

Perspectives on evidence-based practice

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17 October 2002

HDA Contract no 02/042

Project 00477

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Acknowledgements

I thank staff members at the HDA, in particular, Catherine Swann for helpful advice, and Claira Bannon for carrying out searches; Catherine Marie Sykes of King's College Hospital for information on action research in the NHS Collaboratives; and Natasha Soureti at City University for locating literature in libraries across London and summarising literature on feminist epistemology.

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Executive summary

Purpose: To review alternative approaches to evidence for evidence based practice (EBP), to critically appraise the core assumptions of EBP, and to analyse problems in the current ways in which EBP is being implemented by the health care system.

Background: The Health Development Agency commissioned this review for its Public Health Evidence Steering Group to inform the development of the HDA evidence base.

Key points: The choice of evidence for evidence-based practice has been strongly influenced by positive realism in which the quasi-experiment of the randomised controlled trial is viewed as the “best” method for the generation of clinical evidence. Critical realists and social constructionists view the currently accepted epistemology and methodology of EBP with scepticism. The evidence hierarchy and systematic review are seen as overly prescriptive, restrictive and narrow. Current ideals of the positivist approach to EBP are challenged on the grounds that the working assumptions are naïve and counterproductive. The research evidence on the disappointing slowness with which EBP is being adopted has lessons both for further work on EBP itself and also for future implementation of innovations intended to improve health care.

Conclusions: If EBP is to be more widely adopted and to achieve genuine improvements in health care and, it will be necessary to:

- (i) broaden the evidence base;
- (ii) create more inclusive methods for evidence synthesis;
- (iii) clarify principles and assumptions to make them coherent and consistent with the evidence about decision-related behaviour from psychology and the social sciences;
- (iv) differentiate more clearly between the dissemination of evidence and its implementation;
- (v)** take into account the social, organisational and psychological barriers to behaviour change.

Introduction

The Health Development Agency commissioned this paper to inform the development of the HDA evidence base. The aim is to review different approaches to evidence for evidence based practice (EBP). Literature in public health and related fields is discussed in the light of alternative epistemological and methodological approaches in the social sciences. The review is in three sections. In section 1, alternative epistemological approaches that problematise the relationship between ‘reality’ and ‘experience’ are discussed. In section 2, a critical analysis of ‘myths’ within the EBP movement is presented. In section 3, recent themes concerning issues and problems concerning implementation of EBP are discussed.

EBP is an adaptation of epistemology and methodology derived from the natural sciences and applied to fields of clinical medicine, health care and education. Beginning in 1992 with the work of Guyatt and others at McMaster University in Ontario, Canada (Evidence-Based Medicine Working Group, 1992), evidence-based medicine (EBM) was an innovation in medical education employing a new ‘problem based’ approach, which has since been adopted by medical schools all over the world. EBM has been given the following definition:

Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available clinical evidence from systematic research. (Sackett et al., 1996).

A textbook *Clinical Epidemiology: A Basic Science for Clinical Practice* (Sackett et al., 1985, 1991) influenced the new “science” of clinical decision-making that expects practitioners to have sufficient competence in critical appraisal of research evidence to implement current best evidence into clinical practice (Gray, 2000). A manual entitled *Evidence-based medicine. How to practice and teach EBM* (Sackett et al., 2000) has been widely used and cited. In addition to any scientific merits, three factors commonly held to have influenced the shift towards EBP in the UK are cost-containment, quality assurance and the purchaser/provider split in the internal market of the NHS. In this light, EBP is the product of historical, political and economic imperatives and it is essential

to be aware of this background when examining the procedures that are advocated for the production and implementation of evidence.

The scope of EBP is comprehensive; it includes pharmaceuticals, devices, procedures, settings, personnel, management, IT, and policy. A major element of EBP is Health Technology Assessment (HTA), which is concerned with containing costs and maximising value (Stevens, Abrams, Brazier, Fitzpatrick & Lilford, 2001).

A range of organisations and agencies produces and disseminates evidence reviews in the UK, for example, the National Institute for Clinical Evidence (NICE), the Cochrane Collaboration, the NHS Centre for Reviews and Dissemination at the University of York, the EPPI-Centre at the Institute of Education, and the Research and Information Directorate of the Health Development Agency (HAD). The Campbell Collaboration aims to provide high-quality, systematic reviews of studies of effectiveness of social and educational policies and practices.

The evidence-based practice movement employs a scientific discourse derived from the epistemologies of positivism and realism. Evidence from randomised controlled trials is highly privileged in a so-called ‘evidence hierarchy’, as illustrated by the evidence that is considered acceptable by agencies such as NICE (Figure 1).

The creation of institutions for the evaluation of evidence in health and social care using the epistemological and methodological systems of clinical medicine raises a variety of issues. For example, the replication of the power-knowledge complex of the clinical encounter within health promotion is considered by some critics to be of debatable value (Lupton, 1995). The Foucauldian post-structuralist debate (e.g. Foucault, 1973; Turner, 1994) has rarely been extended to public health work, yet, in Lupton’s view: “Public health and health promotion...may be viewed as contributing to the moral regulation of society, focusing as they do upon ethical and moral practices of the self” (Lupton, 1995, p. 4). In Lupton’s terms, “ ‘Healthiness’ has replaced ‘Godliness’ as a yardstick of accomplishment and proper living” (Lupton, 1995. p. 4). To quote Foucault, “Health replaces salvation” (Foucault, 1973, p. 198). More detailed analysis of health promotion discourses is presented in section 1.2.

Figure 1: Categories of evidence accepted by the National Institute of Clinical Excellence



The translation of methods suitable for the review of medical technologies into public health is fraught with difficulties and dangers. These difficulties vary in complexity and subtlety but are plainer to see when placed under a lens that views modern systems of health and social care (whatever else they may be) as *hierarchical systems of power, regulation and control*. This review considers the current difficulties of EBP by reference to three sets of issues:

Firstly, the epistemological, ontological and methodological assumptions considered appropriate for clinical medicine may be inappropriate for non-biomedical health and social care. Alternative categories of evidence are available, and these must be considered on their merits if the “*judicious use of current best evidence in making decisions*” is to be the guiding principle. Evidence is always a contextualised, negotiated product, not an *a priori* given. This means that what is considered ‘best’ evidence in one context may be considered ‘worst’ in another. Evidence is a product at the end of a long line of assumptions and choices at the levels of epistemology,

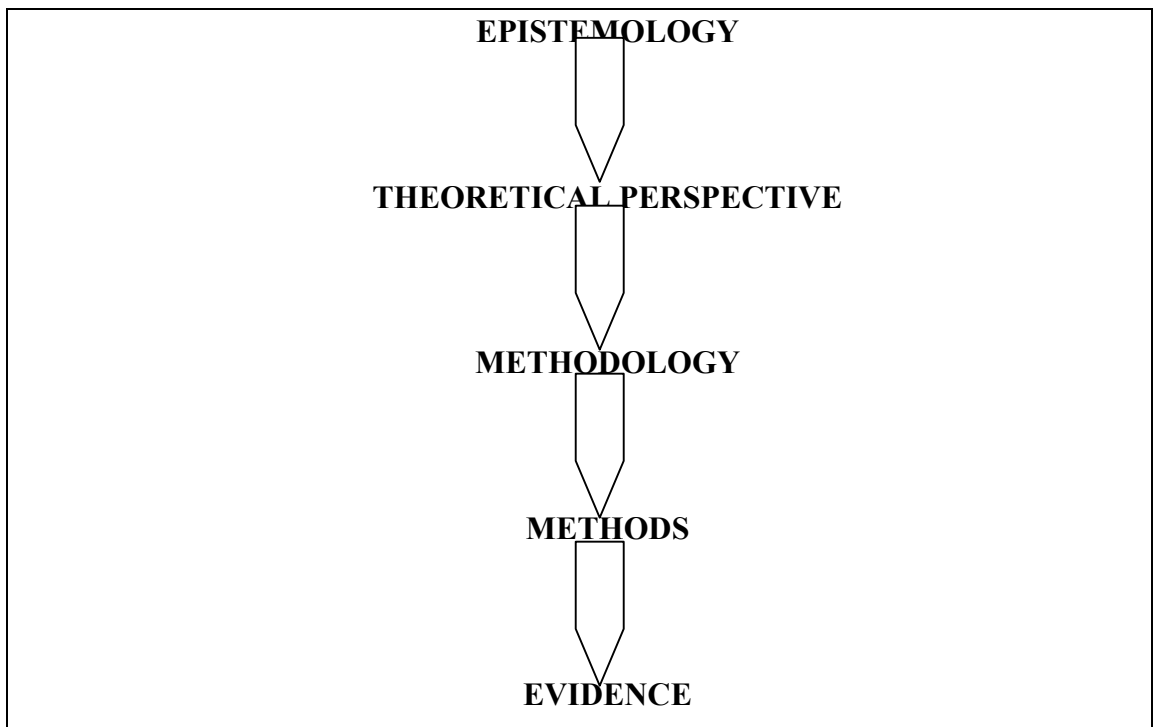
theory, methodology, and methods (Crotty, 1998). Each level informs the next; the evidence that is the final outcome is conditioned by the choices that are made at the prior four levels (Figure 2).

Secondly, current ideas about the logistics of putting evidence into practice include a series of questionable assumptions about human behaviour drawn from lay knowledge. In light of the current best evidence from psychology and other social scientists, these ideas are seriously flawed.

Thirdly, theoretical and empirical studies of EBP reveal several psychological, social and organisational barriers to implementation. These sets of issues are discussed in turn.

Figure 2. Decision elements that condition the production of evidence

(adapted from Crotty, 1998, pp. 3-4)



1. Approaches to Evidence

1.1 Realist and critical realist approaches

Epistemology is concerned with the nature of knowledge, its basis and presuppositions. Epistemologists are not concerned with the ways in which we come to hold beliefs, which is more the work of psychologists. They are more concerned with whether we are justified in claiming knowledge of a particular truth and whether this knowledge is possible at all. In this section I discuss three different positions on the nature of knowledge as “facts” or “evidence”: realism, constructionism (“relativism” or “post-structuralism”) and pragmatism

Realism is the view that we perceive objects whose existence and nature are independent of our mind. The existence of objects independently of the mind is required for a judgement to be considered true. Anti-realism is the view that the perception of any object is dependent on the mind. According to Williamson (1995) “no sane position is reached at either extreme”. Realism is often associated with *materialism*, the view that everything is made of matter. Matter in turn is viewed as ‘whatever can be studied by the methods of natural science’ thus converting materialism into a type of *naturalism*, the view that everything is natural and therefore belongs to the world of nature, which can be studied by objective methods, which in turn is described as *empiricism*. Naïve realism is the view that the world is as we perceive it to be. Critical realism is the view that the world is not always as we perceive it to be. When people talk about ‘realism’ today they usually mean ‘critical realism’. This form of realism accepts that meanings, interpretations, social and political relations must have an influence on social and psychological phenomena (Bhaskar, 1975, 1989, 1997).

In its simplest form, realism is associated with ‘positivism’, a term introduced in the mid-nineteenth century by August Comte to describe the scientific stage of the evolution of human thought. The currently accepted epistemological assumptions of EBP are a form of positivist realism or “positive realism” (PR). Positive realism has been traced back to the philosophy of Descartes, who proposed that we have direct knowledge of subjective, mental reality (‘I think, therefore I am’), but must derive our knowledge of objective, physical reality through observation (Yardley, 1999). The researcher’s task is to make accurate observations about objective reality, ensuring that error and bias are eliminated by isolating variables in order to be able to identify

cause-effect relationships. Thus PR views science as a mirror of nature that reveals the truth. In the case of naïve PR the perception of objects is direct, unmediated by any awareness of mental entities so that objects have the properties they appear to have (Dretske, 1995):

Object-----→Perception-----→Truth

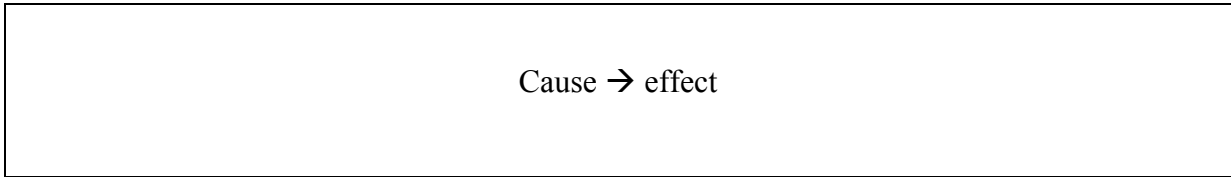
Critical realism allows for judgemental rationality, the fact that we can have good reasons for preferring one theory to another. CR is therefore highly fallibilist in nature, so we can easily be misled by evidence, however rigorous the methods that we use. CR is described by New (2001) as a form of ‘depth’ realism. The world is viewed as layered or stratified, extending beyond what we can experience, with three domains, the real, the actual and the empirical (Figure 4).

Figure 4: Three layers of reality (New, 2001)

	Domain of Real	Domain of Actual	Domain of Empirical
Structures (mechanisms)	√		
Events	√	√	
Experiences	√	√	√

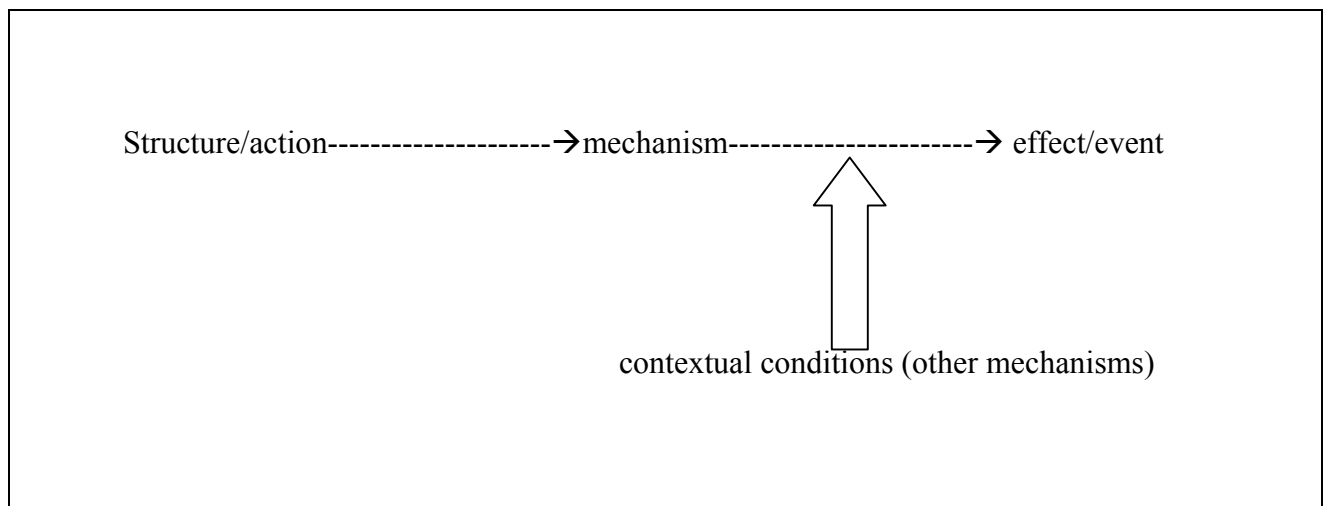
CR views the social world as an open system – a multiplicity of mechanisms are operating simultaneously and affecting each other. Thus a simple positivist or successionist (Humean) view of causation is wrong (Figure 5).

Figure 5: Positivist view of causation



In CR, causation involves “structures”, “mechanisms” and “conditions” which include other mechanisms. Structures exercise causal powers through mechanisms that operate only when certain contextual conditions are available. Thus explanation involves identifying structures, mechanisms, contextual conditions, and outcomes (Figure 6).

Figure 6: Critical realist view of causation (adapted from Sayer, 2000, p. 15)



Of particular relevance to health and social work is a transformative dimension that looks at the potential for open-ended structures to change or be changed (Figure 7):

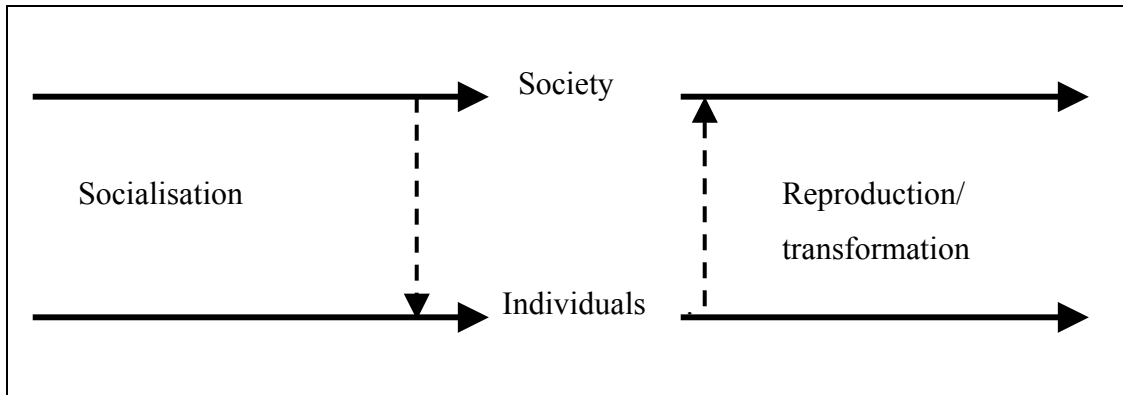
“People do not create society. For it always pre-exists them and is a necessary condition for their activity. Rather, society must be regarded as an ensemble of structures, practices and conventions that individuals reproduce or transform, but which would not

exist unless they did so... Society... provides necessary conditions for intentional human action, and intentional human action is a necessary condition for it”...

“I want to distinguish sharply between the genesis of human actions, lying in the reasons, intentions and plans of people, on the one hand, and the structures governing the reproduction and transformation of social activities on the other...” (Bhaskar, 1989, p.35).

Figure 7: The transformational model of social activity

(adapted from Bhaskar, 1989, pp. 33-4)



An important critique of realist social science has been that of the feminists who perceive natural and social science as male-centered or androcentric. Feminist standpoint theory and feminist empiricism are attempting to give solutions to sexist and androcentric claims in science. With regard to the latter, the feminist empiricists are trying to challenge the incomplete practice of scientific inquiry (not the norms of the science itself). They propose that biases can be eliminated by stricter adherence to existing methodological norms of scientific inquiry. Many scientists agree with that supposition, since they admit that the social values and political agendas of feminism raise issues that enlarge the scope of inquiry and reveal the need for greater care in the conduct of inquiry (Harding, 1991). In specific terms, the feminist empiricists propose that what we see in the world around us is not only a function of what it is there, but of how society designs the cultural filters through which we observe the world around and within us (in ways that do not leave any traces visible to the individual).

Individual biases can be identified and corrected by routine scientific methods, but the cultural biases require different methods of detection. A social movement towards emancipating the more oppressed groups (e.g. women) is one such method. A reliable account of women's life often requires alternative approaches to inquiry that challenge traditional research routines. For example, feminist researchers propose to focus on the conduct of research *by* women, *on and for* women (Stanley & Wise, 1983). For example, understanding the relationship between gender and health requires analysis of the distribution of power and economic resources among men and women (Wamala & Ågren, 2002). Thus feminist standpoint theory is compatible with a critical realist approach to social transformation. It is an approach that is applicable to all marginal and less powerful groups.

In studying other cultures, one must be careful not to impose assumptions from one culture onto another. Linda Tuhiwai Smith (1999) has challenged the positional and ideological superiority of Western knowledge and the “colonisation of methodologies”. From the viewpoint of the Maori people, she describes such colonisation as “a stripping away of *mana* (our standing in our own eyes), and an undermining of *rangatiratanga* (our ability and right to determine our own destinies)” (Smith, 1999, p. 173). Smith points out that years of research have “frequently failed to improve the conditions of the people who are researched” (p. 176). She goes on to say:

“When undertaking research, either across cultures or within a minority culture, it is critical that researchers recognize the power dynamic which is embedded in the relationship with their subjects. Researchers are in receipt of privileged information. They may interpret it within an overt theoretical framework, but also in terms of a covert ideological framework. They have the power to distort, to make invisible, to overlook, to exaggerate and to draw conclusions, based not on factual data, but on assumptions, hidden value judgements, and often downright misunderstandings. They have a potential to extend knowledge or to perpetuate ignorance.”

(Smith, 1999, p. 176).

Given the current political interest in reducing health inequalities, the role of power and ideology in the generation of evidence or “facts” must be carefully analysed. The aim of critical realism to understand the *mechanisms* that generate the phenomena or *outcomes* that are observed in particular *contexts* gives CR a significant advantage over the traditional ‘mirror-of-nature’ approach of positive realism. It is an approach to evidence that is suited to the ideals of EBP. Critical realism teaches that evidence is the product of an error-prone, value-laden system that must be critically appraised and can never be accepted at face value.

1.2 Social constructionist/relativist approaches

Social constructionism or relativism is the view that whatever any individual believes is true *is true* for him or her. An extreme version of this view has little in its favour. More persuasive than absolute relativism is the view that knowledge, or reality, is contingent on social relations and concepts. Social constructionists believe that foundations and knowledge are value-laden, and, contra positive realism, that the distinction between objective and subjective knowledge is unclear. However accounts of realism given by constructionists and relativists usually assume the naïve view of realism (a ‘straw’ realist) rather than the critical realist view. The locutions of “positivist” or “realist” are thus unhelpfully hurled as insults

In constructionist theory different interpretations cannot be viewed as “errors”, since different ways of being and living create different experiences of the world and meanings. Contra PR, there can be no absolute standards for ‘truth’ in the social world, only positions, perspectives or points of view.

The idea that there can be no absolute truth in the social world is illustrated by a table showing four people’s accounts of a series of meetings (Appendix). The table shows a chronology of meetings as recorded by a group of four postgraduate students working on a health promotion project. Each cell records a participant’s opinion about the occurrence of a meeting on a particular date based upon each participant’s independent diary entries. For four of eleven dates there is a disagreement about whether or not a meeting actually was held. Because there is no independent record with which to arbitrate this matter, there can be no right or wrong record; in order to obtain a single “correct” account it would be necessary to negotiate with the

four parties to see if a consensus could be reached. In light of the content of the diaries and the many disagreements that occurred about procedures, it is unlikely that such a consensus could ever be obtained.

This plurality (“inconsistency”) of descriptions (“truths”) about events that are constituted by social relationships, interpretations and meanings does not imply that the alleged singular or ‘objective reality’ of the physical realm is not there; it remains the most valid and useful way of understanding the world. However, the objective reality of the physical world is not the *only* valid and useful way of understanding the totality of the experienced universe; the subjective experiences of social, religious, political, and cultural beliefs all offer different but equally valid perspectives on the truth.

‘Post-modern’ critics of realism have argued that eliminating subjectivity from knowledge is impossible to achieve (Gergen, 1985; House & McDonald, 1998; Yardley, 1999). The constructivist argument is that *all* knowledge is *constructed* by our thoughts and activities. Moreover, the construction of meaning itself is a socio-historical process, since our habitual ways of thinking and acting are fundamentally shaped by social interaction, language and culture. Thus the “same” object or event may be perceived and interpreted differently by different people creating a multiple number of meanings and truths:

Object X-----→Perception by a-----→Interpretation by a-----→Truth for a

Object X-----→Perception by b-----→Interpretation by b-----→Truth for b

Object X-----→Perception by c-----→Interpretation by c-----→Truth for c

Thus when encountering a group of people waving their arms about, one person may see a fight, another see a game and, somebody else, a dance. The actors can also give us their accounts. Acting reflexively, people are then in a position to negotiate and revise their accounts in the light of the perspectives of others. The idea that there can be a multiplicity of accounts or even ‘truths’ about phenomena is a founding principle of constructionism. For this reason,

constructionists favour the use of qualitative research methods. These methods are reflexive and elicit the perspectives and understandings of the actors involved in a situation.

A variety of data sources are available: semi-structured interviews, focus groups, diaries, stories, narratives, texts, photographs, and videos. Flick (2002) has proposed that there are three principle schools of thought within constructionist qualitative research, symbolic interactionism, ethnomethodology, and structuralism, and he identifies four common features of these three schools:

- (i) *Verstehen* as a epistemological principle
- (ii) Reconstructing cases as a starting point
- (iii) Construction of reality as basis
- (iv) Text as empirical material.

The aim of constructivist research is to understand the different meanings of different situations and events for people, and the social processes whereby these meanings are created. Consequently, constructivists investigate how context and interpretation, including those of the researcher, influence our experience and understanding of the world. Constructionists collect contextualised data in the everyday language of participants, and encourage reflection on the social and subjective processes influencing the interpretations that are constructed. The aim of research is to develop meaningful insights, which are useful to specific groups of people, such as patients, participants, or people in similar situations, health care workers, or other researchers. One of the methodological approaches within social constructionism is discourse analysis which can take two forms: (1) Discursive Psychology based on the work of Potter and Wetherell (1987) which asks how participants use language to in order to manage social interactions; (2) Foucauldian Discourse Analysis which is concerned with subject positions, ways of seeing and being, subjectivity and the legitimation of power and knowledge, (Willig, 2001).

Foucauldian Discourse Analysis may be illustrated by a recent analysis of the discourse of European health promotion discourse. A recent analysis suggests that health promotion discourses

are laden with implications about the construction of professional vs. lay power, empowerment, human agency, health, and the practice of health promotion actions (Sykes, Willig & Marks, 2002). We analysed the annual Work Programmes of the EU's Health Promotion Programme (1996-2000). The Programme and its 'key players' are constructed as being concerned with 'doing good' and 'efficiency', while European citizens are constructed as 'recipients' of this good and efficient force.

Three kinds of discourse were evident in the European Health Promotion Programme: a religious discourse, a war discourse and a scientific discourse. Within the *religious discourse* the Programme is being constructed as insightful, almost enlightened on a mission or crusade with a message to spread. In order for the spreading of the message to be effective, organisations and meetings of believers have to be arranged. One way the Programme is organised is by training health promotion practitioners to spread the message, in similar way to disciples spreading Christianity. Just like a religion, it is concerned with sharing and giving. In a similar vein to religious literature, there is a clear distinction made between what is good and bad. Those who partake in what is considered good will be given the 'best' and they will reap the benefits in terms of good health and interventions that are based on scientific findings. Like the protestant religion, not wasting, being patient and exercising control are valued.

The construction of health promotion also draws upon a *war discourse*. The health promotion experts are represented in the same way politicians and diplomats handle potential threats of war. Experts meet to decide structure and strategies to combat the enemy. Members of the public are not invited to these meetings. The decisions are then instructed to health promotion practitioners, like soldiers at 'the front line'. A clear picture of risk factors and their harm is presented although the structures and strategies to deal with the risk factors are not so clearly presented. This is also evident in times of war, when the enemy is clearly known to the public but the structures and strategies to deal with the enemy are mostly kept secret. Just as in times of war, health promotion is concerned with targeting. Health promotion is seen as having useful assets at hand to help its cause – for example, control, exchanges of information, diplomacy and modern technology. In times of war we often see the victims of the enemy, the tortured, the injured and the imprisoned as vulnerable people in need of protection. These serve to justify the war. In a similar light, the

European Health Promotion Programme presents a picture of vulnerable and disadvantaged groups. Vulnerable people are almost blamed for colluding with the enemy by being host to risk factors. However because the Programme is enlightened and modern, it is willing to let these vulnerable groups to defect and denounce the enemy by changing their beliefs, attitudes and ‘lifestyles.’

In the *scientific discourse* knowledge and evidence are conceptualised as being scientific in the Health Promotion Programme. Health promotion is represented as needing knowledge and evidence to implement its principles. As it is concerned with the best, only knowledge and evidence that are based on traditional scientific methods will suffice. There is no mention of any other kinds of knowledge. There is an emphasis on traditional scientific methods of collating information, such as monitoring, observing and experiments. The evaluation of the Programme itself was required to focus on the processes and outcomes of projects using quantitative measures in the form of averages of experts’ ratings (Marks & Sykes, 2002). As in natural science, these positivist methods produce evidence that is seen as objective facts. At one point, even the objects of health promotion’s, people, are called ‘matter’ as in the field of physical science (1997; 77). In a similar way to the scientific world, the Programme attempts to organise ‘key players’ in such a way that the world of the experts is separate from its subject area and clear boundaries are evident. This is supposed to encourage objectivity.

The strong privileging of evidence in the discourse of EBP is an exercise in ‘disciplinary power’, to use Foucault’s term. The power in knowledge may be masked by a professional discourse that includes terms that imply reasonableness, openness and fairness such as “evidence”, “best practice”, and “judiciousness”. When the name of the game is something like ‘clinical governance’, ‘health improvement’, ‘modernisation’, ‘systematic reviews’ and ‘evidence reviews’, who could possibly be against it?

The differences between realists and constructivists need not be an obstacle to integrating the insights and advantages of different approaches to evidence. As suggested by Yardley and Marks (in press), “a qualitative grounded theory analysis of patients’ interviews might be undertaken by a realist who wanted to uncover their rationale for accepting or rejecting a

particular treatment, or by a constructivist who wanted to explore how the treatment was perceived and depicted by the patients. In each case the method used and data obtained would be similar, but the focus of the analysis and the interpretation would be slightly different; the realist would be interested in patients' statements as a reflection of the underlying beliefs which caused them to behave in a particular way, whereas the constructivist might be interested in the accounts as an illustration of the range of socio-cultural meanings whereby patients made sense of the treatment in relation to their wider values and identities".

Clinical decision-making requires the integration of three kinds of information: knowledge about the patient's condition, current best evidence about the effectiveness of treatments, and empathy with the patient's values and subjective meanings. A constructionist approach is particularly well suited to elicitation of the latter.

1.3 Pragmatic approaches

Few researchers are extreme realists or extreme constructivists, and there are many intermediate positions that can be adopted (Guba & Lincoln, 1998). Charles S. Pierce introduced pragmatism in 1905 as a method for clarifying the meaning of concepts and hypotheses by listing the experiential consequences that our actions would have were the hypotheses true (Hookway, 1995, p. 709). Pragmatism has subsequently led to the possibility of resolving some of the disputes about realism and constructionism.

If choice of method is based on the *purpose* of the research, rather than on epistemological assumptions, then different methods can be combined in order to gain diverse forms of knowledge that can provide complementary insights (Yardley & Marks, in press). The insights gained will not necessarily be congruent or converging as suggested by the concept of triangulation; rather, one perspective can be used to elaborate the understandings and insights reached using a different approach Eisner (in press) points out that every method reveals certain kinds of evidence and conceals others. Consequently the question the researcher should ask is not 'which method is best?' but rather 'what can be learned from each perspective?'

This eclectic attitude to evidence is consistent with the *'pragmatic'* view that commonsense, scientific and moral judgements are *all* purposive, constructive activities which share the same fundamental test of validity as any other form of human inquiry: 'What happens if...?' (Yardley & Marks, in press; Hickman & Alexander, 1998). All inquiry involves intentions, values and interpretations, but it must be grounded in the empirical experience that realists regard as fundamental. Thus pragmatism is committed to an approach not dissimilar from critical realism.

The collection of evidence should therefore follow the maxim "horses for courses". With respect to understanding experiences of health and illness, qualitative methods provide insights into subjective meanings in their socio-cultural context. These are not causes or mechanisms that can be experimentally demonstrated, but negotiable interpretations or *reasons* with which people position and give an account of themselves and others to make sense of their feelings and actions.

Pragmatic approaches to evidence may be illustrated by two approaches to evaluation and health improvement. Pawson and Tilley (1997) are highly critical of evaluation procedures modelled on an experimental method that uses experimental and control groups. This experimental approach assumes that programmes/interventions operate in a closed system in which a regularity is said to result from a successionistic cause-and-effect relationship that can never be assumed to occur in the open system of the social worlds (Sayer, 2000). Pawson and Tilley's causal model is the same as that pictured in Figure 6. Instead of using a control group, what the experimenter has to do is to (i) produce a mechanism (M) that will influence things by bringing about a regularity (X-Y) in a context (C) and (ii) prevent interference with the mechanism's activity, which is experimental control. In designing realistic evaluations Pawson and Tilley advocate an evaluation cycle consisting of theory, hypotheses, observations and program specification, following what they call the "wheel of science" (Wallace, 1971).

On the question of evidence, Pawson and Tilley (1997, p. 85) have this to say: "we are whole heartedly *pluralists* when it comes to choice of method. Thus, ... it is quite possible to carry out realistic evaluation using: strategies, quantitative and qualitative; timescales, contemporaneous

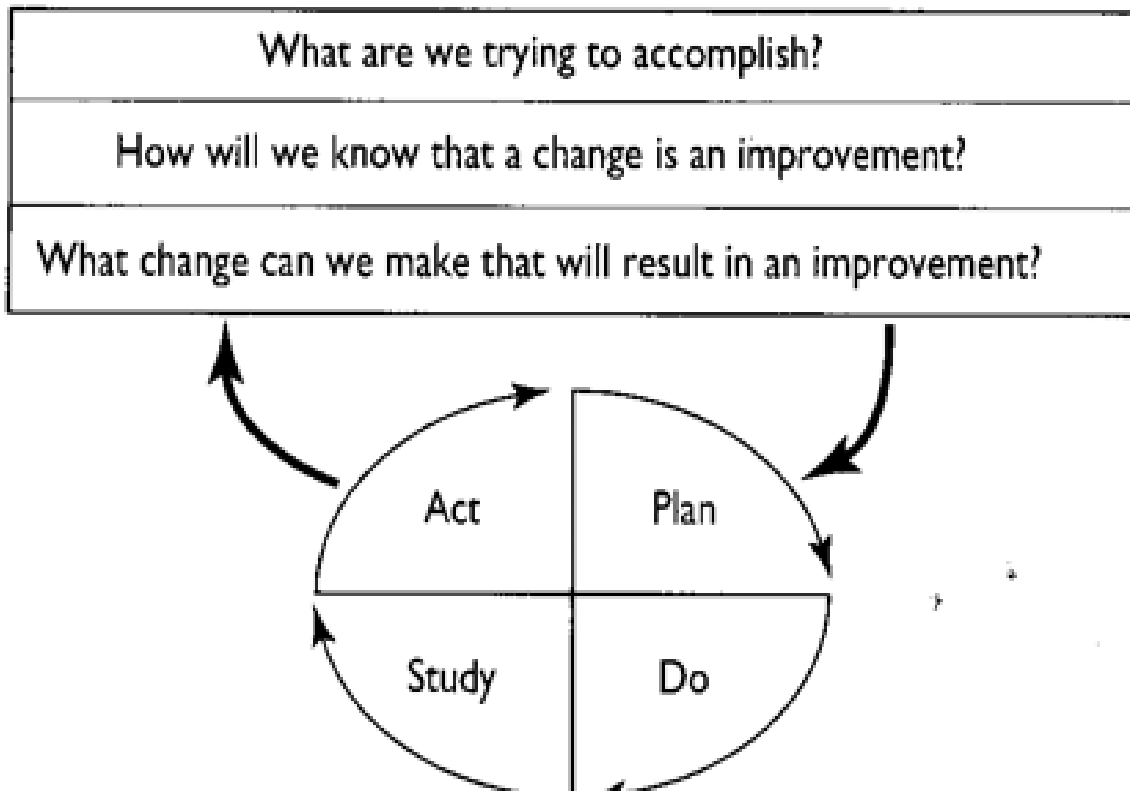
or historical; viewpoints, cross-sectional or longitudinal; samples, large or small; goals, action-oriented or audit-centred; and so on and so forth...*the choice of method has to be carefully tailored to the exact form of hypotheses developed earlier in the cycle*” (p. 85; italics in last sentence added by the author).

A second example of a pragmatic approach to health care systems is Langley, Nolan and Nolan’s (1992) “model for improvement” (Figure 7). This model is based on action research defined as comparative research on the conditions and effects of various forms of social action, and research leading to social action. The cyclical structure of planning, action and investigation may progress spirally and endlessly comprises three basic questions and a fourth element that describes a cycle for testing innovations (Berwick, 1996).

Figure 7: A model for improvement from Langley, Nolan, and Nolan. This framework can guide improvement activities in individuals or teams.

(From Berwick, 1996)

Model for improvement



Berwick's adaptation of the Plan-Do-Study-Act (PDSA) model is being used by the NHS Modernisation Agency and the Collaboratives. This action research approach to systems change is described by Berwick (1996) in the following terms:

"Improvement must be intended, and specific aims are crucial. If my daughter tries to learn to ride a bicycle she has a chance of success. If she sets off to "improve transportation" she might not. How will I know if a change leads to an improvement? Measurement is only a handmaiden to improvement, but improvement cannot act without it. We speak here not of measurement for the purposes of judgment (for deciding whether or not to buy or to accept or reject) but for the purposes of learning (such as from experiment, from others, or from history).

“The plan-do-study-act (PDSA) cycle describes, in essence, inductive learning--the growth of knowledge through making changes and then reflecting on the consequences of those changes. Such inductive learning is familiar to scientists, but such formal cycles of action and reflection are unusual in daily work. Nolan's model intends that the enterprise of testing change in informative cycles should be part of normal daily activity throughout an organisation.”

Sometimes mocked by cynics as “Please do something, anything”, PDSA does not pretend to be “rocket science”. However it is a pragmatic way of making changes relatively quickly, easily and locally, as soon as experience shows an improvement. However, like any change scheme, PDSA encounters resistance in the form of managerial, organisational and ‘cultural’ barriers.

Integrating the evidence from research, which has employed different perspectives and methods, requires an appreciation that realist analysis of quantitative data and constructivist analyses of qualitative data yield different but complementary perspectives on practice. Public health, health promotion and education are applied fields that are interested in both processes and outcomes. It is necessary to adopt a pragmatic framework that can enable integration of *both* qualitative evidence concerning subjective experience, values and meanings *and* quantitative evidence into practice that is fully evidence-based.

2. The mythology of evidence based practice

In this section I review the body of assumptions that constitutes the “mythology” of EBP. Flying in the face of evidence, the collateral assumptions of EBP are myths that do not stand up under the spotlight of critical analysis.

This analysis suggests that advocates of EBP have neglected current best evidence from cognitive, social and organisational psychology about processes that influence decision-making

and behaviour change. This material is contextualised by what could aptly be termed the “politics of evidence”.

The epistemological basis for EBM is a naïve version of positive realism that entails epistemological assumptions that are wrong. To the extent that EBP follows EBM, it is equally naïve. Myths, faiths and idols serve their purposes but they mustn't be believed literally, nor must they replace critical thinking and rationality. On the face of it, *the judicious use of current best evidence* in the making of decisions is an ideal, model procedure. Who could wish to behave otherwise? The trouble is that the majority of decisions are not based on the current best evidence, but on out-dated evidence, opinions, preferences, and routines. For want of a better name, this non-EBP traditional approach may be termed: ‘Opinion Based Practice’ (OBP). For EBP to be successful it must replace OBP. It is supremely ironic that the principles of EBP are unsupported or contradicted by evidence, that they are themselves nothing more than opinion-based theory, a faith.

All beliefs are opinions. Degrees of belief reflect the strength or intensity of opinion. Actions are taken as a consequence of beliefs and desires, and clinical decisions are no exception. Thomas Bayes gave a formula for the revision of beliefs using evidence. Research suggests that people make very poor Bayesians (e.g. Marks, 1970). In comparison to Bayes Theorem, we tend to be conservative, that is we change our opinions much less than the evidence indicates that we should. We tend to stick to what we thought before the new evidence became available. Prior opinions tend to influence what we decide to do more than the evidence suggests that we should. There is also a strong conformity effect, doing what others do in the same situation, what has been termed the “herd instinct.”

EBP is now a major movement within all of the health professions. In reviewing the literature from 1992-2002 I found thousands of items. The vast majority is quantitative and empiricist in nature. There has been almost no critical discussion of the epistemological foundations of EBP. I outline here “seven myths” of EBP (Marks, 2001).

2.1 The myth of evidence based policy

Evidence based practice is an important part of the present Government’s plans for the new NHS. The idea that EBP will improve health care and reduce errors is an optimistic policy, but it may also be a risky one if the evidence base is incomplete. At some point in the future EBP may be proved to be superior to traditional Opinion Based Practice. However, as yet, there have been no trials or evaluations, and so we don’t currently know. Opinions will always be necessary in health care because every situation is unique and no technology exists for making decisions infallibly.

The first of seven myths is that the policy on which the adoption of EBP is based is evidence based. This is such an obvious myth that I will not dwell on it any further. That this is a policy that is not evidence based does little to promote the EBP cause. Until EBP has been shown to be better than OBP, its wide-scale adoption is purely a matter of gut instinct, literally a matter of faith.

In the following I illustrate some specific ways in which the policy to use EBP either has no evidence to support it or actually runs counter to best evidence.

2.2 The rationality myth

The Government's *Our Healthier Nation* (OHN; DOH, 1997) policy states:

“We want to:

- improve the health of everyone
- and the health of the worst off in particular.

Good health is fundamental to all our lives. But too many people

- Are ill for much of their lives
- Die too young from preventable illness...”

The OHN white paper sets targets that by the year 2010, the cancer death rate in people under 75 will be reduced by at least a fifth; coronary heart disease and stroke death rates in people under 75 will be reduced by at least two fifths; accidental death rates will be reduced by at least a fifth and serious injury rates by at least a tenth; mental illness death rates from suicide and undetermined injury will be reduced by at least a fifth. Nobody can doubt that these targets are excellent aims, but they will not be achieved unless the means for doing so are given more serious analysis than has been the case to date.

The Executive Summary continues:

“We believe that:

- the **social, economic and environmental** factors tending towards poor health are potent
- people can make individual decisions about their and their families' health which can make a difference.”

Appendix 1 of OHN describes National Contracts on Cancer, Coronary Heart Disease and Stroke, Accidents, and Mental Health, all of which include social and economic aspects, environmental aspects, personal behaviour and services. For Cancer, for example, “*people can stop smoking, increase consumption of fruit, vegetables, and dietary fibre each day, avoid high consumption of red and processed meat, keep physically active, maintain a healthy body weight that does not increase during adult life. People can also cover up in the sun, practice safer sex, and follow sensible drinking advice*”, the White Paper says.

For most people, especially from the poorest population groups, this well-intentioned advice to carry out health-protective behaviours will not be heeded. Evidence from the fields of health psychology, health promotion and education has revealed significant difficulties with this approach, yet this evidence has been consistently and repeatedly ignored by successive governments of the realm. *Our Healthier Nation* frames behavioural and psychological factors in terms of *individuals making decisions about their and their families’ health*. This gives primacy to individual decision-makers making informed choices about their eating, drinking, exercising, driving, sexual behaviour and smoking over other determinants such as customs, tastes and preferences. The policy states: “Individuals and their families need to be properly informed about risk to make decisions.” This statement is based on the false assumption that informing people about risks is a necessary and sufficient condition for behaviour change (Figure 8).

Figure 8: The chain of causality embodied in the rationality myth

**Information about risks -----→ Rational decisions -----→ Intentions to change
behaviour -----→ Healthier lifestyles -----→ Improved health**

A substantial literature shows that information about health risks is insufficient to bring about lifestyle change. The best predictors of compliance are costs and benefits and perceived seriousness (Becker & Rosenstock, 1984; Ogden, 2000). Unfortunately, the idea that the links in the chain are causal is highly contestable. People do not act rationally upon the information in their possession and change their behaviour: *beliefs are not sufficient causes of behaviour change*. Much more potent as influences on public health are inequalities in income, poverty and social exclusion.

The terms linked by the first arrow in Figure 8, **Information about risks → Rational decisions** constitute the “Rationality Myth”. Millennia of experience and scientific evidence suggest that the rationality assumption is false (Marks, Murray, Evans & Willig, 2000, p. 331; Neuhauser & Kreps, in press). *Rationalisation* about why it is not necessary or beneficial to make a change is more prevalent than rationality. Evaluations of interventions designed to improve knowledge in the population indicate that such interventions can and do successfully improve knowledge, but what they cannot do is successfully bring about behaviour change. People’s behaviour does not conform to the rationality principle; nor does the behaviour of the health practitioner.

2.3 The intentionality myth

Consider now the terms linked by the third arrow in Figure 8: **Intentions to change behaviour** → **Healthier lifestyles**. This is the “Intentionality Myth”. Imagine the case of Adam, a smoker who was properly informed that smoking causes cancer and that cancer causes death. On his 30th birthday Adam successfully defeated the Rationality Myth and decided to stop smoking. Adam subsequently made this decision on repeated occasions. Now Adam is 60 and he is still smoking. Thirty years of evidence-based intentions to quit have passed but Adam has not implemented his intentions to stop smoking by taking effective action. There are millions of Adam-and-Eve survivors proving that the alleged link between evidence-based intentions and behaviours is easily broken. What goes wrong?

The “intention-behaviour gap” is an issue that is familiar to researchers in health psychology (Ogden, 2000, pp. 36-38). The evidence on non-implementation of intentions has become a major research field in health psychology. The evidence that human beings **normally** carry out their intentions is a myth. The hypothesis that human beings **sometimes** do what they intend to do is more consistent with the evidence. How often people implement their intentions is a moot point. The truth is that it “all depends”, on whom has the intention, what the intention is, and in what context the intention is produced. It also depends on the perceived costs, benefits, barriers and supports. What is true of people in general is equally true of the practitioner. He or she is vulnerable to the intention-behaviour gap. Even when fully informed with the best current evidence available, the practitioner may intend to change, but never implement that change.

The non-adoption of EBP in spite of possessing expert knowledge can be illustrated with a study by Majumdar, Chang and Armstrong (2002) who investigated whether sites that take part in a positive clinical trial translate that evidence into practice? Majumbar et al. utilised the fact that the earliest awareness of new evidence is at the trial sites that first generated the evidence. Therefore sites that had taken part in the Survival and Ventricular Enlargement (SAVE) trial (which found angiotensin-converting enzyme (ACE) inhibitors were beneficial following myocardial infarction) should be more likely to adopt their use than other sites. No significant differences were found. The authors conclude: “To accelerate adoption of new evidence, we need to understand factors other knowledge and awareness that influence practice.”

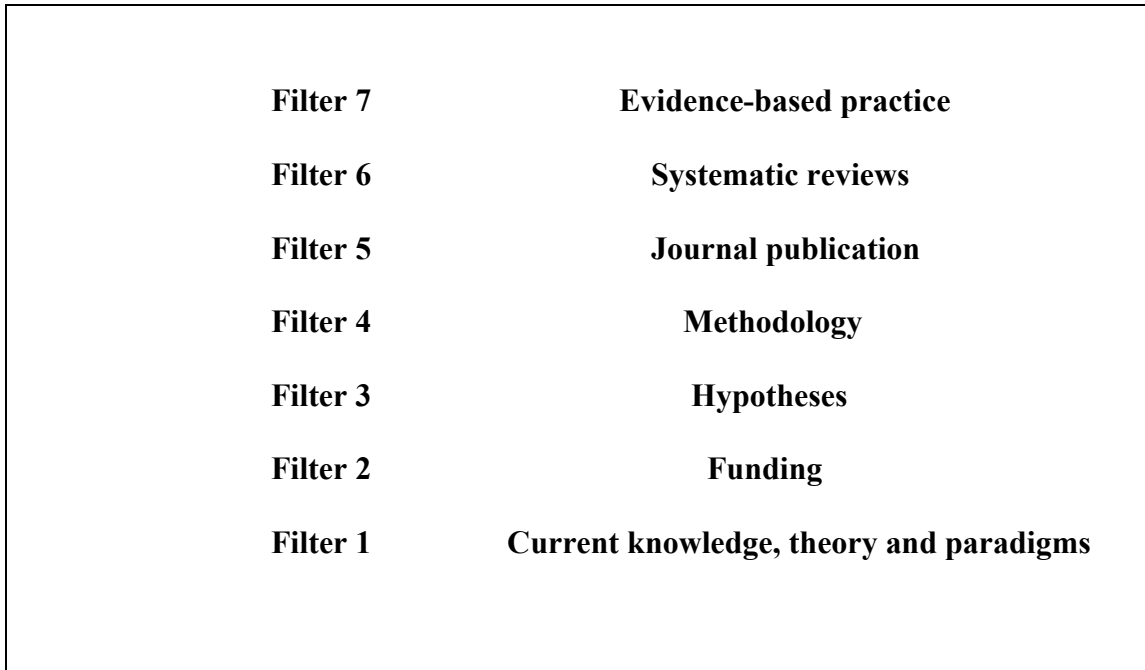
2.4 The objectivity myth

The evidence for EBP is tacitly assumed to have an objective, inviolable status that reflects the reality. In some undefined ways this evidence about reality not only *aids* decision-making, but also *determines it*.

In truth, evidence consists of negotiable, value-laden, and contextually dependent items of information. The knowledge base in science, medicine and health care is not an accident, but the outcome of a systematic set of selective biases that operate as ‘gates’ or ‘filters’. This is apparent if we consider the set of procedures undergone by a piece of evidence before it could be admissible for consideration in evidence based practice. In this example we will consider the pathway of evidence as it proceeds from conception to application. Our glimpse of ‘reality’ that is perceivable through EBP and systematic reviews is a highly select and particular one, a glimpse that is conditioned by a series of filters that operate at seven levels (Figure 9). The filters are so selective that reviewers commonly find that only a dozen or so primary studies from a total field of several thousand will fulfil the inclusion criteria. For example, Oakley (2001) describes a systematic review of peer health promotion for young people that found 5,124 citations of which exactly 12 (0.234%) were judged to have carried “sound outcome

evaluations.” This selective process has been termed “finding needles in haystacks (Oakley, 2001, p. 22-4).

Figure 9: Filters of evidence in EBP



At filter 1, the body of theory , and myth, that constitutes “received wisdom” or “current knowledge” is an accretion of historical choices based on the interests, values and ideologies of the day. This knowledge base informs decisions about the kinds of research projects that are funded at filter 2.

At filter 2 the allocation of research funds is decided by reference to current interests and the already established knowledge base. Funding bodies of principally three kinds - governmental, industrial or charities - have agendas, priorities and criteria for the selection of programmes and projects. Each individual investigation is relevant to a programme of established authorities and interests. Innovators and critics are unlikely to be sponsored.

At filter 3, data collection is driven by specific purposes, theories and methods. Working within the purposes of the sponsoring organisations, conformity to established theories and methods, and personal ambitions to be accepted by the establishment, are the main drivers of investigation.

At filter 4, evidence is collected and analysed according to the particular methods that are best established and accepted by the community of scholars in the field. Innovative approaches and methods are rarely used because: (i) approval would not have been obtained at filters 1-3; (ii) the evidence that they produce will be unlikely to pass through filters 5-7.

At filter 5, when studies have been completed, dissemination of evidence relies upon the judgements of editors and peers who themselves have predispositions to accept some kinds of evidence and reject others. If the evidence is deemed unfit for publication in a journal with a high reputation, then it will be submitted to a lesser read, lower impact journal, or it may not be published at all.

At filter 6, evidence may be incorporated into the body of knowledge that constitutes 'received wisdom' by being included in systematic reviews or meta-analyses or it may be discarded or discounted on methodological or theoretical grounds. It may therefore fall by the wayside of 'received wisdom' and disappear into obscurity.

At filter 7, the level at which evidence is put into practice, the practitioner may be swayed by the convictions of training, routines, and habits - "Old habits die hard", or so the saying goes - to continue with existing procedures, even if they are based on tradition and opinion. Personal ambitions and the need to conform also favour conformity rather than innovation. The practitioner may well believe all the while that she/he is being rational, objective and evidence-based, but she/he is likely to make bad calls nevertheless.

Thus, to be judged 'sound', evidence must pass through seven filters, all operated in the context of an establishment that is predisposed to preserve existing practices, traditions and myths. Undeniably, this evidence selection procedure is systematic and the evidence derived

from it may well be judged 'sound' (at least by narrowly defined criteria). But is it not supremely wasteful of evidence? And does it not give too high a weighting to the beliefs and values of those in the knowledge establishment with the greatest stake in regulating and controlling our health and education systems?

2.5 The methodology myth

EBP has an affiliation to methods that are adjudged by received wisdom to be 'rigorous' and 'sound'. The randomised controlled trial (RCT), at the top of the 'evidence hierarchy', is viewed as the optimal design for the removal of biases that may result from differences other than those attributable to the interventions, e.g. disease severity, co-morbidity. Observational methods are seen as less secure, and qualitative methods as much less so.

These opinions about the ranking of methods in order of their perceived value are contestable however. An awareness of the almost religious fervour about the specific approach to evidence in EBP has been there almost since the beginning. In an editorial in the *American Journal of Public Health*, Susser (1995) stated: "Faith in the randomised controlled trial is so firm amongst epidemiologists, clinical scientists and journals – not excluding this one – that it may be described as a shibboleth, if not a religion" (p. 156). A review by Sanderson, McKee, Britton, Black, McPherson and Bain (2001) stated that the 'instinctive' assumption that observational evidence is inherently more biased and flawed than evidence from RCTs must be guarded against. Reeves, MacLehose, Harvey, Sheldon, Russell and Black (2001) found that observational studies of high quality yielded similar evidence to that produced by RCTs.

Qualitative data could play a much more significant role than has hitherto been the case. If evidence concerning patient experience with a health technology should be taken fully into account, one could reasonably expect that qualitative methods would be considered essential. Yet in only about 20 (about 2.2%) of a sample of 900 items of literature on EBP was qualitative evidence even discussed, and in very few indeed (<1%) was qualitative evidence used in making decisions.

Chamberlain (2000) has described the treatment of methods such as RCTs as idols as ‘methodolatory’. It seems clear that the worshipping of idols could lead to errors of judgement and inappropriate practice. In similar fashion, Fitzpatrick (2001, p. 93) argued that “evidence must replace dogma in choice of study design to optimise the value and impact of data to inform decisions about health services.” Methodolatory and dogma should be the enemies of EBP, yet in the established wisdom of EBP they are welcome friends.

2.6 The trainability myth

EBP requires that practice should be consistent with the best available evidence. EBP assumes that giving the clinician evidence about services and treatments should be sufficient to improve their practice. However, there are many other influences, including routines, lack incentives, lack of time, marketing, and a host of other variables that make information less effective as a change agent than other means. Understandably strong EBP advocates have dedicated considerable efforts into training practitioners to find, appraise, and apply best evidence. However their experience has produced some disillusionment. The group of clinical epidemiologists who developed evidence-based decision-making at McMaster University in Canada (Sackett et al., 1985) recently published some second thoughts about the impact of EBP training on medical practitioners (Guyatt et al., 2000). Following their observation of 10 years in an internal medicine residency programme committed to systematic training in EBP, the authors suggest that:

“The availability of evidence based sources and recommendations will still be insufficient to produce consistent evidence based care...”

Habit, local practice patterns, and product marketing may often be stronger determinants of practice. Controlled trials have shown that traditional continuing education has little effect on combating these forces and changing doctors’ behaviour. On the other hand, approaches that do change targeted clinical behaviours include one to one conversations with an expert, computerised alerts and reminders, preceptorships, advice from opinion leaders, and targeted audit and feedback. Other effective strategies include restricted drug formularies, financial incentives, and institutional guidelines”

(Guyatt et al., 2000, p. 954).

For a large number of practitioners trained before 1995, the EBP movement arrived while they were already qualified and practising. This means that special training and education in the form of CPD would be necessary if the new style of EPB can be expected to have any chance of success. The evidence to be reviewed in below in section 3 suggests that such training and support has not been forthcoming.

2.7 The opinion elimination myth

In the above, I have contrasted EBP with OBP, suggesting that the aim of EBP is to replace OBP in the same way that one paradigm replaces another in natural science. The main trouble is that evidence and opinion are both necessarily involved in decision making. Evidence alone is rarely if ever sufficient in making a decision. The idea that, at some time in the future, when EBP is fully established, evidence will replace opinion may be appealing but, it is illusory. Opinions will always be necessary because each situation is unique. In many situations, having all of the best evidence at one's disposal will still be insufficient to determine a decision. Decisions are nearly always under-determined by the evidence and over-determined by prior beliefs, resulting in overconfidence (e.g. Ayton & McLelland, 1997). Ethical considerations can also conflict with whatever the best evidence suggests might be 'best' for the patient. Patients and their families will always expect and have a right to have their say in the treatments they receive and their opinions may well be contrary to the prognostications of the practitioner. The ethical and personal preferences of the participants of health care must be given a far higher weighting than has been generally the case to date if health care is to become truly a service for the people it serves rather than for the convenience of the providers.

Before closing, I would like to refer to a critique of systematic reviews by Hammersley (2001). Hammersley points out that the terms 'systematic review' and 'EBP' are both: "formulated as implicitly to disqualify alternatives. After all, what use would *unsystematic* reviews be?" In reference to myth-making, Hammersley refers to the fact that EBP extends the myth of the audit society to research (Power, 1997). He goes on to state: "... the consequences are likely to be negative, both for social inquiry and for policy making and practice."

3. Implementation of EBP

EBP in everyday use often departs from the ideal model in manuals and textbooks. Adoption has been slower and less conscientious than advocates would like. Like a new charismatic religion spreading among its converts, EBP talk is a lot more pervasive than “walking the talk” and everyday practice is falling short of the original ideals. The research evidence suggests that practitioners who have been specially trained to carry out EBP are unable to perform EBP with anything like the skill that was hoped. The majority of this section concerns EBP in clinical practice.

From the very outset, the McMaster group accepted that there would be barriers to change. They used a practitioner performance formula that defined performance (P) as being directly related to both motivation (M) and competence (C) multiplicatively, and inversely to barriers (B):

$$P = \frac{M \times C}{B}$$

Firth-Cozens (1997) described the determinants of changing behaviour towards EBP using a marketing approach. Those perceived to need to change (clinicians and patients) are ‘customers’ and the leaflets, Internet pages, CD-ROMs from the Cochrane Library, audit reports, guidance by the NICE, etc that the producers want them to ‘buy’ are considered the ‘products’.

Firth-Cozens cites Winett (1995) who pointed out that to bring about adoption products need to be tried without great cost or effort, deliver a relative advantage, be able to be reinvented and fit well with prevailing norms. Firth-Cozens points out that “all change involves moving away from a state of equilibrium which is maintained by forces which drive forward and counter forces which restrain... We change by altering the balance between the barriers and the drivers, either by increasing the drivers or reducing the forces which hold us back” (p. 207).

Firth-Cozens lists six drivers: pressure from outside the organisation, pressure from inside the organisation, product champions, feedback, *education* and rewards. She lists five restraining factors: insufficient time, high stress/low morale, double bind, poor communication and resistance. Training cannot bring about behaviour change towards EBP in isolation from these other determinants of change. The evidence suggests that untrained practitioners are not easily able to drop OBP and change to EBP.

3.1 Empirical studies suggest adoption is slow

McCull, Smith, White and Field (1998) found that a sample of 302 Wessex GPs mainly welcomed EBP, but had a low awareness of extracting journals, review publications, and databases. Only 40% knew of the Cochrane Database of Systematic Reviews and fewer used it. The doctors thought that the best way to move from OBP to EBP was by using guidelines or protocols. The study focused on the management of hypertension in the elderly.

Cranney, Warren, Barton, Gardner and Walley (2001) carried out a qualitative study using semi-structured interviews with 34 GPs in Merseyside. Although all welcomed practice based education, several barriers to implementation of guidelines were identified:

- * Doubts about the applicability of trial data to particular patients
- * Poor adherence of GPs to practice protocols
- * Ageist attitudes of some GPs
- * Time pressure and financial considerations
- * Absence of computers
- * Absence of an educational mentor

Evidence from Canada is similar. Putnam, Twohig, Burge, Jackson and Cox (2002) carried out a qualitative study of evidence in primary care. Fifty family physicians in Nova Scotia participated in focus groups. The focus of the study was treatment of cardiovascular disease. Physicians reported thinking about evidence during clinical encounters but still situated the evidence within the specific context of their patients and communities. They considered the evidence not to be absolute and considered it along with other factors. It is interesting that this mixture of evidence with local and personal knowledge is seen here as a problem. EBP asks for

judicious use of evidence integrated with clinical expertise. The question is one of balance: how much to weigh evidence from clinical guidelines and how much to weigh one's own clinical expertise? This need to balance and weigh evidence from systematic reviews against particular knowledge of the patient creates a special difficulty for the practitioner.

3.2 Practitioner doubts about epistemology and the evidence hierarchy

Further difficulties occur as a consequence of practitioner resistance to the epistemological assumptions of EBP. Tonelli (2001) discusses the gap that exists between clinical research and the assessment of "what is best for the patient at hand". Of particular concern is the fact that clinical experience and opinion is placed on the lowest rung of the evidence hierarchy and yet it is precisely this kind of expertise that is required in dealing with the individual case. Again it is the dilemma of weighing the so-called "best" evidence of a quantitative kind with the qualitative evidence of the particular patient acquired by the practitioner over their career in practice. Tonelli points out that the two kinds of evidence differ not in degree (as suggested by the notion of an evidence hierarchy) but in kind. Tonelli (2001) argues that clinicians need to incorporate knowledge from 5 distinct areas into each medical decision:

- 1) Empirical evidence
- 2) Experiential evidence
- 3) Physiological principles
- 4) Patient and professional values
- 5) System features

Tonelli adds: "The relative weight given to each of these areas is not predetermined, but varies from case to case."

Coulter (2001) discusses EBP in dentistry and the lack of rigorous health services research that he suggests should focus on effectiveness and not efficacy. Such research also needs to investigate questions about the appropriateness of care, Coulter suggests.

In the field of rehabilitation Ottenbacher and Hinderer (2001) suggest that RCTs have practical and ethical limitations, and they recommend alternative methods to examine effectiveness of treatment techniques such as single case designs.

Welsh and Lyons (2001) also argue for a less restrictive view on what constitutes evidence than that of the evidence hierarchy used by the NHS Executive and others. They suggest that it is “not always appropriate to disregard tacit knowledge and intuition of experienced practitioners when making assessment decisions in mental health nursing practice.”

Jennings and Loan (2001) discuss misconceptions among nurses about EBP. They suggest that EBP is not a synonym for using research in practice but is in fact a set of epistemological assumptions that include evidence hierarchies and systematic reviews. They suggest that the nursing literature shows incongruous interpretations of what EBP is which is a barrier to advancing EBP in nursing.

Melnyk and Fineout-Overholt (2002) point out that evidence is not available for many clinical questions so that clinicians must turn to expert anecdotal evidence to guide their decision making. They point out that EBP must include patient preferences and clinical expertise.

Finally, there has been a push by researchers for a much broader methodological base for evidence than the RCT, with a strong case for the inclusion of qualitative evidence (e.g. Dixon-Woods, Fitzpatrick & Roberts, 2001).

3.3 Practitioners question ethical issues

Christianson and Lou (2001) discuss ethical considerations related to EBP. They suggest that “the dangers of not attending to evidence are just as significant as the ethical issues attending to its application”. They state that EBP has clear limitations in occupational therapy and rehabilitation partly due to the lack of relevant and usable research (a point also made by Ottenbacher and Hinderer, 2001).

Oliver, Piachaud, Done, Regan, Cooray and Tyrer (2002) discuss the difficulties in conducting RCTs of interventions in the field of intellectual disability. Currently the evidence

base is very limited for much of everyday practice. However the RCT design entails a “denial of opportunity which is now at last regarded as disenfranchising.”

Rosen and Teeson (2001) discuss the issue of psychiatric case management and suggest that reviewers have had undisclosed conflicts of interest that have biased the conclusions of their reviews. They state that: “Unless this potential for abuse is recognized and checked, EBP in psychiatry is in danger of being discredited at the hand of some of its own proponents.”

3.4 Practitioners troubled by political issues

Some have expressed concerns about the political implications of EBP.

McLaughlin (2001) discusses the rhetorical nature of EBP as a vehicle for articulating professional identity. He challenges the idea that EBP is a threat to professional autonomy. On the contrary EBP and the concept of risk he sees as resources for defining professional identity.

Stoelwinder (2001) argues the contrary view that EBP reflects the desire of rational management to standardise the clinical process and develop professional accountability to the management hierarchy. The author contrasts EBP with the lack of an evidence base for both policy and management.

Lines (2001) voices concern over the tendency of nurses to isolate their knowledge base from other cultural practices and argues for critical discussion of EBP informed by complex issues that permeate the discourse and construction of EBP.

3.5 Practitioners seek better communication of evidence

Coomarasamy, Gee, Publicover and Khan (2001) claim that clinical journals have not been effective in meeting the information needs of practitioners. They attribute the slow adoption of evidence partly to the failure of journals to disseminate information in a practitioner-friendly way, i.e. in a way that motivates them to change their practice. The authors suggest various

ways in which journals could change, e.g. publish pre-appraised evidence summaries and clinical 'bottom-lines'.

Johnson and Cowan (2002) advocate the use of a computer-based documentation system for EBP in clinical encounters. However they mention that only about 50% of providers in a local centre were using such a system.

A recent study by Eccles et al. (2002), however, suggests that computerised guidelines do not improve care for patients with chronic diseases, and are unlikely ever to be the "magic bullet" that answers all questions. Eccles et al (2002) evaluated a computerised decision support system for delivering evidence-based guidelines for asthma and angina in 60 general practices in north east England. The computerised guidelines had no significant effect on consultation rates, any aspect of the process of care, or prescription of any category of drugs in patients with asthma or angina. The software was receiving low levels of usage, despite the system being optimised as far as was technically possible. The authors suggest that the current system could not be recommended. Even if the technical problems of producing a system that fully supports the management of chronic disease were solved, the challenge of integrating the systems into primary care, where busy practitioners manage patients with complex, multiple conditions would remain.

3.6 Practitioners perceive lack support and resources

A large number of reports have been concerned about the lack of support and resources for implementation of EBP. A few representative studies are briefly described as follows. Wilson, Droogan, Glanville, Watt and Hardman (2001) carried out a postal survey of general practice staff in the Northern and Yorkshire Region. Just fewer than 60% of all respondents reported having no access to the NHS internet and just fewer than 50% reported having no access to the internet. All respondents had greater access to paper based information than to electronic databases. 70% of all staff said that they would need training to either use a computer, the internet, or to search databases. The authors concluded that "general practices seemed to be

struggling to set up the infrastructure and develop the skills that are necessary to make best use of available research evidence.”

In 2001 the situation was no better in New Zealand. Kerse, Arroll, Lloyd, Young and Ward (2001) report that internet access was available to 40% of practices and 76% of GPs' homes. 42% were aware of the Cochrane Library but only 15% had used it.

Maddern (2001) suggests that initial reticence on the part of some surgeons combined with a lack of RCT evidence has slowed adoption of EBP in surgery. The author welcomes the publication of a new register of safe and efficacious procedures, and points out that EBP must be adequately resourced if it is to be widely adopted.

Stapleton, Cuncins-Hearn and Pinnock (2001) surveyed Australasian urologists in 1999 concerning attitudes to EBP. All (100%) endorsed the need for access to evidence-based reviews but 28% claimed such access did not exist and their recommended treatments in some case study vignettes were not always consistent with the best current evidence.

In the field of critical care nursing in Australia Bucknall, Copnell, Shannon and McKinley (2001) found that 42% of nurses believed that they were not sufficiently prepared to evaluate research. The authors also reported that there was a lack of organisational support and management commitment to EBP. A similar picture emerges in many other studies throughout the western world.

A recent study of chronic care management in the USA reported that patients with chronic illness not benefiting from advances in care (Rundall et al, 2002). The study suggests that many patients with chronic diseases are not benefiting from advances in care because of a lack of financial and staff resources, inadequate information systems, and doctors' heavy workload. Rundall et al. assessed the extent to which evidence-based chronic care management processes and computer based clinical information systems were being used to care for patients with asthma, congestive heart failure, depression, and diabetes in nine leading physician practices in the United States. The care management processes studied were the use of practice guidelines,

population disease management, case management, and health promotion or disease prevention activities. Although several examples of high quality care were observed, some of the medical groups used few, if any, care management processes. In some cases care management processes were discontinued because of financial and staffing problems. Nearly all study groups were using clinical practice guidelines. However, the use of other care management processes varied greatly across conditions, with fewer than half of the nine groups using all four processes. The use of computer based information system functions varied greatly among the groups.

Rundall et al. (2002) identified several barriers to the use of care management processes including lack of financial and staff resources, inadequate clinical information systems, doctors' heavy workload and doctors' resistance to change. One medical director said, "We have a major problem with overwork in primary care, and it's getting worse. It is impossible to launch any programme that gives physicians more work." They concluded that the future agenda for restructuring practices should include addressing workload issues, promoting a culture that supports quality improvement, expanding clinical information systems, and financial incentives to reward practices that improve the care and outcomes of patients with chronic disease.

3.7 Organisational issues seen as primary barrier

The literature on EBP makes frequent reference to the evidence-practice gap and to the idea that there are two cultures of research and practice (e.g. Mulhall, 2002). Relatively little discussion has been published thus far on theoretical or practical means for bridging the culture gap. Dooks (2001) from the field of oncology nursing advocates the use of Rogers' Diffusion of Innovation Theory.

Newman, Papadopoulos and Sigsworth (1998) studied barriers to EBP in an acute NHS trust in North London using an action research method. The authors concluded that structures and cultures were important barriers, especially hierarchical structures, and practice routines.

Rosenheck (2001), working in the USA, suggests that organizational processes are the "missing link" between research and practice in mental health work. The author argues that complex organisations have multiple competing goals, uncertain technologies, and "fluid

involvement” of key participants. He suggests that innovations in practice require decision making coalitions and linking new goals to legitimated goals and values.

4. Conclusions

4.1 I have discussed a spectrum of approaches ranging from extreme positivism and empiricism at one end to extreme relativism and idealism at the other. Intermediate positions allow both the *realist* view that there is a physical reality independent of knowledge and the *constructionist* view that human interpretation and subjective meanings configure multiple social worlds and a diversity of truths. Public health, health promotion and health education are applied disciplines concerned with psychosocial mediating processes as much as physical outcomes. It is necessary to adopt an epistemological framework (such as critical realism or pragmatism) that can integrate *both* evidence on processes, subjective experience and socio-cultural meanings *and* evidence on the effects of interventions.

4.2 Critical analysis suggests that strong advocacy of EBP exhibits an indulgence in seven identifiable myths: evidence-based policy; rationality; intentionality; objectivity; methodolatory; trainability; and opinion elimination. If health care is to become truly evidence-based, the current positivist approach to EBP will require radical change. In particular, what is counted as evidence, and methods for gathering and synthesising evidence, will need to be substantially broadened.

4.3 The current literature on EBP reveals seven barriers to successful implementation:

- (i) Complacency – most practitioners are slow to change existing routines;
- (ii) Scepticism - some practitioners have doubts about the epistemological assumptions and the evidence hierarchy;
- (iii) Ethical concerns - some practitioners question ethical issues;
- (iv) Political concerns - some practitioners are troubled by the political implications;
- (v) Inadequate communications - many practitioners seek better communication of evidence;

- (vi) Inadequate resources - many practitioners perceive a lack support and resources;
- (vii) Organisational barriers – current systems and structures viewed as a significant obstacle to individual behaviour change.

4.4 In sum, if EBP is to be more widely adopted, and genuine improvements in health care are to be achieved, it will be necessary to:

- (i) broaden the epistemological approach and evidence-base, and create more inclusive methods for synthesis of evidence;
- (ii) dispel the current mythology and replace it with theory and assumptions that are evidence-based;
- (iii) employ more sophisticated approaches to implementation that take into account the organisational and psychological barriers to behaviour change.

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APPENDIX

Social construction of a group activity

A chronology of group meetings recorded by four members of a group.

Each cell records a participant's account of whether or not a meeting was held on each of the dates listed in column 1. Different accounts, or no records, were made by one or more participants on four dates (printed in red).

Date	A	B	C	D
18 January	Yes	Yes	No	No
25 January	Yes	Yes	Yes	Yes
1 February	Yes	Yes	Yes	Yes
8 February	Yes	Yes	Yes	Yes
15 February	Yes	Yes	No record	Yes
22 February	Yes	Yes	Yes	Yes
1 March	Yes	Yes	Yes	Yes
8 March	Yes	Yes	Yes	Yes
15 March	No	Yes	Yes	Yes
22 March	Yes	Yes	No	No record
26 April	Yes	Yes	Yes	Yes