



# University of Chester

**This work has been submitted to ChesterRep – the University of Chester’s  
online research repository**

<http://chesterrep.openrepository.com>

Author(s): Lewis, Stephen J

Title: On 'Kantian Experimentation' in the health sciences

Date: May 2002

Originally given at: Seminar at Chester College of Higher Education

Example citation: Lewis, S. J. (2002). On 'Kantian Experimentation' in the health sciences. Unpublished presentation given at a seminar at Chester College of Higher Education

Version of item: Given at seminar

Available at: <http://hdl.handle.net/10034/87095>

# On 'Kantian Experimentation' in the Health Sciences

This is **not** a transcript *per se* but rather notes and slides used for an internal seminar given in May 2002. There are, invariably gaps in the argument where expansion was given on the day.

## Introduction

Looking at the title, I know that some people have been puzzled by the term 'Kantian Experimentation'.

Many will have heard of Immanuel Kant – a German philosopher of the 18<sup>th</sup> century.

Least the term 'philosopher' be daunting –

What is a philosopher?

Not necessarily somebody that can answer questions but certainly somebody who can **ask** questions (even about beer). Such people are important because without the right questions we can't get the right answers.

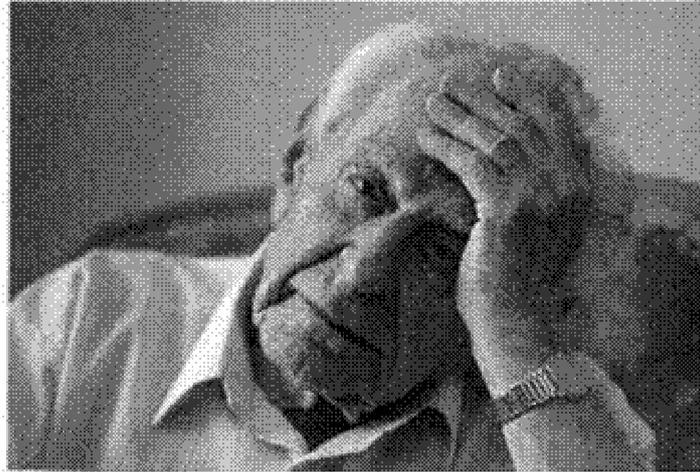
How do you spot a philosopher in the street?

The woman (who looks like Simone de Beauvoir and who is holding her hand to her chin) is obviously a questioner – the guy with the book looks more like a religious fundamentalist; his book gives him all he needs to know so he doesn't need to ask questions.

Popper – A philosopher all scientists (should) have heard of.

# Karl Popper

(1902-1994)



**The Logic of Scientific Discovery (London, 1959)**  
**tr. of Logik der Forschung (Vienna, 1935)**

Many of us claim to be doing science as he proposed it should be done.  
But, how do science and philosophy differ? Answer: They don't.

Popper – The method of science and philosophy are the same.

## How different are philosophy and science?

**There is no method peculiar to philosophy ... And yet, I am quite ready to admit that there is a method which might be described as 'the method of philosophy'. But it is not characteristic of philosophy alone; it is, rather, the one method of all *rational discussion*, and therefore of the natural sciences as well as of philosophy. The method I have in mind is that of stating one's problem clearly and of examining its various proposed solutions critically.**

**Karl Popper, *The Logic of Scientific Discovery***

As an example of this, consider:

## The Philosophers' Magazine Poll

**Books that ought to be placed in a hypothetical  
United Nations library of philosophy**

- **Plato's 'Republic'**
- **Kant's 'Critique of Pure Reason'**
- **Darwin's 'Origin of Species'**

Darwin gets in at number 3. He is not considered the property of science alone.

As biologists, we have (or should have) no problem thinking Darwinian thoughts – when we do so we are using/doing a particular philosophy.

In philosophy, what concerns the thinker, amongst other things, is the nature of the world and the way we see it and relate to it. Darwin certainly changed the way of seeing and understanding it and our part in it. That project is neither complete nor finished.

What people probably haven't been puzzled by in my title is the term 'Health Sciences'.

I should add that when I use the term 'health sciences' (not capitalized), I am not referring to our degree programme.

Nor have people been puzzled by the individual words 'Health' and 'Science' – or that they can be put side by side.

Perhaps people should be puzzled.

Look up 'Health Science' on the UCAS website and you find that it's a very broadly applied term – so broad, in fact, as to be virtually meaningless and in need of qualification for each institution that uses the term. Some nursing courses are 'Health Science: [colon] Nursing'; some paramedical degree programmes are 'Health Science: [colon] ... *whatever*'. It's even applied to some alternative therapy degrees with my favourite, at Westminster, being entitled 'Health Science: Therapeutic Bodywork'.

But try defining 'Health' (and 'Science' for that matter) and we have considerable difficulty.

### **Experimentation – Kantian and otherwise**

Be this as it may, for the time being, what I should like to explain first is what I mean by 'Kantian Experimentation'.

I get the term from Peter Medawar.

# Peter Medawar

(1915-1987)



In his Jayne Lectures of 1968 (which appeared as 'Induction and Intuition in Scientific Thought' (which was later incorporated in 'Pluto's Republic') and in his book 'Advice to a Young Scientist', Medawar describes three types of experiment.

Medawar's experimental types – my order:

**Baconian (or Inductive) Experimentation**

## Baconian (or Inductive)



**Francis Bacon (1561-1626)**

This type of experimentation is typified by the phrase ...

"I wonder what would happen if ... ?"  
All investigations begin this way.

**Galilean (or Critical) Experimentation** (The hypothetico–deductive system (the subject of Medawar's third Jayne Lecture))

## **Galilean (or Critical)**

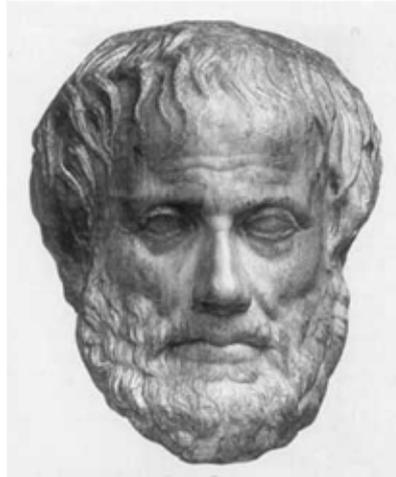


**Galileo Galilei (1564-1642)**

This is the type of experiment where "actions are carried out to test a hypothesis or preconceived opinion by examining the logical consequences of holding it." Here Medawar's words reflect the ideas of Popper [above].

### **Aristotelian (or Demonstrative) Experimentation**

## **Aristotelian (or Demonstrative)**



**Aristotle (384-322 BC)**

This type of experiment is "intended to illustrate a preconceived truth and convince people of its validity." Here, there is an element of the classroom/teaching experiment mentality.

**Kantian (or Deductive) experimentation**

## **Kantian (or Deductive)**



**Immanuel Kant (1724-1804)**

This type of experimentation is based on: "Let's see what happens if we take different view" and consists of "experiments in which we examine the consequences of varying [our] axioms or presuppositions"

We're used to the idea of refutation in science (à la Popper). In some respects, Medawar was to Popper what Huxley was to Darwin. There has always been some debate (mainly outside scientific circles) over whether Popper's ideas were valid. Now Popper is dead, people are feeling freer and able to be more anti-Popperian.

However, what is evident is that, although Medawar is a champion of the hypothetico-deductive system, what he actually portrays – by giving four experimental types – is a sort of methodological pluralism. He may have preferred an ideal 'type' of experimentation or approach to scientific problems but that approach was not necessarily the only one.

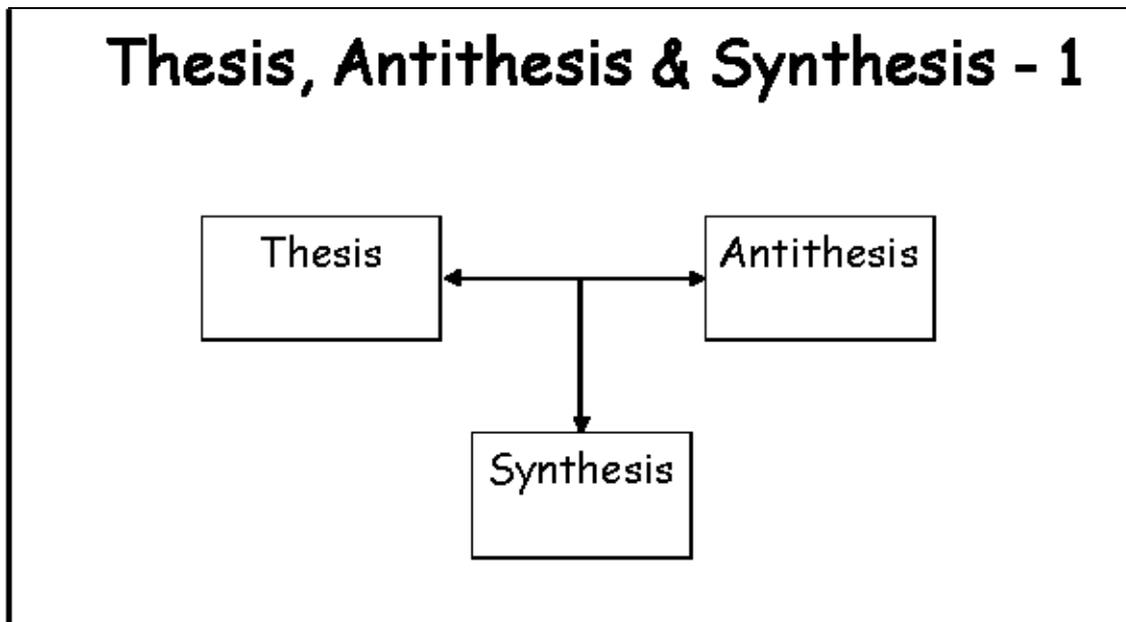
That, and the new found freedom to question Popper, means that scientists must be very careful not to think that methodology is a single, simple pre-defined thing or process.

Scientific thinking does not always have to progress by hypothesis.

An alternative approach that fulfils the criteria underpinning Kantian experimentation is the use of the dialectic.

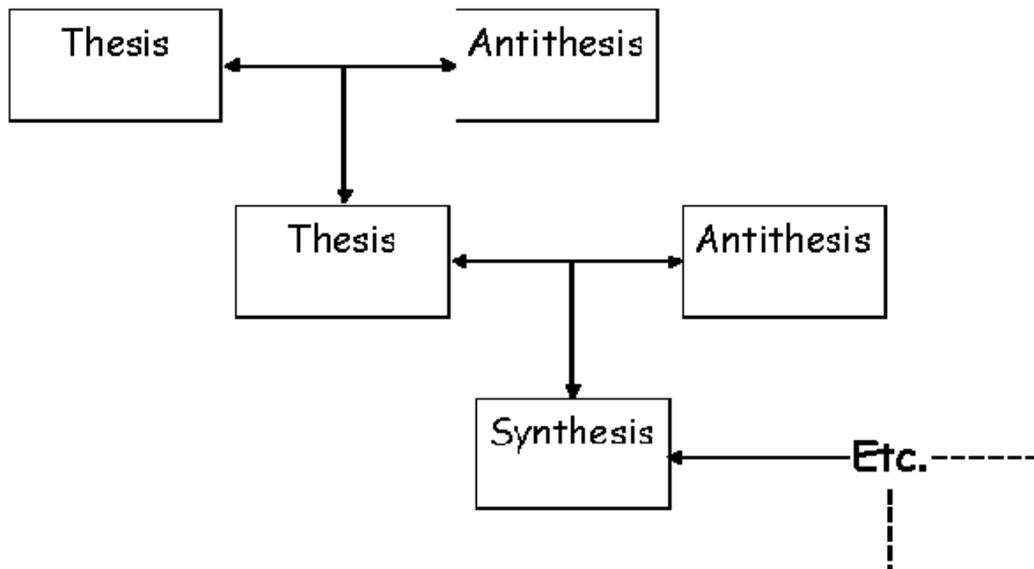
In ancient Greece, dialectic was a form of reasoning that proceeded by question and answer (rather than by hypothesis and test). Plato described it in *The Republic*. Kant used it; so did Hegel who thought that all logic and world history followed a dialectical path.

It works like this:



This new synthesis then becomes the thesis upon which the next round of this process is based.

## Thesis, Antithesis & Synthesis - 2



This provides an alternative/additional way of addressing a range of problems.

In this context, Kant introduced the notion of 'antimony' – we could think of it as 'contrary-ness' – a way of producing 'antitheses'.

Kant stated that "in presenting antimony, I hoped to shake reason from the slumber of fictitious conviction."

In science, do we have what Kant called 'fictitious convictions'?

The answer is 'Yes'. By definition, it is implicit in the hypothetico-deductive system. If a hypothesis is refuted, it must also have been fictitious. Fictitious, that is, in the sense that it was not a perfect description of reality.

In health science more than others, we are particularly close to our key problems: we are those to whom the terms 'health' and 'disease' apply.

This closeness to the problem can be traced back to and seen in our evolutionary cousins the Neanderthals.

Life for the Neanderthals is known to have been harsh. Four out of six adult Neanderthal skeletons found in a cave near Shanidar, Northern Iraq, show deformation due to pathology or injury.

Shanidar 1



Or taking my earlier advice "Let's see what happens if we take different view"

Shanidar '(minus) 1' (using inverted colours)



The specimen called Shanidar 1 showed a severely atrophied (withered) right arm, a condition that he dealt with for most of his life, possibly since birth.

He also had a crippled and withered right leg.

One of the metatarsals on his right foot shows a healed fracture.

He had suffered a crushing injury that probably blinded his left eye.

It can be inferred from this that the individual was cared for during his lifetime by other members of his group, since without this he would not have been able to survive.

As our awareness of the world changed and we developed myths and theories to account for it and our part in it, caring continued but in new ways.

For a long time, disease was seen as some external entity that entered the body and, once there, was interpreted as a sign of divine displeasure and punishment. This had a direct bearing on how one went about dealing with such people. Although, in the West, to offer Christian charity was proper, to try to heal such a person would be contrary to God's will – He having ordained or allowed the disease (à la Job) in the first place. Fortunately for medieval monks who ran most of the infirmaries, there wasn't much they could do by way of cure, anyway. Significantly, upon entering such infirmaries, one was first required to confess one's sins (= cure the soul) before the body could be ministered to.

Diseases were seen as agents that took hold of the person.

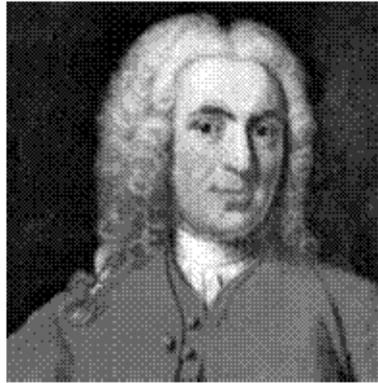
Later, with the mechanistic philosophies of Descartes and Newton in particular, the human body began to be seen as a mechanism too.

In the 18<sup>th</sup> and 19<sup>th</sup> centuries, disease that was previously only discernible at person-level became associated with alterations in internal organs and with physiological function.

Linnaeus even proposed a taxonomy of disease in much the same way as he offered a taxonomy of living things.

# Linnaeus

(Carl von Linné (1707-1778))



**Systema Naturae - 1735**

**[*System of Nature*]**

**Genera Morborum - 1763**

**[*Types of Diseases*]**

Morgagni – Prof. of Anatomy at Padua is seen as the father of modern pathology. He very much started the science of morbid anatomy (i.e. the study of disease at organ level – or what we now call pathology)

**Giovanni Battista Morgagni**  
(1682-1771)



**De Sedibus et Causis Morborum - 1761**  
**[On the seats and causes of disease]**

This was extended by Bichat down to tissue level.

# **François Xavier Bichat**

**(1771-1802)**



**Traité des Membranes - 1800**

**[Treatise on Membranes]**

Foucault uses the idea of a change in the surface (level) at which disease is addressed – and understood to be operative – with Bichat taking it down to the "tissual surface".

Later in the 19<sup>th</sup> century, Virchow took the focus down to cellular level and in the 20<sup>th</sup> century, it became molecular.

# Rudolf Ludwig Karl Virchow

(1821-1902)



**Die Cellularpathologie - 1858**  
**[Cellular Pathology]**

It's worth slotting in a few passing questions at this point:

Are we now any more objective than the Neanderthals?

Does a lack of objectivity compromise our understanding of 'health' and 'disease'?

Is it ever possible to be objective about 'health' and 'disease'?

Important, I think, is the fact that although the level changed – and appropriately so – the language and the meaning of the words used didn't change in keeping with this; certainly they didn't change in the same way. So where once a person had a disease, now disease and pathology were becoming and still are thought of interchangeably – too interchangeably I'd suggest.

During the 19<sup>th</sup> century, medicine was considered to be the science of diseases while physiology was the science of (normal) life.

There are problems with obtaining a precise definition of the term 'disease' but one thing is for sure and that is that 'disease' is not equivalent to 'pathology'. In medicine, there is the concept of the 'pathological counterpart' to disease.

Disease is not equivalent to pathology.

**What isn't -**  
  
***Disease***  
**is not equivalent to**  
***Pathology***

A mass of completely excised pathological tissue may have been the source of a person's 'dis-ease' BUT it was not the disease *per se*. Disease is not a 'thing'.

Something very common in the dissecting room is the amount of pathology of a serious and potentially life threatening nature that did NOT, in fact, lead to the person's/cadaver's demise.

These are technically referred to as pseudo-diseases because there is a physical change but not one that is experienced adversely.

Something else evident through human dissection but not quite so common is the degree of anatomical variability/anomalies about which the person would have been unaware and again did not kill them.

Therefore, it is reasonable to suggest:

What isn't -

***Disease***  
is not equivalent to  
***Pathology***

***Normal***  
is not equivalent to  
***Healthy***

Kant also proposed that knowledge could be divided into:  
*Analytic Facts* and *Synthetic Facts*

This was not an entirely original idea – but had been inspired by Hume  
David Hume (1711–76) – *Relations of Ideas* and *Matters of Fact*.

Furthermore, Hume followed Leibnitz.

Gottfried Wilhelm Leibniz (1646–1716) – *Truths of Reason* and *Truths of Facts*.

The Nature of Knowledge

**Synthetic Facts & Analytic Facts**  
(Immanuel Kant 1724-1804)



**Matters of Fact & Relations of Ideas**  
(David Hume 1711-1776)



**Truths of Facts & Truths of Reason**  
(Gottfried Wilhelm Leibnitz 1646-1716)



However, Quine challenges this.

## **Willard van Orman Quine** (1908-2000)



**Two Dogmas of Empiricism**  
**The Philosophical Review (1951) 60: 20-43**

This Leibnizian/Humean/Kantian separation was one of the 'Two Dogmas' Quine sought to abandon. (The other was 'reductionism':

"One of the most used and abused terms in the philosophical lexicon" (Michael Ruse) and needn't concern us here.)

Quine advocated the idea that all our beliefs were, in fact, connected and formed what he called 'The Web of Belief'. Changes in one part of the web affected other parts. (The terms *belief* and *knowledge* he seems to use to mean the same thing.)

Changes of mind are alterations in the web requiring the least number of alterations to the web as a whole.

States of mind are accordingly, states of this web.

We all know what health is – after all we weren't puzzled by the word 'health' in my title.

However, although we 'know' what it is, we can't define it – yet we can (or think we can) all talk meaningfully about it.

There appears to be something about our individual 'Webs of Belief' that are consistent from one person to another.

When it comes to philosophical analysis of disease and health, two schools of thought have evolved:

Descriptivism (or naturalism) suggests that disease is a statistically species–subnormal biological body function – and health is the absence of disease (*contra* the WHO definition), such that states of health or disease can be objectively allocated simply by reading off some set of biological parameters. Importantly, this approach sees itself as 'value–free'. This approach is characterized by the work of Christopher Boorse and his *Biostatistical Theory* (BST) of disease.

Normativism, however, says that the classification of certain groups of phenomena as diseases is based on value judgements. The concept of disease is not merely descriptive but normative i.e. it says what ought NOT to be.

These are the two principal schools of thought.

# Approaches to the definition of Health and Disease

- **Descriptivism  
(Naturalism)**
- **Normativism**

Some lesser approaches have been proposed. Of these, one worth noting has been called *naïve normalism*. This is worth pointing out because it is the prevailing notion in many textbooks – certainly those available to us – and, it has been suggested, the prevailing mentality in many medical schools. (If this is indeed the case, then it is likely to be a prevailing notion in much, if not all, nursing and paramedical teaching and thinking too.) This view states that health is 'normality' and diseases are 'abnormalities'.

I refer to it as a 'lesser approach' because it is not a rigorously thought through approach. It is none the less probably the most significant attitude prevailing at present.

The use of the term *homeostasis* needs particular note in relation to this. The term has become quite common in health-related textbook titles – yet without any apparent research to obviate such a move.

Books advocating homeostasis draw from an assumption that 'balance' is important for health – this has echoes perhaps of 'the humours' and 'yin and yang'. An influence from alternative therapies may also be evident.

Returning to the two main schools of thought.

## Approaches to the definition of Health and Disease

- **Descriptivism  
(Naturalism)**

**Associated with:**

**'Science'**

- **Normativism**

**Associated with:**

**'Humanities'**

The descriptivism tends to be attractive to scientists, whereas normativism tends to be attractive to those from the humanities.

However, the two sides are at odds. As one author (Sadegh-Zadeh, 2000) has put it: 'The discussion seems to have ended up a blind alley.'

## Approaches to the definition of Health and Disease

- **Descriptivism  
(Naturalism)**

**Based on:**

**Synthetic Facts**

**Matters of Fact  
Truths of Facts**

- **Normativism**

**Based on:**

**Analytic Facts**

**Relations of Ideas  
Truths of Reason**

Looking at the normative–descriptivist debate, it is noticeable that one side can be aligned with –

Synthetic Facts  
Matters of Fact  
Truths of Facts

While the other can be aligned with –

Analytic Facts  
Relations of Ideas  
Truths of Reason

But Quine has already argued against such a division of knowledge.

So perhaps there is an inherent weakness in the division into normativism and descriptivism and these schools of thought are another 'fictitious conviction'.

Either way, routes out of the 'blind alley' are needed and are being sought:

Sadegh–Zadeh's way out was to go back to the beginning of logic and blame Aristotle. In particular, he takes issue with the law of non–contradiction and the law of the excluded middle. Briefly, these laws of logic (together) state that, something can be only one thing at a time; it cannot be both one thing and another at the same time and cannot be something in-between. By this reckoning a person cannot have a disease and not have that disease, at the same time; they cannot be healthy and unhealthy at the same time. By contrast, Sadegh–Zadeh introduces multi–valued or 'Fuzzy logic'.

### **Taking a different (Kantian) view of Disease and Health**

This approach is welcome (as almost anything is, at this stage). It is interesting and thought provoking but it has to be said that it does introduce an element of mathematical notation that does not sit well with everyone – better to have an entirely intuitive approach.

Whether it has practical application is also unclear.

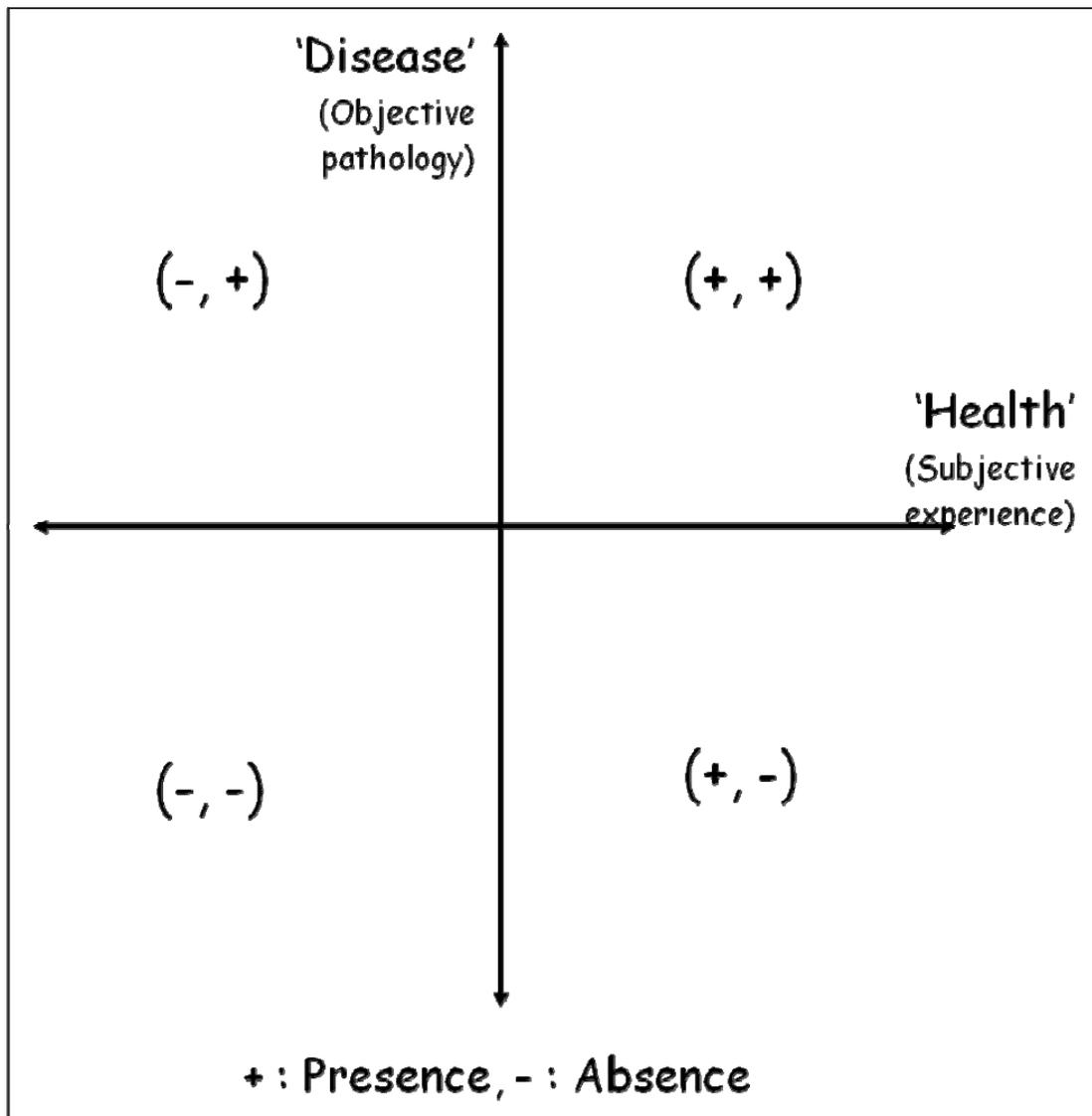
There is also an implicit assumption that 'health' and 'disease' form part of a continuum and are at the opposite ends of the same line.

This is a common assumption – and seems reasonable, or rather to be hard to contradict.

Health and disease on one axis:



What of health and disease on two axes based upon the subjective experience of 'health' and the objective observation of 'disease' in terms of pathological tissue?



However, 'by taking a different view' one might do the thought experiment: 'What if I separate health and disease and make them the two axes of a graph?'

We see that the usual assumption is not without viable alternatives – and therefore it is not unassailable.

**Another way out:**

Elsewhere, Danzer et al (2002) recently published an article on individual health, arguing that one can look at these problems through the work of certain thinkers – they choose Nietzsche in particular – and draw useful insights.

Theirs can also be described as a Kantian experimental approach (although they do not use the term).

Without going into too much detail, something significant that Danzer et al (2002) do is to highlight the difference between British and US philosophy and continental philosophy. There are ways of seeing the world that are unknown to us i.e. because we are British.

Amongst continental philosophers that I've come to be interested in and who are likely to be important in offering new insights in the question of disease and health is Georges Canguilhem.



Canguilhem, first studied philosophy, then medicine, then, following medical work in World War II, became a professional philosopher. (Amongst other things, he is famous as Foucault's doctoral supervisor.)

Important questions in Canguilhem's work include 'How do we define 'normal'?' This is an important question, especially for those who still think that 'normal' and 'health' go together.

One result of exploring these questions was the suggestion that we define normal in response to what we call 'abnormal'.

To put it another way – there would be no call to define normal if that state did not change; were it not for the fact that there is an alternative state.

In this context, Canguilhem notes Leriche's description of health. For René Leriche, health is equivalent to the 'silence of the body in its organs'.

## René Leriche

(1879-1955)



**Health is equivalent to the  
'silence of the body in its organs'.**

In drawing our attention to the 'abnormal' in this way, Canguilhem makes us consider the role and significance of the abnormal **and** normal.

We have a 'sense' of the 'abnormal' in ourselves and in others without resorting to scientific measuring techniques.

I am using the word 'sense' deliberately because this is where I think further insights into understanding 'health' and 'disease' may lie.

What lies at the heart of deciding what is abnormal may be associated with sexual selection and related survival strategies:

'Abnormal bodies' are those that elicit fear and disgust.

('Ideal or normal bodies' elicit 'allure'.)

There are innate factors that are at work that would otherwise be missed.

In this respect, attitudes to the human body cannot be ignored or excluded. In fact, attitudes and their meaning/source must be explored.

Even if this means that social and cultural factors must be considered in order to find a scientific position.

Indeed, giving due attention to these attitudes can be the source of useful questions and insights. An interesting example from our present culture is: What do the cyborg movies (like Terminator and Robocop) tell us of our perception of the human body – its perfections and its imperfections, how it can be improved upon – and what do they tell us, therefore, of our perception of health and disease? (We were once a little lower than angels and our medical and biological thinking followed suit; now we are seen to be aspiring to something quite different.)

## **Conclusion**

Let me note in concluding that:

The question of what 'health' and 'disease' are is central to 'health science' but that the difficulty of the question often goes unacknowledged except by certain schools of philosophical thought.

We all know what 'health' and 'disease' are – until we try to define them.

This seemingly 'innate' sense may be just that – related to an innate survival mechanism.

Whatever we perceive 'health' and 'disease' to be, it is likely to be part of a 'Web of Belief' that connects with all our other knowledge and innate behaviours rather than a result of simple linear reasoning.

To help us gain a fuller understanding, reference to other areas of interest, so far excluded from the scientific remit, may be necessary.

Indeed, our way of doing science may need augmenting by a system that helps us take a different view.

