) accept with minor change, or 3) Accept with major change, or 4) Reject. There are various grades of journal in which the findings are published, the major segmentation being between international and national. Within the journal there are various categories of article, such as “original research”.

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291 Chapter 3.
There is an eccentric circularisation. At the centre is the Cochrane Collaboration. Surrounding this are various organs of publications of clinical trials, in a decreasing order of status. Out beyond these are the practice guidelines, protocol-based practice, and critical pathways, derived from EBM. Further out again are the notes taken by doctors and students during lectures, after reading, or searching the internet. Then there are printed handouts and impromptu diagrams for patients. There is also linearity. Medical researchers, administrators of academic departments and lecturers have higher status than do other fully-qualified clinicians. Then come registrars, house physicians and medical students. From segment to segment energy flows and receives layers of legitimation. This energy/power is accompanied by fascism (a rigid command hierarchy that has nothing intrinsically built in about critique and permitted disruption) if forms of knowledge other than EBM are discriminated against.

6. 4. State science and nomadic science

6. 4. 1. Patient preferences and actions

When I canvass the five warrants for decision which a doctor uses, I wonder whether the distinction between State science and nomadic science, set out in *A Thousand Plateaus*, applies to this context. Let us consider the five serially. The structured, clinical research is the paradigmatic representative of the State science. But what of the other four? In searching for a representative of the nomadic science, I pass over pathophysiological reasoning, as this is largely striated. I also pass over system factors, because these simply constitute limitations on the application of clinical research. Clinical experience straddles both EBM and nomadic science and would be difficult to divide. So I will explore the fifth warrant as my example of nomadic science—patient preferences and actions. From the point of view of EBM, the particularity of the patient can be awkward. With messy flesh, her own understanding of her illness, and seemingly spasmodic placebo effects, not to say complications introduced by group interdependence and bone-pointing (which can be lethal) she
I choose one example of patient wishes. For years, now, general practitioners have been urged to restrict the use of antibiotics to certain bacterial infections. (For simplicity I ignore the fact that a few viral infections, such as herpes zoster, are treated with effective anti-viral agents.) Research reveals that antibiotics are ineffective against viral infections. Although general practitioners and public have reduced the use of antibiotics for upper respiratory tract infections, the use of these agents in viral infections continues, at a reduced level. When some patients are debilitated with pharyngitis, they seek help. Such scientific niceties as bacterial/viral distinctions are drowned in a sea of need. Patients may perceive antibiotics as powerful drugs which can hoist them out of their plight. I suggest that once the doctor yields with a prescription, the patient feels more able to cope. This, I suggest, stimulates her to engage all her coping mechanisms and bravely battle through the illness. Furthermore, this (arguably) strengthens the relationship for future use. A second issue is the doctor's frame of mind. A day arguing with distressed, paying clients can be abrasive, and lead to job-dissatisfaction. I suggest that the doctor's attitude is an issue in the healing process. Another factor is the size of the doctor's client base. The patient may consider the fee to be excessive for merely symptomatic treatment, and may leave the practice or consult a pharmacist next time and may delay effective diagnosis and treatment for something beyond the ordinary. Then the doctor may be less therapeutic with the worries of a small client base. Another issue is that, today, many consultations occur with locum doctors. If the locum doctor learns that the usual general practitioner prescribes antibiotics, she will be under pressure to prescribe these herself. Lastly, there may be a worry that the illness might be

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293 This presentation is a little confusing. Upper respiratory tract infections are either viral, bacterial, or both. I argue for and against the use of antibiotics for viral infections in the upper respiratory tract. However, the research does not support the use of antibiotics for bacterial infections here either. These get better with or without antibiotics. The only caveat here is that streptococcal pharyngitis is rarely followed by rheumatic fever. However, this occurs in the overcrowded homes of children between 3 and 15 years of age, and the usual course of five days of antibiotics is ineffective. A ten-day course of penicillin or erythromycin is required to prevent rheumatic fever.
bacterial, or might become bacterial, especially in the very young, very old, or the immuno-compromised.

Numerous parents report that each time they take the child to the doctor, the doctor refuses antibiotics for the infection. After more than one consultation the same or different doctor does prescribe antibiotics, and the child recovers! This influences the parent's attitude and behaviour for next time. By now there is a disparity between EBM, in which this parent's experience is described as “anecdotal”, and the parent's experience, where the need for antibiotics has been “proven”.

So how do I relate the prescription of antibiotics for viral infections to nomadic science? I draw attention to the exteriority of what I explained in the previous paragraphs. These considerations are not viewed from the EBM (State science) point of view. These doctors (and patients) do not understand! Their actions fly in the face of the evidence. Such doctors and patients increase the incidence of allergic reactions, bacterial overgrowth, vaginal candidiasis, and diarrhoea; and they waste the country's money. The doctors mis-educate the patients, perpetuating the habit of prescribing antibiotics for viral infections, discouraging the scientific leaders of the profession. From the point of view of State science, these doctors and patients are irrational.

I refer above to the experience of taking a child to a doctor several times, and how the parents attributed the recovery to antibiotics, and I implied that EBM does not agree. The two sides call on different evidence. Nomadic science allows for rights and power issues. After all, the parents are making a co-payment, and much modern primary care aims for patient-centred medicine. The parents and their child will bear the consequences of the decision. So how should we balance out the provision of professional advice, based, let us assume, on the results of clinical research, with the wishes of the parents, who have “proven” that these infections require antibiotics? The doctor is working for the patient and is funded by the patient, the state or both. The parents are paying taxes (to be wasted on antibiotics) and a co-payment fee. I suggest that these issues take us into the smooth space (described in A Thousand
Plateaus), which is not mapped. The argument has EBM on one side. On the other side are the emotional needs of the patient, and sometimes aspects of the doctor-patient relationship and/or the doctor's work environment. I explain that the behaviour of these doctor/patient dyads is incomprehensible—from the point of view of State science. From the point of view of nomadic science, we could note that human behaviour is guided by social and emotional considerations, as well as by science. Modern medicine must come to terms with the fact that people have choices, as doctors have always known. The thrust of EBM is that doctors should give evidence a central place in their practice: they need more education! However, we might wonder why it does not occur to EBM people that their model might be inadequate.294 Perhaps, instead of bemoaning doctor's incomplete adherence to the medical model, the model needs changing to fit what doctors are doing.

6. 4. 2. Medical ethics

The distinction between State science and minor science extends into medical ethics.

For all the sound and the fury, the dominant ethical discourses have not in general supported a deep questioning of the conditions and assumptions that generated the problems they are seeking to solve. This in turn reflects the fact that the inexorable sources that are driving modern society forward—including science and medicine, money and power—also sweep up ethical discourse, which is therefore implicated within and co-opted by it.295

Ethics deploys the subject and rational thought, and assumes that dilemmas can be dealt with. Furthermore, “...a major outcome of the logocentrism of ethical thought is that it provides no independent standpoint from which medicine or science can be subject to critique”.296 As indicated in numerous parts of this work, I am placing EBM in this dominant complex. So I am linking EBM with medical ethics, as it is usually taught—beneficence, non-maleficence, justice, autonomy and so on—all part of what Deleuze and Guattari 297 call “State science”.

However, here is a depiction of micro ethics, ethics at the level of the individual person or dyad.

In daily life, ethical issues are everywhere. We make frequent and continuous decisions about the small details or even the most mundane of our interactions. Typically, we assume a limited number of large-scale principles and we take into account regional codes of behaviour. However, the substantive contents of our face-to-face relationships are not set primarily by such principles or codes. Rather, they are negotiated in the course of these relationships as they emerge out of our shared lifeworlds of social and cultural experience. When we engage with another person in almost any interchange, we embark on a process of mutual exploration that may lead to uncharted, unknown territory. We engage in dialogues and share experiences as we negotiate our way—not always without misadventure—through potentially explosive fields of conflicting values. We reach an outcome, sometimes conclusive and satisfying, often partial and incomplete.\textsuperscript{298}

But surely this is just like the nomadic science described by Deleuze and Guattari. Note the lack of structure, the likelihood of frequent changes in direction, the lack of moving from one fixed point to another fixed point. There is a range of possibilities at each stage. Deleuze and Guattari would consider medical ethics to be closely associated with EBM, both part of State science, but would regard microethics as nomadic, and an alternative depiction of what happens in the micro world of doctor and patient.

6. 4. 3. State science and the nomadic science interact

The two forms of science (or approaches to science) share so much. They operate, to some extent, in the same people. They share the earth, consulting rooms and universities, paper and computers. The literature sets out patient-centred medicine and EBM. Many patients are well-informed about scientific issues, but sometimes feel overwhelmed by illness, and place less emphasis on the results of scientific research than when they are well. EBM was at first somewhat rejecting of patient wishes, although a revised model has been published in which 1) research evidence, 2) patient clinical state and circumstances and 3) patient preferences and actions, are

\textsuperscript{298} Komesaroff 2008, p. 265.
coordinated by clinical expertise, as already stated.\textsuperscript{299} And if patient wishes could be researched and placed on a structured footing, EBM would exercise sovereignty over at least some of the new research, using the RCT if possible. I have already explained that Deleuze and Guattari tell us that State science will do its best to striate smooth space.

6.4.4 A post-colonial critique

Nursing has been colonised by EBM (transformed into EBN) and that this has stimulated a reaction in which nursing intelligentsia try to disallow all non-nursing models.\textsuperscript{300} Nursing is a social activity, and is therefore automatically political.\textsuperscript{301} Post-modern thought is inherently political: a post-modern, intellectual analysis of nursing trends is intended to disturb the present balance of power. Nursing knowledge and practice should allow a number of paradigms:\textsuperscript{302} positivism, post-positivism, critical theory and constructivism, and the dominance of any one should be resisted. I consider that the same principles apply to medicine.

Accompanying the colonisation,\textsuperscript{303} is a reciprocal effort from nursing (or clinical medicine) to facilitate the takeover, after the nursing (or medicine) has been converted to the invading system. The colonised discipline actively participates taking part in clinical research, development of guidelines, learning to critique published studies, and to experienced clinicians teaching students and new graduates the principles of EBN (EBM).

Deleuze and Guattari ponder, in many places, the desire to be subjugated. Even so, some post-psycho-analytic French feminists have argued that it is not ideal for the vagina to enact an agenda which is formulated from one side. The desire to be subjugated is not entirely plastic. Some element of the accommodating being needs to resist. The colonised entity accepts and resists colonisation in favour of its own way

\textsuperscript{299} Haynes, Devereaux and Guatt 2002.
\textsuperscript{300} Holmes, Roy and Perron 2008
\textsuperscript{301} Holmes, Roy and Perron 2008.
\textsuperscript{302} Ibid.
\textsuperscript{303} Ibid.
of being in the world. In a dynamic interchange, characterised by oscillation, the colonising entity is to some extent transformed by the colonised entity. Some of this is being played out in palliative care. There comes a stage when the correct medical procedure, such as the draining of a pleural effusion when the patient has difficulty breathing, is resisted. I have been told that the lead given by palliative care, in which a relativisation of evidence-based interventions to the whole situation of the patient and a notion of substantial benefit, is to some extent being followed more widely in medicine.\textsuperscript{304}

In connection with nursing knowledge--and power---, concern has been expressed\textsuperscript{305} about what statements can be made, what is the ordering of knowledges, what rules are used for this, and how the right to speak for the movement is developed. Logical (post-) positivism, which sets out the relationship between variables, is not equipped to deal with these issues. Postcolonialism has a broadly postmodern approach, and can be used to support subjugated knowledges and people, in the interests of difference and multivocality. EBN and EBM concern themselves with disease in groups of experimental subjects. This is scarcely an adequate knowledge base for nursing, which considers the individual patient who is ill and suffering, and who needs care which recognizes his or her own unique experience. Furthermore, if EBN and EBM are dominant paradigms, the individual patient is subjugated to expert knowledge, derived from the studied group. EBN and EBM expect the clinician to make decisions based on a narrow selection of scientific evidence: RCTs and observational studies. But this evidence is about disease processes as abstract entities, not about real patients as whole people. EBM stratifies smooth space. It would be different if EBM were a royal road to truth, but it has been extensively problematised. EBM draws attention away from many enormously complex issues in smooth space of nursing, such as nurse-patient relationships.

Ideology underlies the dominating role of EBN in nursing. Leaders of this approach decide what is good research/evidence, the order of merit of the various research methodologies and knowledges, and who are good scholars. This one form of truth is

\textsuperscript{304} Gillett, “personal communication” 2008.
\textsuperscript{305} Holmes, Roy and Perron 2008.
supported by universities, which are largely government funded. The panoptic gaze of EBN protagonists surveys the inclusion/exclusion of research and knowledge. The surveillance involves conversion: subjugated groups internalise the colonising worldview.

In the last five paragraphs the status of EBM has been viewed from a postcolonial approach.\textsuperscript{306} This has involved supporting marginalised patients and clinicians, in the name of difference and multivocality. Under attack has been the colonisation of nursing by EBN. I now mention a second, parallel analysis.\textsuperscript{307} Taken from Deleuze and Guattari,\textsuperscript{308} and detailed above in my work, this second analysis pits nomad science against State science, or royal science. State science, the science of the governors, allows only those forms of science which “reinforce the primacy of the fixed model of form, mathematical figures, and measurement. One of the major objectives of royal science is to control/refuse access/survey/map the space it occupies and over which it reigns”.\textsuperscript{309} By contrast, “nomad science is fractured, discontinuous, and pluralistic”.\textsuperscript{310} It grasps singularities, rather than developing an integrated system of truth. Being exterior to the State science, it looks absurd when viewed conventionally.

6. 4. 5. A critique from nomadalogy

Nomadology, which aims to develop new knowledges, is infused with politics. Holmes et al. have already criticized EBM.\textsuperscript{311} In fact their 2006 paper is polemical (and scientific, professional and philosophical), linking truth, power and fascism. It drew a massive response, more defensive than epistemological, in the literature. State science is jealous of its territory.

Any newcomers must follow the “hylomorphic” model implying both a form

\textsuperscript{306} Holmes, Roy, & Perron 2008.
\textsuperscript{307} Holmes, Roy & Perron 2008.
\textsuperscript{308} 1987, Chapter 12.
\textsuperscript{309} Holmes, Roy & Perron 2008, p. 48.
\textsuperscript{310} Holmes, Roy & Perron 2008, p. 48.
\textsuperscript{311} Holmes, Murray, Perron & Rail 2006
that organizes matter and a matter prepared for the form; it has often been shown that this schema derives less from the technology of life than from a society divided into governors and governed, and later, intellectuals and manual labourers.\textsuperscript{312}

Putting it in the terms of Deleuze and Guattari, nomadology and State science/EBM are at war. Holmes et al.,\textsuperscript{313} reacting to the huge, defensive response to their criticism, argue that nursing is a social activity, and, as such, involves a political dimension. The introduction of nomadology is their pointedly political response to EBN.

Whereas Deleuze and Guattari provide an extensive account of the nature and functioning of State science and nomadic science, and how each has its style and function, EBM makes almost no allowance for nomadic science in medicine. Instead of seeing these two sciences as working in complementary or even competing modes, with endless border disputes, EBM considers that medicine should be maximally run by State science. It has no understanding of nomadic science. To some extent this can be excused because, nomadic science is in problematic mode, but \textit{scientific} health care requires the (metric) resources of State science. The counter to this is that solutions may well be available from the smooth space and practices outside of State science. Despite EBM's ignoring nomadic science, it is not possible for State science to comfortably replace it in areas where measurement is difficult if not impossible.

6. 4. 6. The struggle between EBM and alternatives is a mirror image of the struggle between State science and nomadic science

I refer extensively to the editorial by Miles, Loughlin and Polychronis\textsuperscript{314} as a representative of nomadic science, in conflict with State science. The paper starts out complaining about the colonisation of medicine by EBM, and an overbearing stance by EBM. Protagonists have failed in their own terms in not providing evidence of the superiority of EBM over traditional medicine and projecting progress without

\textsuperscript{312} Deleuze and Guattari 1987, p. 369.
\textsuperscript{313} Holmes, Roy & Perron 2008.
\textsuperscript{314} 2007.
debating the underlying epistemology, or to “explain in any detail, its underlying assumptions: about the nature of science, rationality and evidence itself and how these key concepts may be put to work in the formulation of any defensible view about proper medical practice.”\(^{315,316}\) These editors had previously described this as "unscientific" and "anti-scientific". EBM leaders early developed the habit of referring to it as a new paradigm, but EBM leaders have not provided “a detailed theoretical structure with explanatory power and substantial empirical corroboration”, and that the early use of the term “paradigm” was quickly discredited.\(^{317}\) EBM protagonists regard its merits as self-evident and regard critics with disdain, or worse. The medical literature, these editors assert, contains considerably more comment in favour of EBM than against. Thus the picture of EBM as overbearing is in harmony with the profile advanced by Deleuze and Guattari\(^{318}\) of State science being despotic.

The EBM debate,\(^{319}\) in part, concerns the application of the research knowledge regarding the ideal patient, who yields positive of negative results to tests, and who responds to treatment, and divides clinicians into name-calling groups when applied to some real-life patients. Various clinicians and researchers often seem unable to understand each other, even unable to view the other as sincere, rational, caring persons. Clinicians work astride the quantitative/qualitative divide. At one pole the various narratives by which patients and clinicians make sense of life are hard to assimilate into “the data”. Furthermore, at what may appear to be the hard end of the spectrum, plurality and relativism is alive and well in “mathematical ... computational and scientific fields of study”.\(^{320}\) The plurality of the modern world has, in part, driven the evidence-based movement.\(^{321}\) This is an attempt to gain more certainty in an increasingly uncertain environment. However, the standardization in EBM has only partly reduced disagreement, so that the problem of different world views continues to divide clinicians and researchers.

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315  Miles, Loughlin and Polychronis 2007, p. 482.
316  Miles, Loughlin and Polychronis 2007, p. 482.
317  Miles, Loughlin and Polychronis 2007, p. 482.
319  Miles et al. 2007.
320  Miles et al. 2007, p. 486.
321  Surely this is in part due to post-structuralist philosophy.
Of all the points raised against EBM, perhaps the most strongly emphasised is the lack of theory, along with related considerations. Why? What? How? Why are we to change medical practice so drastically? What exactly is the new system, at the level of theory? How do we integrate research evidence with other warrants for decision? In several places these authors complain about the separation of theory and practice (EBM), and about the shallowness of observation without background theory, which, they tell us, is not possible. What they are saying here is that EBM emphasises observation as the best route to medical knowledge: but what we see varies with the mindset of the observers. EBM pays no attention to this, and believes that it takes its researchers out of the research. There is a lack of research in favour of EBM as a whole process. One matter of great concern is that protagonists continue operationalizing EBM while paying little attention to constructing a theoretical base. EBM protagonists are aware of the deficits but plan to develop their product, nevertheless. All these deficits in research and theory have been gathered together and linked to the power of those who truck EBM across this minefield of deficits. This attempt to introduce State science into medicine smacks of despotism, from the perspective of Deleuze and Guattari, as I state above. All fighting talk.

Another major issue is the paramount position accorded to RCT and meta-analysis by EBM/Cochrane Collaboration. The superior position of the meta-analysis/RCT, and systematic reviews of meta-analyses/RCTs, is to apply to the whole of medicine, as from 1992, after centuries of medical practice. It is not clear where the scientific and clinical authority assumed by the Cochrane Collaboration is coming from. There are a number of issues at stake. One is the lack of philosophical underpinning for the elevated position of meta-analysis/RCT. Another worrying issue with the systematic reviews is the way in which judgments are needed in their compilation. Admittedly it is in the preparation of educational aids from systematic reviews that Scott et al. record that the sourcing and selection of systematic review evidence required the

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322 Miles et al. 2007 and their contributing authors.
323 Miles et al. 2007 and their contributing authors.
324 Miles et al. 2007 and their contributing authors.
325 Miles et al. 2007 and their contributing authors.
326 2007.
maintenance of a credible balance between the diametric concepts of comprehensiveness and efficiency and those of relevance and validity. Moreover, on examination of the collated evidence base, additional challenges were encountered in addressing the lack of consistency among systematic reviews in the quality of execution, the scales used to rate the quality of evidence and the conclusions on common topic areas, and the authors proceed to discuss methods for resolving these particular difficulties. It has been argued that the key elements for synthesising clinically relevant knowledge from systematic reviews are: a flexible consistent and transparent methodology; credible research; involvement of renowned clinical experts to translate the evidence into clinically meaningful guidance; and an open, trusting relationship among all the contributors to the overall process.\textsuperscript{327}

As stated elsewhere in this work, the emphasis in EBM is not on the quality of knowledge but on the path to its acquisition. Another issue is the gap between the culture of research and the culture of clinical medicine: this is worrying. There is emphasis on internal validity in the former milieu. However, the clinician is tempted to distort the research results in order to manage the external validity. This is unsatisfactory. What is needed is a concerted effort to help the two groups to develop an understanding of each other. All these issues carry on through into the practice guidelines. This debate can be viewed through the explanation provided by Deleuze and Guattari: the border between State science and nomadic science is always changing, in a struggle.

Guidelines, then, are another area of debate. Five worries about the guidelines, developed from meta-analyses of RCTs for practicing clinicians, have been identified.\textsuperscript{328} The application to the individual patient is a topic needing extensive consideration.\textsuperscript{329} Some doctors know their patients well, and may be less able to bring to bear their non-mathematical understanding of the patient and her social and

\textsuperscript{327} Scott et al. 2007.
\textsuperscript{328} Miles at al. and their contributing authors.
\textsuperscript{329} This issue of the \textit{Journal} was published in 2007. This work notes elsewhere that, certainly by 2008, EBM leaders had devoted detailed attention to this matter. For example, I allude in this work to two papers by Bassler et al. 2008. Elsewhere in this work I argue that the problem is only partly soluble.
religious situation, if guidelines are dominant. And what if the patient has several problems? How do the guidelines on diabetes relate to a patient who thinks the doctor is poisoning her? (My question). Secondly, they are being usurped by managers, who place upon the guidelines an unintended spin. Already, audits are being conducted to ascertain to what extent doctors comply with guidelines. We do not know what use will be made of such audit results. One possibility is that employers will pressurise doctors to comply. This may occur in the teeth of evidence in favour of other treatment for the patient, as assessed by the patient's own doctor. This also reduces professionalism, and may conflict with the Hippocratic oath in which we swear that our primary concern is the individual patient. Thirdly, we are heading into a legal minefield. For example, will they be used to discredit the care provide by a doctor? Fourthly, the more formulaic medicine becomes, the more liable the medical profession is to partial takeover by non-doctors, including computers. Fifthly, there are issues about the evidence used to set up the guidelines, along with complex issues about the process leading from the evidence to the guidelines. Through the eyes of *Capitalism and Schizophrenia* this all looks like an attempt by State science to striate smooth space, using a totalising ideology. That is paranoid in the sense of reading meaning everywhere and subjugating serendipity and contingency to a unified, law-governed framework (that is inappropriate).

Miles et al.\textsuperscript{330} continue their crusade with assertions about the funding of EBM implementation, such as workshops, teaching, and guideline development. Surely no independent funding body would support these activities in view of the weak underlying epistemology, the paucity of evaluating research, and the habit of addressing not the weaknesses in EBM but the obstacles to further implementation. In the absence of strong interest in EBM among clinicians, this new approach to medical practice has been trucked in by forming an alliance with government and the management of the health care services.\textsuperscript{331} For these organisations, EBM holds out the possibility of standardising medical practice, reducing costs, and altering the balance of power between managers and doctors. It is puzzling just how clinicians and

\textsuperscript{330} Miles et al. 2007.

\textsuperscript{331} Miles et al. 2007.
scientists can gain satisfaction in this process of straitjacketing medicine with the likely consequences of poorer care for patients and the partial conversion of doctors into functionaries.\textsuperscript{332}

The previous paragraph was about EBM cutting costs. Actually, it is possible to take a different approach.\textsuperscript{333} We could juxtapose two factors which EBM seems not to link. One is the cost-conscious health care environment: surely EBM could be expected, these days, to try to justify itself as an (expensive) intervention. The other is (yet again) the assertion, and this is admitted by EBM protagonists, that there is no evidence for the overall effect of EBM on clinical care. This time the editors do list a number of proxy and surrogate outcome measures for the overall effectiveness of EBM.\textsuperscript{334} These are: compliance with guidelines, observations of the use of the EBM process by clinicians, successful teaching of EBM, consultations of the Cochrane Database and other repositories of results of clinical research, and reference to praise for EBM in the New York Times Magazine. Needless to say, Miles et al.\textsuperscript{335} dismiss the entire list as not being clinical outcome measures that tell us anything about actual patients. More totalising ideology in place of real care delivery.

EBM has made a thrust towards enlisting public support, and educating the public in EBM concepts, such as “number needed to treat”.\textsuperscript{336} However, it has taken rather longer for any hint of the major debate within medicine to reach the public arena. Patients are becoming more educated and beginning to realise EBM's limitations, Trojan-horsed in as “evidence”. In particular, patients are starting to realise that access to medical services may become limited, and that not all patients are happy to have nearly all medical research excluded from consideration. Some are also becoming unhappy about being forced towards the mould of the research group. They allude to the limitations of algorithms (for example, when there is co-morbidity), the

\textsuperscript{332} Miles et al. 2007.
\textsuperscript{333} Miles et al. 2007.
\textsuperscript{334} Miles et al. 2007, p. 498.
\textsuperscript{335} 2007.
\textsuperscript{336} Miles et al. 2007.
move towards requiring statistically significant research results\textsuperscript{337} supporting all treatment choices (so that other treatment options are frowned upon), and the tension between the results of research on groups of experimental subjects and the needs of the individual patient. The day might come when patients will require individualised treatment, possibly litigating, and that they may play a part in the demotion of EBM from a dominating position in medicine to a tool. This outcome would spark a celebration in the halls of the \textit{Journal of Evaluation in Clinical Practice}. All fighting talk. More fluctuation and room for the war machine in the border between smooth space and striated space!

Deleuze and Guattari distinguish between the war machine, the war, and the battle (see my Chapter 3). The war is wider than the exchange of views in the academic papers to which I have been referring. Here we have the contestation of discourse and practice—both facets of the same total reality where the terms of engagement are themselves up for dispute, disruption and debate. However, Miles et al. are interested to bring in smooth space medicine, or allow it to remain, and the exchange of argumentative and critical papers is not their only activity. Similarly, it can be seen in the paper referred to above\textsuperscript{338} that Holmes et al. are trying to populate smooth space. They support the use of several paradigms for nursing knowledge. They support the voice of the individual clinician and the individual patient. All this parallels the function of the war machine as depicted by Deleuze and Guattari: academic papers aiming to reduce the influence of EBM (power pole of war machine) and constructive plans for continued emphasis on aspects of nursing care threatened by EBM (the line-of-flight pole of the war machine). In several places Miles et al. complain that EBM protagonists rarely enter scholarly debate. In fact, Holmes et al \textsuperscript{339,340} had to hit them with nomadology and assertions that they were fascist before they emerged in numbers. I apply the theory of Deleuze and Guattari like this: EBM pursues its

\textsuperscript{337} I have noted elsewhere in this work that Djulbegovic et al. 2009 explain that EBM has dropped the \textit{statistically significant} approach in favor of the \textit{size of the effect and confidence intervals}.

\textsuperscript{338} Holmes, Roy & Perron 2008.

\textsuperscript{339} 2006.

\textsuperscript{340} 2006.
takeover by means other than battle. This means that EBM people colonise medical practice with clinical epidemiology through such approaches as teaching registrars and housemen, medical students and general practitioners; and far less by writing papers to refute criticism by humanities graduates.

More recently, an editorial introducing the 2009 thematic edition of the Journal of Evaluation in Clinical Practice, is still combative, and takes up cudgels on behalf of nomadic science against the strident striation of smooth space by State science/EBM. Miles makes a number of points, abrasively. Over the years EBM protagonists have "conceded key points to their opponents, but remain in general terms doggedly attached to the original EBM work". Quoting a papal authority on pastoral care for health care workers, who calls for care of the whole person, Miles manages to describe EBM as "empiricist quackery". Again he describes EBM as "unscientific" and "antiscientific". These derogatory labels are applied because EBM has not proven the effectiveness of its recommendations and because it has a top-down approach, imposing an hierarchy of evidence which clinicians should use. EBM has eschewed the bottom-up approach in which there is a democratic process of building an international consensus, as in science. The editorial goes on to tell us that opponents have forced concessions from EBM so that it is highly irresponsible of EBM protagonists to have occasionally and sporadically conceded a few defects in their approach while steaming ahead with a worldwide movement to revolutionise medical practice. I present these recent denigrating accusations against EBM in the light of the war between nomadic science and State science as set out by Deleuze and Guattari in A Thousand Plateaus. By 2011 it is clear that most of the publication about the way in which EBM is conceptualised is provided by nomadic apologists, while EBM pushes ahead with success in changing medical practice despite crippling criticism of its conceptualization.

341 Diplomacy is war conducted by other means.
342 Miles 2009a.
343 Miles 2009a, p. 887.
344 Miles 2009a, p. 888.
Summary of chapter 6

The rhizomatic consultation allows for adaptation to the relationship between doctor and patient, the topics needing discussion, and how they are handled. I depict EBM as State science trying to striate the smooth space of the consultation. EBM gives no account of nomadic science and behaves as if nomadic science is regrettable and needing to be largely eliminated by State science. Yet relationships, infinity and the smallest deviation do not allow striation. In trying to reticulate smooth space, EBM advocates brush across complex issues. Nomads resist this striation. One aspect of this response is the use of philosophy (as ammunition) to critique this desire-driven, hurried activity. I review much of the literature on EBM from the viewpoint of a struggle between State science and nomadic science.
PART 2: FOUCAULT

The second major section of this work considers EBM from the point of view of the writings of Michel Foucault, 1926—1984, a French philosopher and historian of ideas, whose writing is better known than that of Deleuze and Guattari. His work, which considers forces ahead of forms, and statements ahead of propositions, phrases and words, has been adapted to provide a vantage point in art, philosophy, history, anthropology, geology, archaeology, communication studies, public relations, rhetoric, cultural studies, linguistics, sociology, education, psychology, literary theory, feminism, queer theory, management studies, the philosophy of science, political science, urban design, museum studies and numerous other fields. His most relevant work for my work is on discourse, the history of medicine, and the inseparability of power and knowledge. I apply some Foucauldian themes to EBM, which is hereby viewed as a system of thought.

Chapter 7: Foucault and the spatialisation of disease

Diagnosis is the basis of therapy and is in complex interactive relationship with (a) the therapies we have available, and (b) the context of delivery of medical or healthcare regimes. These form the map on which truth claims must locate themselves and in terms of which they must articulate the truth about disease and health. This chapter
explains how Foucault explores the way we have canonised a space – the patient's body – for the laying out of disease so that it can be dissected and understood. Foucault perceives disease in a number of primary spaces, a secondary space, and a tertiary space. From early in the nineteenth century, disease has been placed, “localised”, in the body. This chapter describes a number of primary spaces, such as anatomical, pathological, philosophical, and semantic, for disease to occupy. Most of the chapter will expound these singly, and in each case EBM will then be configured into the space. Foucault tells us that there is no positive status for the individual in the primary spaces of disease. It is in the secondary space that the individual figures. In fact, I do not develop the secondary space. The Foucauldian tertiary space for disease is set out late in the chapter.

7. 1. The body: The space of anatomy

Given that we reify disease then look for its instances in different individuals, we can say that the body localises disease. For example, the spread of septicaemia involves the volumes of the arteries and of solid organs. We soon reflect that this is based on Euclidian geometry in the form of anatomy. Even so, Foucault wonders if Euclidian geometry and its filial anatomy provide an adequate conceptual model for the progression of an allergic reaction. Furthermore, Foucault goes on to depict several other spaces across which disease is distributed. Of course, this depiction revolves around the response of the patient. These various spaces in which disease can be depicted are discussed serially in the remainder of this chapter.

7. 2. The configuration of disease: The space of pathology

Once pathological anatomy had attained high status in the nineteenth century, the space of configuration of disease became superimposed on the body (where it

345 Today this seems obvious.
346 1994, p. 15.
347 1994, p. 3.
remains). The medical gaze superimposes pathology on anatomy: for instance, a histopathologist looks down a microscope and “recognises” a tubercle, a lesion pathognomonic for tuberculosis. With her training in pathology, she extrapolates from the tubercle under the lens to the disease configuration called “tuberculosis”.

Foucault says of the sovereign moment of diagnosis,

> The “glance” has simply to exercise its right of origin over truth. But how did this supposedly natural, immemorial right come about? How was this locus, in which disease indicated its presence, able to determine in so sovereign a way the figure that groups its elements together? 348

The space of the configuration of disease has several principles. The knowledge is historical. This means that over, say, two days, a range of symptoms and signs manifests itself to the clinical gaze. Secondly, the cause is in the same space as effect but Foucault depicts this space without a temporal dimension so that time does not figure in this model. In this model of the configuration of the disease, “There is only one plane and one moment”. 349 (Bear in mind that “disease” is an abstraction, like a map. “Disease” is a conceptual system, a reification of a dynamic process which may or may not share some core features, across individuals—one that we happen to be good at picking up.) A third principle is: “It is a space in which analogies define essences”. 350 This means that the differences between two diseases, such as pneumonia and influenza, is established by analogy through the extent to which their surface pictures resemble each other (both exhibit fever and cough, but sputum or the presence of basal crepitations 351 characterise only pneumonia). Lastly, Foucault explains how patient and doctor are interlopers in the disease process or space. Each specific patient distorts the ideal picture of the disease because the patient both reveals and conceals the disease, and the doctor is in a strange situation using her knowledge of disease as a guide, in that she never experiences the disease in ideal form. The doctor chases the disease through her patient who distorts the ideal form. In order to know the truth of the pathological fact the doctor must abstract the

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348 1994, p. 4.
351 These are fine crackles heard, often at the lowest part of a lung.
What is more, as soon as the doctor begins treatment, she further distorts the disease, if the treatment is effective.

If Foucault is correct, then it is very difficult to practise “patient-centered care” (PCC), which has been defined as “quality healthcare achieved through a partnership between informed and respected patients and their families, and a co-ordinated healthcare team”. The practice of PCC is difficult because of the nature and complexity of the diagnostic process. Using her knowledge of pathology as a map or guide, the doctor goes on a hunt for one or another disease or map defined in relation to others by comparison and contrast. But, as explained in the previous paragraph, the patient a) obscures and b) distorts the ideal picture the doctor is trying to bring into bold relief, although the patient also, perhaps reluctantly, reveals the disease. Using shingles (Herpes Zoster) as an example, the patient may obscure the disease by presenting with pain in the renal area. Many doctors make the wrong diagnosis before the characteristic rash arrives on about the fourth day. With regard to the distortion each patient makes, a general practitioner may be accustomed to seeing shingles in elderly patients. But if the patient with a painful rash is ten 10 years old, the diagnosis is difficult. (Of course, if the correct diagnosis is made, then the patient has revealed the disease.) Continuing with my assertion that the diagnostic process makes it hard to practise patient-centered care, Foucault explains that the doctor is constantly seeking lacunae. She thinks in the space between true and false (for example, hyperventilation due to anxiety or metabolic acidosis), and in the space between viral and bacterial, and in the space between benign and malignant, and in other spaces. This difficult thinking, which surely distracts from thinking about the patient only or the patient at the centre of the process, can be pictured in a space between obscurity and clarity of the disease. In this space is the interaction between the body and the disease. It does not fit the ideal forms captured in the canonical texts and treated with canonical methods. Thus I have postulated a tension between the primary space of pathology and the secondary space of the individual person.

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353 In a 2004 study of patient-centred care, the American National Health Council defined PCC (alfutures.com).
7. 3. The medical gaze: The space of perception

7. 3. 1. Introduction to the gaze

Canguilhem and Foucault extensively develop the space of perception. The term used here is “gaze”. The gaze can be related to EBM. The gaze is the perception of the doctor, perceiving the patient and is scopic or visual. This is because, since the end of the eighteenth century, the post-mortem examination—which is visual—has fundamentally determined how doctors view the diseased patient. Doctors look back from death, in which medical truth is revealed, to life. Secondarily, Foucault allows both auditory and tactile modes of perception to intertwine with vision in the gaze so that a doctor examining a patient's chest might look at the breathing rate, touch the pulsation of the lowermost, leftmost point of distinct cardiac pulsation, and listen to the breath sounds, the three forms of perception functioning together. However, the sight--hearing--touch perception system is subject to the absolute gaze of knowledge. This latter is dominated by death, in that, as previously explained, the post-mortem examination is the foundation stone of medical epistemology.

7. 3. 2. Pathology dominates the gaze. A new role for death. Medical epistemology modernised

Foucault makes three very interesting points about this imperious, death-infiltrated, gaze. The first is that “The 'glance' has become a complex organization with a view to a spatial assignation of the invisible”. "The structure, at once perceptual and epistemological, that commands clinical anatomy, and all medicine that derives from it, is that of invisible visibility". A doctor (and this is the second point) is drawing a 3D picture, not learning, when she steadies her gaze on the patient. Obviously, the doctor detects from the 2D surface (usually: sometimes the doctor conducts an internal examination, for example of the rectum, after which she is no longer limited to a 2D assessment) of the body a few clues, through sight, hearing and touch. (When

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354 1978.
a doctor hears a certain type of murmur between the first and second heart sounds, she may visualise a narrowed space between the cusps of the mitral valve. When she palpates the lowermost, leftmost point of distinct cardiac pulsation and finds it is further to the left than normal, she visualises an enlarged heart.) The gaze uses knowledge of human life, derived from post-mortem examination, to build a 3D (functional) model of the body's disease. This aspect of the Foucaldian gaze is important with regard to EBM because its epistemology assumes that the 3D picture is objective. But it implicitly undermines EBM evidence in that EBM evidence provides a truth, rather than the truth. After all, each doctor might build a different 3D model. A third interesting point made by Foucault about the gaze is that it medicalises the human world. This means that people are now viewed in a dichotomy of diseased--healthy whereby “....one did not think first of the internal structure of the organized being, but of the medical bipolarity of the normal and the pathological”. EBM has inherited this powerful bias, this binary thinking, not that of life and health and normal living.

I have indicated that the post-mortem examination laid the foundation of the medical gaze which henceforth would establish disease as individual and require a nuanced use of the old language to express the newly perceived realities of pathological anatomy in combination with the age-old symptoms. However, Foucault explains two other developments arising from the use of the post-mortem examination. One is that death, as well as being individualised, was also concretised. It moved into the space previously occupied by the gods and immortality. There was a decrease in theory and systems that had befuddled earlier generations of doctors.

Since early in the nineteenth century, as I have briefly indicated in the previous paragraph, the medical gaze has been restructured away from the belief that disease comprised a set of symptoms to a belief combining this with pathological anatomy. This latter localised the disease, although the organs in which disease could be found may or may not be where the disease originated. In the twenty-first century we know that the pancreas is part of Type 2 Diabetes but perhaps too many fat cells make

357 Foucault 1994, p. 35.
inordinate demands on the production of insulin in the pancreas. By contrast, pancreatic carcinoma begins in the pancreas. Before long the set-of-symptoms model of disease was abandoned, leaving pathological anatomy to dominate the disease model.

Early in the nineteenth century in France, the belief that disease had an essence which “was both nature and counter-nature”, was removed from the medical gaze. To constitute the new gaze then, the post-mortem examination had to form or inform the foundation of medical epistemology--

In anatomical perception, death was the point of view from the height of which disease opened up onto truth; the life/disease/death trinity was articulated in a triangle whose summit culminated in death; perception could grasp life and disease in a single unity only insofar as it invested death in its own gaze.

From early in the nineteenth century, death built into the gaze a better understanding of life and disease, using the anatomical--clinical model. Death also built into the gaze the dissolution of disease, and the limited nature of disease as that which enabled death, rather than death being the consequence of disease. Thus the medical gaze is henceforth structured to regard death as more fundamental than disease, which death elucidates (through post-mortem examination) and terminates.

The epistemological foundation stone for this view of disease is, by now, the post-mortem examination and from that origin the gaze proceeds to construct the individual. Previously, clinical medicine had dealt with cases. But the new gaze is to be different. The post-mortem examination provides information about the individual so disease is primarily the disease of an individual. It is no longer the case that each individual presents a variation on a general phenomenon. Thus the idea that the individual is an exemplar of a general phenomenon is now problematised.

7. 3. 3. The gaze is multifaceted

359 Foucault 1994, p. 158.
The gaze is “not content to observe what was self-evident”.\footnote{Foucault 1994, p. 89.}

Foucault explains that the gaze involves possibilities and probabilities, risks--and experience. He reminds us that society confers authority on the doctor, so that the doctor from her gaze, announces the truth (The doctor says she has cancer: so she has cancer).

In the clinic, it was a question of a much more subtle and complex structure in which the integration of experience occurred in a gaze that was at the same time knowledge, a gaze that exists, that was master of its truth .... . . At this level there was no distinction to be made between theory and experience, method and results; one had to read the deep structures of visibility in which field and gaze are bound together by codes of knowledge;...the linguistic structure of the sign and the aleatory structure of the case.\footnote{Foucault 1994, p. 90.}

7. 3. 4. Disease is now visible, but needs to be articulated

Here Foucault draws attention to the need for a language that relates the signs and symptoms of diseases to human understanding and communication. This matter belongs in linguistic and semiological spaces. Bear in mind that the gaze includes questioning the patient, in language. The patient answers verbally and non-verbally.

Foucault explains that language needed to adapt to the new knowledge so that the disease of the individual could be seen. Doctors who conducted the post-mortem examinations needed to clothe the new knowledge in words that would convey it to absent clinicians:

It is no longer a question of correlating a perceptual sector and a semantic element, but of bending language back entirely towards that region in which the perceived, in its singularity, runs the risk of eluding the form of the word and of becoming finally imperceptible because incapable of being said.\footnote{Foucault 1994, p. 169.}

Foucault tells us how the language was adapted to express the new perceptions “to
introduce language into that penumbra where the gaze is bereft of words.”

He mentions the use of colour, metaphor, empirical comparisons, the value of intersensorial qualities, and references to the normal and everyday. Many of these ways of making the perceived expressible were deployed by Laennec, whose early description of one cirrhotic liver, quoted by Foucault, exemplifies these linguistic developments.

The liver...when cut, it seemed to be made up entirely of a mass of small seeds, round or oval in shape, varying in size from a millet seed to a hemp seed. These seeds, which can be easily separated, left almost no gap between them in which one might be able to make out some remaining part of the real tissue of the liver; they were fawn or reddish-yellow in colour, verging in parts on the greenish; their fairly moist, opaque tissue was slack, rather than soft, to touch, and when one squeezed the grains between one's fingers only a small part was crushed, the rest feeling like a piece of soft leather.

I have alluded obscurely to an issue which needs clarifying. In Foucault, a distinction is made between a statement and the visible. I have explained that when the post-mortem examinations were first used to provide knowledge, it was necessary to develop a language--statements--to match the visible. Foucault provides an account of the difference in the nature of these two, the visible and the articulable. Read what Deleuze explains regarding Foucauldian theory:

...there is a difference in nature between the form of content and the form of expression, between the visible and the articulable (although they continually overlap and spill into one another in order to compose each stratum or form of knowledge). ...Between the two there is no isomorphism or conformity, in spite of a mutual presupposition and the primacy of the statement. ...there is neither causality from one to the other nor symbolization between the two, and that if the statement has an object, it is a discursive object which is unique to the statement and is not isomorphic with the visible object. Of course we dream of isomorphism, ...”

I consider that all this eludes EBM. Does this matter? In Part one of my work I drew on Deleuze and Guattari to argue that EBM rides rapidly over some deep and obscure issues yet urges us to change the way we treat sick people. Here I am drawing on

364 Laennec, R. 'De l'auscultation mediate', vol. 1, p. 368.
365 Deleuze 2006, p. 61.
Foucault and I make a similar claim: EBM moves the articulable around from paper
to paper and book to book to guidelines, but I suspect that these writers assume that
the object of the statement is the visible object: I am sure that EBM protagonists
assume that what we are saying matches what we are seeing. In simple terms, then, I
am arguing that such complex, underlying issues make the strident assertions of EBM
protagonists seem too strident.

7.3.5. Reconfiguration of the doctor, patient, consultation and epistemology

The other consequence of the new perceptual structure was that this visual system
rested on an opaque base. This means that what lay beyond the base was not available
for the constitution of knowledge. This is of enormous importance for EBM. Foucault
postulates that a change in doctor/patient relationship has occurred over recent
centuries in which the key element is epistemology. He uses the metaphor of a grid.
By now doctor, patient and their interaction take place in this new grid. This is like
children moving their game to a jungle gym. However, no analogy is complete, and,
in fact, the children are newly configured (their bodies can go through different
sequences), as well as playing by different rules which have resulted from a
fundamentally different knowledge that the jungle gym prescribes. This is like a
discipline that introduces a new habitus, like the posture associated with ballet.

Previously the doctor and patient were taken as given, not as problematic, although
this is an exaggeration. Medical progress was considered to have occurred between
the two “givens”. For example, early in the twentieth century it became possible for a
doctor to arrange for the patient's chest to be X-Rayed. But against this given-ness of
the doctor and patient, both were constructions in flux. Late-twentieth-century
patients began to manage their own asthma and diabetes, and the doctors also
changed. Early in the twentieth century a chest physician had skills to map out the
tuberculous cavities in the chest, with whispering pectoriloquy, percussion, and
auscultation for bronchial breathing. The late-twentieth-century chest physician had
lost some of these skills, but become expert in reading a chest X-Ray film. The chest
physician had become subject—in turn—to the gaze. This applies with more force to
the cardiologist and neurologist with electrocardiograms, electroencephalograms, ultrasound, magnetic resonance imaging and computerised axial tomography.

The space between doctor and patient changed to further complexify the shifting relationships. The physician moved closer to the patient, beginning to examine the rectum and vagina, and to pass a sigmoidoscope into the colon. These procedures brought the interior more directly under the scopic gaze. But even more subtly and profoundly, Foucault challenges this “given”, unproblematic nature of the doctor, patient, and consultation space. In the last two decades, EBM has further reconstructed the patient, doctor and intervening space reconstructing the smooth and striated yet again:

A more precise historical analysis reveals a quite different principle of adjustment beyond these adjustments: it bears jointly on the type of objects to be known, on the grid that makes it appear, isolates it, and carves up the elements relevant to a possible epistemic knowledge (savoir), on the position that the subject must occupy in order to map them, on the instrumental mediations that enables it to grasp them, on the modalities of registration and memory that it must put into operation, and on the forms of conceptualization that it must practice and that qualify it as a subject of legitimate knowledge. What is modified in giving place to anatomo-clinical medicine is not, therefore, the mere surface contact between the knowing subject and the known object; it is the more general arrangement of knowledge that determines the reciprocal positions and connexion between the one who must know and that which is to be known. The access of the medical gaze into the sick body was not... it was the result of a recasting at the level of epistemic knowledge (savoir) itself, and not at the level of accumulated, refined, deepened, adjusted knowledge (connaissances).

The modern (EBM) patient is biomedical, hopefully has one acute disease, depictable though the science of pathology, and is viewed against a background of one or more groups of similar patients whose disease has been investigated through one or more RCTs and/or observational studies. Suitable treatment is available, and affordable. The modern (EBM) doctor is steeped in the studies and/or their downstream proliferations. She sees her patient against a background of groups of experimental

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366 The physician moved to the other side.
367 Of course, Foucault is writing of the early nineteenth century in France.
368 Foucault 1994, p. 137.
subjects whose similarity to her patient she is assessing. Where possible, she is applying clinical guidelines. The space between doctor and patient is infiltrated with research/statistics, and the computer/internet. This is how the grid is constructed. Doctor and patient have moved towards the model of experimenter and experimental subject.

All parties work in a grid of knowledge that has been, or should have been, reconceived, not just increased. The legitimated knowledge is computerised biomedicine, connecting a biomedical patient with a guidelined doctor. This legitimated knowledge has been produced by biomedicine's emblematic group, the protagonists of EBM—a group that has determined what counts as knowledge, who speaks authoritatively, and in particular, what counts as evidence, and what does not. Critically important are the reliability of evidence, the strength of the recommendations flowing from the evidence, and the power/knowledge supporting these.

Foucault makes the point that the sciences of Man and the notion of the uniqueness of Man and his individual qualities, separating him from nature and so on, were not so-called ground-breaking “discoveries”. The “Enlightenment” did not “roll back the frontiers of ignorance” and provide a means of knowing the “truth”. The “truth” was the product of discourse. Discourses may be understood as bodies of knowledge or disciplines, in themselves the form of disciplinary practices. A discourse enables and limits what can be thought, said and written during a period of time. Discourses produce knowledges and knowledge is made known historically. The historical constitution of knowledge undermines any claim that knowledge is impartial or better than previous knowledge. Foucault does not see an extra-discourse point from which we can assess the correctness of any discourse. Thus the truth about “Man” is not a pale reflection of a real, natural man, idealised in form and content but the actual, engaged, situated human beings described in social sciences and works of art.

It is my contention that EBM does not acknowledge the Foucauldian insight that EBM does not investigate and treat an objective patient, through an objective doctor.

369 Coveney 2006, p. 4.
Foucault would argue that EBM has constructed the patient, the doctor, and the consultation space. As stated above, EBM has not just added to our knowledge, EBM has set up a new knowledge. And not only that. EBM has established itself as the creator of knowledge, has decided how knowledge is legitimated (through RCTs and observational studies leading on to an hierarchy of evidence and the strength of recommendations flowing from the evidence). It is my contention that all this floats free of evidence, and that the medical profession has not debated it to an agreed conclusion. You could say that EBM has not just altered the goalposts. It has moved us to a new football field and reconfigured the teams and the rules. And yet in some ways EBM plays as if we were on the old field (realistically or mind-independently construed). It's proponents do not acknowledge the constructed status of the patient, the doctor and the consultation space. They do not acknowledge that the patient is set up in terms of variables and mechanisms which EBM can investigate and treat. The investigating gaze of the EBM doctor takes itself to be dividing even to the joints and marrow of nature itself ("cutting nature at the joints"), armed with the spirit of truth.

With regard to health care research, the topics selected for investigation will need to fall within the area of intersection of the gaze and health care. The EBM doctor will look for problems suitable for investigation (which assumes funding) through RCT or observational study. Typically this will involve holding one or more variables constant while altering one or more other variables. Obviously, this assumes that such variables can be isolated and dealt with. But there are many aspects of health care which would struggle to fit into this model. For example, palliative care has developed a discourse of dying. There is now a right way to die: quietly. Patients should realise that there comes a stage when definitive treatment should yield to symptomatic treatment. Patients should be actively involved in decisions. But some patients reject this modern discourse on dying. I am not sure that EBM investigates ways a team steeped in the palliative care discourse can work together to support this recalcitrant patient. An issue here for EBM is that the team may be divided as to how to proceed.

370 Miles et al. 2008, p. 621.
Gillett\textsuperscript{371} gives an account of HIV/AIDS as a postmodern illness which reveals the limitations of biomedicine, and therefore EBM. In the West, at any rate, the illness follows a period in which traditional values were challenged. This means that some men formed sexual relationships with other men. Other people injected drugs intravenously. These choices confronted the power of biology, in that some people developed HIV/AIDS. Despite extensive research, the (biomedical) treatment for this condition is only partly effective. Sufferers were forced together to try to deal with prevention and education and to support each other in grief. This group of people, accustomed to challenging the social hierarchy, developed partnerships with their health providers, negotiating treatment. Doctors and sufferers had to face the question of whether to tell the partner that the patient had tested positive. Ethical questions arose over testing people for the virus. Although I have referred to the West, the condition spread extensively in the third world. In Africa, Gillett\textsuperscript{372} tells us, some men enjoyed their sex with or without the preparedness of the woman. Women often have little education, political power, or rights within the marriage. This all facilitated the spread of infection among women, and therefore among men and children. An ethical issue arose over research into this condition. Largely led by Western organisations, any such research in third world countries was bedevilled by the fact that those who took part in the research were unlikely to be able to afford its benefits. In one study, some desperate research subjects managed to decipher the code in the RCT and break protocol by handing around the active moiety. The point I am making is that there is a (disease) space in which culture and biomedicine meet. With Gillett,\textsuperscript{373} I submit that much of what I have described is poorly handled by EBM, whose gaze is restricted—EBM is blind to certain aspects of the problem that is human disease and therefore it may be blind to critical determinants that will make a real difference to the suffering caused. Then with Foucault, I draw attention to the dominance of the narrow EBM discourse and to the association of knowledge and power. The western biomedical gaze constructed our solutions in terms of pharmaceutical remedies rather than in terms of socio-political change, revealing the hegemony of the biomedical, pathological anatomy gaze.

\textsuperscript{371} 2004, Chapter 8.
\textsuperscript{372} 2004.
\textsuperscript{373} 2004.
The medical gaze has been said to discriminate against some patients. Such issues as social class, gender, race and whether the patient is paying, have received comment. The medical gaze struggles with comorbidity, and with poorly defined problems and language problems. The medical gaze also struggles with the fact that the modern equivalent of the Hippocratic airs and spaces is to widen our gaze to the socio-culturo-politico-historical contexts of disease. As stated above, this last struggle has implications for patients with Aids, for example.

The gaze surely includes the higher valuation which doctors place on signs as distinct from symptoms. This is described by Foucault, who explains how numerous chest diseases can be heralded by such symptoms as cough and shortness of breath. However, early in the nineteenth century, Laennec focused on examination of the chest. He found that, in a few patients, the voice was transmitted surprisingly well to a small area of the chest wall. He called this clinical sign “pectoriloquy”, and made the (epistemological) decision that this, rather than the symptoms, would establish the diagnosis (of Pulmonary Tuberculosis). To this day doctors prioritise signs (and particularly images and the results of laboratory investigations with their attached figures) over symptoms if they point to different diagnoses. In passing I note the very interesting point that Laennec made an epistemological leap. However, the point of this paragraph is simply to flesh in Foucault's medical gaze with more detail.

7. 3. 6. The docile body

Foucault's gaze has been problematised. The trouble is that the patient does not look back! (This has been called “the docile body”, and does not square with phenomenology.) There is an air of dominance here. My comments on the sufferers from aids are a suitable antidote. I represent these patients as active in the medical relationship. “Bloor and McIntosh noted that the subjects of the surveying therapeutic gaze responded in various ways, including direct rejection and attack on the value and

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374 1994, pp. 159-161.
legitimacy of the health worker’s attentions, non-cooperation, silence, escape, avoidance, and most-common of all, concealment”. In my work as a Police Medical Officer, I need permission to examine every patient in police custody. Sometimes this is not granted, even when the patient asked for a doctor, and I have travelled 22 kilometers during the night. In my third year I was challenged as to whether I was a Police Medical Officer (as I had stated) or “just a doctor off the street”. I always have a constable with me, so questions about the intake of drugs and alcohol, intended to help me assess the state of the brain, receive a variety of responses. Recently, in obtaining a history as to how the patient gained an incised wound in front of his patella tendon, I was given completely different accounts by the patient and constable. These police patients, then, sometimes show up one limitation of the medical gaze.

In the previous paragraph I state that Foucault’s gaze has been faulted because of the docile body. However, in Chapter 11 I partly recuperate the Foucauldian account: I mention the Foucauldian technology of self, in which the subject examines herself vis-a-vis her behaviour as against her standard for her behaviour. This is a more active approach than that of the docile body. I also, in Chapter 10, provide for a post-structuralist depiction of the subject as fragmented, emotional, trying to integrate conscious and unconscious desires, as she interacts with, say, the doctor. This depiction is also more active than the depiction of the patient in the medical gaze.

7. 4. Social space

Disease takes place in social space, which includes political space. What were the effects of President Reagan’s dementia? What has been the effect of Nietzsche's insanity? In this space fits public health. Psychiatric conditions, such as depression, have social elements in causation and consequence. People with disease are cared for in a social system, informally and formally. Their diseases impact on work (including

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375 Strictly speaking, this quote refers to British health visitors calling on mothers, not actually to doctors.
productivity), sexual relations and other aspects of social performance. Some diagnoses involve social stigma, some invoke sympathy, some fear. Sometimes the correct diagnosis is withheld from employers and insurance companies. Disease also takes place in medico-legal space. As a Police Medical Officer I classify and describe all wounds, distinguishing between an incised wound and a laceration. I measure some of the wounds and draw them all. In serious medico-legal cases I prepare a Formal Written Statement for the court, expressing an expert opinion on causation of wounds, conservatively expressed, ready for challenge by one, two or three barristers. A doctor will occasionally be required to defend her actions in court. This has led to an increase in diagnostic testing, and a somewhat adversarial atmosphere in medicine. The medico-legal aspects of medicine sometimes involve lawyers and courts.

With regard to EBM, the medico-legal environment pushes a doctor to use tests and treatment which have EBM-type evidence. Public health medicine is integrated with EBM. Otherwise I think EBM deals inadequately with social space. This is because of its underlying biomedical model.

7.5. Linguistic and semantic spaces

Disease has linguistic, semantic and grammatical spaces. The descriptions of a disease in various languages are translatable only approximately. Each description bears a distinctive cultural heritage. This would apply to EBM’s pivotal words and phrases, evidence, and double-blind, crossover, randomised, controlled trial: EBM puts its own spin on these expressions. In a court of law evidence is what the judge allows. In anthropology the narrative of the tribe contributes to evidence. Historians have their criteria for the constitution of evidence. My point is that EBM has infiltrated the semantics of evidence in medicine, even though medicine is broader than epidemiology. As I have already explained, Deleuze and Guattari\textsuperscript{378} assert that language contains the order word. This means that language is a function of society, in which some people have more power than others. The requirements of the powerful

\textsuperscript{378} 1987.
people are built into the language. Every word you hear will communicate not just information but also the structure of society and what is expected of societal members for the structure to last. It is a mistake to regard language as primarily a way of communicating information, according to Deleuze and Guattari. It is rather a way of commanding or imposing order on things. The language used for disease has built in societal values. When a doctor thinks the patient may have had a subarachnoid haemorrhage, the doctor is commanded by those words to admit the patient to hospital by ambulance now. When a doctor uses the evidence to diagnose Type 2 Diabetes Mellitus, society is communicating that the patient has consumed too many kilojoules. With regard to EBM, “evidence” caries a command. In EBM, the use of “evidence” is associated with morality, good judgement, common sense, self respect, professionalism, rationality, science..... ! And “evidence” means evidence derived from RCTs and observational studies, with or without their downstream developments. “Evidence” is dynamic: thou shalt put me first! What happens to a doctor who goes against the guidelines, the evidence? As I have stated elsewhere in this work, such a doctor, in court, faces an uphill battle because of the authority of the evidence, the guidelines.

Books have been published on “Diseases of the Mind.” The semantics here persuade us that the mind is a thing which has another thing called a disease, like “depression”. Similarly, take “anti-social personality disorder”. It has been suggested that we all, to some extent, live at the expense of other people, change address, friends, and jobs, and that we manipulate people. We lie. According to this approach these regrettable behaviours are spread across the community like a spectrum. But the semantics of “anti-social personality disorder” persuade us that some people have a thing called a “personality disorder” and, presumably, other people do not have this entity. I suggest that EBM skids across these issues.

7. 6. Semiological space

There is also a semiological space for disease. Foucault presents us with a lucid
account of an assumption, built into the gaze, that EBM protagonists do not seem to have teased out and examined.

The formation of the clinical method was bound up with the emergence of the doctor's gaze into the field of signs and symptoms. The recognition of its constituent rights involved the effacement of their absolute distinction and the postulate that henceforth the signifier (sign and symptom) would be entirely transparent for the signified, which would appear, without concealment or residue, in its most pristine reality, and that the essence of the signified--the heart of the disease--would be entirely exhausted in the intelligible syntax of the signifier.\footnote{Foucault 1994, p. 91.}

We look through the signs and symptoms to see the underlying reality and then we intervene to change the reality in its underlying--read patho-physiological--essence through the kinds of interventions that work on physical things like the body and its processes. The effects of Foucault's clear statement on EBM are incalculable. With this semiology built into the clinical research, EBM is in a weak position to claim that its evidence is superior to other forms of evidence, especially when morbid anatomy and biochemistry do not reveal the truth.

7. Religious and metaphysical spaces

EBM ignores the metaphysical space of disease. EBM does not consider whether structure underlies function or what is the relationship between the earlier model of disease as a set of symptoms and the current model as a set of symptoms integrated with pathological anatomy. EBM does not examine whether disease in general, rather than quintessentially infectious diseases such as cholera and bubonic plague, have an essence, as previously thought. The EBM juggernaut drives straight through all this. Such issues cannot be investigated through RCTs and observational studies. The religious beliefs of the patient largely escape the biomedical model, and so escape EBM.
7. 8. Space for treatment

I come now to another space for disease: treatment of disease, including the investigation of treatment—pharmacology, rest, exercise, surgery, and so on—through therapeutic research. This is EBM's favourite place, since the RCT is mainly used for evaluation of treatment (while observation studies are often used for diagnostic test and prognostication). The medical gaze is relevant here, bringing knowledge to the patient, deciding treatment, then evaluating results. EBM is not centrally focused on treatment but on evaluation and recommending the choice of treatment. And yet one of the most important parts of a doctor's work is actually doing or managing the regimen of treatment. A great deal of the treatment is actually done by others: for instance when the patient takes a prescription to a chemist or a referral to a physiotherapist or other provider. Much of the treatment is carried out by the patient alone, or in conjunction with a provider. The point of this paragraph is to ensure that the space of treatment of disease is mentioned in this chapter, and to depict EBM in this space. This is EBM's favourite space, yet not all treatment has yet been evaluated, and doctors and others have to carry out the treatment after EBM has evaluated and recommended. Furthermore, by the time the doctor has considered the evidence, perhaps used some of it, negotiated treatment according to patient wishes and the available resources, the patient has complied with some of it for a while, with mixed results, there has been some slippage from the idealised world of the RCT or observational study.

Guyatt, Rennie, Meade and Cook\textsuperscript{380} rehearse the 1992 explanation of EBM, but go on to explain that there is more than one way of conceptualising the place of EBM.

Another conceptualisation ....emphasises how EBM complements and enhances the traditional skills of clinical practice. As a distinctive approach to patient care, EBM involves 2 fundamental principles. First, EBM posits a hierarchy of evidence to guide clinical decision making. Second, evidence alone is never sufficient to make a clinical decision. Decision makers must always trade off the benefits and risks, inconvenience, and costs associated with alternative management strategies and, in so doing, consider their

\textsuperscript{380} 2008, p. 10.
patients' values and preferences. This theme has been developed by other writers.\textsuperscript{381} More specifically, in EBM practice the doctor, on his or her own, judges what is the best available evidence; and even more specifically, the subsequent medical practice ultimately is based on the doctor's personal scientific opinion informed by that evidence.\textsuperscript{382} There is a shift from the evidence derived from, say, 10,000 experimental subjects to the individual doctor and the individual patient. However, astonishment has been expressed at the path that this thinking has now taken.\textsuperscript{383} EBM leaders have taken us away from the panel of experts to the individual doctor reviewing the evidence herself, and making her decision. Miettinen, Bachmann and Steurer\textsuperscript{384} quote a study that undermines any confidence in the individual doctor's equipment for doing this. I refer to knowledge of EBM technology—Number Needed to Treat, statistics, and so on. Other studies with similar, disappointing, findings have been reported.\textsuperscript{385}

As distinct from EBM, a knowledge-based medicine has been propounded in some detail.\textsuperscript{386} In this system the doctor deploys an abstract body of knowledge for the individual patient. This approach also, in particularising the general, nods in the Foucauldian direction, by inviting us to mind the gap between the Platonic world of theory and reasoned evidence subject to the fixation induced by the medical gaze and the reality of a lived-in and living world where spaces intersect and interrupt each other's geometry.

Thus far in this section about the space of treatment, I have assumed we are using allopathic medicine. But why? Why not naturopathy? Foucault writes about \textit{Regimes of Truth}, and I discuss this in my next chapter. Suffice it to say here that many patients consult complementary and alternative therapists. I consider that both allopathy and fringe medicine rest on beliefs, and that the border should be reviewed

\textsuperscript{381} Miettinen, Bachmann and Steurer 2008.
\textsuperscript{382} Miettinen, Bachmann and Steurer 2008, p. 772.
\textsuperscript{383} Miettinen, Bachmann and Steurer 2008.
\textsuperscript{384} 2008.
\textsuperscript{385} El Dib, Atallah and Andriolo 2007 and by Ahmadi-Abhari, Soltani and Hosseinpanah 2008.
\textsuperscript{386} Miettinen, Bachmann and Steurer 2008.
now that positivism has been problematised. EBM is creeping into complementary and alternative therapy, but is often an unsuitable way of evaluating these healing methods. In homeopathy, for example, it is not sensible to separate the healer from the potion.

7. 9. More space for philosophy

There is a philosophical space for disease—in addition to a religious and metaphysical space, a semiological space, and an epistemological space! Still to come are a space of probability and a space of philosophy of language. I have already alluded to the huge numbers of experimental subjects needed in RCTs and observational studies, and how this improves the probability that the results will be correct in their own terms and according to the canons of their own regime of truth. As already mentioned, there is a striking lack of precision in the resulting knowledge. Post-mortem observations must be matched with words, making the observations knowable and communicable. One coherent pattern, language, must be matched to another coherent pattern, pathological anatomy, in the context of the biomedical reconstructions of life from death. And that coherence, once found, must be matched to the spaces of life and disease in the living and the spaces of therapy in the delivery of services. Can these all match one-another? Of course the language chosen to suit the post-mortem findings is impregnated with philosophical assumptions about essences (what things really are—as in the essence of atherosclerosis is an inflammatory reponse of the endothelium to deposited, crystalline fats) and the geometric precision of natural science. These issues of philosophy of language are scarcely considered by EBM protagonists before they insist on their evidential approach. Lastly, the issue of causation is debated in this fossilized space—whether A causes B or whether they are merely associated with each other. This is profoundly important in medicine and allows intense, inconclusive debate influenced by this or that human agenda (as in the recent controversies about vaccination). The tobacco industry argued for decades that cigarette smoking and lung cancer were merely associated.
7. 10. Psychological space

Disease has a psychological space. The diagnosis of gonorrhoea seems more distressing to some patients than to others. Some patients are daunted by the hurdle they have to overcome when diagnosed with a major illness. Others play down the importance of the diagnosis. In either case it profoundly affects the psychosomatic whole that is the human being. A person's attitude to life can be greatly affected by disease or injury, such as paraplegia.

7. 11. Primary spaces not discussed

Armed with my exposition of the Foucauldian approach to the primary spatialisation of disease, readers will have no difficulty in creating their own image of 1) the geographical space of disease, 2) the temporal space of disease, 3) a space for the severity of disease, e.g. septicaemia, or new melanoma v. melanomatosis, 4) a space for prevention of disease and another for 5) early detection, 6) a conceptual space for the degree of certainty of the diagnosis of the disease (?cancer) (IMP. = impression, in the absence of a precise diagnosis), 7) a conceptual space for the investigation of the disease, 8) an ethnic space, 9) an economic space, 10) a technological space, 11) an historical space, 12) an ethical space and 13) a cultural space. Readers will then configure EBM into each of these spaces. More difficult to clearly articulate is an epistemological space for disease: to what extent is a disease known by one particular doctor? How many diseases can a doctor know? How well can she know them? What about the variation of her knowledge through a 50-year career? Following from

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388 This is a rich space. Think of the proximity of people with regard to cross-infection. Think of the distribution of diseases such as AIDS in the world. Think of the distribution of protozoans, mosquitoes, bacteria, viruses and other animals (e.g. cows) and plants (e.g. privet). Think of border control and immigration medical examination. Think of winds and rivers.

389 Think of Varicella causing Herpes Zoster 50 years later.

390 This is one of EBM's strongest areas: the evaluation of the diagnostic test, such as exercise electrocardiogram, which is noted for false positive tests and false negative tests.
this is medical specialisation. We can consider the spread of the knowledge of a disease across the various specialties. For example, there is a need for both neurologists and psychiatrists to distinguish depression from cerebral tumour. In the USA patients often consult a medical specialist without referral from a family practitioner. A case of temporal arteritis can easily arrive at the rooms of a specialist who does not recognise it. Another space is the degree of elucidation of a disease. How well has the pathology been elucidated? The same question can then be asked about the other aspects of the disease—symptoms and signs, etiology, prognosis, treatment and so on. Another space for disease is the degree to which it has been differentiated from non-disease. For example, is chronic fatigue syndrome a disease? There is a space for behaviour in relation to disease. Modern medical schools teach behavioural science. This involves the behavioural causation of disease, and the response to disease, as in coping, for example. Research has been done separating vigilantes from deniers in cancer, the latter faring better. Does the person consult a doctor or other provider of health care? Lastly, there are conceptual spaces for the incidence and prevalence of a disease. Closely related is a conceptual space for this question, “What diseases are there?”, and in this space we could distinguish between diseases which have been named and the concept of diseases which have not yet been identified.

7. 12. Tertiary space

At the time of writing, May 2009, there is a pandemic of Influenza H1N1. This illustrates Foucault's depiction of disease in social space. He tells us we now have another space, a tertiary space. (The primary spatialization of disease has been set out above, while the secondary spacialisation of disease involves individuals, and is not dealt with in this work, although, it is obvious that EBM focuses largely on group phenomena which detract from the individual.) Numerous heterogeneous phenomena occur here. Foucault mentions this heterogeneous space: it is illustrated by my visit to a slightly unwell child, quarantined in a hotel in Auckland during the 2009 pandemic.
The Australian parents were concerned at the slight decrease in health of the child, associated with nasal discharge, but with negative swabs for H1N1 Influenza. My general practitioner visit was suggested by a senior Public Health Specialist. I made two telephone calls to our service trying to ascertain the correct fee for this non-resident. Unable to gain this information, I made the decision that it should be $250, and I stated that, only to be telephoned with the information that the correct fee would be $320. Complex arrangements were made with a nurse for payment and a receipt to be sent to another party, by our administrative executive. For my examination I was gloved, masked and gowned. Instruments and hands were later cleaned. I was passed a message from the Public Health Doctor that I should take a course of Tamiflu. The pharmacist would not sell me this until I had written a prescription. This antiviral drug cost $80. (I posted the receipt to Southern Cross Healthcare, who posted me an explanation as to why they would not refund the $80.) The next day I developed a viral upper respiratory tract infection. I decided to withhold all this information when I met my 11-month grand-daughter at the airport in the second day of my infection!

I submit that this homely happening mirrors the more articulate and far-reaching formulation set out by Foucault:

Let us call tertiary spatialization all gestures by which, in a given society, a disease is circumscribed, medically invested, isolated, divided up into closed, privileged regions, or distributed throughout cure centres, arranged in the most favourable way. Tertiary is not intended to apply a derivative, less essential structure than the preceding ones; it brings into play a system of options that reveals the way in which a group, in order to protect itself, practises exclusions, establishes the forms of assistance, and reacts to poverty and to the fear of death. But to a greater extent than the other forms of spatialization, it is the locus of various dialectics: heterogeneous figures, time lags, political struggles, demands and utopias, economic constraints, social confrontations. In it, a whole corpus of medical practices and institutions confronts the primary and secondary spatializations with forms of social space whose genesis, structure and laws are of a different nature. And yet, or, rather, for this very reason, it is the point of origin of the most radical questionings.  

Foucault goes on to aver that from this tertiary space medical experience was totally restructured. He refers here to the setting up of the clinic (read “teaching hospital”) in

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391 Foucault 1994, p. 16.
France in the early nineteenth century, and, more particularly, to its combination of 1) disease, which fed knowledge into 2) the gaze of the doctors and students. In this way the spectrum of disease was socialised, institutionalised and normalised or “made scientific”.

Note the extensive range of issues and aspects of life involved in my visit. There was general practitioner service including motor vehicle usage and general practitioner fees (divided between the doctor and the company) including GST, involvement of a telephonist and medical director regarding the quantum of the fee, cell phones, the office manager at our service who would process documents. There was anxiety, detention, money, travel arrangements, landline calls, driving (including the possibility of traffic infringement, problems with car, such as headlight not working), protective equipment (in short supply), New Zealand Post, Southern Cross Healthcare, and the imposition of this disease scene in an hotel, selected for proximity to the airport. The relatives were detained in this hotel. Public Health “authorities” seriously interfered with the freedom of these Australians, and others. That the hotel was a quarantine centre, was apparently kept secret. A nurse was stationed there. News media gave elaborate coverage of a pandemic killing a limited number of people in America, and no mention of the substantial numbers of people dying, throughout the world, of common forms of influenza. Later, the New Zealand Parliament enacted new quarantine laws, and an employment lawyer spoke on the radio about loss of earnings for quarantined relatives, and whether their employer should pay wages when workers were at home. Schools did and did not follow protocols, quarantining students who had been to Australia. Layers of school students were kept at home, with complex arrangements for homework, and impaction on the activities of the parents. Businesses closed. Doctors faced an ethical issue as to whether they were required to risk their health treating people. Quite unusually, a campaign was mounted asking the public to make a telephone call to a special health line or the the office of the general practitioner and not to present automatically at the doctor's surgery! General practitioner incomes rose, bringing relief in an economic recession! There was an impact on tourism, including travel advice and restriction. The procedures for disinfecting planes had to be reviewed--cleaners had to consider
self-protection, like masks. Exports were affected. As the influenza was widely known as “swine flu”, some countries cancelled their imports of pork from affected countries. In Egypt many pigs were killed, and there was poor compensation for the pigs belonging to the minority Christian group. There was a scarcely successful attempt to persuade people, chiefly the media, to use the name “H1N1 Influenza” instead of “swine flu” because of the impact on the pork trade (which may have caused it all), and the unfortunate train of likely effects on intensive pig farming using underpaid, migrant workers. What contribution could the law make? With little scientific evidence to hand at the beginning of the outbreak, law-makers drew on the previous epidemic of SARS. This had already stimulated a review of the 1897 Epidemic Diseases Act in India, leading to an act passed in India in 2006 covering all aspects of Public Health. The SARS epidemic in China had cost the Minister of Health in China his position, and led to new rules for reporting epidemics. These involved the People's Liberation Army. The reporting of cases varied from country to country. In many countries the law has to set up the necessary and sufficient conditions for the declaration of a Public Health Emergency, and then this is sometimes enacted. The epidemic involved many countries in the world. Their laws and the declaration of states of emergency differed. There is the pharmacology of Tamiflu and its competitor. Would resistance develop? What about the logistics and economics of the production and distribution (including black market) of very large quantities? Who is to receive it if there is not enough? Who educates the public about whether Tamiflu is preventive, curative or symptomatic? Later, there are similar issues with vaccination—immunology, logistics and economics. Is it effective, even safe? Are there issues of mutation? What about the immuno-compromised? Who should be vaccinated, who educates, who decides who is prioritised and on what grounds (ethics)? What about vaccination in the poorer countries (access, money, administration of vaccine, education)? There is research into the influenza, its vaccination and treatment. There will be issues here, such as lack of co-operation, cost, expertise. There will be legal issues, such as liability claims, loss of income. Health authorities and ordinary citizens have to consider the behaviour of a viral illness. There will be the numerous downstream consequences of death. The extensive array of social issues in this epidemic contrasts with the primary and secondary
spatialization of disease.

As stated above, these factors fall under Foucault's concept of the tertiary space of disease. The numerous dimensions of society involved in disease are evident in the dimensions of life involved in the H1N1 and SARS epidemics. EBM, even evidence-based public health, is poorly equipped to provide adequate guidance and support across the substantial number of aspects of society involved in disease. The RCT as evidence in medicine is too narrow in that it omits those features dependent on issues of discourse/power and the ways in which those aspects of disease configure medical practice in certain ways.

There is a more complex way in which EBM seems limited with regard to the H1N1 epidemic.

Being a collective phenomenon, it requires a multiple gaze; a unique process, it must be described in terms of its special, accidental, unexpected qualities. The event must be described in detail, but it must also be described in accordance with the coherence implied by multi-perception: being an imprecise form of knowledge, insecurely based while ever partial, incapable of acceding of itself to the essential or fundamental, it finds its own range only in the cross-checking of viewpoints, in repeated, corrected information, which finally circumscribes, where gazes meet, the individual, unique nucleus of these collective phenomena.  

Of course, Foucault is writing of epidemics in general. However, I think the implications of this statement are far-reaching. I doubt if all of the viewpoints on the epidemic subscribe to EBM's definition of evidence. Consider for example, the legal and ethical decisions made by airlines and industrial pig farmers. Furthermore, surely there is a lack of coherence (mentioned by Foucault) required by the multi-perception. Secondly, the epistemology set out here by Foucault does not square with that of EBM. Foucault's epistemology is much more tentative because his gaze is must less structured by a coherent, epistemic position. Far-reaching questions can be asked in the tertiary space for disease.

392 Foucault 1994, p. 25.
In further consideration of the tertiary space, I introduce Foucault's panopticon, a tower in the centre of a circular prison. The prisoners are in the cells in this peripheral ring, which is one cell deep. Each cell is windowed at the inner and outer circumferences of the circle, so that the sun shines in and illuminates the prisoner for the guard in the tower. As the prisoner cannot see the guard (who is shuttered), the prisoner is portrayed as an object of information but not as a communicating subject. It is possible to develop the system so that the observer is simultaneously observed. The panopticon bristles with interesting philosophical issues. Foucault depicts the panopticon as a part of the historic shift from physical punishment to mental control. Furthermore, there is a very interesting shift in surveillance. Obviously, the guard surveys the prisoner. However, Foucault depicts the presence of the guard as intermittent, like the camera in a speed camera box. Just as motorists learn to discipline themselves in case the camera is present in the box today, prisoners, Foucault tells us, learn to monitor and adjust their own behaviour, in case the guard is looking. This transfer of surveillance from the authority to the subject is a major plank in the philosophy of Foucault. The subject assumes responsibility for much of his or her own surveillance and gives effect to the norms and standards of the institution exercising surveillance. Thus whereas some lay people think they can sense when their blood pressure is elevated, when they take home a sphigmomanometer and do some readings of blood pressure they adopt the medical understanding. A man diagnosed with Obstructive Sleep Apnoea will watch his food: he will adapt to the way in which a doctor or dietician views food.

Foucault tells us that the panopticon technology is permeating society. Not only does this technique lead to self-surveillance in conjunction with official surveillance but the information produced through the panopticon has a persuasive/normalising effect. Since Foucault published his books, the panopticon effect has intensified and extensified. I refer to the World Wide Web, television and travel, so that people are far more visible. More is known about people. Foucault would say that the increased specification of people is equivalent to increased individuation. There are four interwoven effects: surveillance, normalisation, subjectification and power. Power can easily use the specification, surveillance and normalising effects of all this.
specification. However, strictly speaking, I think this is a departure from the panopticon. Whereas the guard is shuttered, there must be few if any more closely scrutinised people than the most powerful man in the world.

The New Zealand Government is targeting obesity. One of the Government's concerns is the drain on healthcare resources. For example, at Middlemore Hospital the renal dialysis unit now works two eight-hour shifts each day. This is largely because of renal failure caused by diabetic nephropathy, a consequence of obesity. It is the Government's hope that surveillance will transfer from Public Health authorities to individuals, who would monitor their own weight. This would blend with the doctor/patient relationship, where the same transfer, or sharing, of surveillance, happens. Today, better-trained patients, who sometimes have equipment to measure weight, blood sugar concentration and blood pressure, carry out much of their own surveillance. They survey their own taking of medication, this process being facilitated in elderly people by blister packs. A person injecting insulin will frequently measure the concentration of his or her blood sugar. Although I have mentioned obesity, diabetes and medication in this paragraph, the public health authorities and doctors have also had some success in persuading many people to monitor their exercise, diet, smoking and some other aspects of lifestyle. The gaze has to some extent been forced wider, but it has made little use of the sophisticated concept of desire, as in the writings of Deleuze and Guattari, the idea that we respond to values promulgated by the discourses that shape our subjectivity.

Those people who have accepted this surveillance have allowed their lives to be medicalised. This facilitates the continuing power of biomedicine, which, today, is scarcely separable from EBM. Indeed, the whole process I have described, in which the Government and doctors embrace goals regarding obesity, exercise, diet and smoking, and move some of the surveillance to individuals, is suffused with the power/knowledge of EBM. This is productive power that has produced desires and desirable images for people to align themselves with.
Any phenomenon that falls outside the gaze is not a candidate for medical knowledge or activity. Within the gaze are numerous activities, knowledge, experience, interpretation of signs and symptoms into a disease, attitude to patient and self, caring, and so on. In medical research, the contingent nature of the gaze undermines the claims of EBM to provide evidence that is superior to other forms of evidence and a unique guide to the truths that medicine ought to incorporate. EBM does not acknowledge that its evidence (read “knowledge”) creates its own doctor and patient/experimental subject. We are asked to believe that EBM's experimental subject is part of objective reality, understood by all concerned. I consider it a composite of imposition and assumption. Lastly, the gaze is complex. It involves too many facets to be adequately captured by the insistence on using such-and-such evidence. This emphasis on evidence leaves much of the gaze/medical activity untouched as it strives to deal with health, disease, fear, agony and loathing in the real world.
Chapter 8: Foucault and discourse, regime of truth and discursive practices

8. 1. EBM is contingent

I have read little discussion about the development of EBM being contingent. (Like all claims to truth it seems universal and absolute.) We might well discuss what our knowledge would be if there had been no McMaster University and Cochrane Foundation. I wonder if EBM people agree with Foucault's viewpoint that knowledge has not reached us via “a fixed immutable path to enlightenment and progress” but rather via “contingencies, ruptures, discontinuities and historical fragility of events”.

But if the Kantian question was that of knowing [savoir], what limits knowledge [connaissance] must renounce exceeding [franchir], it seems to me that the critical question today must be turned back into a positive one: In what is given to us as universal, necessary, obligatory, what place is occupied by whatever is singular, contingent, and the product of arbitrary constraints?

I contend that EBM protagonists should factor in the following contingencies: 1) the facilities needed to study a large group of experimental subjects, quintessentially the

393 Coveney 2006, p. 3.
394 Coveney 2006, p. 3.
395 Rabinow's introduction to Foucault 1997, p. xxxii.
multi-centre trial, especially computers and people who use them\textsuperscript{396}, 2) young people, impatient with authority, and often enthusiastic and persuasive, although these are hardly unusual; 3) money to fund the expansion of EBM; 4) air travel; 5) research methodology and statistics. On a different plane, I suggest that EBM has to some extent been spurred by the postmodern lack of certainty, slide in the authority of the grand narratives, decreased trust in the professions, and fragmentation of society and knowledge. I am suggesting that the EBM “truth” is predicated on all these contingencies. Just think of EBM “truth” without computers. EBM “truth” would not have been discovered if most of these had been missing. Despite all this contingency, EBM promised objectivity, certainty, a kind of timeless inevitability as of "the order of things".

8. 2. Some features of the biomedical model

I now introduce some features the biomedical model as a picture of the order of things in relation to human health and disease. In doing so I intend to reflect a statement made by Popper. He tells us that the former idea of objective knowledge, certain and demonstrable, has had to be abandoned. By now we must realise that all propositions are tentative. Often they can be corroborated, but with other propositions of similar epistemological status.

With regard to medical taxonomy, the biomedical model rests on the concept that diseases are natural kinds\textsuperscript{397}. This means that appendicitis is an objectively specifiable dysfunction in a specific organ. However, particularly in psychiatry, this natural kinds depiction of disease now shares the field with another depiction: diseases are human constructs. The Diagnostic and Statistical Manual III categories of disorder to some extent reflect whether psychiatrists were seeing such cases, whether researchers

\textsuperscript{396} Furthermore, the internet affects the mode of communication of knowledge and the packaging of that knowledge. It allows for increasing distance between the origin of the knowledge and the application of the knowledge. Foucault would not agree with this wily nilly detachment of knowledge from 1) the subject of knowledge and 2) the object of knowledge.

\textsuperscript{397} Gillett 2004.
needed these categories, and the categorisation requirements of the insurance industry.

The biomedical model is characterised by a conceptual space of disease in which there is a variable relationship between the disease and the patient. In *The Birth of the Clinic* Foucault sets out a distinction between the hospital, where patients are diagnosed and treated, and the clinic, which is the specialised section of the hospital where students are taught. Together they make up the teaching hospital. In the hospital, he explains, the patient has a disease. It is the task of the doctor to diagnose which disease. By contrast, in the clinic section, where patients are placed largely because of their value for teaching, students are being instructed in disease, and the disease has a patient.

...the role of the hospital doctor is to discover the disease in the patient; and this interiority of the disease means that it is often buried in the patient, concealed within him like a cryptogram. In the clinic, on the other hand, one is dealing with diseases that happen to be afflicting this or that patient: what is present is the disease itself, in the body that is appropriate to it, which is not that of the patient, but that of its truth. …: the patient is only that through which the text can be read, in what is sometimes a complicated and confusing state. In the hospital, the patient is the subject of his disease, that is, he is a case; in the clinic, where one is dealing only with examples, the patient is the accident of his disease, the transitory object that it happens to have seized upon.  

This contrast mirrors the worries of some clinicians. EBM is based on clinical studies, or meta-analysis of clinical studies, or even systematic reviews of clinical studies or of meta-analyses of clinical studies. In all these the disease is primary and the patient or experimental subject is incidental. Many clinicians are very aware that the patient in front of them fits the alternative description provided by Foucault: “in the hospital one is dealing with individuals who happen to be suffering from one disease or another.” Foucault tells us, about the clinic (which I liken to the research): “Its contact with the hospital was of a special kind. It was not the direct

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398 Cooper 2004
399 Foucault 1994, p. 59.
400 Foucault 1994, p. 59.
expression of the hospital, since a principle of choice serves as a selective limit between them”. Foucault states that the disease is the text. This means that doctors study the disease (not the patient), like a textbook. Similarly with EBM, the results of research on disease in huge numbers of experimental subjects, sometimes spread around the globe, is the text: but an individual doctor is dealing with an individual patient who happens to have some disease that is configured not only in terms of its scientifically described nature but in terms of its particular configuration for this human being in his or her psycho-socio-politico-cultural space.

8. 3. Foucault on discourse and regime of truth

In the last section I draw attention to the biomedical/EBM discourse. I now relate this to the writings of Foucault, where we find three overlapping concepts: discourse, regime of truth and discursive pratices. For most writers “discourse” “means anything written or said or communicated using signs”. However, Foucault uses the term “discourse” differently

writings in an area of technical knowledge—that is, areas in which there are specialists, specialised or technical knowledge, and specialised or technical vocablulary.....The idea is that technical specialists always work together to establish their field and its dominant ideas. These technical fields have had ever-increasing power over people, and these discourses have profoundly shaped the structure of our society.  

In the writings of Foucault, the term “discourse” has moved away from something centred on language to something like a discipline, possessing both scholarly and institutional components. So a discourse is characterised by 1) a body of knowledge and 2) social control. Foucault does not see discourse as being created or owned by a person or group. “Discourse in this sense has a life of its own independent of human agency”. Discourse is not closely related to reality or traditional (essential) subjectivity. A humanistic framework for discourse analysis is not suitable. Thus the

402 Fillingham 1993, pp. 100-1.
403 Ibid.
404 Fox 1997, p. 36.
use of the concept of “author” is inappropriate. With regard to EBM, this means that Foucault would not focus his analysis on Gordon Guyatt, Brian Haynes and their associates at McMaster University. EBM is intertextual. This means that “the book” is open in every respect, to other books, papers and people. Furthermore, whatever Gordon Guyatt, Brian Haynes and their associates intended, in Foucauldian theory the final meaning of EBM is decided by the reader and the contexts that take it up and use it thus and so. In particular, the reader can combine interpretation with resistance: where there is more than one way in which EBM can be read, it is possible to select the interpretation which is surely discordant with what was intended, at least to some degree.

However, not only has Foucault moved the concept of discourse, he also uses the word “knowledge” differently. Foucault is not so much interested in “know how” as in “the social, historical and political conditions under which, for example, statements come to count as true or false”. “What can be said?”. We are talking here of

\[
\begin{align*}
\text{the limits and the forms of expressibility...} \\
\text{the limits and the forms of conservation...} \\
\text{the limits and the forms of memory...} \\
\text{the limits and the forms of reactivation.}
\end{align*}
\]

“Truth becomes a function of what can be said, written or thought”.  

8. 4. Biomedicine/EBM as discourse and regime of truth

I now place EBM alongside this Foucauldian use of the terms “knowledge” and “discourse”. A lecturer at a postgraduate medical educational seminar can comfortably speak about “the studies”, but will not be invited back if she spends her entire time speaking about cases she has treated. What counts as “knowledge” has changed in 20 years. Note that in writing about knowledge I have already mentioned social control. I discuss this in my chapter on “power-knowledge”. In that chapter I

405 McHoul and Grace 1980, p. 31.
discuss, inter alia, surveillance/EBM. The most focused aspect of this surveillance/social control is in examinations of undergraduate and postgraduate medical students.

Over several centuries, then, we have arrived at a classical model of disease, in which each disease has a representation in language. This has been developed from the interconnected theory, practices and technology collectively known as “biomedicine”. The purpose of my presenting this (one) characterization of medicine, in conjunction with Foucault's ideas on discourse, discursive practices and regimes of truth, is to consider what can be said, what is meant by the term “evidence”, what the various grades of evidence are, and so on. Other forms of knowing are demoted. These include intuition, the patient's knowledge of her body and its illnesses, knowledge brought to medicine by ethicists, lawyers, philosophers, linguists, historians, anthropologists, librarians and so on. These have usually not been subjected to RCTs and observational studies, and are not amenable to that type of inquiry. Foucault uses a category called *subjugated knowledges*. These are forms of knowledge which have not been articulated up to a sufficiently formal level. Their status is low. Any aspect of indigenous culture, such as Maori healing methods before the oral tradition was written, would constitute one subjugated knowledge. Little or no research has been published in peer-reviewed journals. Other examples would be reflexology and colour therapy. The opinion of an old man's care-giver, as to what treatment works, is inferior to the results of RCTs and observational studies. The term *regime of truth* combines the philosophical notion of truth with certain worldly embodiments and power, which Foucault suggests use truth as a weapon. The expression “regime of truth” elevates a truth to the truth, at least in action, if not in philosophy, placing this truth above other truths, to their detriment. A person applying for a position as a senior lecturer needs a list of publications of the results of RCTs and observational studies. Nearly all new pharmaceutical agents must be evaluated using RCTs. I am highlighting biomedicine/EBM to strike here, as in many parts of my work, the note that EBM is on weak ground in claiming to provide us with the most superior form of evidence (read: knowledge). Rather, Foucault would see EBM as suspended in a web of assumptions, many of which could credibly be altered. It is of concern that
this web of assumptions has become a regime of truth. This means that EBM
determines what questions can be researched, by whom, who can speak for medicine,
what can be said, what is meant by the term “evidence”, what the various grades of
evidence are, and so on.

8. 5. A method with distortions becomes a regime of truth in action

8. 5. 1. Introduction

In a science like medicine, for example, up to the end of the eighteenth century
one has a certain type of discourse whose gradual transformation, within a
period of twenty-five or thirty years, broke not only with 'true' propositions
which it had hitherto been possible to formulate but also, more profoundly,
with ways of speaking and seeing, the whole ensemble of practices which
served as supports for medical knowledge...
But the important thing here is not that such changes can be rapid and
extensive, or rather it is that this extent and rapidity are only the sign of
something else: a modification in rules of formation of statements which are
accepted as scientifically true. Thus it is not a change of content (refutation of
old errors, recovery of old truths), nor is it a change of theoretical form
(renewal of paradigm, modification of systematic ensembles). It is a question
of what governs statements, and the way in which they govern each other so as
to constitute a set of propositions which are scientifically acceptable, and
hence capable of being verified or falsified by scientific procedures. In short,
there is the problem of the regime, the politics of the scientific statement.\textsuperscript{407}

8. 5. 2. Review of distortions in EBM

Elaborating on my depiction of EBM as lacking in the areas of theory and evidence,
and of being narrow and totalising, I draw on Kerridge to describe EBM as “a
method, ..., a model, a system of regulation or audit”. It aims to deal with large
amounts of data. It provides “evidence” as understood by epidemiology and
biostatistics, but has only partly clarified how to apply evidence from a multi centre
trial involving, say, 10,000 experimental subjects, to a single patient, one who
suffers.\textsuperscript{408} EBM sets out an hierarchy of evidence guiding the doctor as to how much

\textsuperscript{407} Foucault 1980, p. 112.

\textsuperscript{408} Elsewhere in this work I have explained that by 2008 Bassler, Busse, Karanicolas and Guyatt
2008 had published detailed instructions as to how to bridge the gap between the population study
weight to place on evidence when deciding on a test or treatment. But this hierarchy of evidence, like the whole body of EBM, is weak on epistemology and evaluation in the respects outlined. For instance, it neglects to notice that all questions frame their answers. This means that 1) this hierarchy seems not to have been related to the substantial body of theory of knowledge in such a way as to provide theoretical justification, and 2) we are not told what evaluation the hierarchy of evidence has undergone. We have substituted the authority of prestigious clinicians for the authority of EBM protagonists.\(^{409}\) EBM has developed normative power: doctors who follow another approach may experience disapproval. Kerridge tells us that this form of evidence is sometimes combined with financial constraints that rule out a test or treatment. Focusing on quantitative measurements, EBM is skew to a world (medicine) in which some issues are diffuse, and that it promotes aspects of medicine where the data is plentiful. If this is so, aspects of medicine which are hard to explore in the framework of holding n-1 variables constant while one is manipulated, suffer neglect (and produce little data). Lastly, after millennia of medical practice, we now have only two decades during which the usual sources of knowledge have been demoted. I refer to clinical experience, patient wishes and values, expert opinion and pathophysiological reasoning, although the latter is more modern. The new approach reduces the autonomy of the doctor and patient, in favour of the computer in the consultation, and, more distantly, multi centre trials and the people associated with them. In this chapter, then, I draw on Foucault's "regime of truth", and apply the term to EBM. Wtih Kerridge, I suggest that evidence-based medicine (EBM) is not "evidence" "based" "medicine", but a distortion of clinical reality by a monolithic scientific model with normative power. I now take this "regime of truth" idea and apply the Foucauldian analysis of power--knowledge to EBM. Note here the use of "truth" as a function, not something to be found. Truth is in action, in medicine and in politics. Truth is not found but created and adopted. In our society it is more convincing if truth has a scientific dimension. Truth, in our society, is a major issue, not so much as a philosophical concept, but as a commodity or issue for unceasing debate, for transmission/diffusion. The truth that governs clinical life is set up and

\(^{409}\) There is a power issue here.
sent out largely under the auspices of, for EBM, the universities, pharmaceutical companies, Cochrane Foundation, professional journals, professional colleges, and so on. The truth is a matter of conflict, struggle, politics and economics.

8. 5. 3. The modern intellectual

The truth in EBM, then, is associated with the production of a new type of intellectual. This person is not leading us to “the ensemble of truths which are to be discovered and accepted”. The new intellectuals are Sackett, Haynes, Guyatt, Rennie, Richardson, Cook … and they tell us how to ascertain the truth and what to do with it. These action-intellectuals tell us how to separate “true” from “false”. And all this is interwoven with politics, economics, with who gets university positions who publishes, who is invited to lecture at conferences. Indeed,

The essential problem for the intellectual is not to criticise the ideological contents supposedly linked to science, or to ensure that his own scientific practice is accompanied by a correct ideology, but that of ascertaining the possibility of constituting a new politics of truth. The problem is not changing people's consciousness--or what's in their heads--but the political, economic, institutional regime of the production of truth.

8. 5. 4. The dynamics of the internal regime of power

At this level it's not so much a matter of knowing what external power imposes itself on science, as of what effects of power circulate among scientific statements, what constitutes, as it were, their internal regime of power, and how and why at certain moments that regime undergoes a global modification.

Foucault goes on to explain that “the effects of power peculiar to the play of statements” he will call a “discursive regime”, and move his analysis from the popular “symbolic field” to the “....genealogy of relationships of force, strategic developments, and tactics”, and to the constitution of the subject.

410 Foucault 1980, p. 132.
411 Foucault 1980, p. 133.
412 Foucault 1980, pp. 112-3.
413 Foucault 1980, p. 113.
8. 5. 5. The constitution of the subject of knowledge and the object of knowledge

This means that he does not use, in his analysis, the constituent subject, as in the sovereign state, or the subject which seems unchanged during “…constitution of knowledges, discourses, domains of objects…”.

Rather he includes the constitution of the subject of knowledge, inseparably with the constitution of knowledge, and domains of objects. This approach seems to elude EBM, which regards knowledge as something you can find in a research report or that jumps out at you from an experiment or observation. It is detached from people, including the reader, researcher and experimental subject. EBM tries to work with unchanging subject and object (for example, experimental subject) as the knowledge is constituted, through clinical research.

I turn now to the influence of power on the object of knowledge and the subject of knowledge.

Further, the condition that programmatic knowledge must satisfy is that it renders reality in the form of an object which is programmable. This operation is reminiscent of the function Kant attributes in the Critique of Pure Reason to the concept of the schema which, as Deleuze puts it, 'does not answer the question, how are phenomena made subject to the understanding, but the question, how does the understanding apply itself to the phenomena which are subject to it?'

The object of knowledge is often a patient who becomes an experimental subject. Actually, it us usually a subject group. Selection criteria begin the process of modification. This means that, at a quick glance, a reader of a research report might think that a study is about, say, post-menopausal women. But some post-menopausal women are not approached to take part, and some decline. By the time the project manager has eliminated those who do not speak English, those with co morbidity (including, for instance, paranoid schizophrenia) and those of subnormal intelligence, and so on, the experimental subject is becoming a different object of knowledge from

415 Foucault 1980, p. 117.
the original image of *post-menopausal women*. However, the process is more subtle than this. *Omit* confusion, existential issues, a plan to separate from the husband tomorrow, and *include* oestrogen level, weight, height, level of blood pressure and current medications, and the object of knowledge is depicted as a biological entity with one or a limited number of pathological processes, (such as hyperlipidaemia, hypertension, and so on), whose angst over her husband’s drinking has been stripped off by EBM protagonists who seem not to have noticed that they are studying a biomedical object of their own creation.

Even so, we have not yet explored the full extent to which the object of knowledge has been constructed.\textsuperscript{417} I now elaborate a twentieth century depiction of post-menopausal women, studied for the suitability of Hormone Replacement Therapy (HRT). This group is my *object of knowledge*. Consideration has been given to all women between menopause and death (an unproblematised category with unproblematised relationships with doctors, who are available, as are HRT and lifestyle change). Hormones are measurable, adjustable, chemical indicators of sex. Sex hormones distinguish male from female, and to some extent disease from health, desiring from desired. With regard to post-menopausal women, femininity is in question. “Femininity is rendered precarious, provisional and in need of reinforcement”.\textsuperscript{418}

This depiction of post-menopausal women blurs out almost every aspect of their lives barring the low oestrogen levels and their sequelae,\textsuperscript{419} and it surreptitiously drags in surveillance. It treads lightly across an unproblematised, submerged discourse of risk: it is assumed that all post-menopausal women live in a rational universe in which rational people perceive that certain actions reduce the risk of osteoporosis and cardiovascular disease. This discourse on risk involves uncertainty, and assumes that risk motivates behaviour which reduces the risk of avoidable conditions, such as osteoporosis. It involves the provision of information—but experts often disagree about the level of risk and the weighting of various factors contributing to the risk.

\textsuperscript{417} Harding 1997, Daly 2005, pp. 221-5.

\textsuperscript{418} Harding 1997, p. 136.

\textsuperscript{419} Off the map are other health issues, such as those relating to class and race.
This “information” will often differ according to the agenda of the writer. Whatever is intended by the expert, the reader has the last say: action or inaction will follow from what the reader understands or misunderstands the risk to be. Likewise with the action or inaction which the reader understands or misunderstands is being recommended.

Of course, all post-menopausal women want to contribute to society at large, and their immediate family, and to avoid being a burden through fractures and strokes, for example. All post-menopausal women are responsible with regard to their health, which responds to individual efforts. This is a meaningful subject position, and can be reached. These women have choice, and have been set up as having to choose between HRT, healthy lifestyle (an unmedicalised body), and no action. Rewording this, they are pilloried between the consequences of oestrogen deficiency and the side effects of HRT, thought to possibly include cancer in the endometrium or breast. But there is a social model buried here-

However, behind the rhetoric of “freedom of choice”, “right to know” and “entitlement to participate” that has recently come to dominate discussions in health care, lie compulsions surrounding the exercise of choice and an array of pre-defined and limited options for action. The “good consumer” of health care is compelled to make choices, exhibit appropriate “information seeking” behaviour, and to behave in certain prescribed ways (consulting “relevant” expertise, taking the “right” medicine, engaging in personal risk management, and so on). However, one can question the extent to which this ideal of rational consumer behaviour accords with the reality of people's everyday lives.

EBM people would surely argue that the recommendations for HRT were based on observational studies. They would point out that an RCT in the twenty first century

420 I has been suggested that there is a commercial element operating here, even exploitation, and disempowerment.

421 I admit to bringing in a women's health perspective here.

422 Each post-menopausal woman probably assumes that she is typical of the cohort and that if she acts now, she will live long enough to reap benefit.

suggested that more harm than good was likely to follow the long term use of HRT (so doctors no longer recommend it). However, I contend that the EBM recommendation against the use of long-term HRT, provided in the twenty first century, applied to the same object of knowledge that I have depicted above.

8. 5. 6. Back to the subject of knowledge

And what of the development of the subject of knowledge? Earlier in this work I drew on feminist and other writers to depict a scientific researcher, whom I am here regarding as the subject of knowledge, in that he or she is the first person to gain the knowledge derived from the clinical study (of the created object of knowledge). I have depicted the researcher as having good education and income, who assumes that the readers share his or her world view (such as outlook on risk) and experience. As the researcher develops from, say, a school pupil to a 50-year-old medical scientist, a process of modification produces a particular subject of knowledge. This person has a superior intellectual ability along with a unique experience of life and a way of depicting the world. In the last few paragraphs, then, I have indicated that a Foucauldian view differs from that of EBM: I contend that EBM ignores (or misunderstands) the subject of knowledge and the object of knowledge, viewing the subject and object as distinct from knowledge. I contend that EBM thinks it produces, from clinical research, knowledge which is objective and understood by the reader in the same way as by the writer.

8. 6. Discursive practices

8. 6. 1. General comments

I have brought into focus the well-known biomedicine/EBM model. I have conveyed that this is one model. I have stated what Foucault's perspective on knowledge and discourse is, and I have made a connection between biomedicine/EBM and the
Foucauldian concepts of knowledge and discourse. In doing so I have verged into *discursive practices*: the activities of the people associated with the discourse.

There one finds a type of systematicity which is neither logical nor linguistic. Discursive practices are characterised by the demarcation of a field of objects, by the definition of a legitimate perspective for a subject of knowledge, by the setting of norms for elaborating concepts and theories. Hence, each of them presupposes a play of prescriptions that governs exclusions and selections.\footnote{Foucault 1997, p.11.}

As I have already explained, in the case of EBM these include carrying out RCTs and observational studies, publishing the results, doing meta-analyses on RCTs and observational studies, setting up systematic reviews, and, in the hands of people a little more distant from EBM, the creation of clinical guidelines and protocol-base practices. EBMers have set up an hierarchy of evidence to guide the doctor as to how much weight she can place on this evidence. People associated with the EBM discourse have infiltrated the pharmaceutical industry, universities, medical colleges, educational seminars and so on. They have carried out this expansion exemplifying Foucault's term, *regime of truth*: the truth is *what counts as truth*. I conclude this chapter considering two more aspects of the EBM *discursive practice*.

8. 6. 2. EBM swerves away from the patient-doctor nexus

The EBM clinician makes little use of herself as a person.\footnote{I draw on Wifstad 2008 for this line of thinking.} Although her reality is with her patient, she quickly sets out on a conceptual trajectory which distances her from her patient. She first asks what group of patients or experimental subjects her patient can be placed in. Then her mind continues to function at a distance from her patient by asking what intervention she should consider. Third, her mind continues at a distance by asking what intervention is probably less suitable, for comparison. Lastly, she projects herself out of the here and now by asking what outcome, in the future, she is planning.

8. 6. 3. Rhetoric: EBM overplays the part played by its "gold standard" evidence
During this conceptual excursion she needs look back at her patient and assess the suitability of her patient for this research-based intervention. As stated several times in this work, EBM leaders have, in 2008, provided detailed guidance on this. Even so, as stated by numerous authors and in several places in my work, the gap between the group data and the individual's suitability cannot be reduced beyond a certain, unknown, distance. *The actual susceptibility of the patient for the researched intervention cannot be precisely known.*

There is a complex issue regarding the judgment as to whether the patient is suitable for the intervention, the alternative, and even the outcome proposed. The doctor must know something of the patient, her attitudes, values, preferences, and perhaps even her social situation. With increasing emphasis on the business aspect of medicine and also the scientific aspect and the computer, this detailed understanding of the patient is declining in comparison to what it was in time when most people lived in a country district and saw one doctor over many years. The knowledge of the patient, who is reified, is incomplete and inaccurate. Whatever assessment the doctor makes, the knowledge of the patient is fallible and not based on an RCT. *The knowledge of the patient is different in kind from the RCT knowledge.* This surely limits the entire EBM discursive practice which projects the image that it is based on the results of clinical studies.

If the clinical doctor follows the study results and invokes the intervention for her patient, we can, at best, hope and believe that that the intervention will be helpful. Regrettably, if the patient improves, we still do not *actually know* whether the intervention caused the improvement.

**Summary of chapter 8**

Foucault distinguishes between the clinic section and the rest of the teaching hospital. In the clinic the disease has a patient. In the remainder of the hospital the patient has
a disease. I place the same tension in the consulting room of the EBM doctor, where
disease is the text (although it occurs in the consulting rooms of all doctors). Thus I
begin to characterise what Foucault would call a discourse. This is a field of
scholarship with language, knowledge and techniques, associated with social control,
and an impact on social structure. The truth is a function of what can be said within
the rules governing the status of statements. So we have Regime of Truth. This
denotes a combination of philosophy (of truth) and worldly power. The issues are: 1)
“What is the truth, in action?” and 2) How did this become the truth? The third
expression used in this chapter, discursive practices, refers to the characteristic
activities of people in this regime of truth. For EBM this involves carrying out
research using RCTs and observational studies which clarify the relationship between
variables. Then meta-analyses of studies are conducted, and systematic reviews.
Various major institutions, such as universities, are infiltrated. In these institutions
there is a set way of setting up a clinical problem. After the literature has been
searched, there is a certain prescribed balance to be observed regarding the various
inputs to the clinical decision. Older methods of practicing medicine and other
elements within the intelligent application of the evidence to the individual are
demoted, although there has been a degree of rehabilitation of some of these in our
century. EBM projects an image that it is based on the studies: this skids across some
less secure issues. There is an element of rhetoric.
Chapter 9: Foucault and power--knowledge

9.1. Power is relational

As I indicate in several places, Foucault regards power as relational. It would be easy to take out of this the idea that power derives from relationships; for example, the relationship between a pharmaceutical company and a possible area of research. But he intends that the power relation also means that power determines the relationship, at least to some extent. In the case of EBM the influence or power of EBM determines to some extent how the members of the Faculty at McMaster University relate to each other. Daly tells us that they monitor each other's use of EBM when practising and teaching. New staff appointed to a clinical department of a medical school will be chosen partly according to their research publications. Ideally, these will deploy the RCT or observational study. A New Zealand doctor has been appointed to the Chair of General Practice at Australian National University after completing his PhD on the n-of-1 research design. The influence of EBM is partly responsible for setting up the relations among people on a research project, such as a multi-centre trial on the use of a lipid-lowering agent. This is the flip side of the conferring of power on the project manager and lead author by the relationship structure of the research team. In one study, the implementation of hypertension

426 2005.
guidelines altered the division of labour between doctors and nurses.\textsuperscript{427} Furthermore, more generally, protocol-based care has facilitated moving some medical tasks from doctors to nurses and has proved helpful in services with a high turnover of junior medical staff.\textsuperscript{428} “On the other hand this \textit{is} a conception of the exercise of power as a practice which \textit{establishes} certain relationships between heterogeneous elements”.\textsuperscript{429} “Hence for Foucault power is omnipresent in the social body because it is coterminous with the conditions of social relations in general\textsuperscript{,}\textsuperscript{430} There is an assumption here that the relationships are only an instrumental means to the healing encounter.

I have in several places suggested that the EBM machinery extends from centres such as McMaster University and Cochrane Collaboration to the individual clinician, let us say, in small town New Zealand. However, Foucault takes pains to explain how he sees the power of the centres. He does not consider that McMaster University, for example, set up EBM to gain worldwide power. Rather, EBM was developed to deal with issues like cost, eminence medicine, variation in practice, and uncertainty in testing, prognosticating and treating in clinical practice. Distinguishing his approach from traditional theory of (juridical) power as in a sovereign state, what he tells us implies that the Department of Clinical Epidemiology and Biostatistics at McMaster University, for example, is caught up in the system/power as much as is the isolated clinician. \textit{Nobody owns the system}. Foucault is explaining the features of a power/knowledge system, not who has the power in one place in order to repress someone who lacks it in another. Power is pervasive, it cements the system in place and stabilizes its hierarchies. Foucauldian theory emphasises the transparency and visibility in the system, along with the the part played by opinion. In fact, far from being a top-down system, there are plenty of examples in society and EBM of peripheral people surveying those in good positions, as in Egypt. In Great Britain in May, 2010, the General Election takes place in a country where the electors have lost faith in politicians, so many electors do not vote. In New Zealand society in 2009 we

\textsuperscript{427} Alanen et al. 2008, p. 834.
\textsuperscript{429} Foucault 1980, p. 245.
\textsuperscript{430} Foucault 1980, p. 246.
have an outcry because our Minister of Finance lets out his Wellington house while claiming Governmental rental allowance for the house he occupies in Wellington. In Foucauldian spirit, after the embarrassment of the Minister of Finance in New Zealand and many parliamentarians in Great Britain, surely Members of Parliament in both countries will themselves be monitoring the probity of their own expenditure.

Foucault weighs in against an earlier emphasis on power at top level, such as the king or state. He does not view power as something which some have while others do not. This approach would create resistance in those without power. He takes a more neutral view and writes about the dynamics of power, how it works. “Once knowledge can be analysed in terms of region, domain, implantation, displacement, transposition, one is able to capture the process by which knowledge functions as a form of power and disseminates the effects of power”.431 This Foucauldian (productive or generative and de-centered) approach to power, then, contrasts with the older “repression, interdiction and punishment”.432 He writes about the mechanisms by which power is exercised, and largely about the less exalted levels at which these mechanisms function. For example, he states that a change in regime in Russia did not substantially alter the mechanisms of power at the level of, say, technicians. Much of his writing on power discusses what happens at the level of the individual, depicted as an object and subject of power both under the influence of and contributing to the power relations within the system. For example, the forensic psychiatric nurse is under the control of the state, but also exercises power over the detained patient. The individual is a necessary part of the functioning of power, not just a point of application of power. Power functions through the individual. More radically still, he does not see power operating on a person whose identity is already established. Rather the power is to some degree involved in creating the identity, in fact, in creating the individual. For example, power influences the gestures, diction, body weight, education, occupation, martial status, philosophy of life, and so on, of the individual. Even so, one should not lose sight of agency.

431 Foucault 1980, p. 69.
432 Perron, Fluet & Holmes 2005, p. 536.
My account may convey the impression that power in EBM starts at the McMaster University/Cochrane Foundation level and permeates through journals, internet, professional colleges etc. to the general practitioner in a remote New Zealand town, such as Tapanui. However, Foucault makes two refinements to this depiction. Firstly, he describes two aspects to power, whereas I have implied one. When a new regime takes over in Russia, Foucault tells us that this power structure has its own methods, yes. But it utilizes already existing power channels. For example, a publishing house has its own machines, culture, rules and relationships. I allow that these may undergo some change when the Communist Government rises or falls. But some aspects of the publishing culture continue only partly modified. So he suggests an analysis of the interaction of the government power structure with the age-old power channels of the publishing industry. So there is the government power, the infrastructure power channels, and their interaction. The relatively new regime of EBM, depicted in this work partly in terms of power, could not function without the infrastructure and its existing power relations. Just as the Communist Regime in Russia in 1917 utilised the existing power relationships among, say, staff in a newspaper office, so EBM uses the existing power relations among the members of a general practice team or hospital team, including laboratory technicians, radiology staff and so on. Of particular interest for Foucault is the meshing of the top-down new power regime with the age-old infrastructure. This may be exemplified, for example, by the way in which the relatively new Primary Health Organisation relates to the funding bureaucrats and health board functionaries who enable it to operate, and to a receptionist in a general practice, and does not tell her that her doctor is no longer contractually required to provide or arrange a home visit at night if the health of an elderly patient who leaves the surgery at 1700 hours deteriorates. A related issue in Auckland is that many doctors who treat a patient in a private hospital by day are unavailable by night. Nor is any other doctor available. This glaring problem cannot be separated from power issues.

The other refinement on my picture is that Foucault prefers an ascending (to descending) analysis of power dynamics, rather than a descending (to ascending) analysis, suggested by my account so far.
One must rather conduct an *ascending* analysis of power, starting, that is, from its infinitesimal mechanisms, which each have their own history, their own trajectory, their own techniques and tactics, and then see how these mechanisms of power have been—and continue to be—invested, colonised, utilised, involuted, transformed, displaced, extended etc., by ever more general mechanisms and by forms of global domination.

What concerns Foucault is to ascertain how the global domination works at the minute level, where there is already an autonomous set of power-sustaining interactions and discourse. For example, in the publishing industry there are procedures for maintaining equipment and paying staff. When the governing regime changes, the new regime inherits this infrastructure. Just exactly how does it infiltrate the routine checking and repairing of the machines, and weekly paying of staff? This is where the most important issues lie, not at central government level, Foucault tells us. With regard to EBM, Foucault would be interested in the fact that the Cochrane Collaboration has involved consumers. He would be even more interested in whether the consumer representatives represent the consumers, or even whether this is possible.

9. 2. How and where power works

A post-structuralist enquiry does not ask why EBM leaders dominate much of medicine, but rather how the individual doctor channels the power of EBM. Foucault does not depict the doctor as a point of application of EBM power, but as part of the power--knowledge *network*. This involves journals, internet, attendance at continuing medical education seminars, peer group discussions, visits from pharmaceutical representatives, and so on. Although, obviously, the Cochrane Foundation and the McMaster University are in the network, the further away the eye moves from these centres to the general practitioner in the New Zealand town of Tapanui, the more interest Foucault takes in the dynamics of power--knowledge. One should try to locate power at the extreme points of its exercise, where it is always less legal in

character. An example is provided by a doctor prescribing colchicine for gout this century, when the evidence better supports anti-inflammatory drugs. (What are the power--knowledge issues here?) Foucault would say we are as far as possible away from the legal. He states that the power is actually produced in relations at this level: that where there are relations there is power; and where there is knowledge there is power; and where there is power there is knowledge. These three function together: relations, power, knowledge. In Foucauldian spirit, if the doctor/patient diad does not enact the results of clinical research then EBM power is stymied.

However, the Foucaldian analysis of power is more fine-grained still. In considering the individual doctor and the particular patient, he explains that he does not see either of these people “as a sort of elementary nucleus, a primitive atom, a multiple and inert material on which power comes to fasten or against which it happens to strike, and in so doing subdues or crushes individuals”. He actually views the individual as the effect of power.

By the twentieth century, a perceptive analysis will focus on bodies rather than commodities. In the case of EBM, Foucault would look at what people are doing with their bodies. This will be the site of the out workings of power as it spreads through the medical world. I suggest that doctors are attending lectures, reading journals, checking the internet, ascertaining the evidence. This involves their brains in particular, but eyes, hands and so on, as well. Their bodies and capacities will be moulded by the reshaping of their neural networks to realise the implicit structures in which they are formed. And in the consulting room the doctor's body is engaged in thinking, speaking, listening and so on. A good EBM doctor will be typing away at the computer (possibly developing an overuse syndrome). Hands, eyes and so on will be engaged in printing out laboratory forms, X-Ray request forms and prescriptions, all of which enact the doctor's knowledge of the best evidence. Various other people, such as pharmacists, radiographers, and laboratory technicians will move their bodies and sophisticated equipment to act out the doctor's requests. The

434 Foucault 1980, p. 97.
435 Foucault 1980, p. 98.
436 It has been noted that literature on doctor-patient relationships omits the doctor's body!
patient's body will be following along a trajectory, to the radiographer being X-Rayed, to the laboratory passing urine, to the pharmacist with a script. Medication will be swallowed and metabolised with the beneficial or damaging effects. Further physical activity follows a healthy outcome after investigation and/or treatment, or a pathway of deleterious effects. (When I was a house surgeon my consulting physician, who had had six heart attacks, instructed me to telephone a woman in a peripheral town and advise her that her husband, 54, had died during his intravenous pyelogram!

Foucault would follow the body to the funeral, tracking the flow of power into the cemetery, and through masonry and the trimming of the grass, and so on. Foucault would also note the influence of or on the consultant's body, all embedded in discourses that prescribe certain ways of conducting oneself, emotionally, intellectually and physically.)

Foucault's analysis of power then focuses on time and labour rather than commodities and products of the earth, as was the case in the distant past, when rulers extracted labour or the products of work from serfs. With regard to EBM, Foucault would consider the time and effort involved in research, publication, setting up data sets, ethics committees, and all the other apparatus of clinical research, its compilation, distribution and so on. The further out the network spreads from the universities, pharmaceutical industry and other foci of learning, investigation and so on, towards the individual doctor treating the individual patient, the more interested Foucault becomes, as stated above. At this level he would consider the time and effort involved in the doctor acquiring knowledge of the latest research, systematic reviews, guidelines, and so on, the effort and time involved in discussing with the patient the various options regarding diagnosis, prognosis and therapy. In recent years this would bring the latest clinical research into the mixture of pathophysiological theory, clinical experience, patient values and wishes and system features. Foucault would consider the time, energy and skill in presenting these complex issues to the patient, and the subsequent negotiation and the terms in which it is conducted, influenced by popular magazines, newspapers, latest discoveries and so on. This, then, is how Foucault would analyse the power/knowledge issue with EBM, perhaps stopping at the consultation. Of course, the flow of power never actually ceases, and could be
traced through successful treatment and productive work, loving, caring and so on, and/or through future unwanted effects to morbidity, mortality, funeral, and beyond.

With regard to the infiltration of EBM over the last 20 years, how does power work? This matter has been touched on obliquely in various parts of this work. Here I bring the matter into focus, with some examples. Various forms of Protocol-based care, largely based on “the evidence”, have been instituted in medicine and nursing. This has led to a movement of work from doctors to nurses. One example is provided by nurse-prescribing. More broadly, in country districts some nurses undertake care previously carried out by doctors. Protocol-based care helps organisations with high staff turnover. For example, some rest homes engage bureau nurses, who come for possibly only one shift. In Auckland, house surgeons are in short supply, so payment for locum tenens house surgeons is high. Accordingly, some doctors work in a locum tenens capacity, doing perhaps three days per week. This means that several doctors are need to cover 168 hours. Surely the management is able to raise standards of care with protocols in these situations. Then again, power operates through requiring these changing staff to follow protocols. The protocols are impersonal, reinforcing the objectivity of medicine.

Some of the examples of power operating in/through EBM are obvious and have been alluded to in other parts of this work. The relationship between power and EBM is easy to observe in the pharmaceutical industry, largely built around RCTs and observational studies. Then there is the medical press: papers are published partly according to evidential criteria. EBM acolytes are invited to speak at conferences and at continuing medical education seminars. Grants for research are decided, in part, according to EBM principles. Doctors are busy studying how to understand evidential papers, then putting this understanding into action. One of the most obvious of the ways in which power works can be seen in the implementation of clinical guidelines (the basis of protocols), discussed later in this chapter. Note the array of strategies to which I allude. For example:

The relatively poor dissemination by means of the original publications, even among interested dermatologists, indicates the need to find improved methods
of distribution, e.g. by publishing different versions of the guidelines in a variety of journals and drawing additional attention to these publications by means of educational activities.\(^{437}\)

9.3. Visibility and surveillance

A major theme in the writings of Foucault is visibility. The prisoner is visible. The patient in hospital, endlessly questioned, examined and tested, is visible. The endlessly examined medical student is visible, and the doctor is visible through audit funding return, through Maintenance of Professional Standards Programs. Intimately involved with visibility is surveillance. Foucault tells us that, as in the panopticon, described earlier in this work, surveillance has a subtle influence. As I have already explained, the earlier concept of an authority surveying the people has, over the centuries, changed to a large measure of self-surveillance. This is an incomplete move from exteriority to interiority: the modern doctor/person has absorbed the external surveillance into her soul. Foucault tells us that surveillance has a normalising effect, as I have already explained. There is pressure towards conformity. In the case of EBM, I do not perceive a comprehensive surveillance of the uptake of EBM by practitioners. However, I identify a number of aspects of surveillance which fall short of a comprehensive program. As I describe these, in succession, I allow a drift from surveillance of the uptake of EBM to a wider treatment of surveillance in medicine, which is infiltrated with EBM. For example, a general practitioner surveys the blood sugar levels of her diabetic patients. To some extent she is surveying the patient's own measurement of levels of blood sugar. EBM has demonstrated that good control of blood sugar is associated with fewer diabetic complications.

The visits of the representatives of the pharmaceutical companies to doctors provide surveillance. The pharmaceutical industry strongly favours the RCT in evaluating treatment. As the pharmaceutical companies choose personnable representatives, there is surely some pressure on doctors to say that they have been using the product which the engaging representative detailed earlier.

\(^{437}\) Nast et al. 2008, p. 806.
There is surveillance of the use of EBM in peer groups. In New Zealand, fellows of the Royal New Zealand College of General Practitioners are required to belong to a structured peer group. In these groups wide-ranging discussion occurs, and it is impressive to quote studies on which you base practice. Surely monitoring of each other's evidence-based practice is “in the air”. Opinion is a powerful force. Here again, external surveillance shades into internal surveillance.

Another form of surveillance is provided by patients. Some patients consult the internet, watch television and listen to the radio, then speak with their doctors. As the internet, television and radio allow access to evidence (from clinical research) for testing, prognosis and treatment, these patients are likely to provide some level of surveillance when discussing their management with doctors. This even applies to clinical guidelines, which some patients have read! Some patients are health professionals, while others check things out with friends and acquaintances who have some knowledge of health care.

Discharge letters from hospitals provide some surveillance for referring doctors. Such letters are written by people who have some knowledge of EBM, and the referring doctor is likely to find that her treatment has been changed, surely to some extent influenced by evidence from clinical research. For example, an older doctor referring a patient with congestive cardiac failure is likely to find that the patient comes out of hospital on angiotensin converting enzyme inhibitors instead of digoxin. It is likely that this change reflects evidence from RCTs and/or observational studies.

I have referred to the use of clinical guidelines. In an issue of the *Journal of Evaluation in Clinical Practice*, entirely devoted to EBM (including philosophy of EBM), 19 of the 53 papers in this issue, describe the “Clinical Attitudes to and Understanding of EBM & Guidelines Use/Implementation”. Various papers tell us about the use of guidelines for backache, urinary incontinence, hypertension, and so

on, and give evidence of a surprising industry directed to ascertaining the extent to which clinicians are implementing guideline advice. We are told that “there are manuals for improving the creation of guidelines …, systematic RCT studies of guideline implementation campaigns …and formal recognition that guidelines may need to be 'styled' for a particular practice...”, and that “The most frequently reported implementation strategies were 'reminders', 'education at start', 'printed matter', and 'internal facilitators'”. These authors are reporting on “an evaluation of a test-retest study…to investigate the use of a questionnaire designed for the purposes of developing an instrument, to be used when developing implementation strategies in clinical practice”. One can only speculate on the prominence of this activity as reported in the literature. This is surveillance of EBM uptake par excellence (although I admit that EBM leaders have distanced themselves from guidelines, publishing their concerns). The word “compliance” is ubiquitous in the guideline implementation literature.

The formal examinations for undergraduate and postgraduate medical students constitute a very focused surveillance of the knowledge of EBM. Indeed it is possible to fail an examination because knowledge of EBM is unsatisfactory.

The examination combines the techniques of an observing hierarchy and those of a normalizing judgement..... At the heart of the procedures of discipline, it manifests the subjection of those who are perceived as objects and the objectification of those who are subjected. The superimposition of power relations and knowledge relations assumes in the examination all its visible brilliance.

Foucault, in this passage, goes on to refer to “power relations that make it possible to extract and constitute knowledge.” Examiners at undergraduate and postgraduate level accrue a knowledge as to what the students know. Foucault depicts the individual entering the field of knowledge. Take the undergraduate medical student, progressing in time to the postgraduate medical student. She is frequently examined.

Foucault places the teaching and the series of examinations alongside each other, and so points up a transfer of knowledge from teachers to pupil correlated with a transfer of knowledge from pupil to teacher. Not only might students be assessed as 'A', 'B' or 'C' students, but, of course, one doctor may have one postgraduate qualification while another has five. Those with none will be in training or working in a collegial relationship. The subject of knowledge becomes and object of another order of knowledge. Taken together, a class of students becomes a class of objects arranged in a grid. Students, now objectified in a grid, can be compared, as members of a population. This can be used academically and politically. Academically, it can be used in a feedback loop guiding training. It can constitute fodder for the academic disciplines of statistics and education. Politically, the government could be embarrassed by a shortage of radiation oncologists. The examination results can be deployed to answer the question, “How many people qualified as radiation oncology in the years …?”. It is possible to develop a comprehensive dossier on the individual student. This could involve attitudes, cultural sensitivity, clinical skills including how many babies have been delivered, and theoretical knowledge over a range of subjects. Indeed, Foucault argues that the creation of this dossier on the individual is partly responsible for the creation of the individual. The idea here is that, centuries ago, before writing, computing, spreadsheets and so on, the individual was a blur. Now she is highly specified. The compilation of this dossier involves visibility, frequent examinations through which the student becomes legible, and the objectification of the subject of knowledge, the examination being the ceremony of objectification. Here we have intense, formal surveillance. And, of course, before and after the examinations, students are surveying their own knowledge (as in the model of the panopticon), only a fraction of which will be formally assessed, and some will never be needed.

The Public Health field bristles with surveillance, and is deeply infiltrated with EBM. Here obesity, communicable diseases, border controls, substance abuse, child abuse and other issues are surveyed. The New Zealand Government is facing the issue of more and more people on sickness benefits for drug and alcohol dependence (and how they cannot be required to seek medical treatment), and the the issue of damage done
by alcohol users and methamphetamine users. Maori leaders are trying to watch over families at risk of child abuse. I keep in touch with my daughter, with two young children, as to her stress levels. Television advertisements encourage us to see if our friend is too drunk to drive. Publicans are to assess whether the client is drunk before serving alcohol. All members of the community are urged to monitor their own weight, diet, exercise and use of alcohol, especially before driving. We are strongly urged to monitor our driving speed. I am trying to convey a concept of surveillance which involves government, public health leaders, television, newspapers, bars, exits from parking buildings, conversations among us, a concept of surveillance which extends throughout the community, and which has moved, in part, to self-surveillance. This harmonises with Foucault's teaching on the community being infiltrated with surveillance. (There are RCTs and/or observational studies to support most of the public health drives.)

This discussion of examinations leads naturally to Foucault's approach to truth.

...truth isn't outside power, or lacking in power: contrary to a myth whose history and functions would repay further study, truth isn't the reward of free spirits, the child of protracted solitude, nor the privilege of those who have succeeded in liberating themselves. Truth is a thing of this world: it is produced only by multiple forms of constraint. And it induces regular effects of power. Each society has its regime of truth, its 'general politics' of truth: that is, the type of discourse which it accepts and makes function as true; the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true.444

Academics validate the questions in part by the extent to which they discriminate between what academics regard as good students and those who are not so well schooled. We could ask whether the examination reliably and validly tells us the ability, attitudes, skills, and knowledge of the candidate. Does it tell us the truth about these student proclivities? Foucault would say that the results of the examination function as the truth. Students are passed or failed: this is the truth in action. It does not matter that a student who gained 49% may know more than a

444 Foucault 1980, p. 131.
student who gained 51%. Those with knowledge-power have decided that the
examination will assess the knowledge and other properties of the student, according
to a set of measures that they have legitimated. We have left behind the arguments
about multi choice questionnaires versus essays. The results of the examination
constitute the truth. Those students who continue to pass will become doctors or
medical specialists and will diagnose and treat patients for years. This is the truth in
action--it is not found by meditating in a cave.

9. 4. Resistance

Foucault depicts resistance as an integral part of power relations. In fact, without
resistance there would be less power. “Foucault himself was careful to emphasize
frequently that where there is power there are always resistances, for power inevitably
creates and works through resistance”.$^{445}$ This is because obedience would be more
straight forward, and coercive power needed less. “The field of strategies is a field of
conflicts: the human material operated on by the programmes and technologies is
inherently a resistant material”.$^{446}$ This means that with “relations of power...
interwoven with other kinds of relations (production, kinship, family, sexuality) for
which they play at once a conditioning and conditioned role;”.$^{447}$ Resistance occurs at
the site where power operates, and can be expected when people are asked to change
the habits of many years. Furthermore, just as all the elements of the micro power can
be globalised, so too with elements of resistance. I have alluded to a surprisingly
large body of literature on the implementation of guidelines. The implementation of
guideline advice has disappointed EBM protagonists. I am suggesting, then, that we
have evidence of resistance to the attempts to infiltrate medical practice with EBM.
Furthermore, both writings of Holmes et al. and Miles et al. and others can be viewed
as coordinating and spearheading a somewhat comprehensive resistance to the further
expansion into practice both locally and/or globally. The examination of the couplet
power/resistance, at the micro level, that is, at the level of the individual faculty

$^{445}$ Lupton 1997, p. 103.
$^{446}$ Foucault 1980, p. 255.
$^{447}$ Foucault 1980, p. 142.
member or clinician, resonates with the Foucauldian teaching that whereas the Feudal Society was too tough and approximate in its implementation of power, in more recent centuries the resolution, as in photography, has greatly improved. For EBM, the analysis of power--knowledge relationships would focus, in part, on what happens in the consultation of the individual doctor.

On the contrary, it should be concerned with power at its extremities, in its ultimate destinations, with those points where it becomes capillary, that is, in its more regional and local forms and institutions. Its paramount concern, in fact, should be with the point where power surmounts the rules of right which organise and delimit it and extends itself beyond them, invests itself in institutions, becomes embedded in techniques, and equips itself with instruments, ...  

In other words, one should try to locate power at the extreme points of its exercise, where it is always less legal in character.

With regard to the EBM push towards the use of the results of population studies, there are a number of considerations which will weigh on the mind of the clinical doctor. Are the results consistent with the doctor's previous understanding? Are the results easy to use? Is the cost of the intervention reasonable? Will the patient accept this intervention? How do the patient characteristics square off with those of the research population? Although my final point is not made by Tonelli, surely if there are also some less-than-rational desires to resist the push of EBM, they will enter the decision process here.

“The evidence” is used to bolster the power of the medical profession, against such people as managers, governments and patients (although the evidence is often congruent with the aims of these goups). However, there is a shift of power towards the elite in the profession, away from the individual clinician: her idiosyncrasies belong to the past. Indeed, with so much emphasis on “the evidence”, amalgamated with a huge powerful complex, the end of the “personal doctor” has been feared.

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448 Foucault 1980, p. 96.
449 Foucault 1980, p. 97.
450 I am indebted to Tonelli 2010 for most of these points.
451 I am indebted to Daly 2005 (e.g. p. 226) for this line of thinking.
452 Daly is quoting McCormick, J. 1996. “Death of the personal doctor'. *Lancet* 348, 9028: 667-
Clinical doctors have some resistance to guidelines. They are unsure if recommendations are based on *effectiveness* or *cost-effectiveness*. Guidelines also invoke a spectre of legal and/or financial punitive measures, if not followed. This resistance to guidelines is part of a more comprehensive resistance to regulation, which threatens to minimise autonomy of the clinician.

Another reason why clinicians resist EBM is that clinicians are immersed in the context of the medical care. As is well-known, this involves a fuzziness inimical to science. Daly\textsuperscript{453} quotes Strong and McPherson.\textsuperscript{454}

> Science is a radical movement. That is, just like religious or political radical movements, science seeks a unified and internally consistent interpretation of the world. Such a quest is always difficult, for the ideal is constantly threatened by the fuzzy, ad hoc and heterogenous nature of the outside world as perceived in daily experience. Thus, like other radical movements, science must segregate itself from that world in order to survive.

*It is a pivotal theme of this work that doctors and patients are aware of this “fuzzy, ad hoc and heterogeneous nature of the outside world as perceived in daily experience” and so resist the pressure to use the pure science extract of EBM.*

9. 5. Despite lack of evidence for EBM, adherents derive status

As I have stated above, there is a lack of evidence for the effectiveness of EBM. Some writers have considered this unsatisfactory.\textsuperscript{455} In this section I again draw on a fundamental platform in Foucauldian philosophy: knowledge is inseparable from power. Just for now, I equate “knowledge” with EBM, and I develop the idea that the advocacy of this approach to medicine is excessive, when viewed against the paucity of evidence. This smacks of power and mechanisms of promulgation that differ from the proclaimed virtues of EBM.

\textsuperscript{453} 2005, p. 235.
\textsuperscript{454} Strong, P. M. and McPherson, K. 1982. *Natural Science and Medicine; Social Science and Medicine: Some methodological controversies.*
\textsuperscript{455} For example, Miles, Loughlin & Polychronis 2008.
With regard to the lack of evidence for EBM, overall, it has been argued that an RCT to evaluate EBM would be difficult to interpret. Saad postulates a trial of EBM against traditional medicine, using RCT design. Outcome measures could be mortality, morbidity and cost. Saad explains that a positive outcome for EBM is difficult to interpret because we need to assume the efficacy of the RCT to prove the efficacy of EBM, which is permeated by RCTs. Secondly, if the outcome is bad for EBM, that is, if the RCT shows that using evidence from systematic research produces poorer mortality, morbidity and cost than does the traditional method of practising medicine, then we are left with the awkward question, *Why use the results of this systematic research (to discredit the use of results of systematic research)?*

But this does not satisfy Loughlin. He thinks Saad lets EBM protagonists off the hook too lightly in explaining that the RCT of EBM against traditional medicine would be too hard to interpret (so why bother?) “The trouble is, both horns of the dilemma are blunt.” Claiming to better represent the long history of sceptical thought than does Saad, Loughlin does not deploy Saad's *reductio ad absurdum* argument, but prefers to regard the negative result as significant: this is bad for EBM as it proves that EBM is inferior to traditional medicine. “…it would show that EBM had failed in terms of its own criteria of proof, and so would render the claim being tested …a directly self-defeating proposition”. (He reminds us that, in logic, the only way that “if p then not-p” can be true is for p to be false.) Loughlin then alludes, approvingly, to extensive use of similar reasoning by Hume and Derek Parfit.

With regard to the other horn of the dilemma, Loughlin is less severe than Saad. Drawing on Hume, Loughlin tells us that nothing can be proved except within a circle.

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456 2008.
457 Ibid.
458 2008a.
459 Loughlin 2008a, p. 653.
460 Loughlin 2008a, p. 654.
Hume showed that basic inductive reasoning, predicated on the belief in universal causality, could not be "proved" in a non-circular manner..., as the belief is so fundamental in nature that any evidence in its favour only counts as evidence on the assumption that it is true.\textsuperscript{461}

Loughlin then goes on to aver that in all the credible positions that he can think of in philosophy of science, a positive outcome for EBM would strengthen the claim that we should use EBM in clinical decision-making. He alludes to Popper, and points out that a positive result would mean that EBM had withstood an attempt at falsification. Loughlin sees a clear distinction between a positive outcome for EBM and the refusal of EBM protagonists to subject their claims to RCT. This latter he regards as weakening the claims of EBM to scientific credibility.

My own view is that the issues involved in setting up an RCT to compare EBM with traditional medicine are still more complex. Presumably we would enter a group of doctors with patients, using EBM, controlled against a group of doctors with patients using traditional medicine. It is not clear how these people would be selected. I suggest that some aspects of EBM would be assumed before the selection: patients visiting a general practitioner might include those with little English and several poorly defined problems inseparable from existential issues. The general practitioner might not have time to tease out problems suitably tailored for discrete biomedical intervention. These patients would not satisfy inclusion criteria. It is hard to picture the general practice patients being enrolled on an “intention to treat” basis. Perhaps there should be a theoretical examination of how many would fit the “intention to treat” protocol using EBM and then asking what kinds of effects one would need in order to show anything significant in this group compared with the whole, depending on a guestimated expectancy of a significant treatment-related change. The second group might decline to participate. (They would surely consider that they were getting suboptimal treatment.) Ethical approval might not be granted two decades after EBM had begun to contribute so much. It might be hard to find doctors whose practice has not been contaminated. Bear in mind that the proposed study would still have several years to run. Whilst the selection of such endpoints as cost, mortality and morbidity would not be arbitrary, it would be debatable. I consider the problems

\textsuperscript{461} Loughlin 2008a, p. 654.
I now move to another part of the paper by Saad.\textsuperscript{462} My purpose is to argue that EBM protagonists overemphasize the role played by evidence derived from RCT. (This has obvious implications for power). But before I start, let me mention that Saad sets out a lengthy argument in which he depicts three groups of doctors making use of the results of an RCT in which digoxin was found to have no significant influence on the morbidity or mortality of patients in heart failure, \textit{on average}. Saad postulates three groups of doctors, distinguished from each other according to their skill in using digoxin. (There is a narrow therapeutic window.) Saad then depicts these three groups of doctors reading the trial results and integrating them into practice. Then we have a set of clinical outcomes which reflect the decisions of doctors who vary in their ability to use this difficult drug, in interaction with the results of the trial. Thus Saad depicts the trial results as an intervention in clinical medicine. The other aspect of the intervention is, of course, the decision of the variously skilled doctors to use or not use digoxin, after reading the results. The point Saad makes is that the doctors decide \textit{intuitively} whether/how to use the trial results. Saad considers that EBM protagonists write as if the trial results are all-important. EBM protagonists place little emphasis on the intuitive use of the results. Saad (and I) believe that a doctor always \textit{decides} whether/how to use the results of a clinical trial. Whilst I have just discussed a therapeutic trial, Saad points out that the same applies to the use of diagnostic tests. Scientific evidence may support the use of a test: even so, the doctor decides whether/how to use it.

How are we to decide whether to use the results of RCTs and observational studies in our clinical decisions? EBM protagonists tell us we should. Saad regards this as the use of \textit{expert opinion}, ranked \textit{very low} by the GRADE criteria.\textsuperscript{463}

In the last few paragraphs I have argued that EBM protagonists have written as if the evidence is all-important, and scarcely noticed the intermediate step in which the

\textsuperscript{462} 2008.

\textsuperscript{463} Guyatt, Rennie, Meade & Cook 2008, p. 539.
doctor intuitively decides whether to use the results of the trials. However, I now try to balance these claims by quoting a clear statement by EBM people to the effect that they are perfectly aware that the evidence has to be *deployed*.

In applying evidence, clinicians rely on their expertise to define features that affect the applicability of the results to the individual patient. The clinician must judge the extent to which differences in treatment (local surgical expertise or the possibility of patient *nonadherence*, for instance), the availability of monitoring, or patient characteristics (such as age, comorbidity, or the patient's personal circumstances) may affect estimates of benefit and *risk* that come from the published literature. Understanding the patient's personal circumstances is of particular importance and requires compassion, sensitive listening skills, and broad perspectives from the humanities and social sciences.\textsuperscript{464}

9 6. EBM and its relationship with other emphases in medicine

We need to consider why EBM protagonists are persisting when there are other approaches available. A report on a study in focus groups of mental health patients, tells us “Many patients had been psychiatric patients for lengthy periods, and were especially reluctant to give up anything they considered to be working for them, whatever the evidence”.\textsuperscript{465} This statement challenges the EBM position, which I have undermined, considerations other than evidence are paramount to the person who stands to gain or lose the most from the medical treatment. So does another statement from the same research.

Third, personal meanings may matter more than effectiveness data to consumers facing treatment choices. Medical care requires sense-making by both physicians and patients, and often the meanings given to illnesses and treatments are as fundamental to healing as the so called "facts" of the case....\textsuperscript{466}

Whereas this is likely to be especially important in mental health it is also important in other areas of health, particularly in primary care. Another statement in this paper

\textsuperscript{464} Guyatt, Drummond, Meade and Cook 2008, p. 14.
\textsuperscript{465} Tanenbaum 2008, p. 702.
\textsuperscript{466} Ibid.
by also seems to clash with EBM: “First, physician-patient relationships may trump information of any kind”.\footnote{Ibid.} This paper refers to “Consumer-taught courses that emphasise personal responsibility for one's health care. That is, how to talk to one's physician...”.\footnote{Tanenbaum 2008, p. 705.} So why do EBM protagonists persist with a system which is so rationally unsustainable, in the teeth of quite different approaches to medical care, only one of which is mentioned here? This work assumes power as an explanation.

In his investigation of power Foucault uses \textit{archaeology} and \textit{genealogy}. The former endeavour involves investigating records as they build upon each other and reveal layers of texts and dealings with others, and the latter the story of the production of a phenomenon to ascertain why and how some subjugated knowledges have been repressed and/or brought into a role subordinate to a dominant discourse which presents itself in terms of truth and perhaps of science.

Even though it can (by chance) take a linguistic form, the statement is a socio-historical function rather than a strictly linguistic one. Yet because statements can still be located in talks and texts, we can work from collections of statements to their organising archives. This archaeological method shows that social histories of thought, knowledge and power are both unique and specific as well as having general properties.\footnote{McHoul and Grace 1998, p. 40.}

These subjugated knowledges often lack coherence and a high degree of articulation, and can suffer from disuse atrophy unless deliberately supported. In relation to EBM, examples include intuition, the experience of the individual doctor, the diverse knowledges called “complementary and alternative medicine” (CAM), and the patient's narrative of her illness. For example, a report (mentioned above) on focus group discussions with mental health patients, tells us “Focus group members spoke about knowing their own bodies best and having the benefit of experiences that could not be captured in medical record or scientific study”.\footnote{Tanenbaum 2008, p. 702.} (The genealogy part of the endeavour involves presenting these subjugated knowledges in such a way as to affirm their right to exist in the presence of a dominant discourse, which latter, as I
have already indicated, frowns down on the subjugated knowledges from the solid pinnacle of truth. “What is the evidence for colour therapy?”

Continuing with the theme that knowledge and power are linked, I draw on Gillett and other writers in explaining that biomedicine uses a theoretical model in which interventions are directed towards a specific biological disorder, such as the demyelination of some nerves. Critics have complained that this neglect of the wider aspects of the patient's life has several implications. One is that this distortion allows the biomedical industry to continue to enjoy status, power and money, following on its success. Another is that the biomedical gaze tends to create what it treats, as I explain above. A contrasting view is presented by holistic medicine, which targets the whole person, regarded as imbalanced when sick. Intervention is directed towards restoring this balance. Such an approach would not countenance chemotherapy for cancer unless it fitted the whole need of the patient. This is because chemotherapy is directed at only the disordered cells, and, of course, has severe side effects.

Biomedical critics of holistic healing usually defend their strong position by focussing on the paucity of evidence in favour of holistic therapy. There are two weaknesses in this defense. One is that biomedical critics bring to the debate their own conception of evidence. (How does allopathy stack up in this view of Complementary and Alternative Medicine? But the RCT is often unsuitable for Complementary and Alternative Medicine (CAM). For example, how can you provide a placebo arm for chiropractic manipulation? How can you blind such a therapist or patient? Some forms of CAM do not lend themselves to a separating out of the "intervention" from 1) theory and 2) practitioner. As stated above, CAM often targets the whole person, not one illness. As a consequence, it may not be appropriate to treat two people with, say, hypothyroidism, with the same therapy. Therefore Colleen Derkatch has published a paper arguing that the RCTs, to some extent, are used as rhetoric in firming up the borderline between allopathy and CAM. The other weakness in the defense is that biomedical critics turn their eyes away from the areas of allopathic medicine which have not been subjected to assessment by RCT or observational

472 2008.
study. For example, if a general practitioner has cared for a family for 15 years and one member develops a terminal illness, are we to doubt that there is support for the family in the long-term relationship? Secondly, in recent years, some long-standing treatments for low back pain have been found ineffective or even harmful. Examples include muscle relaxants, narcotics and bed rest. However, there is now evidential support the effectiveness of 1) a careful examination and 2) a careful explanation. These are associated with reduced chronicity. But in many other areas of clinical medicine these two approaches been not been subjected to scientific scrutiny, yet they are a standard part of a doctor's approach. In this paragraph, then, I have suggested that biomedicine maintains its prestige in comparison with holistic medicine, but provides weak arguments in its debate with holistic medicine. I consider this another aspect of the Foucauldian association between knowledge and power.

My impression from reading the literature is that, while equal weight is given to research evidence, patient preferences and actions, and clinical state and circumstances, all integrated through clinical expertise, some weights are more equal than others. As stated above, the original 1992 emphasis was on research evidence. However, auxiliary clauses have been added to the hypothesis in response to criticism. To me there is a feeling of auxiliary clause in the deployment of patient preferences and actions in the more recent EBM formulations. There is a sense of a paradigm resisting change. In fact, it has been argued that patient-centred medicine, personalised medicine, translational science and genomics are threatening EBM. The latter has, as I am suggesting, stretched itself in an attempt to accommodate, by upgrading the status of patient preferences and actions. In this paragraph, then, I have written of the addition of an auxiliary clause. In my next paragraph I argue that the patient place in the calculus needs a more convincing formulation. I am aiming for something more deep and subtle than patient preferences and actions which sounds like one more part of the system (along with research evidence). To attempt to convey what I mean I draw on Komesaroff.

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473 This is as explained by Kuhn 1962.
475 2008.
Komesaroff\textsuperscript{476} gives us a multifaceted picture of obesity. Although the \textit{fat} body has been eulogised at various times in various societies, the more modern \textit{obese} body has been constructed by society with entirely negative connotations, and without input from the inside; that is, from the obese people themselves. The obese body has been configured “in the service of larger social, economic and political projects”.\textsuperscript{477}

Contrary to the assumptions of contemporary medical discourse, the body is not only a machine and is not subject to machine-like causality. There is no simple causal route by which the social forces are played out within people's bodies. The pathway from society to the inner schema of the body, from history to flesh, from culture to the lifeworld, is tortuous and complex.\textsuperscript{478}

Komesaroff\textsuperscript{479} goes on to take readers inside the obese eater. Drawing on Emmanuel Levinas, he explains “While I am savouring this mouthful of food, there is no physical distance between me and the world. I become my sensations...The sensibility is my experience of otherness, of “the elemental.” Komesaroff then provides a vivid picture of how being obese is for the person concerned. This cannot be reduced to “patient preferences and values”, a formulation which, as stated or implied above, is a weak substitute, \textit{in logocentric language}, for the misery of the food-dependent sufferer.

In a power point presentation on the limitations of EBM, the bullet points of Kerridge\textsuperscript{480} for \textit{Death and Dying} are: poor data set; singularity; enormity; unsayability; sources of evidence (of experience):?? I submit that Kerridge conveys that “patient values and preferences” in the equation is too glib. He asks: “If the following are evidence/insights, how are they to be balanced or made commensurate? Mozart, Auden, Larkin, Kierkegaard, Dostoevsky, Heidegger, poetry and art.” In summary, then, I have drawn on Komesaroff and Kerridge to support my contention that the promotion of “patient values and preferences” in more recent formulations of EBM smacks of Popper's “auxiliary hypothesis” and does not do justice to the depth and complexity of patient issues. Kerridge summarises: “EBM is... unable to account for

\textsuperscript{476} 2008, Chapter 12.
\textsuperscript{477} p. 231.
\textsuperscript{478} Komesaroff 2008, pp. 232-3.
\textsuperscript{479} 2008, p. 235.
\textsuperscript{480} 2009, conference presentation.
Summary of chapter 9

Power is relational, and is associated with resistance. Foucault sees power in the system which nobody owns, and favors an ascending, microanalysis. Power works through the individual, even, in part, creating the individual. Foucault, in EBM, would look at what the bodies of patients and medical staff are doing. He would note the effects on distribution of labour of protocol-base practices and on the requirements for university positions, grants, and publications. Viewing power as productive, Foucault would note how this complex produces research evidence for the investigation and treatment of disease.

Visibility and surveillance are connected. They are patchy in EBM. One of the most striking instances is the assessment of the uptake of clinical practice guidelines, and the extensive literature on how to improve this. The truth is intimately related to the results of surveillance.

481 I discuss subjectivity in Chapter 12.
Chapter 10: Foucault and the distinction between normal and pathological

10. 1. Introduction

The distinction between normal and abnormal is a major Foucauldian theme. He tells us that the “abnormal” is delineated first: “normal” follows. (This contrasts with the common trend where the deficit is defined by reference to the norm. For example, “female” is a deficit term in some discourses, as is “oriental” or “foreigner”. However, “not sick” stands in for “healthy”.) Abnormal people are sometimes segregated, as in psychiatric hospitals and prisons, after which some normal people study some abnormal people. This involves a power differential. I provide two examples.

10. 2. Examples

Medical researchers often carry out studies on abnormal people. For example, a new drug proposed for Type II Diabetes is likely to involve researchers, probably “normal”, carrying out research on many diabetic patients, termed experimental
subjects, regarded as “abnormal.” Sometimes pharmaceutical companies secure substantial profits from directing a marketable remedy at an abnormality, thus making a pool of abnormal people a desirable target for expansion. In discussing “subjectivity” (Chapter 11), we note that these abnormal people are subjugated to the normal people - the researchers – who may gain funding and publications. The subjects may gain nothing more than the satisfaction of contributing to medical science, and may experience the loss of time and money, although they may gain access to a restricted form of treatment that is regarded as desirable in the discourse framing the research. But have experimental subjects ever written up the experience? Surely 99% of the “truth” to emerge from medical research is written by the normal people. This is a power issue even though the cooperation of the experimental subjects can be withdrawn before or during the study. Ethics committees, whose task is to protect the subjects, may be reinforcing the paternalism that often operates and excludes those most affected by any decisions.

It is obvious that the doctor-patient relationship is another site in which normal and abnormal come together, with a power differential reinforced by the framing discourse. Often, the patient pays the doctor, notably in long term psychoanalysis or private surgery. Foucault has drawn attention to the power associated with gaining knowledge of human beings, but surely this is obvious. The medical gaze is powerful, and patients sometimes ask their doctor, "Am I normal"? or "Is my cholesterol normal"? Doctors decide whether the person's cholesterol is normal. This normal/abnormal distinction, between doctor and patient, sits astride another: the tendency to define health as the absence of disease. This tendency long preceded EBM, but EBM has developed in this milieu, and has proceeded from it. One could ask whether EBM has helped the modern move towards defining health positively. This seems unlikely as it aims to construct statistically significant groupings that are identified by a disease marker so that the correctives can be applied and monitored. In fact one might argue that it has demarcated the realm of statistical variation from the normal as being abnormal and therefore aided the program of medicalisation. Examples include serum lipid concentration and body weight. Laymen would not regard a person with a Body Mass Index of 26 as overweight.
10. 3. The distinction is contestable

A theme common to these examples is that the distinction between “normal” and “abnormal” is, if not arbitrary, at lease contestable. When has a man got cancer? When one cell has had a mitotic change? When the disease is detectable? Another issue is that EBM uses the standard deviation. An outlier is a datum lying outside, say, the third standard deviation. Decisions may be made about this datum, and the experimental subject to which the datum belongs. But this is a contestable decision. Somewhere along a continuous spectrum a datum is classified as abnormal! This is important because there can be a raft of sequelae: for example, whether the person is lined up for social stigma and/or treatment. There are likely to be issues of economy, perhaps for the individual, perhaps for a larger sector of society. Take, for example, a person in renal failure. There are implications following the decision that the patient is suitable for dialysis. Are there resource considerations coming into this decision? If so, there is a political dimension. All this will probably elude the patient and perhaps the general practitioner, especially if he or she is an immigrant.

10. 4. What we learned from surveys

After many years of doctors treating patients (usually “abnormal”), there occurred in Great Britain, in the twentieth century, two events. One was that there were a number of surveys of the health of large sections of the community. These did not

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482 Are there resource considerations coming into this decision? If so, there is a political dimension.

483 Armstrong 1983.
use the normal/abnormal distinction. These surveys, rather, were to some extent social, and compared people with each other. Typically, such research surveyed morbidity in the community.

A related issue was the survey of the development of babies into children. When the heights and weights had been plotted, an awkward question arose. It was not obvious which children were abnormal. It was not clear whether this should be decided on statistical grounds. A leading clinician refused to accept this and insisted that any abnormal child be clinically abnormal.

Some researchers surveyed psychiatric morbidity in the community. Psychosis was not new, but neurosis, neurasthenia and some other minor psychiatric conditions had not previously come to attention. Once again, it was not clear who was normal. It was not clear whether “fear of flying” was normal one day after that particular airline has had a catastrophe, or one week, one year, or ten years. And when does “shyness” become “social phobia”?

Against the older notion of separate populations of healthy and ill, a prominent Dr. Pickering\textsuperscript{484} presented the concept of continuous distribution of measurable traits in total populations, and the concept of normal variability to cope with quantitative differences. There has been a debate as to whether diseases were entities (things).\textsuperscript{485} Much medical literature in the first half of the twentieth century (at least) assumed they were. It was not clear if depression were a thing you either had or not. There has been a discussion in the literature about the alternative notion of a continuous distribution of measurable variations.\textsuperscript{486} This view does not cope so well with cerebral haemorrhage, or the Berry aneurysm responsible for most of them and so the possibility of areas of medicine with different conceptions of what is normal and abnormal and different ways of dealing with them even if there is a binary that broadly underpins the global difference, are there just as many differences as there are many reasons why people might be excluded from normal society? What ever the

\textsuperscript{484} Armstrong 1983, pp. 96-7.

\textsuperscript{485} Ibid.

\textsuperscript{486} Armstrong 1983, and others.
fact of the matter with regard to continuous distribution of measurable abnormalities and the twentieth century “discovery” of a huge range of normal variations, i.e. variation within the categories of normal, the division between normal and pathological presents major difficulties. It is not always necessary to impose this dichotomy. An example is provided by “essential hypertension”.

I draw two conclusions from the events I have just described. One is that there may have been room for discretion as to whether the normal/pathological division be applied. I suggest that the decision to bring to bear a normal/pathological division onto the data springs from a regime of truth. This is an involved matter, and relates to the goals of the experimenters. Is there some benefit in dividing people into normal and pathological? Or is there some benefit in spreading people along a spectrum of shyness, for example? In the case of arterial blood pressure, there is a long history of changes in the dividing line between normal and abnormal. This has been abandoned in favour of at what level of pressure to investigate and/or treat. That decision was made in the light of the practicality of the more recent approach along with the weakness of any theory underlying a normal/pathological distinction. In fact the graph of mortality against arterial blood pressure is J-shaped--very low blood pressures do not sustain life, but otherwise the higher the pressure the sooner the person will die (group data).

My other conclusion is that there is a different regime of truth behind the community survey from the panopticon behind the survey of tuberculosis, for example. Very roughly we can speak of community gaze and medical gaze. The former, and to a large extent the latter, creates truth from observation, measurement and calculation. (“The incidence of ...in the community is...”.) It is easy to forget that many aspects of the life of the community escape this observation, measurement and calculation. I suggest that these have a tendency to escape all consideration. So with EBM we are working with a skewed sample of phenomena which should be of interest to doctors.

Some people began to wonder to what extent and/or in what ways the

normal/pathological divide was a product of the survey. Firstly, it is possible that there were phenomena which would have influenced the picture if they had been measured. Surveys contain specific questions, and this limits the elicitation of information. Secondly, researchers studying morbidity began to realise that “illness behaviour” could confound their findings: researchers were impressed by the difference between the findings of community surveys and the findings of general practitioner surveys. A surprising number of people had not reported illness to their doctors. This suggests that the clinical interview is a filter which legitimates certain kinds of report.

10.5. More implications of the divide

The normal/pathological divide has enormous implications for activity. Once a person or group has been classified as abnormal it is likely that something will have to be done. Much of Foucault's work has been devoted to the segregation of people classified as insane, criminal or sexually perverted. Today, with regard to health, the community and the individual, attention is directed to such issues as treatment. Other aspects of activity include the control of the spread of infection, screening for disease, and prevention of disease. Medical genetics is largely built around this divide. Antenatal screening for genetic disorders is a modern example of the outworking of the divide: if spina bifida is predicted, the implications for activity/non-activity are enormous.

The temporal aspect of the normal/pathological divide is of great importance. Suppose a person has been diagnosed with “arthritis”. It matters whether this is transient, as in influenza, recurring, as in gout, or chronic, as in osteoarthritis, possible requiring hip replacement after years of pain and stiffness while the patient waits for surgery. Or consider erectile dysfunction. The implications are enormous with regard to personal suffering and planning for health care resources. Take an African community with a high incidence of AIDS. The temporal considerations include work force issues, health care issues, and the economy, and these stretch far into the
future.

Finally, consider “the norm”. Usually, most people will be in this group, which, therefore, is relatively large. I am saying that it carries unexpected, subtle weight. “Is that normal, doctor?” “Am I normal, doctor?” We are anxious to be normal, not an outlier. That would mean a degree of isolation, even discrimination, and perhaps intervention, as stated already. In this paragraph I am moving the issue to the influence of “the norm.” People should be normal. Take obesity. The medicalisation of life in what Foucault calls “the society of normalisation” pressurises a fat person (now called “obese”) to lose weight. Gastaldo makes a fascinating point: health education involves both empowerment (people are given the tools to improve their health) and coercion (the authorities decide what is “health” and try to move the community towards a predetermined goal, although they eschew coercion). Surely only some of the health message will be taken up by the community, which thereby develops a new norm, probably unpredictable. For example, there will be a new percentage of people smoking, a new normal, including in subgroups, such as Maori women. This new norm has an influence, as explained above. This is how health promotion works. The norm has an influence in the application of the results of clinical research to the next patient. If a treatment worked in a study of 10,000 experimental subjects, this overshadows the next patient. The treatment will work for the next patient.

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489 1997.
490 As stated or implied elsewhere in this work, “These issues are directly related to the labour force, economic growth and the distribution of wealth” (Gastaldo 1997, p. 115).
491 “In the traditional approach to health education, the healthy choice is the only choice. ...The possibility of a patient opting for unhealthy behaviours after some health education is interpreted by professionals as a failure” (Gastaldo 1997, p. 117).
492 Someone else decides what is good for you.
493 “Thus 'healthy behaviour' is presented as the norm and all other behaviours become deviant” (Gastaldo 1997, p. 119).
Summary of chapter 10

The divide is not very objective and incorporates multiple determinants like the model of health, the level of provision available, the types of focus our concern with health and well-being can take, given that these things are sensitive to the creation of health needs by interested players who stand to gain from that commercially or politically. There is a regime of truth behind the distinction-- social surveys have given different results from medical surveys. The findings partly depend on the questions asked, and these reflect the theoretical leanings of the surveyor. The issues are often very complex.\footnote{ See Canguilhem 1978.} In almost every case the distinction is at the very least contestable. Whatever methods are used, there can be social forces at play and these are likely to elude the doctor and patient. Once a person classed as “pathological” she moves into another discourse and community resources may need mobilising. The very concept of “the norm” functions to influence the behaviour of people towards the norm. This is how power works.
Chapter 11: Foucault and the subject

11. 1. The subject

Western thought has been based on the subject as depicted by Descartes in the seventeenth century. EBM is based on this Cartesian subject which is sovereign, autonomous, centered, and rational, integrated, and whose ethical choices proceed from a base of knowledge and truth. At least this is how it seems. This Cartesian subject allows the subject can gain knowledge as to what makes knowledge possible.

In the eighteenth century Kant modified the Cartesian subject with his noumenon and phenomenon. The Cartesian cogito was reconfigured to depict 1) the self as it appeared to itself—a psychological subjectivity 2) the noumenal or ahistorical self, which was considered to reside in the unchanging laws of reason, and 3) the ding-an-sic, which is the actual self apart from the idealised intellectual self—or self as it must be thought to be.

In the twentieth century, Foucault wrote on “The theme of individual conduct and its relationship to subject production...his attention is now focused on the relationship of the self with the self and the formation of oneself as a subject”.495

495 Coveney 2006, p. 9.
How was the subject established, at different moments and in different institutional contexts, as a possible, desirable, or even indispensable object of knowledge? How were the experience that one may have of oneself and the knowledge that one forms of oneself organised according to certain schemes? How were these schemes defined, valorised, recommended, imposed? ...The guiding thread that seems the most useful for this inquiry is constituted by what one might call the “techniques of the self”...the procedures, ...suggested or prescribed to individuals, in order to determine their identity, maintain it, or transform it...through relations of self-mastery or self-knowledge.496

Foucault does not support any particular depiction of the subject, such as that set up by phenomenologists. Rather he writes about the person setting up his or her own subject, constituting the subject. “An essential aspect of doing this work is to take up a stylized relationship to things, to oneself, and to others. The question is, What form should such a relationship take?”497

Foucault describes the result of centuries of development, instigated by state and church, leading to the ordinary member of the community being a self-reflecting, introspective, subject, who goes on to regulate what he or she does, according to this reflection. So this activity involves the creation of the self or subject as object, a standard set for the self, an assessment of performance, and the assessing of any discrepancy between the two.

But I became more and more aware that in all societies there is another type of technique: techniques that permit individuals to effect, by their own means, a certain number of operations on their own bodies, their own souls, their own thoughts, their own conduct, and this in a manner so as to transform themselves, modify themselves, and to attain a certain state of perfection, happiness, purity, supernatural power. Let us call these techniques, “technologies of the self”.498

Furthermore, this activity involves the truth. This means that the reflection on self needs the truth about oneself. Other aspects of the truth are also involved. For example, in a medieval monastery, a monk would reflect on his behaviour and thinking. But he would need to consider the realities of the situation in which he had behaved and thought, the teaching of the church (especially of the abbot), and his

496 Foucault 1997, p. 87.
497 Rabinow's introduction to Foucault 1997, p. xxxi
498 Foucault 1997, p. 177.
actual thoughts and actions. He would need to recall, for example, whether he stole bread, whether he fantasied sex. All this I call “the truth”, and it forms part of Foucault's teaching on surveillance. The metaphor of the panopticon seems relevant: some of the activity of the surveillance moves from the abbot to the monk. It is clearly relevant in medical practice. The ultimate technique is self-monitoring that can be relied upon and that will faithfully deploy the framing discourse that governs the regime of truth. An example is provided by a diabetic patient, who monitors her exercise, eating, medication and blood sugar levels. In the past, more of this would have been done by the doctor. All this is infiltrated with "the evidence".

11. 2. Subjectivity and subjectivation in EBM

11. 2. 1. Introduction

I divide my treatment of subjectivation in relation to EBM as follows: 1) the use of the technologies of the self to examine the relationship of the doctor with herself; 2) the use of the technologies of the self to examine the relationship of the patient with herself; 3) the subjectivation of the doctor's knowledge and practice to EBM; 4) the subjectivation of the patient to the EBM doctor; 5) the experimental subject in EBM. Of course, these overlap. Foucault uses the word axis: along each of these five axes we can explore subjectivation in EBM. I now work through these serially.

11. 2. 2. Technologies of self: the doctor.

Does the modern doctor reflect, “Have I adhered to my self-set standards by using research evidence in all my choices of diagnostic tests employed today”? In answering this question, I draw on an issue of *The Journal of Evaluation in Clinical Practice* because the entire 336-page issue is devoted to EBM, and contains 19 papers on the implementation of clinical guidelines. As there is a philosophical emphasis in this issue, this extensive coverage should surely reveal EBM's focus on
the individual doctor/subject, and reflect what has been thought about her self-reflection regarding the use of EBM, and then the doctor's actions after she has reflected. Using practice guidelines as an example of EBM, which guidelines does she use, and to what extent, after what reflection? Now the answer. I find numerous reports of extensive assessment of the extent to which clinical guidelines have been implemented, but the papers take an objective view of the actions of the doctor. They do not address the self-policing of the doctor, her thinking, her engagement with the moral/clinical issue as to whether she should use guidelines, or should not, and her actions from that point. EBM does not embrace subjectivity (subjectivity and the trajectory of disease or subjectivity and the practice of the doctor). EBM takes an objective approach. 500

11. 2. 3. Technologies of self: the patient.

As stated above, Foucault depicts of the modern member of the community as having slowly, under the persuasion of state and church, developed the “technologies of the self” to become a self-reflective/introspective entity who regulates her actions according to the results of self-reflection. I wish to consider whether the surveillance of EBM usage moved to involve self-surveillance in patients. Does the patient reflect on EBM at home before discussing with her doctor whether the test or treatment is evidence-based? Answer: I have found no literature to suggest that this is how patients function, two decades after the introduction of EBM. My conjecture is that this has scarcely reached the intellect of the patient. “...instead of asking ideal subjects what part of themselves or what powers of theirs they have surrendered, allowing themselves to be subjectified [se laisser assujettir], one would need to inquire how relations of subjectivation can manufacture subjects.” 501 This implies the production and formation of souls according to the disciplines that have been applied to the body.

If EBM has not reached into this self-reflecting/self-directing doctor-as-subject or

500 Kerridge 2009.
patient-as-subject, is this a lost opportunity for EBM governance? Yes. However, this is a challenge to those who aver that EBM intends to govern medical practice.

11. 2. 4. The doctor as the subject of knowledge of EBM

The doctor takes part in a truth game which involves power relations. This does not mean that truth is a pawn of power. It means that truth/knowledge and power function together. Power relations, in Foucault, enable the production of truth/knowledge. Furthermore, what counts as truth/knowledge is influenced by who has the power, as explained in my chapter on power/knowledge. The clinical doctor learning and practicing EBM is subjectified to EBM. The doctor's professional knowledge must give way to probabilistic knowledge not owned by the profession.\textsuperscript{502}

On the positive side, the task was to bring to light the domain where the formation, development and transformation, of forms of experience can situate themselves—that is, a history of thought. By “thought”, I mean what establishes, in a variety of possible forms, the play of true and false, and consequently constitutes the human being as a knowing subject [sujet de connaissance]; in other words, it is the basis for accepting or refusing rules, and constitutes human beings as social and juridical subjects; it is what establishes the relation with oneself and with others, and constitutes the human being as an ethical subject.\textsuperscript{503}

The subject is ethical in that good knowledge and social relations are involved: inferior medical knowledge and/or poor relations between patient and doctor are likely to harm the patient. The subjectivation of the doctor to EBM is done through thought-- the play of true and false. Once the doctor has accepted the premises, she fits into the social and professional structure, and she now sees herself as an ethical doctor if she follows these rules. Doctors have accepted the EBM premises partly because the premises have been presented by charismatic, intelligent, highly trained and talented spokespeople, with catchy phrases like “the evidence”, all shrouded in the impressive complexities of statistics, scientific studies with huge numbers of experimental subjects in multicentre trials, often wrapped into meta-analyses and even

\textsuperscript{502} Tanenbaum 1999.

\textsuperscript{503} Foucault 1997, p. 200.
systematic reviews of numerous meta-analyses! All this can be overwhelming and totalising in the sense of dis-inviting problematization and investigation of assumptions. It is difficult for the doctor's intuition, experience and pathophysiological reasoning stand up against all that. Even so, as is widely reported, in theory, in Foucauldian writings, doctors are resisting. The literature reveals a slippage between the EBM taught in focused courses and the actual knowledge of doctors, and a further slippage to actual practice of EBM, as discussed above.

11. 2. 5. Subjectivation of the patient to the EBM doctor

If it is indeed true that the constitution of the mad subject may be considered the consequence of a system of coercion—this is the passive subject—you know very well that the mad subject is not an unfree subject, and that the mentally ill person is constituted as a mad subject precisely in relation to and over against the the one who declares him mad...On the other hand, I would say that if I am now interested in how the subject constitutes itself in an active fashion through practices of self, these practices are nevertheless not something invented by the individual himself. They are models that he finds in his culture and are proposed, suggested, imposed upon him by his culture, his society, and his social group.504

The modern patient can often access evidence or its derivatives through internet, radio and so on. Medical secrets are open! Patients now sometimes challenge their doctors. The patient in the EBM era is less subjectified, even a consumer! This change is part of a wider change in which there is a smaller power difference between professional and lay people as a result of ethical transformation of the profession by the doctrine of autonomy and patients'/consumers' rights movements. Even so, accompanying this change is an increase in the promulgated discourse of medicine as the technifix for life's problems.

Is the modern patient overridden by too much pressure from biased information (EBM), so that the patient cannot get out of the evidence net? The patient is involved in a game of truth. As I have already stated, there is a movement to incorporate “patient preferences and actions” in clinical decisions. But this eminently reasonable approach falls short of including the subjectivity of the patient. I mean that the

504 Foucault 1997, p. 291.
subjective feelings of the obese, Type II diabetic patient fall outside the wonderfully reasonable and objective, logocentric EBM model. This has a bearing on efficacy, but it also tends to marginalise the patient as a self-storying individual, as I discuss fully below.

11.2.6. Subjectivation of the experimental subject

EBM is associated with a substantial increase in the phenomenon of the subjectivation of the experimental subject. By this I mean that EBM has highlighted the need for large numbers in trials, often multi centre trials. To some extent the panopticon applies. The researcher can view the subject, as in measuring the serum lipid levels, but the reverse process is almost non-existent, as in the panopticon. The experimenter is shuttered! In contrast to the panopticon, self-surveillance is limited. There is some, as in the keeping of a food diary, for example. The complexity of the study methodology increases the possibility that there is a power difference between the experimenter and the experimental subject. It is likely that the subject has only an approximate grasp of the research. For example, she probably overestimates the chance that she herself will gain benefit.

Not all medical research is the same. There is a spectrum of research which moves from mainly scientific to mainly clinical. This spectrum is: Epidemiology/genetics, Phase I (healthy/sick), Phase II, Phase III, Phase IV, Case Reports. I now indicate the diversity of arrangements between experimenter and subject as we proceed across this spectrum, then provide a Foucauldian comment.

To summarize, clinical investigators face a conflict between institutional roles (clinician vs. scientist), which can generate different ethical obligations. To deal with the conflict, investigators should weigh and consider their options in the light of ethical theories and principles and contextual factors, such as the research design; benefits and risks; the patient/subject's reasonable expectations, motives, and vulnerability; their ability to help the patient/subject; and their prior relationships with the patient/subject. The investigator's obligation to provide clinical care to the patient/subject can vary, depending on the circumstances. In some situations, the clinical role

505 Resnik 2009.
dominates, and the investigator has significant obligations to provide the patient/subject with medical benefits; in other situations, the scientific role dominates, and the investigator has minimal obligations to provide the patient/subject with medical benefits. And there are many variations on these patterns.\textsuperscript{506}

The subjectivation of the experimenter to the experimental subject, and vice versa, is intensely relational. Note the contextual sensitivity. This is congruent with Foucault's approach: the subject, to some extent, styles herself. This applies to the experimenter and experimental subject. These two parties are sensitively creating themselves in relationship with each other.

Both researcher and subjects take part in a game of truth. However, this is almost written up from the perspective of the researcher. There is a substantial power difference. The researcher hopefully gains funding and publication, possibly, in time, promotion. The subject loses time and possibly money, although some are paid. On the other hand, since 1988, ethics committees have striven to protect the interest of the subjects, for example by ensuring that the study “needs” to be done. This assessment is made according to the prevailing mores of EBM but usually not according to what subjects want to find out, even when they are a relatively coherent and informed group. It is widely known that experimental subjects commonly show two patterns of behaviour: they like to please the researcher and they like to display themselves in a good light. This harmonizes with two aspects of Foucault's teaching: subjectivity is partly created by the subject herself, and it exists in relation to contexts of judgment and validation.

11. 3. The post-structuralist subject and EBM

The human subject is varying with time and circumstance, becoming.\textsuperscript{221} Far from being an object, the embodied human subject is unstable. It is hard to examine it, partly because it interacts with examination, perhaps shrinking away from the gaze, perhaps coming to life with attention. Without this examination, the human subject

\textsuperscript{506} Resnik 2009, p. 13.
tends to elude description. Attempts to identify and describe the human subject are further complicated by the fact that it is relational. This means that the subject exists only in community, and has a (changing) social profile. Relationships with other people help constitute the human subject. Like an enzyme-substrate system, people foster dormant aspects of the subject. This process is ongoing, making it hard to clarify just who the subject is. Take, for example, an African nurse working in a New Zealand rest home. She is defined by her gender, race, country of origin, occupation and type of nursing. But these currents may be moving at an angle to one another. If she moves from the rest home to an emergency department, she changes. This environment may bring out her ability to respond to a crisis. Thirdly, the human subject actively mediates and moderates her relationship with other people. For example, a medical student may be impressed with a surgeon. The student might cooperate fully and turn herself into a surgeon over 10 years, practice for 30, then retire to prune trees.

But we still have not captured the elusive subject when we have depicted a changing subject necessarily in relation to others. The child who is given good examination marks by teachers may come to see herself as academic. She may decide to work for a degree, neglecting sport and social life. In time she may view herself as non-sporty and somewhat asocial. These various strands of the subject and the world may not only interact with each other but may conflict, tending to fragment the subject. I recall a house surgeon at Dunedin Hospital in 1961. He very early decided to be a psychiatrist. When he was the only doctor in the Emergency Department he could sometimes be found soaking in the spa at the physiotherapy pool. One reason why a policeman tends to lose non-police friends is that these people may embarrass him. For example, an off-duty policeman at a party with friends who are smoking cannabis needs to decide whether to be buffeted by friends who urge him to be a good sport, or to call in a squad of colleagues. Perhaps he does the first for a time, then the second, then regrets this. All of the above complexity might interact with misperceptions, misunderstandings and reification. “Fifth, all these aspects of the self-as-embodied-subjectivity in the midst of others are subject to misconception and illusory reification
by the subject in ways that mediate and moderate each aspect”. With regard to doctors, it is easy for a doctor to see herself as performing correctly, making no mistakes, when in fact doctors work in a very complex field, much of which is obscure.

My arguments in the last three paragraphs are supported by Lupton, who reminds us that it is too easy to view the subject as rational. Unconscious forces may easily enter the doctor-patient relationship, bringing in issues from the past, present needs, aversions. Post-structuralist theory suggests a subject who is fragmented, trying to integrate conscious and unconscious desires, and various other contradictions. I draw attention to emotional aspects of the self, and posit a self that is not static but contextual and dynamic, “fraught with ambivalence, irrationality and conflict.”

Last century, substantial research was conducted into patient compliance with medical regimens. A number of approaches were investigated in numerous attempts to increase compliance. Most of these were disappointing. I suggest that researchers were picturing the rational subject, autonomous and integrated. I suggest that Gillett and Lupton provide a picture of a different subject, fragmented, involved with others, moved by unconscious forces and by emotions. I wonder if attention to this subject might illuminate the topic of compliance.

How does EBM engage with the post-structuralist subject? I provide a quote which explains what has happened to the body, then I suggest something similar happened to the embodied human subject.

508 One island of partial stability for the post-structuralist subject is the body. While this changes, obviously, it has some stabilizing function for the numerous currents I mention..
509 1997, p. 106.
510 Ibid
511 It has been pointed out that compliance is a medical concept. Another approach, and not really distinct from what I am suggesting with the post-structuralist subject, is to reconfigure this issue into a patient perspective. Another Foucauldian point is that the concept of “compliance” involves the concept of “resistance”.
In a sense the true inheritance of this period is the anatomical atlas which proclaims on every page the solid, invariate reality of the body. Armed with this truth it becomes possible to view the events of the late eighteenth century as enlightenment: the abandonment of old superstitions, the laying to rest of moral qualms about the post-mortem and physical examination of the body, the brilliance of scientific advance, the technological breakthrough of the hospital. But there remains another anatomy whose truth is not to be discovered in the bright illumination of the dissecting room but in the dusty texts of forgotten knowledge. Therein lies the outline of the body that was not fashioned long ago in an East African rift valley but relatively recently in a medical gaze; a body that became intimately legible at the end of the eighteenth century, a body whose reality and transparency was consolidated in the nineteenth century, a body whose existence gave rise to and was sustained by myriad techniques ranging from the the laws of cellular function to the great strategies of liberalism and individual contract.\textsuperscript{512}

Using this approach to the human subject, we need to see how the subject is viewed through the medical gaze, the EBM gaze. To do this we re-read three seminal papers: 1) The Evidence-based Medicine Working Group (1992), 2) Haynes, Devereaux and Guyatt (2002), and 3) Djulbegovic, Guyatt & Ashcroft (2009). I will quote the only sections which could possibly refer to the subject.

The first paper introduces EBM with a doctor searching the literature to ascertain the likelihood of a patient having a second seizure. The search is conducted in response to the patient's concern. After the search results are presented to him, we are told “the patient leaves with a clear idea of his likely prognosis”.\textsuperscript{513} Later in the paper we are told that

Another traditional skill required of the evidence-based physician is a sensitivity to the patient's emotional needs. Understanding patient's suffering and how that suffering can be ameliorated by the caring and compassionate physician are fundamental requirements for medical practice. These skills can be acquired through careful observation of patients and of physician role models. Here too, though, the need for systematic study and the limitations of the present evidence must be considered. The new paradigm would call for using the techniques of behavioural science to determine what patients are really looking for from their physicians and how physician and patient behaviour affects the outcome of care.\textsuperscript{514}

\textsuperscript{512} Armstrong 1983, p. 6.
\textsuperscript{513} The Evidence-based Medicine Working Group 1992, p. 2420.
Apart from the these two references (the concern of the man who had had one seizure and the need to consider the emotional aspects of the patient) the paper is devoted to matters which are not subjective. There are, then, only two references to anything approaching the subjective, and both of them laud the need for objectivity to correct possible distortions.

The second paper moves the emphasis in clinical decision making. A major update on the 1992 model (noted for its emphasis on research evidence), the 2002 model deliberately moves to “patient preferences and actions”, “clinical state and circumstances”, and “research evidence”, all brokered by “clinical expertise”. I have extracted the only three sections which I consider might possibly approach subjectivity.

“His father experienced a debilitating stroke several years ago, and when he learns that his atrial fibrillation places him at higher risk for a stroke, he is visibly distressed” (p. 1). “Rather, clinicians must apply their expertise to assess the patient's problem and also incorporate the research evidence and the patient's preferences or values before making a management recommendation” (p. 2).

Patients may have either no views or unshakable views on their treatment options, depending on their condition, personal values and experiences, degree of aversion to risk, health care insurance and resources, family, willingness to take medicines, accurate or misleading information at hand, and so on (p. 5).

The third paper is called “Epistemologic Inquiries in Evidence-Based Medicine”, and is referred to several times in this work. Note the title. It falls short of defining precisely the epistemology of EBM. It engages with several well-known epistemological theories and explains their relevance to EBM. Again, I have extracted for the reader the only sections which I consider come close to subjectivity. I quote them serially. “To answer the second question, we need to understand the nature of beliefs held by individuals and the different ways those individuals can acquire true (and false) beliefs” (p. 159). “The operationalism approach is often too restrictive in clinical medicine since many concepts (e.g., patients' well-being or preferences) defy easy measurements and translation into variables consisting of
specific observations” (p. 162). “Within the EBM paradigm, students can challenge professors and patients can challenge their doctors” (p. 165).

In general, the attacks on EBM have come from five points of view: 1).... 2) a neglect of post-modernist ideas of social importance of science activity, 3) the need to acknowledge patients' values and their subjective experience, as well as physicians' “tacit knowledge” (i.e., private evidence) gained through a long practice of medicine, 4)....and 5)...We would agree that the first and last two criticisms have some legitimacy (p. 166). (Note the implication that the second and third criticisms are considered not valid.)

EBM proponents have recognized from the beginning the limitation of inferences from group observations (observed reality) and the need for decision making to reflect patient values (unobserved reality of phenomenology of experience). In recent years, EBM proponents have placed increasing emphasis on the assessment of the quality of life and the role of patient values in decision-making, thus allowing the use of private evidence in scientific reasoning and decision-making. Nevertheless, despite some recent developments in this direction, EBM has yet to present a fully developed theoretical framework for accomplishing effective problem-solving (p. 166).

However, EBM will continue to acknowledge that there will always be exceptions to the rules. The biggest challenge to EBM continues to be ensuring that decisions are consistent with patient values and preferences. Helping to resolve this vexing issue represents a key frontier of EBM practice and investigation (p. 166).

So how does EBM engage with the post-structuralist subject? Using a post-structuralist view of subjectivity, as set out above, it is difficult to answer the question. For example, while EBM literature reminds us to consider the emotional needs of the patient, it is unclear whether this does or does not tap into the five problematised areas of subjectivity set out by Gillett, paraphrased above. I refer to the changing, elusive, identity of the subject, incomplete without certain people, dealing in many relationships, fragmented, and misinterpreted. It is not clear whether EBM deals with the unconscious. On the one hand, much of the complexity of this problematised post-structuralist subjectivity seems to elude the EBM. To a movement (EBM) dealing in objectivity, the subject will always remain other. On the other hand

515 2008.
the attention to patient values and actions and to clinical state and circumstances surely opens windows onto this complex subjectivity.

There are, however, other considerations here. Both EBM and the post-structuralist subject could be viewed against time. The post-structuralist subject has been depicted in a certain period of history, and so has EBM. The articulation of the post-structuralist subject precedes that of EBM by a few years. There is a question as to whether EBM should engage with the post-structuralist subject. There is more than one point of view here, as the post-structuralist subject is surely controversial. Furthermore, it is possible that the post-structuralist subject will be replaced unless limned in terms that are not limited to a time of analysis, even though that seems to imply a universalism that does not hold water.

As I have stated, I have not been able to draw a conclusion as to whether EBM engages with the post-structuralist subject. Perhaps more traction could be obtained by reversing the arrangement: perhaps the post-structuralist subject could engage with EBM; a self-enunciation. A similar way of reframing the original question (Does EBM engage with the post-structuralist subject?) is to move question to the doctor. Then it would become, “Does the doctor bring together the post-structuralist subject and EBM?” (This model uses EBM as a tool, whereas the first question personifies it.) I have no doubt that, the better the doctor knows the patient, the more she adjusts the treatment to the changing, fragmented subject, engaged with others, and so on. This would reach its zenith in a medical practice in a Maori area where the doctor and patient had been together for up to 40 years. The doctor, especially if Maori, would grasp how the subject was immersed in whanau and tribal currents.

Summary of chapter 11

Subjectivation is rife in EBM. Across a range of research designs, experimental subject and experimenter create nuanced relationships in which the experimental subject is subject to the experimenter, who, nevertheless needs to consider the subject.
The EBM doctor gives up some professional independence to accommodate to epidemiology, to some extent moving her thinking from deterministic towards probabilistic. The consultation moves towards the experiment: there is a tendency for a guideline doctor to try to conceptualize her biomedical patient in terms of a group of experimental subjects. Of course, even the EBM leaders are subjectified to EBM. The various subjectivations are negotiated, and dynamic. For example, today's patient may be better informed on medical matters than a decade ago, and may assert herself more after she gets to know her doctor, and vice versa. The issue seems not to interest EBM leaders, and I am unconvinced that EBM has caught up with the post-structuralist subject, postulated years earlier.
PART 3: FINAL CONSIDERATIONS

Chapter 12: Viewpoints from 1) Deleuze and Guattari and 2) Foucault compared and contrasted

12. 1. Introduction

In comparing and contrasting the viewpoints on EBM developed from 1) Deleuze and Guattari and 2) Foucault, I consider there is common ground, considerable difference, but little real conflict.

12. 2. Similarities

All three philosophers involve thought with action--these are in the same plane. We do not have the world on one plane and representation on another. We do not have theory on one plane and action on another; thought is a force, part of the world. The way we see ourselves, are affected and act are part and parcel of power for Foucault, desire for Deleuze and Guattari. Being affected by the world links to the passions of
the soul and that aspect of human life which is engaged, as in Heidegger and the existentialists, versus the Cartesians/rationalists/metaphysicians.

Neither Deleuze and Guattari nor Foucault support the subject/object distinction so that, from the point of view of Deleuze and Guattari, there is no solid ground to found objectivity. For Foucault, objectivity rests in the episteme, the set of conditions underlying whatever is considered to be “objective”. For example, in EBM the decision of a large group of experts on the GRADE Working Committee is considered objective. This does not conflict with Deleuze and Guattari.

The subject-object distinction is considered by Deleuze and Guattari to be an effect of perception, this latter developed from pre-human activity (They pick up the idea from phenomenology.). The human subject is an inappropriately privileged base from which to develop a description of human phenomena, for example. Deleuze and Guattari tell us that the human subject has been depicted as thinking. They reverse this: thinking has produced the human subject. The human subject is the Western dogma that arises from philosophical Cartesianism. The viewpoint from Foucault is a less extreme but does not really conflict. Foucault develops the technologies of self as a study of the way we give ideational or articulated form to ourselves in the many dealings we have with others. He would expect the doctor and the patient to have set

516 Drawing on Macey (1993, pp. 255-6), I quote from an open letter which Foucault wrote to Pierre Guyotat regarding the latter's book, “Eden, Eden, Eden”. The theme which Macey draws out here is the refusal to perpetuate “the primacy of the subject and the unity of the individual”. I have in mind that this extract from Foucault's letter could as easily have been written by Deleuze and Guattari.

...it's not something like 'sex' at the limit of the body, nor is it a means of communication; it is not even the individual's fundamental or primitive desire; the very texture of its processes exists prior to individuals. The individual is no more than its precarious prolongation, provisional and quickly effaced; ultimately, the individual is no more than a pale form which arises for a moment from a great stock that is both stubborn and repetitive. Individuals--the pseudopodia of sexuality, quickly retracted. If we wish to know what we know, we must abandon up what we know about our individuality, our ego, our position as subject. In your text, relations between the individual and sexuality are openly and completely reversed, perhaps for the first time; they are no longer characters which are effaced for the benefit of elements, structures or personal pronouns; sexuality moves to the other side of the individual and ceases to be 'subjectified'.
standards as to their use of EBM, to monitor their behaviour against these standards, and to consider amending any discrepancy. Unfortunately, I find no literature on this actually taking place. It is not yet realised that this is a technology for EBM to gain influence.

Deleuze and Guattari and Foucault see subjectivation in EBM. I present this in terms of faciality and the numerous prestigious names on the guidelines, in the viewpoint from Deleuze and Guattari, but in terms of axes of subjectivation in EBM from the viewpoint of Foucault, where a number of relationships in the EBM complex enact the details of subjectivation. For example, there are a wide range of arrangements between researcher and experimental subject in medical research, that instance the Foucauldian teaching that the researcher and subject negotiate the subtleties of their own relationship of subjecification.

Both 1) Deleuze and Guattari and 2) Foucault would differ from EBM philosophy in seeing truth as partly constructed. In addition to trying to ascertain the truth, they would be attentive to the will to truth, and the fate of truth across time and differing social contexts, including professional contexts, such as medicine. They would view knowledge as a tool, rather than as an understanding of a Newtonian universe. Both would see EBM as a social movement, although not only that but also a key element of an episteme.

12. 3. Differences

12. 3. 1. Introduction

Deleuze does not entirely concur with Foucault's image of power. Deleuze reacts to any mention of power or the law, as molar entities. His analysis is at the molecular, as distinct from the molar, level. However, in Foucault's defence he is also interested in the micro picture, concentrating, where possible, on power at the capillary level.

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517 Macey 1993.
12. 3. 2. Drawing on Deleuze and Guattari

Foucault writes in conventional form but this is not the case with *A Thousand Plateaus*. The Deleuzian teaching on rhizomatic thinking, and two other Deleuzian themes, *smooth space* and *nomadic science*, play a major role in my analysis. Rhizomatic thinking challenges the arborescent, ordered, structure of any EBM document. A variety of writers of fiction and non-fiction speak through *A Thousand Plateaus*, and the chapters are arranged to be read in any order. There is no climax, only numerous plateaus, and there is no organising centre. In rhizomatic thinking, there is room for enormous plasticity. This feature recalls the clinical consultation, although some structure is necessary. The doctor and patient can start in the middle or at the beginning and they can negotiate what will be discussed. For example, the patient may have several matters to discuss in the consultation, and may early sense the doctor's mood and time. Accordingly, some topics may be dropped. The doctor and patient can proceed in any direction for any distance and change direction any number of times. By contrast the EBM is more structured and therefore less suitable, in some respects, to the subtleties of doctor-patient interaction and the consultations involving multiple morbidity. EBM has little to say about the consultation as such, excepting that the results of clinical research should be used.\(^518\)

The Deleuzian distinction between striated space and smooth space elucidates issues in medicine in that EBM striates smooth space, imposing structure which limits the topics and methods of medical research, and extends the control of the EBM movement. Thus the introduction of EBM can be viewed as the striating of smooth space. Clinical trials use segmentation, an aspect of striating space. The distinction between striated space and smooth space provides a perspective on the vexed question of doctor/patient dyads using antibiotics for viral infections, decisions that look irrational from the EBM viewpoint. Traditional medical ethics aligns with State

\(^{518}\) It is not entirely clear whether the setting up of the PICO question and the search for answers should take part in the consultation. (PICO—when a doctor identifies a knowledge deficit she should follow a structured approach.: What patient group does this patient belong in? What intervention is appropriate? What comparison intervention is under consideration? What outcome is planned?)
science more than does microethics,\textsuperscript{519} with its frequent changes in direction of the doctor-patient relationship, taking place in smooth space. The immiscibility of striated and smooth space provides a theoretical backdrop on the way in which the results of epidemiological research do not blend with clinical intuition.

The Deleuzian distinction between State science and nomadic science illuminates the struggle between EBM and any forces exterior to it. Papers critiquing EBM fit in this framework, their polemical tone reminiscent of the Deleuzian distinction between the war machine, the war and the battle. Although EBM protagonists protested vigorously, and in numbers, when accused of microfascism,\textsuperscript{520} EBMers usually desist from replying to critique.\textsuperscript{521} But this is not the only front on which the war is waged. Correspondingly, EBMers are vigorously producing clinical research and its downstream developments, including large textbooks, and teaching residents and medical specialists how to practice evidentially. I draw out the teaching that State science and nomadic science are always struggling with each other, constantly altering the border, and even intermingling. Here, with regard to EBM, Tanenbaum pushes to have the five warrants for decision,\textsuperscript{522, 523} converted, through research, into evidential form,\textsuperscript{524} an attempt to striate smooth space that, Tonelli objects, if pushed far enough, would almost eliminate from medical decision-making all considerations other than evidential. With Deleuze and Guattari,\textsuperscript{525} I note how State science sometimes offer positions to nomadic scientists,\textsuperscript{526} and I further draw on the Deleuzian account of the struggle between State science and nomadic science to note that the thrust (read: “war”) against EBM is not organised, is likely to fail, and is characterised

\textsuperscript{519} This is set out by Komesaroff 2008.  
\textsuperscript{520} Holmes et al. 2006.  
\textsuperscript{521} For example, Djulbegovic, Guyatt & Ashcroft did not reply to a battery of papers in volume 15 of the Journal of Evaluation in Clinical Practice commenting on their landmark paper (2009) on epidemiology of EBM. Holmes et al. are supporting a number of paradigms for nursing practice.  
\textsuperscript{522} Of course, the clinical research is already in that form.  
\textsuperscript{523} Tonelli 2006.  
\textsuperscript{524} I am aware that Tanenbaum has her reservations about EBM.  
\textsuperscript{525} Chapter 12.  
\textsuperscript{526} One such is Professor A. Miles, at Buckingham University.
by internal disagreement. I note, with Deleuze and Guattari, that, from the point of view of State science, exterior forces (such as the prescribing of antibiotics for viral infections in the face of sound, scientific evidence that they do not work) look irrational and disruptive/undisciplined.

Deleuze and Guattari and their teaching on desire also illuminate EBM, in that desire does not focus on an object. In enthusiastically trying to improve on “eminence medicine”, highly motivated EBM pioneers pushed ahead with method but did not pay a great deal of heed to the sensible considerations of theory and whether there would ever be RCT evidence supporting their method. They have rarely entered into scholarly interchange with non-believers because theirs is an action philosophy. They are not constantly checking their actions against the mirror world (which Deleuze and Guattari consider needs explaining). Secondly, the Deleuzian teaching on desire, combined with the Deleuzian teaching on State science versus nomadic science, provides a different critique from the usual philosophical criticism of EBM. Insistence on such worthy considerations as theory, fresh explanation of puzzling medical phenomena and empirical corroboration of the new methods, smacks of a turf war between State science and nomadic science, since it is unrealistic to require all of these philosophical boxes to be ticked but Deleuze and Guattari would regard this requirement for evidence, theory, and so on, as totalizing (EBM must conform to the requirements of state philosophy), and totalising is unacceptable to philosophers of difference.

In a further attempt to provide a positive view on EBM from the writings of Deleuze and Guattari, I follow the Deleuzian teaching that it is not legitimate for philosophy to legislate for medicine, because EBM also makes a contribution to philosophy. I introduce the topic of “how doctors think”--deterministically, probabilistically, heuristically, casually--and relate this to EBM in that there remains no direct deductive path from these probabilities to the next patient. EBM stirs up these difficult issues and therefore clarifies our understanding of the philosophy of medicine. In that way doctors and biostatisticians can contribute to philosophy-- an

527 For example, Miettinen & Miettinen 2007 versus Murray et al. 2007.
instance of philosophy not wholly belonging to philosophers since others can introduce new conceptual tools, some of which are the better for coming from outside.

Deleuze and Guattari explain that a proposition needs fleshing out by passage through a regime of signs, of which there are several possibilities. The regime of signs which I nominate is “despotic, paranoid/interpretive” because, in it everything fits into a schema of meaning and a unified structure of knowledge as in a paranoid system that imposes hyper-rational order on reality. All propositions, in passing through this signifying system, are influenced by the structure of the language with its limitations and by the metaphysics to which it has adhered over centuries. For example, there are many dichotomies, such as fact and value, objective and subjective, reality and appearance. There is the concept of origin. There are certain ways of viewing history, along with representational thinking. All of these bring in what Deleuze and Guattari describe as a “despotic” or controlling influence on the propositions, but EBM does not acknowledge this influence on its final message.

The term “paranoid” indicates that EBM people, for example, are very concerned about how much influence they do or do not have. But not only that. There is an insistence that everything makes sense in certain limited terms that rationally cohere with one another. I describe in detail the great concern as to whether doctors use the clinical guidelines, which are, of course, evidence-based. I state that there is a substantial literature on what works and what does not with regard to persuading doctors to use these evidence-based guides. The word “compliance” is ubiquitous in this literature, and assumes resistance.

The word “interpretive” is the third of the adjectives which Deleuze and Guattari apply to the signifying regime of signs. They aver that every interpretation is an interpretation of an interpretation: nothing is interpreted that is not an interpretation itself. I quote papers alleging that the chain of interpretation in EBM rarely finishes so that even though you might think that EBM provides the clinician with evidence to guide her in clinical decision making, further research is frequently advised.
Of course, capitalism, another Deleuzian topic, influences EBM in that EBM has become popular among managers, who now like doctors to be not just effective, but cost-effective. The problem is that, when a patient consults a doctor, she presumably thinks that the doctor is going to recommend the most effective treatment, but it is often opaque whether the treatment is the most effective or the most cost-effective. Furthermore, the supply of money plays a part in the decisions as to which aspects of medical practice are investigated. For example, it would be easier to gain a large sum for investigating antidepressant medication than meditation. Capitalism, in Deleuzian theory, enables the production and distribution of clinical research and Foucault similarly would likely view EBM as part of a giant, enabling, capitalistic complex which produces medical evidence.

Deleuze and Guattari write extensively on the influence of the Oedipus myth in our society (as well as in Freudian psychoanalysis), in Anti-Oedipus. The idea here is that desire is oedipal if it chooses the word of the father over the warmth of the mother. Indeed it chooses to embody and take on the identity of the father—the giver of law or representative of order and truth in objective terms. The law and the other requirements of the societal leaders are chosen over natural desire. EBM, arguably, favors “the word of the father”: a doctor following EBM is likely to be motivated by (Oedipal/Electral) desire to be orthodox, ordered, rational, good and true in objective terms. She might have preferred to use intuition or the wishes of the patient. By contrast, Deleuze and Guattari have a positive theory of desire as an energized drive, recalling the early efforts of enthusiastic EBMers.

Moving away from “What does EBM mean”, Deleuze and Guattari would consider, “What does EBM do?” “How does it work, and for whom?” EBM provides a substantial bank of results from RCTs and observational studies, along with the various methods of making these more digestible for clinicians. With an emphasis on evaluation, medicine becomes more data-orientated. The staff at University changes. The consultation changes: there is a newly constructed patient (comprising numerous, discrete, variables) and a guidelined doctor, partly separated by a computer. Doctors make less use of intuition, pathophysiology, experience and expert opinion. There is
more emphasis on treatments which have been researched, such as drugs, and less emphasis on treatments that have not been formally evaluated, such as the healing effect of the doctor-patient relationship. The Deleuzian theory of immanence contrasts what we do with transcendence or representational thinking (as in “What does it mean?”). We do not sit around contemplating semiology and knowledge structures, such as language but are engaged, as in a war image: what struggles are being won or lost? In some respects this is similar to Foucault, in that he brackets power and knowledge together and writes extensively on prisons and psychiatric hospitals, contexts of acting on one another in power-inscribed ways.

12.3.3 Drawing on Foucault

In relating Foucault to EBM I explore spatialisation of disease, discourse, power/knowledge, distinction between normal and pathological, subjectivity and the subject.

In *The Birth of the Clinic*, Foucault depicts primary, secondary and tertiary conceptual spaces for disease. The setting up of even primary spaces for disease has extended the conceptual field too wide for EBM to master. Beyond the spaces for anatomy and the configuration of disease (pathology), there are complexities of social, metaphysical, religious, linguistic, semantic, grammatical, philosophical, semiological, economic, ethical, cultural, psychological and even treatment spaces of disease. With regard to the tertiary space for disease, there is a lack of coherence in the various aspects of the heterogeneous model for an epidemic: EBM is out of its depth here.

EBM has shifted the game from the playing field to a jungle gym with a new patient (set up in identifiable, biomedical variables), a new doctor (guidelined) and a new consultation space (permeated by the World Wide Web and universal reason). However, EBM is having difficulty cutting its ties with the old playing field. I refer to the confusion between the constructed (as explained in the previous sentence) and

528 1994
the real (as in the health of the patient, say haemoglobin concentration in the blood, in 
a Newtonian universe), which I consider is also constructed, but in accordance with 
the prevailing tenets of a regime of truth. Along with complexity goes uncertainty. 
For example, the matching of the signifier with the signified is imprecise and open to 
numerous influences. This complexity and uncertainty occurs in the space of 
perception, in which Canguilhem and Foucault have described the medical gaze. 
Furthermore, this medical gaze is too restricted to deal with all the issues of suffering 
due to disease. In particular, the medical gaze, built on the post-mortem examination, 
binarising health and disease, looks for variables which can be identified and 
manipulated according to a biomedical model. Whatever does not get into the gaze is 
not a candidate for inclusion in research, in knowledge, in treatment. There is too 
much complexity and uncertainty for EBM to prioritise the evidence coming from 
RCTs and observational studies. By contrast with Foucault’s penetrating account of 
the change in medical knowledge 200 years ago, Deleuze and Guattari work at a more 
general level.

A major Foucauldian theme is the inseparability of power and knowledge. Foucault 
considers that “the evidence” does not speak for itself but for voices hidden from view 
by objectivity. These are the voices of white, Western, educated people. They 
function in a complex of universities, governments, pharmaceutical companies and 
other stakeholders who determine the truth and spokespeople. Their power--
knowledge complex works through individual practitioners and patients. Actually, 
EBM moulds these people into guideline doctors and biomedical patients. Visibility 
(as from endless examination of undergraduate and postgraduate doctors and endless 
monitoring of hospital patients) and surveillance (as in doctors' use of EBM by 
patients and peer group members and by publications on the use of antibiotics for 
viral infections) permeate the health care system. There is an extensive literature on 
the degree of penetrance of guidelines into practice and on the effectiveness of a 
number of strategies to increase this. But resistance of practitioners operates where 
power operates.

This work notes the distortions and limitations in EBM (like lack of RCT evidence for
its effectiveness), and relates these to the power of the EBM movement which continues to promulgate its methods despite published critique. EBM, a regime of truth, is somewhat dismissive of other medical emphases, such as subjective knowledges. As an emblem of allopathic medicine, EBM decides what will count as evidence, and turns a blind eye to the lack of clinical trial evidence for some allopathic tests and treatments, as in rare diseases. I consider that the approach to other medical emphases illustrates the Foucauldian inseparability of knowledge and power. Even so, EBM has, over time, made adjustments in response to criticism. The upgrading of the status of “clinical expertise” and of “patient preferences and actions” savours of Popper's auxiliary clauses added to save a struggling hypothesis. “Patient preferences and actions” are a logocentric, poor substitute, for patient subjectivity. They enter the decision calculus as pieces of information to be considered along with other pieces of information in the mind of the doctor. This is how power works: absorb the opposition, or say you do, “so that the serial reconstitutions of EBM have left the foundational claims of EBM in conceptual and methodological ruins.”

EBM needs to grapple with the concepts of disease used by funders, researchers, doctors, nurses, patients and even their entourage (illness or sickness?) and employers (can she work)? Such uncertainty as to what a disease is (normal/pathological divide) allows plenty of room for the regime of truth to operate. For example, are we moving now towards definition of disease which can be operationalised in an RCT? Does the definition of disease pay less attention to symptoms, such as anxiety? Is the understanding of disease moving towards the body? What about schizophrenia? In any case, two points stand out from a study of Foucault and Canguilhem: the issue of the divide between normal and pathological (disease) is often enormously complex, and, secondly, it is frequently contestable.

As we decide whether a patient is normal or pathological, we struggle with whether the disease is constructed or natural. What if the diagnosis is wrong, as in breast cancer, for example? What if the patient receives a diagnosis of gonorrhoea but does

529 Miles 2009b, p. 924.
not have the disease? What if a disease exists but is undiagnosed, missed? Even if the “correct” diagnosis is made, there are consequences-- stigma sometimes, decreased sexual activity in the case of sexually transmitted infections, employment and insurance. The decision as to normal/pathological has enormous implications for the economy. Whether to marry a certain person could hang on the identification of a disease, such as Aids, in the prospective partner. The point of this paragraph is that there is enormous potential for the regime of truth to influence the decision and the sequelae.

Another major aspect of the normal/pathological distinction is the power and influence of “the norm” in modern society. Foucault goes to great lengths to explain that power has shifted from the monarch, who created a spectacle when he tortured and/or killed a deviant subject. Today, Foucault explains, much of society is governed by a combination of surveillance (including self-surveillance) and the influence of the norm. We want to be normal. So once the regime of truth has decided what is the norm, much of society takes it up and runs with it. We want our cholesterol levels to be “normal”, and our blood pressure and weight. Society judges whether a person is normal, on many fronts. It is now abnormal to smoke (it did not used to be) and to be obese, or to have Type Two Diabetes.

Lastly, subjectivation is alive and well along several related axes in EBM. The experimental subject and experimenter create a relationship of mutual subjectivation to each other which varies across a spectrum from epidemiological research to case studies. Patients are subjected to EBM doctors. Doctors are subject to EBM and even the EBM leaders are subjected to EBM. EBM has latterly promoted “patient preferences and actions”, but it is not clear whether EBM relates to the post-structuralist subject, or to the shifting target for therapeutics that such a subject generally presents. This latter is changing, relating, conflicted, fragmented, perhaps misunderstood and misrepresented. Then again, it is not clear whether EBM should relate to the post-structuralist subject. Perhaps this is better done by the patient, or by the doctor on her behalf. It is also not clear whether EBM views the doctor as integrated, autonomous and rational as she knuckles down to be a good EBM subject.
Summary of chapter 12

The viewpoints are different but hardly conflicting. A major thrust of the viewpoint from Deleuze and Guattari combines 1) the style of *A Thousand Plateaus*, 2) rhizomatic thinking, 3) nomadic science and 4) smooth space. Two points emerge: one is that the message is in the medium; *A Thousand Plateaus* challenges EBM by its rhizomatic format. Secondly, the Deleuzian analysis of the struggle between State science and nomadic science mirrors the struggle between EBM and those forces exterior to it, and partly explains the difficulty in integrating the results of clinical research with clinical experience in terms of the immiscibility of striated space with smooth space, and the need to move out of codification of explicit knowledge and into tacit knowledge, as might be learned by a junior doctor from a senior colleague.

Foucault would not disagree with any of this. But from his writings we can emphasise 1) the creation of conceptual space for disease, especially perceptual space/medical gaze, 2) the inseparability of power and knowledge, 3) the importance of the distinction between normal and pathological, and 4) the way in which subjectivity is rife in EBM, and Foucault's depiction of the subject. Consideration of the conceptual spaces for disease leads to my view that EBM is not adequate for the enormous scope of health care. Foucault depicts power as enabling or productive, permeating the whole of EBM, facilitating the production of research, and its use in clinical practice. Foucauldian teaching focuses on the underling beliefs and social structures enabling EBM to become truth in action and the resistance from the doctor-patient dyad that limits the power of EBM, complicating and contesting the distinction between normal and pathological. Power has shifted to a combination of surveillance and the norm. We want to be normal, and society judges whether its members are normal, across a range of parameters, including health parameters. Subjectivation is negotiated between two or more parties so that the subject is fragmented, conflicted, changing, in relationship and often misunderstood and
misrepresented. Perhaps EBM engages with this subject now that it emphasises “patient preferences and actions”, or whether it still accepts the underlying premise that there is an objective way that the subject is.
Chapter 13: EBM contributes to philosophy

13. 1. Introduction

A Deleuzian view of EBM claims no authority. The view from Deleuze is not superior to the view from EBM. *It opens up another way of thinking.* This Deleuzian approach if taken another step implies that, rather than philosophy berating EBM, EBM actually enriches philosophy. (In fact, they can interact and cross-fertilise eachother.) EBM is an action philosophy which has been trying itself out in the real world for two decades, stirring debate, from which we rescue insights for philosophy of medicine, to clarify the main claims of medical or clinical science and their areas of shortfall.

13. 2. Evidence and its integration into a clinical decision

Tonelli\(^530\) addresses the issues raised in integrating evidence into clinical practice by proposing an alternative to EBM, dubbed CBM or Casuistic-Based Medicine.\(^531\) As set out in Chapter 2, five inputs to clinical decision-making are used: research

\(^{531}\) 2006.
evidence, clinical experience, pathophysiological rationale, patient preferences and values, and system factors. (These last deal with issues such as the availability of a test or treatment, its legality and its ethicality.) But it is not clear that the five warrants are all best regarded as “evidence”. The results of clinical research are often assumed to be evidence, but Kerridge\textsuperscript{532} states that the results are \textit{used}; that the user confers evidential status on the results of research, depending on the aim of the user. He or she \textit{engages} the results by taking the data from a passive state to mobilize into the program of a person, and that subjectivity is not excluded. Now what about the evidential status of clinical experience, pathophysiological reasoning, patient values and preferences, and system factors? Some years after EBM's seminal paper was published,\textsuperscript{533} clinical experience and patho-physiological reasoning were elevated to the status of “evidence”,\textsuperscript{534} but this is a debatable move. Tonelli argues that evidence is indirect and of general application whereas clinical experience is direct and personal, and that pathophysiological reasoning is a stage removed from evidence and part of the theory on which doctors rely to understand clinical facts. Tonelli also notes that EBM places them in an hierarchy, so that the empiric evidence (“best evidence”) is of higher degree than are clinical experience and pathophysiological reasoning, but this neglects the differences among the warrants for decision. Tonelli cannot find an epistemological argument to support this hierarchy. Pathophysiology is part of the theoretical framework, clinical experience is often based on casuistry rather than relationships between theory and evidence and it therefore involves both application and reflection on the application of theory to practice both of which are much more than evidence. Patient preferences are ethical constraints, and system factors are side constraints on clinical decisions. Tonelli\textsuperscript{535} describes a situation in which a cardiac arrhythmia occurred in clinical practice but not in the trial, a fact that indicates either a failure of the trial to capture highly relevant clinical possibilities or that a trial should only ever be considered a provisional snapshot of an area of practice based on limited factors that were considered by those designing it. Either way we can adapt Tonelli's approach to avoid totalisation in terms of a striated system.

\textsuperscript{532} 2010, p. 369.
\textsuperscript{533} The Evidence-Based Working Group 1992.
\textsuperscript{534} Haynes, Devereux & Guyatt 2002.
\textsuperscript{535} Tonelli 2006, p 251.
of knowledge when we reconfigure the philosophical analysis. That leaves the desire to do what doctors do when they care for people, and do it better, accompanied by reflective critique, and, where necessary, the panoply of striated or State science, as a defensible understanding of the relation between research and practice but nothing more tight or rational holding the field in “a war in the name of humanity against the ills that flesh is prone to”.

It is not satisfactory to pit clinical experience against clinical trials, because they share a problem, that of assimilating the present patient to others. Not only is all understanding based on previous cases liable to misinterpretation and other forms of cognitive bias but the data in the memory bank of the doctor has not been subject to rigorous analysis. Where possible, all such knowledge should “involve explicit reasons how and why experience is guiding the thought process”, whether individual, selective and possibly biased clinical experience, pathophysiological rationale or the results of trials. When reflective engagement with knowledge of this type is undertaken, further evidence can be accumulated regarding a test or treatment that is supported by a trial and events not seen in the trial can be registered so as to suggest truths which may later be subject to systematic examination. For instance, in a remote New Zealand town of Tapanui, a back-country doctor was consulted by several patients presenting with lethargy and other symptoms, forming a syndrome that he had not read about. He published a paper on “Tapanui Flu.” The condition later morphed into Myalgic Encephalitis and then into Chronic Fatigue Syndrome, upon which there has been a number of publications. The status of this problem is controversial but its development reveals something of the need to negotiate the boundary between smooth and striated space.

A recent paper on EBM epistemology softens its sharply-etched hierarchy of evidence by admitting that some RCTs have problems which reduce the quality of their evidence while some observational studies have strengths which improve the

536 Goodman 2010.
537 Tonelli 2010, p. 387.
538 Djulbegovic, Guyatt & Ashcroft 2009.
quality of their evidence. This paper also alludes to the work of the GRADE committee, explaining that when the evidence points clearly to harm or benefit from an intervention, a strong recommendation can be made, whereas if the evidence is unclear, a weak recommendation should follow. Even so, it still suffers the fundamental flaw identified by Deleuze and Guattari that the process of systematization or striation of a nomadic space is an issue of contested warrants and not itself subject to striated or fixed principles. The problem is evident in various ways.

EBM has forced us to develop our understanding of the application of evidence derived from large groups of experimental subjects to the individual patient and so has addressed one of its most frequently cited problems. “The inferential leap necessary for treating an individual based on aggregate findings is mostly assumed away”. But in an RCT, some patients are excluded, subjects actually take their medication, the treatment period is likely to be short and closely monitored in comparison with future widespread use of the treatment, and the control condition often uses placebo treatment, not a realistic option for the “nomadic” clinician. The end points of the research may differ from the outcomes of interest to the doctor and/or patient, a problem not always captured in terms of internal versus external validity. The work which the RCT provides evidence for is therefore not the theory that the trialled treatment will, overall, be beneficial for the next patient. Therefore the relationship between group research (in striated space) and clinical care (in smooth or nomadic space) is not self-evident despite voices to the contrary.

The vexed issue of how apply the findings from population research to the individual patient is partly clarified by attention to patient characteristics (including age, severity of disease, comorbidity, ethnicity, and compliance with treatment regimens), healthcare system characteristics (skills of treating doctors, treatment or test availability, monitoring) and outcome characteristics (do study outcomes matter to the present doctor/patient dyad, surrogate endpoints, such as bone density rather than

539 Tanenbaum 1999, p. 757.
540 Worrall 2010.
541 Bluhm 2010.
fractures, and so on.\textsuperscript{543} The clinical doctor treating the individual patient on the basis of population research needs to notice the number needed to treat figure “for a group of individuals resembling their patient”,\textsuperscript{544} and to carefully look into relative risks and absolute risks as they exist for the unselected people who walk into the clinic rather than the select group in whom study effects are seen. What is more, even though subgroup analyses reflect “patient diversity in risk for disease, responsiveness to treatment, vulnerability to adverse effects, and utility for different outcomes”,\textsuperscript{545} subgroups of one are not part of that kind of science even though they are the norm in the nomadic space of real world clinical medicine. When we add ethical considerations of patient choice and the acceptability of treatment to the mix\textsuperscript{546} it is no wonder that results produced in a striated world do not apply at the contested margins of striation where nomadic knowledge charts its paths through smooth spaces of unstructured and sometimes chaotic experience.\textsuperscript{547}

Neither EBM nor Tonelli’s CBM tells us how to mix and match the five warrants that plausibly should attend clinical decision-making. Differences in ontology, methodology and epistemology criss cross the field.\textsuperscript{548} Firstly, there is an ontological difference between pathophysiology and system factors. For example, while pathophysiology may be anchored in the biology of antibacterials, system factors may be anchored in health economics such that a general practitioner is not allowed to prescribe certain drugs. The difference in these two warrants is ontological in that they belong to different orders of reality. Second, an epistemological difference exists between clinical experience and the results of an RCT – one depends on judgments of similarity and difference between particular instances of illness (the last spinal

\textsuperscript{543} Bassler, Busse, Karanicolas & Guyatt 2008.
Bassler, Karanicolas, Busse & Guyatt 2008.

\textsuperscript{544} Bassler, Busse, Karanicolas & Guyatt 2008, p. 2.

\textsuperscript{545} Bassler, Karanicolas, Busse & Guyatt 2008, p. 1.

\textsuperscript{546} Bassler, Karanicolas, Busse & Guyatt 2008.

\textsuperscript{547} I must admit that the frequent emphasis in my work on the chaotic nature of clinical practice is perhaps excessive, and intended to contrast with EBM. I am aware that Descartes and many other great thinkers have been struck by orderliness in the universe, and its susceptibility to mathematical modeling. And there was some structure in the clinical consultation before EBM. For example, the results of pathophysiological experiments have guided doctors for a very long time.

\textsuperscript{548} Kerridge 2010.
empyema and this one) and the other on the adequacy of inclusion and application criteria relating particular cases to a general category (this pneumonia as an instance of bacterial infection). Thirdly, there is a difference between patient preferences and the clinical experience of the doctor as in the choice for abortion and the doctor’s judgment that it will turn out badly for the woman concerned. There is a major ethical component in the way the decision is arrived at in that the patient chooses and the doctor can only advise on the basis of experience. Somehow these two warrants must be combined and how to do so is unclear.

We can draw two conclusions from this analysis of the difficulty in combining warrants for decision. One is that there is an epistemological crisis in medicine, since we now realise that we do not know how to amalgamate five streams of very different kinds of knowledge. The second is that we no longer know what (in real life) EBM is: 100 different doctors may combine the multiple warrants for decision in different ways and in this task of integrating the warrants, no schema has been agreed or even proposed.

I now focus on two of the difficulties in EBM (and CBM) and I actually amalgamate the difficulties for the remainder of this chapter. To clarify, the difficulties are: 1) how to combine the five warrants for decision, and 2) how to apply group data to the next patient. The path I follow is to take the second difficulty and regard it as the major strand in the first problem, leaving aside the other strands. I frame the first problem like this: how to integrate the epidemiological research results with the clinical expertise needed to relate these results to the individual patient.

Deleuze and Guattari provide an analysis of the impasse. Consider clinical research results and clinical expertise and recall the 2002 model of decision making whereby clinical expertise brokers the possibly conflicting claims of research evidence, patient preferences and actions, and clinical realities. The EBM desire to bring the results of clinical research into clinical decision making can be viewed as an attempt to striate smooth space—the epidemiological evidence is used to reticulate the smooth space of clinical intuition and patient management.

549 1987.

550 Haynes, Devereux & Guyatt 2002.

551 Braude 2009.
Smooth space and striated space—nomad space and sedentary space—the space in which the war machine develops and the space instituted by the state apparatus—are not of the same nature. No sooner do we note a simple opposition between the two kinds of space than we must indicate a much more complex difference by virtue of the successive terms of the oppositions fail to coincide entirely. And no sooner have we done that than we must remind ourselves that the two spaces in fact exist only in mixture: smooth space is constantly being translated, traversed into a striated space; striated space is constantly being reversed, returned to a smooth space. In the first case, one organises even the desert; in the second, the desert gains and grows; and the two can happen simultaneously. But the de facto mixes do not preclude a de jure, or abstract, distinction between the two spaces. That there is such a distinction accounts for the fact that the two spaces do not communicate with each other in the same way: it is the de jure distinction that determines the forms assumed by a given de facto mix and the direction or meaning of the mix (is a smooth space captured, enveloped by a striated space or does a striated space dissolve into a smooth space, allow a smooth space to develop?). This raises a number of simultaneous questions: the simple oppositions between the two spaces; the complex differences; the de facto mixes, and the passages from one to another; the principles of the mixture, which are not at all symmetrical, sometimes causing a passage from smooth to striated, sometimes from striated to smooth, according to entirely different movements.  

If this is an accurate analysis, then it follows that rational integration eludes us pace the desire of EBM to resolve the conflict between the results of clinical research and clinical intuition.

There is another way of seeing why we cannot rationally reticulate smooth space and develop a method to overcome the difference because in the multiplicities we deal with in human life a kind of tacit knowledge, similar to clinical intuition/expertise, is indispensable.

We have on numerous occasions encountered all kinds of differences between two types of multiplicities: metric and non-metric; extensive and qualitative; centred and acentred; arborescent and rhizomatic; numerical and flat; dimensional and directional; of masses and of packs; of magnitude and of distance; of breaks and of frequency; striated and smooth.

While it is possible to create rules to deal with entities that are part of the same

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552 Deleuze and Guattari 1987, pp. 474-475.
553 Braude 2009.
554 Deleuze and Guattari 1987, pp. 483-484.
order, it is not rationally possible to reticulate or divide up a commodity which is heterogeneous and intensive. Take pain. Although doctors ask patients to rate pain on a scale of ten, we cannot move from there to arguing that if a treatment leads a patient to change the rating of the pain intensity from 10 to five, the pain (as an orderly variable) has been halved. There are many areas of medicine not amenable to rational metrication and biostatistics because they are intrinsically relational rather than objectively fixed.

In the last few paragraphs I argue that there is no rational way to merge the results of epidemiological research with clinical intuition. I heralded an epistemological crisis in medicine, though I am not the first to do this. So what are doctors doing? The method of mixing these disparate inputs lies not in any codified system. They are joined through implicit, not explicit, knowledge, as is learned by a house surgeon from her senior. The judgments involved are learned by the less experienced doctor. Thus the epistemological crisis moves into the field of tacit knowledge. A lengthy and detailed explanation, which draws on Wittgenstein and Kuhn, of the way in which all codifiable knowledge rests in a sea of implicit knowledge is developed by Tim Thornton who argues that both scientific research results and clinical expertise rest, in fact, on tacit knowledge. (For example, judgment is required in selecting a theory to apply to several diverse scientific problems.)

If Deleuze and Guattari are right, a method for reticulating decision-making warrants into evidential form is bound to fail in that: 1. New forms of evidence would suffer under the tyranny of data; and 2. the whole approach of reticulating the warrants for decision into evidential form ignores the argument that the inputs cannot be construed as evidence. The attempt itself is a totalising tendency suited to a striated domain of action and not nomadic science and it marginalises the idiosyncratic aspects of patients, doctors, and their interaction so that “the movement challenges professionalism by disputing what and how physicians know, and

555 2006.
556 1987.
557 Tanenbaum 2006.
558 Tonelli 2007, p. 505.
especially by marginalising what one physician can know about one patient”.

This encounter-based knowledge is smooth or nomadic and does not have a settled scientific home.

The assertions of EBM, focused on the importance of clinical research, falter because medicine is at the intersection of several sciences and even of diverse scholarly disciplines each with its own mode of knowing. For example, the humanities, such as anthropology and history, emphasize qualitative evidence and argument. Ethics draws heavily on rational thought and the critical examination of claims to good practice. Therefore placing evidence from epidemiology and biostatistics in the dominant position for clinical understanding is hegemonic.

Post-structuralist writers interweave “evidence” with issues arising when one takes note of power and regimes of truth. Misak, for instance, explains that narrative evidence can provide insight into what it is like to be sick, or to receive investigation and/or treatment that is likely to escape RCTs. She gives detailed comment on how we all assess what we are told and incorporate it into our stories and provides a framework for a still better assessment of the multiplicity and richness of clinical phenomena.

13. 3. Evidence as rhetoric

The RCT and the observational study have an influence on professional boundaries and differential prestige. For example, it can be argued that the only issue separating acupuncture, transplant surgery, hypnotherapy and colour therapy is whether it works. How do we know whether it works? The gold standard is the RCT. “Methodology has become the central means of determining the quality of the evidence base.” According to this argument, healing methods are either scientific or unscientific. Members of the medical profession should at least tell their patients

559 Tanenbaum 1999, pp. 757-758.
560 Holmes, Murray, Perron & Rail 2006.
561 Misak 2010.
562 This line of thinking was suggested to me by Derkatch 2008.
564 Or a compromise.
when they are using unscientific approaches to healing.\textsuperscript{565} It does not matter, this argument goes, whether the treatment is British or Tibetan: it stands or falls on \textit{the evidence}. The social context, history and philosophy of the acupuncture, herbal therapy or beta-blockade\textsuperscript{566} are irrelevant. What can go unnoticed in this approach is that professional boundaries are hereby moved and there is a status/income/publication differential across these boundaries. The huge emphasis which EBM has placed on the RCT and observational study has stimulated this discussion in philosophy of medicine. Clinical research has been absorbed into the rhetoric: \textit{“What is the evidence for homeopathy?”}\textsuperscript{567} Deleuze and Foucault would see this emphasis on evidence as part of a struggle, not just a philosophical analysis as might have been developed by the ancient Greek philosophers. Were they alive today, Deleuze and Foucault would seize on the expression “gold standard” for methodology which has been problematised. They would seize on Borgerson's assertion that EBM's requirement that CAM\textsuperscript{568} be subjected to RCT evaluation would bode badly for allopathy if the same standard were applied to all allopathic treatments.\textsuperscript{569} And they would note that EBM has chosen the weapons: many writers have explained that CAM does not lend itself to RCT evaluation. How would CAM want EBM evaluated?

\textsuperscript{565} An Auckland doctor was disciplined because he did not tell his patient that he was treating her thyroid disease with alternative therapy (and not giving her standard allopathic medication).

\textsuperscript{566} Beta-blockade is the application of beta-blocker drugs to the heart. The point of this sentence is that acupuncture and herbal therapy (Chinese) have an extensive history, and, I assume, a philosophy, whereas beta-blockade is a few years old.

\textsuperscript{567} It is actually more complex than this. 1) Modern EBM protagonists (Djulbegovic, Guyatt and Ashcroft 2009) have found against homeopathy on the grounds that the theory is unconvincing although the RCT was supportive, as I explain above. 2) The rhetoric in favour of allopathy is sometimes challenged by another rhetorical ploy: the television advertisement for \textit{ignite} trumps (unnamed) viagra because it is \textit{natural}. Never mind the extensive research behind viagra and never mind that Deadly Nightshade is natural.

\textsuperscript{568} Complementary and Alternative Medicine.

13. 4. Epistemology

By 2006 it became apparent that EBM needed to clarify its definition of disease. At that time, at any rate, there were scarcely any statements of definition of disease used by EBM, or the closely related matter of the distinction between health and disease. This is an epistemological issue in that we are not clear just what the EBM knowledge is knowledge about. EBM faces severe challenges here. It is likely that overlapping models of disease are used by several groups: 1) Government/funders; 2) researchers; 3) clinicians; 4) patients; 5) relatives and friends of patients; 6) patient advocacy groups. It is likely that the last group is not systematic in its requests for research. The menu from which to select a model/definition of disease features: 1) a fundamental divide between naturalist (objectivist) and non-naturalist (normativist) concepts of disease; 2) a division into positive and negative concepts of health; 3) an emphasis on anatomy (as in whether the bacterial infection is in the throat or meninges), biochemistry (as in uraemia), symptoms (as in depression) or signs (as in squamous cell carcinoma).

Any or all of these groups of stakeholders could put pressure on researchers to conduct research but the groups may have differing understandings as to what they want research on. This matter is made more difficult by for EBM as they traverse not only disease but also illness and sickness. EBM further challenges itself by responding to some criticism or committing itself to revision. Each time a new formulation of EBM is enacted it is necessary to review the underlying notion of disease. For example, when patient preferences and actions were brought into the formula, it should have been wondered if the patients had the same definition of disease as did the doctors, funders and researchers. Some examples of complex situations are: 1) conditions such chronic fatigue syndrome in which patients are suffering and seek answers but we have not yet formulated a model of the pathology; 2) psychiatric conditions, especially depression, where the borders are indistinct; 3) behavioral issues where the medical profession is looked to for help in such situations as aggressive behavior in someone suffering from Attention Deficit Hyperactivity

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571 Ibid.
Disorder.

EBM has spurred reflection on medical epistemology and its positioning at the intersection of several scholarly disciplines, of which epidemiology is but one. There is no epistemology that can adjudicate between these various ways of obtaining knowledge. An RCT may produce better knowledge than a case study for a well characterised pathogenic insult and a well defined remedy but generalised problems addressed by generic interventions are not the sole occupants of the territory in which medicine operates. One issue here is, “Who is the knower?” The model used in EBM (and in medicine more widely) assumes that doctors deal with problems where general categories (of disease) and off-the-shelf remedies are what must be understood and about these the doctor knows. In an alternative model, where the disease or illness is a complex breakdown between the patient and a life situation knowledge may only be available if the dyad --the doctor-patient dyad--co-constructs it. The pair have to seek and manage other knowledge, as from clinical trials and/or the patient's observations and together share ownership of it and the problem they mutually face. This is revolutionary medical epistemology and differs radically from the model set up by doctors and restructured to provide a slot into which patient values and preferences can be injected. In the new model the doctor/patient dyad knows something that is local and particular to the problem being solved. This kind of knowing cannot be evaluated scientifically using the accepted apparatus of dependent and independent variables. And in view of assertions in the previous two paragraphs it is likely that patient and doctor would be working from overlapping models of illness/disease. For example, it is likely that the patient is thinking of illness while the doctor is thinking about disease.

13. 5. Rules

The EBM debate has forced us to think more deeply about the role of rules in clinical medicine as is evident in its downstream developments: clinical practice guidelines, standard clinical pathways, and treatment protocols. Doctors are faced by individual patients, yet the rules aim to eliminate particularity. “...the knowledge undergirding
these rules is probabilistic and therefore uncertain from the perspective of the individual patient.” We have an inherent logical problem with rules: you cannot have a rule to decide whether to use a rule. We rely on judgment to apply the rules appropriately to the case, bearing in mind that only in a paradigmatic case will a general rule have a predictable effect. Judgment, intuitive appreciation of where one is and what is required when the terrain does not come complete with labels or signposts, is nomadic knowledge used for negotiating in smooth space.

13. 6. How doctors think

Arguments about EBM have forced us to continue to develop our understanding of how doctors think. By now we realize that doctors can think deterministically, probabilistically, causally and, particularly with experienced doctors, heuristically. When we revisit the idea that professional people are realists (with a small r), wanting to know what actually is the case in an indeterminate world of conflicting and often chaotic forces, but that they are trained in deterministic or mechanistic thinking as in a world where definable causes have repeatable effects, we begin to see why the smooth/striated problem is endemic in clinical practice. Physiology and pathology assist the doctor but convey the norm that competent practice proceeds with a high level of certainty (perhaps based on objective laboratory tests). To be certain that the needle had not missed a possible thyroid tumour during the biopsy, that glucose levels do indicate real life conditions and that probabilistic estimates derived from populations of uniform individuals are the best way to get at the dyadically generated truth of the illness is of a piece with the deterministic thinking of objective medical knowledge. Realistic doctors, they tell us, use “iterative reasoning” based on the deterministic model. But the overall problem with deterministic reasoning, the dynamic and changing nature of the objects and conditions involved, the subjectivity of the effects, the incompleteness of our knowledge of relevant antecedent conditions and the butterfly-in-Kansas factor in chaotic systems with the complexity of a living situated human being will not go away because of a prior commitment to striation.

572 Tanenbaum 1999, p. 762.
573 Tanenbaum 1999, p. 760.
Then again, we have come to realize that the more recently heralded probabilistic model limits itself to the observable, measurable. Then there is the problem, already mentioned, of possible slippage between an effect in a group and an effect in an individual. Lastly, "if the treatment does not work, a deterministic model provides a better basis for “iterative reasoning” because deterministic models aim to provide an explanation, perhaps mechanistic, for results. Probabilistic models attempt no explanation, as I have mentioned, but they cannot divorce themselves from the theories in which the sampling of data has been performed. In either case there are real worries about the applicability of the approach to the dynamic world of doctor and patient.

13. 7. Certainty

EBM leaders deplored the stew of expert opinion, clinical experience and pathophysiological reasoning and could not accept the amount of variation in medical practice. With studies and meta-analyses of studies and systematic reviews of studies and of meta-analyses of studies, for the first time in medical history we could be fairly certain as to how well a test would perform and how well a treatment would work. However, Tanenbaum asks whether more certain doctors are better doctors. She argues that EBM is proceeding at an angle to professional practice, which is geared to uncertainty and to seeing the patient through to the unpredictable outcome. Tanenbaum tells us that EBM is coming from outside the professional relationship, from biostatistics/numerous substitutable and therefore totally functional professional relationships. Furthermore, with regard to certainty, probabilistic reasoning can take you only as far as probability. And there are theoretical limits to certainty. It works better in a realistic framework. However, if reality is partly constructed, certainty is no firmer than reality's cultural supports and the regime of truth governing it. The whole complex discussion in this paragraph floats free of solid foundations. EBM brings with it the subject/object distinction, theories of reality, over-reliance on diagnosis, and inadequate emphasis on the symbolic. For example, the objective

574 Ibid.
575 1999.
treatment of, say, coronary heart disease, occurs in parallel with symbolic issues like the huge placebo-effect of having major cardiac surgery in a prestigious centre and the effect on the patient’s psycho-neuro-humeral system of being cared for in a co-constructed treatment regime.

13. 8. Variation

In the 1970s the outcomes movement confronted the fact that doctors in different areas treated similar patients differently. The management of some medical conditions, such as surgery for inguinal hernia, showed little variation from region to region. However the treatment of other conditions, such as pediatric gastroenteritis, showed a huge variation in hospitalization rates. Why? Two issues were identified. In some cases of wide variability, there was no agreement as to the value of hospital based services, but also a second issue, “practice style”, meant that different doctors provided different treatments “for reasons of their own or their patient's convenience or their interpretation of the requirements of 'defensive' medicine”. In our century, Tonelli has explained that differing doctors can interpret the epidemiological evidence differently as regards the individual patient. He also explains that each doctor can assess the other four warrants for decision differently, and that we have, then, an explanation for the variation in practice so bemoaned by the EBM pioneers. The outcomes movement thus forced doctors to face the issue of traditional (objective, general disease, general-remedy-based) medical knowledge and its adequacy for the task of treating ill people. This profound issue of the situated patient-doctor dyad and the contestability of treatment in the smooth space of uncontrolled human life forced us to see the intractability of real clinical medicine in relation to totalizing knowledge.

Summary of chapter 13

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577 Ibid.
578 Wennberg 1984, p. 31.
This chapter canvasses a number of issues in philosophy and presents updates as to what is being currently discussed 20 years after EBM began to stimulate debate. I consider how many of Tonelli's five warrants for decision can be viewed as evidence and agree with Tonelli that any further structuring of most aspects of the consultation into evidential form should be resisted. Certainty is promised by EBM, but clinical research cannot get beyond probability. We cannot assume that a certain doctor is a better doctor. Insightful papers are being published on the vexed question of the application of research conducted on groups, to the individual patient. Two 2008 papers provided by EBM leaders give detailed guidance as to how to match the study with the present patient. Even so, there is still no rational way to jump the gap from the group results to the next patient. Deleuzian theory explicates the impasse, but does not solve it. Smooth space and striated space do not mesh. There is a crisis in the rational use of medical knowledge. I move the issue into tacit knowledge, arguing that a doctor learns from a senior how to do this, although not rationally. There are two problems in using rules. Rules ride over the individual, and there is a problem how to decide which rule to use, in that you cannot provide a rule to make this decision (It requires judgement.). Variations in practice can be viewed by analysing the five warrants for decision, provided by Tonelli. The idea here is that different doctors attach differing weights to the five warrants, perhaps ignoring some.
Thesis conclusions

1. History and achievements

As the twentieth century was drawing to a close, some people, later called “EBMers”, decided that medical practice had an unsatisfactory knowledge base, with too much subjectivity in the knowledge, too much variation, escalating costs and an unmanageable plethora of information. But the way in which the medical situation in the 1980s was problematised influenced the solution. For example, they assumed that the variation in practice was regrettable. EBMers attacked the problems by bringing epidemiology into clinical medicine (and health services management) and through setting up databases. Doctors were taught how to structure a question after noting a deficit in knowledge. They were taught how to find and assess a research report. EBM leaders developed meta-analyses of trials, and systematic reviews of meta-analyses of trials. Partly in the hands of people other than EBMers, critical pathways, clinical guidelines and protocol-based practices were developed. EBM leaders set out hierarchies of evidence to guide doctors as to how much weight they could place on the research evidence; and, in the second decade of EBM, doctors were given more guidance about the strength of the recommendations which could be made from the research results. All of these were to help the clinician cope with a deluge of (sometimes conflicting) research results. EBM promised to provide objective
knowledge, accessible to all, for settling disputes and reducing variation in practice. EBM emphasised the evidence derived from RCTs, and, in its second decade, from observational studies as well. This method of practising medicine gained substantial influence in numerous institutions and in private practice. However, I do not concede that it is a new method of practising medicine, a new paradigm. I pay tribute to the enormous assistance which EBM has given to doctors in processing the huge amount of information, but consider that all this influences just one part of the practice of medicine. It simply brings in another well-tailored stream of information (from clinical research) to the decision-making. Even the recently added “patient preferences and actions” enter as a piece of information to be (somehow) integrated with other pieces of information, by the doctor.

2. The impact on medicine

In my philosophical critique of EBM a reader might expect an in-depth account of what EBM means. However, this is not the approach of post-structuralist philosophers. In particular, Deleuze and Guattari, using the plane of immanence rather than the plane of transcendence, move the issue to what EBM does: how it engages with the real subjects who are doctors and patients. The consultation has moved more towards a research model, and tests and treatments are more often supported by clinical research. There are shifts in funding: now research money is likely to go towards RCTs and observational studies. University positions have different criteria from 20 years ago. Lecturers at Medical School and at Continuing Medical Education courses now talk about the studies, or they bewitch us with statements beginning “The evidence says...”. EBM has impacted on the publishing industry--many papers now report RCTs and observational studies. Then there are meta-analyses of studies, systematic reviews of these, clinical practice guidelines and protocol-based practice, as stated above. Students and doctors now study EBM. Managers engage with EBM in an attempt to cut costs.

3. Foucault

Foucault sees the power and knowledge in the EBM discourse as inseparable. Despite
their long history, the traditional inputs to medical decision making were abruptly demoted in the early 1990s, although more recent formulations of EBM rehabilitated “clinical expertise” and “patient preferences and actions”. The medical gaze, or more precisely, the EBM gaze, is restricted, and any phenomenon which does not get into the gaze cannot be a candidate for research, knowledge or clinical practice.

Numerous conceptual spaces in which disease finds itself (such as religious space) are given scant attention by EBM, which continues the biomedical reductive emphasis, often limiting itself to the relationship among (identifiable) variables. EBM is inadequate in the area where biology meets culture, as in AIDS. It is also inadequate in an epidemic, where so many disciplines mix their various models. These do not cohere. I mean such disciplines as public health, work force issues, travel, insurance, psychiatry, law and economics.

EBM has not heeded post-structuralist philosophy, or indeed hardly any philosophy after Popper, Kuhn, Lakatos, Quine and Feyerabend. The neglect of post-structuralism leaves EBM exposed to critique regarding the constructing of the subject of knowledge, the object of knowledge and even knowledge itself, which EBM sees as objective and distinct from the researcher and the experimental subject (object of knowledge). EBM pays scant attention to subjection, which permeates its entire structure. An example is the way in which the doctor needs to subject herself to probabilistic thinking, irrespective of her ethics. By neglecting the Foucauldian technologies of the self, EBM has lost an opportunity to spread its influence among doctors and patients, the very site where Foucault would focus his interest in EBM's power (at the periphery). Drawing on Foucault, I describe two strands in the process of EBM gaining influence. One is that by emphasizing the outcomes-movement-type evaluation, EBM persuades health professionals to bend their activities towards those which can be measured and can provide data. It is unlikely that caring, for example, will provide much data. The second is that managed care, which has embraced EBM, rewards not exactly those doctors who are effective, but those who are cost-effective. Doctors adjust.

EBM could pay more attention to the writings of Foucault on the normal and the
pathological. He tells us that “the pathological” is delineated first, “normal” following, like a remainder or counterpoint defined as the negative of a binary. The oppressive character of the society is involved in the distinction, he tells us, in that the people classed as “pathological” tend to be of lower status than the “normal.”

Foucault and Canguilhem tell us that the distinction can be very complex indeed, and that the distinction, while not arbitrary, is contestable. The matter is of great importance for a number of reasons. EBM's mandate derives from the delineation of disease, since this distinction provides the tasks of 1) diagnostic testing, 2) offering a prognosis, and 3) treating. Even today, to some extent, “health” follows from this process, like an uninteresting aunt. This work argues that the neglect of these issues, including the correlation (how?) of the various understandings of “disease” used by government/funders, researchers, clinicians, patients, friends and relatives, and patient advocacy groups, undermines EBM's prioritizing any one form of evidence. Furthermore, it makes the sufferers of disease holders of a lesser kind of knowledge than the dominant discourse which is scientific/biomedical, so that their “take” on their diseases (which they probably view as illnesses or sicknesses) is almost discounted.

This work argues that “the evidence” does not speak for itself. Not only does “the evidence” hide the complex process by which EBMers have streamlined the evidence, but, furthermore, “the evidence” fronts a giant complex of stakeholders, who hide behind its “objectivity”, deriving status, and achieving hegemony.

4. Change and more change

For the first few years this group was content to promote its product, EBM, paying little attention to the deficits identified by critics. However, as from 1996 a number of

579 Take, for example, the insurance premiums for people with a diagnosis of disease. Note that it is not a question of whether the person has the disease, but of whether she has the diagnosis. There is also, of course, discrimination against those diagnosed with sexually transmitted infections, for example.

580 Surely the lower status is due more to the condition than to the categorization.
these deficits have been addressed. In the twenty-first century EBM leaders have told us about their epistemology, and set out a more nuanced philosophy than did the original seminal paper. The RCT is no longer fetished. Observational studies are also used, and “patient preferences and actions” along with “clinical expertise” have been given more weight. As explained in Chapter 2, two papers by the GRADE Working Group have modified the hierarchy of evidence and developed the strength of recommendations which a doctor can make from the evidence. Patient preferences and actions, as well as system factors, are considered before the GRADE committee finalises its recommendations. Now a clinician can move more surely from the hierarchy of evidence to the strength of the recommendation. This conceptually complex process has been further clarified with the provision of detailed consideration of the long-lamented problem of applying the results of group studies to the individual: instructions as to exactly how to ascertain the relevance. Even so, I suggest that at least some of these changes have the flavor of the auxiliary hypothesis, explained by Popper. I mean that EBM leaders have stretched their method to satisfy the opposition, or to try to, rather than abandon the method. I suggest that this has been less than adequate in the case of “patient preferences and actions”, which probably falls short of subjectivity, especially of post-structuralist subjectivity. I also suggest that this is how power works: try to include the opposition. I quote Miles who states that this process of adaptation has gone too far and that the EBM methodology now lies in conceptual ruins. I draw on several papers to argue that the leap from the EBM recommendations to the needs of the individual patient still remains unacceptable. It still cannot be crossed in a rational way and I provide background theory from Deleuze and Guattari to explain, but not solve, the impasse in terms of the impossibility of meshing smooth space and striated space, (epidemiological evidence with clinical experience). I argue that doctors get around this awkward issue by understanding that both epidemiological or coded evidence and

581 Djulbegovic, Guyatt and Ashcroft 2009.
583 Haynes et al. 2002.
584 Two papers by Bassler et al. 2008.
585 2009.
clinical experience or (partly) uncoded understanding rest in a sea of tacit knowledge and that it is in this sea of tacit knowledge that doctors somehow amalgamate, rather than integrate, these disparate forms of knowledge.

5. Something positive

By contrast with the major themes of my work, as heralded above, I adapt the Deleuzian theory of desire and the Deleuzian dissertation on State and nomadic science to present EBM in a positive light after most philosophers have bemoaned its well-known distortions. I align the positivity and energy in the Deleuzian desire (as against the “lack” that is the core of the desire of Lacan) with the enthusiasm of EBM pioneers as they set about solving the problems of variance of practice, overwhelming amounts of conflicting data, and so on. Here I argue that the desire of the pioneers did not focus on an object, but, developing a method, it neglected such considerations as philosophy of medicine. I regard the complaints about lack of theory and evidence, along with charges of being reductive and totalizing, as part of a turf war, and I defend EBM from having to tick all these boxes before it begins. The approach I weigh in against could be seen as totalizing on the part of state philosophy. I provide a chapter on what EBM contributes to philosophy, by stirring debate and revisiting several areas of philosophy of medicine, such as the nature and function of “evidence”, and the still-unsatisfactory state of the theory underlying the use of population research for the next case, as stated above.

6. More Deleuzian critique

The critique from Deleuze and Guattari is even more radical than that from Foucault. The challenging style of A Thousand Plateaus with its numerous scholarly disciplines and selection of novels and the rhizomatic writing support my assertion. The form of the book is a challenge to any arborescent paper or book, such as any EBM document. A Thousand Plateaus celebrates rhizomatic thinking, and the flow from a number of sources other than philosophy. Indeed, a substantial amount of my work is devoted to a combination of Deleuzian themes. These are: the style of A Thousand Plateaus,
rhizomatic thinking, smooth space and nomadic science. These themes merge to resonate with the way in which doctors, especially in primary care, function.

...think of older medicine and the way in which it deals with so many scientific unknowns by a combination of skillful weighting of presenting features, judicious application of remedies, acumen about the patient and his or her situation and so on. This is unstriated territory, inherently unlikely to submit completely to the scientific method however much it may temporarily dwell in this or that oasis of uncertainty where there are resources to be gathered. ...the place of resources then becomes a structured city of thought with its ordered and arranged ways of thinking and its own organized and well-regulated language..  

Summary of work conclusions

The early EBM pioneers were riding a (Deleuzian) wave of desire and not focused on all the correct philosophical principles as they challenged eminence medicine. However, by the twenty-first century, they had swapped places and become the establishment, introducing, inadvertently I am sure, a new authority; the RCT. However, medicine is too complex and uncertain for EBM to place such emphasis on the RCT and observational studies, massaged into meta-analyses, systematic reviews, protocol-based practices, critical pathways and practice clinical guidelines. This “Apparatus of Capture” amounts to more than the traditional publishing of research results for professional and scholarly people. Through the Deleuzian writing this process of capture can be seen as State science gaining ground from nomadic science. In another Deleuzian image the process can be viewed as an awkward, and only partly successful, attempt at the striation of smooth space. In achieving its dominant position, EBM has sped across worryingly complex areas, such as the subject/object distinction, subjectivation and the post-structuralist subject, representational thinking/transcendence, the relationship between power and knowledge, the passage of a proposition through the signifying regime of signs, and order words. Even so, I follow the Deleuzian spirit in crediting EBM with having extensively developed one more stream of input into the clinical decision, and accelerated our investigation into such issues as evidence, how doctors think, and variation in practice.

587 Gillett (“personal communication”, 2010).
I have tried, then, to present EBM with its internal tensions: the early, head-on rush to clean up medicine, solidifying new authority of the RCT inadequately striating smooth space, in the process making a major contribution to the digesting of unmanageable amounts of medical information, and stirring debate (in philosophy of medicine) through its challenging new methods.
Discussion

1. The unclarity of “EBM”

My readers will have been concerned about the lack of precision as to what exactly I have been writing about under the name of "EBM". I will now tease out several areas of unclarity.

1. 1. The first is that there is a difference between the concept and the extension in reality, or practice. Nearly all the criticism has been directed to the concept. In reality, EBM has been credited with extensive development of information systems,

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588 It is not possible to entirely remove phallogocentrism from my post-structuralist analysis of a phallogocentrist (EBM ) discourse or discourse articulated in terms of one ruling effective and powerful force that imposes on and invades every area of life. For example, both draw on language, reason and writing. It is almost impossible to disentangle the metaphysics involved in both. For example, both involve binary oppositions, critiqued by Derrida and others, and the metaphysical supports for “the object.” There is, however, no clear solution to this problem, and one can only do one’s best with care and consciousness of the problems. The method, if there can be such, is to peel away layers of accretion that are unrealised, reveal connections, contrasts and binary oppositions. This is not allowing the word to stand as a master totem ordering but is to contextualize, disclose, disrupt and resist the principle of order by noting its flaws and falsities. “All we can aspire to is engaged, reflective disillusionment or hyper-criticism.” (Gillett, Personal Communication, 2011).
and the massaging of the results of clinical trials for easier consumption by the clinical doctor. Furthermore, numerous tests and treatments in clinical medicine have been replaced. However, the conceptual dimension of EBM has been extensively problematised. As this work is a philosophical critique, most of the work is about the concept. Even so, I doubt that Deleuze, Guattari or Foucault would support this division between concept and practice.

1. 2. The second issue is that EBM has changed over time. The first model in 1992 was revised in 1996 and 2002. It was further revised by the GRADE working committee in 2004 and 2008. By now EBM has been moved into the clinical context. In 2009, Djulbegovic, Guyatt and Ashcroft gave the best account of its philosophy. Critics had commented extensively on these changes. Kerridge tells us that if EBM stops prioritising RCT evidence, it will lose integrity, utility and authority. From the point of view of Popper, the changes have been too fundamental—the same point. The extensive use of auxiliary clauses has been a desperate attempt to save the theory and has emasculated EBM. One commentator has said that, by now, all that is left of EBM is, “Do not believe everything you read!” The same point has been developed by Fox. He explains that the power of a discourse lies not in its content but in its frame. The frame delineates what the discourse is and what it is not and the framework for EBM is:

The conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. Evidence-based clinical practice requires integration of individual clinical expertise and patient preferences with the best available external clinical evidence from systematic research and consideration of available resources.

1. 3. Thirdly, Fox argues that with the exception of the “best available external clinical evidence from systematic research”, which has been extensively explained, this definition of EBM is imprecise in every phrase and we are not told how to do the integration. In a nutshell the point is this: Who is going to disagree with this new way of practising? Using the framing hypothesis set out by Fox, EBM fails as the frame

589 2010.
590 1997.
scarcely separates it from the usual medical practice, although, as I state, a great deal of detail has been provided as to the “best available external clinical evidence from systematic research.”

1. 4. Fourthly, not everyone in EBM is at the same stage of change. This adds to the unclarity. In like vein, not all writers and practitioners of EBM have the same understanding, or the same beliefs. Furthermore not all commentators have agreed that EBM can be reified. “It” could be seen as an activity rather than as a thing. Even this activity could be hard to pin down if one took the view that we cannot get beyond various perspectives of this activity. Then again, there is likely to be a difference between the activity and any description of it. How are we to know exactly what was done? But the confusion goes deeper. Since 2002, EBM now requires us to integrate the various warrants for decision. Kerridge adds “within the interpretive art of clinical experience”, and argues that the warrants differ epistemologically, ontologically and methodologically among themselves. As EBM does not provide a schema for this integration, or how to integrate evidence with values, we are left to our own devices, and there could be as many products as clinicians.

1. 5. In conclusion, as Kerridge points out, by 2010 it is hard to critique EBM, because it is so difficult to state what it is. Any critique is likely to be chronologically faulted: by the time the critique is published, EBM has changed. Furthermore, it has been promulgated in more than one milieu. For example, a statement for academics may differ from a statement for students, which may differ from a statement for psychiatrists. However, Kerridge tells us that even as the clarity has lessened, the rhetorical and moral force has increased. So it is now hard to criticise EBM because of the vagueness of the object but also because it has established itself. Which doctors will go against the published evidence collated from multicentre trials? Even

592 Fox's framing hypothesis is post-structuralist but derived from philosophers other than Foucault, e.g. Barthes.
593 Gupta 2010.
595 2010.
so, out of the vagueness and change Kerridge\textsuperscript{596} has rescued some continuing characteristics for us. In EBM there is a general tendency to emphasise quantitative evidence. Results from trials are often collated into meta-analyses and systematic reviews. There is a corresponding tendency to avoid aspects of medicine which are hard to conceptualise, define, categorise or operationalise. Kerridge\textsuperscript{597} uses the words "narrative", "phenomenological" and "qualitative" to convey the types of evidence EBM struggles with. For example, the meaning of dying is difficult to define and measure. But Palliative Care Specialists, General Practitioners and others will engage with it. As a result there is a skewing of EBM towards data arising from measurement. Rewording this, "the evidence" is short on qualitative issues like pain.

2. What excuse has philosophy for critiquing medicine?

2. 1. By the twentieth century some scientists and philosophers, such as Heidegger, are denying 1) philosophy's right to oversee science and 2) science's dependence on the results of philosophical investigations. Some, such as Quine, have even suggested that philosophy is continuous with science. This claim would eliminate any leverage that philosophy, as a structured system of production of truth according to norms of reason and an ordered model of the world, has over science. Should I then, put philosophy aside and leave medicine alone? Can medicine now run itself?

2. 2. I undertake a deconstruction which disrupts the clean divide between evidence and theory as two arms of knowledge and asks us to examine the situation of the alleged knowledge in practices of human discourse in a way that drives a stake into the heart of the eternal and always self-refreshing, pure lines of theoretical knowledge that medicine (and philosophy) often venerates. Inserting the thinker back into nature as one of the denizens undermines the idolization of knowledge as pure or untrammeled and logical activity answering only canons of reason and critical scrutiny.

\textsuperscript{596} 2010.
\textsuperscript{597} 2010, p. 370.
2. 3. One issue here is whether medicine can be classed as a science. As is well-known, the relationship between medicine and science is complex and much debated (Is medicine a science or an art? EBM protagonists have said that they will help provide the art of medicine with a scientific basis.). In this work I adopt the view that medicine draws on a number of disciplines, including physiology, ethics, law, epidemiology and biostatistics, anthropology and so on. I have positioned the work to be alert to any tendency of epidemiology and biostatistics to dictate its rules of evidence to the whole of medicine. In this regard, I note that De Caro and Macarthur introduce a volume which explains the difficulties scientific naturalism has in dealing with a number of issues which occur in medicine. For example, scientific naturalism, “where causes are thought of as mind-independent” is under strain when it attempts to provide convincing accounts of intentional states, human freedom and personal identity, of patients, doctors and researchers. Scientific naturalism provides us with an account of objects placed in a world-as-studied-by-science. These objects can even include meaning, motivation and values. However, De Caro and Macarthur allude to a chapter by Huw Price, which draws attention to the “metaphysically substantial conceptions of reference and truth” supporting this object world. These authors note an asymmetry in this naturalism: it is heavy on the object but light on the subject. Explaining this, De Caro and Macarthur draw attention to the negligible attention paid to use of linguistic terms and expressions. This subject naturalism is strangely omitted. There is also their tendency to accept a fundamentally foundational and exclusively true and well-ordered scheme of knowledge with a unitary structure of justification and principles of validity and worth.

How do these topics relate to my work? I consider that epidemiology and biostatistics exemplify scientific naturalism and cannot cope adequately with some aspects (such as intentional states, freedom, personal identity) of the lives of patients. From here it is a short step (via psycho-neuro-humero-immunology) to denying epidemiology and biostatistics supreme authority in medicine. This is an example of my application of

598 2004.
600 2004, p. 10.
philosophy to EBM. I hope this approach savours more of providing a viewpoint than
the authority of philosophy. In any event, I am comforted by the last sentence in De
Caro and Macarthur’s “Introduction”, ending...” the distinction between science and
philosophy is one that is constantly being negotiated.”

2.4. Of course, Foucault and Deleuze and Guattari did not provide a critique of EBM,
which was just beginning when they were dying in 1984, 1995 and 1992. There
are complexities with my critique. One is the “death of the author”. Deleuze and
Guattari do not feature themselves as the authors. In post-structuralist culture, the
meaning of a text is decided by the reader. This means that my critique may not be
theirs, and my reader has freedom to interpret my critique.

2.5. Another complexity is that the “message is in the medium”. The very structure
of A Thousand Plateaus “calls into question” all medical writing. This is done
through the rhizomatic writing. Any chapter can be read before any other chapter.
Various disciplines, such as geology and morality, present themselves in any order.
Numerous writers are alluded to, with or without explanation, with or without any
distinction between those who are fictional and those who are not. Some of the
French is untranslated. All this writing is intended to challenge the well-ordered texts
such as those in medicine. But very few health professionals, accustomed to proper
ordering and explanation, could read it.

2.6. The combination of new concepts and jargon reduces the appeal of the Deleuze
and Guattari work for health professionals. Health professionals struggle with
“making yourself a body without organs” and with “deterritorialisation” and
“reterritorialisation”, especially when presented by writers outside of the health

601 2004, p. 17.
602 A Thousand Plateaus problematises medical writing in another way. A Thousand Plateaus is
structured as suggested in its title. There is no climax. The book does not work towards a point of
conclusion. Furthermore, each plateau depicts a period or date in history when some aspect of
culture flowered. The only medical writing which would in any way resemble this would be
medical history (detailing Pasteur, the clarification of the genome, and so on) and, obviously, that
would be sequential.
profession(s). In fact, you could regard post-structuralism as an extreme intellectual elitist movement. Much of what these post-structuralist authors have written has been said more clearly by Peirce and Putnam, by Dewey and Rorty, and by Hacking. Furthermore, some of what these post-structuralist authors have said in complex language is already known. Doctors do not need to read my post-structuralist work to learn that their knowledge of human health and disease gives them power. And they do not need me to tell them that if they prescribe antibiotics for viral infections the are resisting EBM.

3. If not EBM, then what?

3.1. I now respond to Butler's claim that post-modernists are excellent deconstructors but terrible constructors. Firstly, my critics probably want to know, “If EBM is faulted, what do you suggest”? However, I believe that the question has been answered, in part. It surely assumes another system. But post-structuralist philosophers emphasise difference and multiplicity. Furthermore, I am not entirely satisfied that traditional medicine is as bad as EBMers have assumed. Secondly, I draw attention to some positive aspects of EBM, including the way it has made us return to debates. In this way Deleuze and Guattari distinguish themselves from other philosophers, and Foucault would view the power in EBM as productive of research results. Thirdly, I have actually constructed something: a critique, which some might use to sharpen their own understanding and reflection. For example, doctors or philosophers may long have harboured hunches of discomfort about EBM but have not had the double training (in philosophy and medicine) and time to articulate them. Fourthly, Kerridge has proposed values-based medicine. The idea here is that medicine is a moral enterprise. It would provide a different starting point for clinical decisions, since, as this work, Kerridge, and numerous other authors have pointed out,
the integration of the various warrants for decision is, as yet, under-theorized. So move from a knowledge-based enterprise to a values-based approach. In like vein Kerridge tells us that a social model of criticism has been advanced by Berkwitz. This would train doctors to “recognize the social and cultural forces that shape research activity, the selection of evidence and the development of policy”. 607 Fifthly, Tonelli 608 suggests that EBM be retained for its strengths. Keep it separate. No one kind of knowledge has priority in a clinical decision. In this approach evidence is important, but subject to judgment.

3. 2. True to my post-structuralist colours, I end this discussion with a disclaimer. In providing a view of EBM from Deleuze and Guattari, and Foucault, I emphasize that this is a critical viewpoint. Influenced by Rorty, 609 I have tried to avoid the absolutist/relativist dichotomy. In so doing I have, at least, avoided aligning my viewpoint with absolute truth but also tried to avoid a kind of relativistic nihilism. As stated above, Deleuze and Guattari do not consider that philosophy is in a position to tell medicine how to conduct itself. But some people may find in my critical viewpoint some philosophical tools for penetrating EBM’s epistemology, place in neo-liberal society, history, and so on. Readers of my critique would surely see that the claims to absolute and singular truth that people often accept in relation to medical knowledge rest on somewhat less clearcut foundations than might be supposed; that medicine and medical certainty hides within itself unclarities and assumptions that make the world of human health and disease look much more ordered than in fact it is; and that objective knowledge is in fact always situated, and sees things from a point of view that is interested, and embodies a set of values about what is worth knowing, and who knows.

3. 3. Murray et al. 610 throw up the distinction between State science and nomadic science. They are uncertain as to whether there is a system of health care to replace EBM.

607 Kerridge 2010, p. 370.
608 2010.
609 1999.
We have called for an open debate... that would begin to lay out some of the presumptions of good medicine, interrogating the warrants that underlie what will constitute 'evidence' and 'truth' in the health sciences. Ours has been a critical intervention, an appeal, a provocation, but certainly not an authoritarian 'answer'....the way forward must, in our view, be tentative and marked with uncertainty. And finally, yes, there must be an 'opposition between possible answers'...how are they oppositional, and why?

This approach of Murray et al. resembles nomadic science, but it also suggests that exploration--the realization of the faults in the model and a critical appreciation of the defects--will produce a better theoretical basis for care than a Utopian distortion of reality.

It has also been suggested, and I agree, that philosophy can lay bare the conceptual structure of a system like EBM, illuminating the conceptual stand from which the light shines, the candlestick. However, it is asking too much for philosophy to build another conceptual model, in medicine. Perhaps philosophy could be one discipline making a contribution, along with others, such as ethics, law, history, sociology, anthropology, science, language, and, mainly, medicine. Philosophy could set to work to examine just what contribution it could make. From a Deleuzian viewpoint, this would involve the use, probably the creation, of sound concepts. It would apply philosophy to life, not check out life against philosophy. Even so, there would be a close watch for setting up despotic, rigid systems. Life would be seen in terms of desire and this would be freed from fixed, earlier, images that stand apart from the activity of their construction.

3. 4. Post-structuralist philosophers are immediately on guard when they read this question: if not EBM, then what? This is because the question tends to suggest an alternative system. But the system is largely what has been critiqued—almost any monolithic system. One grand scheme for medicine is not recommended, at least in the present state of knowledge. Any change from EBM should allow a diversity of approaches. This is, in part, because post-structuralist philosophers see no way of ascertaining that one approach is “nearer the truth” than others. Any complete theory of medicine harks back to modernism. Today, post-structuralists believe,
fragmentation is appropriate. A theory of medical practice may, of necessity, lack coherence, at least in the immediate future.

3. 5. This work concurs with Daly, who makes a number of suggestions as to how to move the situation beyond the present achievements of EBM. It will be necessary to learn how to integrate pathophysiological knowledge with the results of clinical research. It will also be necessary to learn how to bring in an understanding of the patient and her wishes and the moral norms of society. I would add the need to integrate system factors, such as the price of a drug, or the delay in seeing a medical specialist, the experience of the doctor, and shortage of nurses. I suggest that attention be given to our neoliberal culture—such issues as the market influence on life-long learning, and acquisitions of skills, preferably heralded by certificates, which equip a doctor for the market. Any improvement on EBM needs to heed the “diminished sustainability of the world's resources to meet... the population growth...”. An improved EBM needs to focus more on health promotion, early detection and prevention. Attention should be given to the increasing need for care among the elderly and the disparity in care resources across the economic spectrum along with the ever increasing cost of health care and the gradual withdrawal of many governments from funding this care. Daly suggests that workers from several of these areas requiring integration be brought together to work on this integration. They would, however, stay in their own original settings and answer their own values base as they dud the integrating work.

Summary of discussion

I tease out several strands of confusion as to what is meant, in this work, by "EBM". We distinguish between the concept and the extension in reality. There have been

612 Ronan 2011.
613 Ronan 2011, p. 36.
614 Ronan 2011, p. 36.
615 Ibid.
changes over the years. Surely "it" is an activity rather than an entity, and different in
the practices of different doctors. I excuse myself for applying philosophy to
medicine: *I offer another way of viewing it.* So what do I recommend? No unified
scheme, as in modernism. Attempts to modify or improve on EBM should be
tentative, and, in the present imperfect state of knowledge, allow several approaches.
EBM could contribute as a tool, processing research results for doctors.
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Appendix: Explanation of some EBM terms

1. n-of-1 RCT

In the n-of-1 randomised controlled trial (n-of-1 RCT), a patient and clinician are blind to whether the patient is receiving active or placebo medication. The patient makes quantitative ratings of troublesome symptoms during each period, and the n-of-1 RCT continues until both the patient and the clinician conclude that the patient is or is not obtaining benefit from the target intervention. N-of-1 RCTs and observational studies can provide definitive evidence of treatment effectiveness in individual patients and may lead to long-term differences in treatment administration. Unfortunately, n-of-1 RCTs are restricted to chronic conditions with treatments that act and cease acting quickly, and are subject to considerable logistic challenges.

2. Randomized controlled trial (RCT)

Experiment in which individuals are randomly allocated to receive or not receive an experimental, preventative, therapeutic or diagnostic procedure, and then followed to determine the effect of the intervention. Considered the research "gold standard". Attempts to avoid confounding bias. Exposure (treatment, nature, toxic substance etc) is randomly allocated to participants according to chance (eg using randomly generated numbers), thereby excluding possibility of selection bias.

3. Case-control study

A study designed to determine the association between an exposure and outcome in which patients are sampled by outcome (that is, some patients with the outcome of interest are selected and compared to a group of patients who have not had the outcome), and the investigator examines the proportion of patients with the exposure in the two groups. An attempt is made to find cases which have the outcome of interest and match them with other cases on the basis of potentially confounding independent variables. An example would be cases of Multiple Sclerosis, some having been treated with evening primrose oil.
4. Cohort study

Prospective investigation of the factors that might cause a disorder in which a cohort of individuals who do not have evidence of an outcome of interest but who are exposed to the putative cause are compared with a concurrent cohort who are also free of the outcome but not exposed to the putative cause. Both cohorts are then followed to compare the incidence of the outcome of interest. Another version of this is provided by the Dunedin study, in which one cohort of children is followed for many years. Investigators mine the results for a variety of parameters.

5. Surveys

Observational or descriptive non-experimental study in which individuals are systematically examined for the absence or presence (or degree of presence) of characteristics of interest.

6. Guidelines

These draw conclusions from primary studies about how clinicians should behave.

7. Decision analyses

These use the results of primary studies to generate probability trees to be used by health professionals and patients in making choices about clinical management.

8. Meta-analysis

An overview that uses a mathematical procedure for combining the results of several studies into a single pooled or summary estimate.

9. Systematic review
9. 1. Explanation

A systematic review is a critical assessment and evaluation of research (not simply a summary) that attempts to address a focused clinical question using methods designed to reduce the likelihood of bias. Really a process for finding relevant information to address a clinical question. It need not include a meta-analysis. Different from narrative reviews which give an expert opinion about a topic and tend to give a summary of evidence that supports that expert's beliefs. They can be useful in giving a quick background on a particular area.

9. 2. Appraising a systematic review

Defining the topic (patients, setting, outcome)
Thorough search (search strategy, non-English sources considered, grey literature conference reports, unpublished studies). Consider here the effect of publication bias (papers with positive results are more likely to be published than those with negative results)
Inclusion criteria for the studies (independent reviewers involved)
Study quality assessed by independent reviewers
Missing information and its effect on results
Heterogeneity or lack of heterogeneity discussed and explained
Lack of effect if present is explained (chance or bias)
Recommendations and conclusions reflect the evidence