HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE
Week 1.

Reading: Richard FELDMAN, *Epistemology,* Upper Saddle River NJ: Prentice-Hall/Pearson, 2003.

Supplementary Resources:
During this course, you may well come across terms and concepts with which you are unfamiliar. The following general references may be helpful. (All are in the Bond Library.)

Craig, E. ed. *Routledge Encyclopaedia of Philosophy* (London/NY Routledge)

Edwards, E. and Pap, A., *Encyclopaedia of Philosophy* (London Macmillan)

Honderich, T. ed. *The Oxford Companion to Philosophy* (Oxford OUP).

Also, any *Dictionary of Philosophy* may be useful.

If you are inexperienced in writing papers with a philosophical emphasis, the following may be helpful:

Seech, Z., *Writing Philosophical Papers 4th ed.* (Belmont Wadsworth/Thomson)

1. **The purpose of this Subject.**

All students involved in advanced coursework and research, in whatever field, are concerned with what has been called, albeit somewhat grandly, "the advancement of knowledge." This is just as true in the Humanities and Social Sciences as it is in other broad branches of advanced study and research. In every field we are attempting to expose claims to knowledge which are not as soundly based as they appear, to further knowledge in areas where questions are still open, and to formulate claims about what is known which are clear and legitimately convincing.

In the tutorials, and in the prescribed written work, you will be invited to relate the issues discussed in lectures and in your reading to the issues that arise in your particular discipline or primary field of advanced study or research, e.g. Criminology, International Relations, Psychology, Education, Philosophy, Journalism, and Communication etc. Thus the aim is not merely to introduce you to the great questions of Epistemology but also for you to deepen your own understanding of your own primary field of academic endeavour by reference to these questions. This is consistent with Bond's aim to produce postgraduates in the Humanities and the Social Sciences who are "a cut above the rest" because of the depth of understanding they bring to the theoretical and practical skills which you will have mastered.

2. Knowledge is Everywhere and Everywhere Disputed.

In trying to gain a deeper understanding of a concept, it is often useful to consider what it is contrasted with. In the case of knowledge, there are a number of contrasts:

- Knowledge is contrasted with **ignorance**
- Knowledge is contrasted with **mere opinion** (even though that opinion may be true)
- Knowing something is contrasted with **a lucky guess** (even though that guess may have been completely accurate – e.g. you are asked at a fair to guess the number of jelly beans in a jar to win a prize, and you guess 387; at the close of the competition the jar is emptied and the beans counted – exactly 387, so you were right, but did you know? (Only if you cheated!)
- Knowledge is contrasted with **incompetence** and **ineptitude** (e.g. you claim to be able to ride a horse but every time you mount one you fall off; your ineptitude or practical incompetence proves that you don't really know at all).

TASK 1: Can you think of any other contrasts to knowledge? (Give further examples of the contrasts listed above, as well as of any new contrasts you are able to identify.

3. Two Sorts of Knowledge.

The contrasts listed above reveal that there are really at least two sorts of knowledge, commonly labelled (i) **propositional** (or, somewhat misleadingly, **theoretical knowledge**), and (ii) **practical knowledge.** The late Oxford philosopher **Gilbert Ryle (1900 – 1976)** expressed this distinction with characteristic terseness: it is the distinction between **knowing that** and **knowing how.**

TASK 2: Which, in Ryle's terms, is propositional knowledge, and which is practical knowledge? Can you give three more examples from everyday life of 'knowing that' and 'knowing how'? Now can you provide examples of each sort from your primary field of advanced study?

Epistemologists, like philosophers in general, try to understand things better by breaking them into more fundamental components. (This is not unlike the approach of the natural scientist). However if we are not careful we can forget that in real life the components do not always occur discretely. For example, you might know someone who claims to know Latin (perhaps you do!) Is that propositional knowledge or practical knowledge? The answer is that it involves both. If you know Latin, you (to use Ryle's terms) **know that** the Latin word for "country" is "patria". But you also **know how** to translate, say, a verse of the love poetry of Catullus into English (or whatever is your background language). The same is true of knowing astro-physics or psychology. That is why, in *serious* conversation as opposed to chit chat, we are often reluctant to claim to "know philosophy" or "know

biochemistry" – in claiming to know a field, we can give the impression that we know *everything that there is to be known in that field*. This reluctance is not just humility or modesty. Rather, as the Delphic Oracle is reputed to have declared more than two millennia ago, "The man who knows the most knows how much he doesn't know."

I said above that there are *at least* two types of knowledge, propositional and practical. But there is a third.

4. A Third Kind of Knowledge?

If you know the Vice-Chancellor of Bond University, or know Kylie Minogue, is that propositional or practical knowledge? Well, it certainly *implies* you have some propositional knowledge; you would, for example, know who these people are. But the reverse is not true; you can know who these people are, but not *know* them. (Many of us would know who Kylie Minogue is, but few – if any – of us would *actually know* her. The late Cambridge philosopher **Bertrand Russell (1872 -1970)** expressed the distinction this way. He introduced a contrast between what he called (i) **knowledge by description** and (ii) **knowledge by acquaintance.** Most of us, I suspect, have "knowledge by description" of Kylie Minogue (i.e. we know who she is, and maybe could recognise her picture) but few, if any, would have "knowledge by acquaintance". The latter requires some history of a degree of direct interaction and familiarity. (Russell's knowledge by description corresponds very roughly to what we have labelled propositional knowledge.)

5. What Sorts of Knowledge is Epistemology Concerned With?

The answer, overwhelmingly – and sadly! – has been propositional knowledge, together with the edifices composed largely of propositional knowledge such as theories. Practical knowledge has – again sadly! – been left largely to the *ethicists* or *moral philosophers* – people concerned with what we *ought* to do, with what is right and what wrong, what is virtuous and what is vicious, what is good and what bad, *and why*, The point of contact with Epistemology has been largely with the question, *how do we know* what is right, wrong, good etc. (if indeed we do know)?

Why is this sad? Because there are very important questions about practical knowledge which are not just questions of ethics (as was rightly recognised by the Stagira-born Athenian philosopher **Aristotle (384-322 BC)**. All of you, in your primary field of advanced study, will be concerned with practical as well as propositional knowledge – some in a more obvious way than others. For example, if your field is International Relations, you will be concerned with *knowing what to do* in a particular international situation. In many fields you will be concerned with *policy formulation* – some of you will become policy officers holding senior positions (some are in such positions already). You will be concerned with developing policies about *what to do*. And, like the humanities scholar who is arguing for a particular interpretation of a text, or the research natural scientist who is developing a theory of the transmission of light, you will be **required to justify your conclusions.** The

requirement of justification is with you for life, and not just at essay and examination time. And it applies equally to those components of your work which involve the practical, as much as to those that involve the propositional.

So we will be concerned with practical epistemology and not just propositional (or theoretical) epistemology. But what of the third sort of knowledge, Russell's "knowledge by acquaintance"? We can't do everything, so we won't be spending more time on it beyond noting it for the sake of comprehensiveness. (It should also be noted, though the issue is contentious, that many people believe Russell's knowledge by acquaintance actually dissolves into a cocktail of propositional and practical knowledge. As an interesting exercise, though an idle one for the purposes of this course, you might like to have a go at trying to do this.)

6. Do we REALLY Know ANYTHING?

The work of the university, not to mention many other institutions and individuals, presupposes in a very fundamental and obvious way that **knowledge is humanly possible and attainable**; in other words that it is possible to escape ignorance, mere opinion, lucky guesses, ineptitude and incompetence. Of course we also recognise – it is just a given part of the human condition – that some at least of our claims to knowledge, including many held with great conviction and a feeling of intense certainty, will turn out to be wrong, i.e. that (at least some of) **our claims to knowledge will turn out to be wrong**. To express the same point technically, we recognise that claims to knowledge are **fallible**. Moreover (a related point) we recognise that from time to time such claims will need to be corrected, that – for example – the methods we used to justify those claims were not as reliable as we had thought. Once again, to express the same point technically, we recognise that claims to knowledge are **corrigible**.

TASK 3: Give two examples of claims to knowledge in the past which have turned out to be wrong (i.e. which illustrate that claims to knowledge are fallible). And give two examples of claims to knowledge in the past that have had to be corrected (i.e. which illustrate that claims to knowledge are corrigible).

But what if it were possible to show that all claims to knowledge, be they propositional or practical, were wrong and *had to be wrong*, i.e. that nobody ever has, and nobody ever can, know anything? Some people would say, dismissively, that only a philosopher would think of that! But before you ridicule the messenger, you do need to see why this has been claimed, not least because this teaches us a lot about us as thinkers and investigators, as well as about the subject matter itself. So one of the things we will be examining is **the challenge of universal scepticism** (sometimes spelt "skepticism".)

Consider, for example, a famous example from the French philosopher **Rene Descartes (1596 -1650).** (Note: the adjectival form of his surname is "Cartesian" – hence Cartesian scepticism). Descartes invites us to imagine that, contrary to orthodox religious opinion,

the universe is overseen by a totally malignant demon, whose overriding aim is to cause us to be constantly deceived in our perceptions and our thinking. Nothing is as it appears to be. Can you *disprove* the existence of such a being? But if you cannot rule it out, you have to admit that is at least a possibility. But if it is a possibility, can we be certain of anything? This is an important question for Descartes and not, as the more cynical critics (sceptics about scepticism!) might say, an amusing but idle philosophical speculation. Why? Because Descartes believed **knowledge, to be truly such, must rest on solid foundations**, i.e. on certainties (The edifice of knowledge can only be as strong as its weakest foundations). But if *everything* is *possibly wrong*, there are no certainties, and therefore nothing truly deserves to be called knowledge.

As we shall see, there are many other arguments for scepticism, as well as many attempts to rebut them.

TASK 4: How would you attempt to rebut Cartesian scepticism? And do you agree with the Cartesian view that genuine knowledge must rest on foundations which are certain? In your own primary field of advanced study, can you identify foundations of certainty on which knowledge in your field ultimately rests? (These are difficult and contentious issues to which we will return.)

7. Truth and (Propositional) Knowledge.

The examples of contrasts we gave right at the beginning illustrate that the mere fact that an opinion, or a guess, is true, is not enough to make it knowledge. And, although there are many areas of disagreement about knowledge, there is at least an agreement that, in the case of propositional knowledge, **being in possession of the truth is not enough** to constitute knowledge, **but being in possession of the truth is a necessary condition for you having (propositional) knowledge.** To put it in schematic shorthand, where 'X' represents any person you like, and 'P' represents any proposition you like; then the following pattern holds:

(1) *X knows that P*

entails:

(2)*It is true that P*

and:

(3) *X believes (opines, considers) that P*

But the entailment does not hold in the reverse direction, i.e. it is not what is called a co-entailment or mutual entailment. That is to say, while (1) entails both (2) and (3); (2) and (3) together do not entail (1).

To say that one statement *entails* another is to say that it is *logically impossible* for the former to be true, and the latter false, at the same time.

TASK 5: Satisfy yourself that the relations between (1), (2), and (3) are as stated by putting in your own real values for the variables 'X' and 'P' and testing this contention.

The central problem of knowledge, was first formulated (as far as we know) by the Greek philosopher **Plato (c428 – 347 BC)** in a simple but striking way that might be paraphrased as follows:

What must be added to true belief to get knowledge?

But there is a prior question. What *is* truth?

8. Truth and Confusion: Beware!

There are plenty of famous quotations relating to truth, e.g. from the Bible: "I am the Way, the Truth, and the Light" and "Truth? What is truth, said jesting Pilate, and did not stay for an answer." Truth is a *powerful word* which means that its application is often extended in ways that are not literally accurate, to get the benefit of that power. We note that "true" is often used to mean "right" or "authentic"; however these are not synonyms of "true" – if they were, they would be interchangeable in every context.

The question "What is truth?" is often asked rhetorically. Indeed it is often an arrogant form of exhibitionism, implying that of course nobody knows, but I'm clever, and know that nobody knows, so I know you don't know what you are talking about when you describe something as true! (In fact we will see that everybody does know what truth is – it is not a big deal at all.)

Another common confusion is to equate (and thereby confuse) the question "What is truth?" with the question "How, if ever, can we be certain we have reached the truth?" They are different questions with different answers. Unfortunately, some sceptics, who answer "Never" to the second question (i.e. who say that we can never be certain that we have reached the truth) fallaciously infer from their answer that there is no such thing as truth. In fact one might argue that their answer actually implies that there *is* such a thing as truth!

TASK 6: Consider the last claim above. Can you construct an argument along the lines suggested? Do you think it is convincing? Why?

The moral here is; be careful. It is easy to slip and slide from coherence into nonsense, or even to wallow in it, as per the post-modernist commentators on truth (again, as we will see.)

9. Some other Big Questions to be Tackled.

We conclude Week 1 by simply listing some of the other big questions to be tackled:

- What *justifies* you in holding a belief? Is "a justification" the answer to Plato's question of what must be added to true belief to get knowledge?
- What justifies a claim to *practical* knowledge? Does the proof lie in the performance?
- What makes a theory a theory? And what makes it a good theory?
- Absolutism v. relativism; objectivism v. subjectivism; what are they really and what are their implications for knowledge in general and the natural and social sciences in particular?
- Knowledge and culture – should we be free to express whatever we sincerely believe we know, even if others consider it dangerous.

Reading for Week 2:

As for Week 1, together with Feldman, *op. cit.*, Chapters 6 and 7.

Week 2 Content
HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 2.

Reading: Richard FELDMAN, *Epistemology,* Upper Saddle River NJ: Prentice-Hall/Pearson, 2003. Chapters 6 and 7.

1. True or False – Must it be one or the other?

We have seen that truth is a necessary condition, but not a sufficient condition, for being in possession of propositional (also called, a little misleadingly, 'theoretical') knowledge. In other words, if what you claim to know is not true, then you do not know it. But if what you claim to know is true, it does not *automatically* follow that you know it. It all depends….. On what? That's the big question.

Whatever your primary area of research or advanced study you will be concerned with (but not only with) questions of truth. One of the things you will find is that people can intimidate you (or try to!) by suggesting that any claim you make to truth is so bold, and so presumptuous, that you cannot really be serious. This gives them licence to say all sorts of things, safe in the knowledge that they can resist a truth check.

Let us ask ourselves, as we did with knowledge, what is the *opposite* of truth? The standard (and ultimately correct) answer is *falsity*. This is sometimes called 'the law of

excluded middle' – there is nothing 'in between' truth and falsity. Truth does not admit of degrees. Of course a proposition may be partly true. This means part of it is true and part of it is false. But what about something whose truth is unknown, e.g. 'There is intelligent life elsewhere in the universe'? What is unknown is *whether it is true or false.* Being unknown in truth value is not itself a competing value. (A *truth value* is, in technical jargon, the property of being true or false; just as a numerical value is the property of being 1, or 2, or 3042, …. or any of the infinitely many numerical values.) Being unknown in numerical value is not itself a numerical value.

Is every proposition either true or false? (I.e. does every proposition have a truth value?) This is a long standing epistemological controversy. The traditional answer was *yes.* But some examples caused problems, Consider the proposition, made famous by the Cambridge philosopher **Bertrand Russell (1872 – 1970):**

   (1)   The present King of France is bald.

What's the problem? The problem is that France is a republic. But whatever truth value we assign to (1), we have a problem. If we say it is true, we imply the falsehood that there is at present a King of France; but if we say it is false, we also imply there is at present a King of France.

Russell was deeply committed to the thesis that every proposition is either true or false. So he proposed an *analysis* of what, in his opinion, (1) was really saying that showed that it was actually false. He analysed (1) as really saying:

   (2)   There is at present at least one King of France, *and* there is at present at most one King of France, *and*   whoever is a present King of France is bald.

In other words, he analysed it is a tripartite conjunction, i.e. a joining of three distinct propositions. For a conjunction to be true, every conjunct must be true. But, in (2), the first conjunct is obviously false. Therefore (2) as a whole is false, and as (2) simply spells out exactly what (1) is saying, (1) must be false.

Brilliant? Dazzling? Or does it just make you dizzy? Or maybe you are just infuriated? If you feel the latter reaction, you are in good (but far from universal) company. The Oxford philosopher **Sir Peter Strawson (1919 – 2005)** took on Russell's theory head first some 55 years ago and the controversy is still with us. He contended that Russell's theory is an affront to common sense. It is plain obvious that (1) is neither true or false, and only a perverse desire to sustain the thesis that every proposition is true or false no matter what could lead you to think of it as really saying (2). Strawson's contention – and this is the general point that may be important for your research – is *you need to distinguish carefully between what a proposition actually says (or asserts) and what it presupposes*. And according to Strawson, (1) does *not* assert that there is at least one King of France, it presupposes it. Thus Strawson's thesis:

A proposition cannot have a truth value unless every proposition which it presupposes is true.

In this way, by distinguishing between what a proposition says and what it presupposes, Strawson attempts to both vindicate common sense and to explain, and thereby justify, our common sense intuitions.

The thesis that every proposition has a truth value has as a counterpart that every meaningful question has a Yes/No answer. And, Strawson would argue, his theory of presupposition explains why it is that we cannot give a straight Yes/No answer to the question:

(3)　　Is the present King of France bald?

Consider the infamous lawyer's question:

(4)　　Have you stopped beating your wife?

Answer yes or no! This indicates how there can be *more than one* presupposition. Under (4) there is:

(5)　　You have a wife

And:

(6)　　You have been beating your wife.

If (5) is false, then (6) is neither true nor false, and (4) cannot be given a Yes/No answer, the lawyer's demands notwithstanding. (One would hope a wise judge would call such a lawyer to order, but it is said – or so a very senior judge once told me - that some judges actually enjoy seeing witnesses squirm!)

The practical moral of these bizarre examples is clear. Faced with the need to make a judgement as to whether or not something is true, *first identify the presuppositions,* and then *satisfy yourself that all of them are themselves true.* This may seem obvious, and said like that it is. Nonetheless, there are examples in most disciplines of breakthroughs that have come when an alert scholar or researcher finds that a commonly shared and unstated presupposition that may have been accepted for years is actually false.

By now you may be persuaded that, Strawson yea, Russell nae. So I should point out that, among those who work most closely in this area today, it is Russell's theory that is generally regarded as the winner. How come? Largely because, for modern theories in logic and semantics, it delivers a greater simplification, unity, and elegance of approach. Of course, most people outside of that specialist circle would have no idea what these theories are. But this is an arrow to a more general point. Sometimes issues arise when theoretical research can lead you to reject common sense intuitions as, 'the untutored deliverances of the uninformed intellect'. While that may sound snooty it is something you find in many disciplines. Thus the physicist may shock and provoke you by assuring you that the desk on which your hands are resting is mostly empty space, or that space is really curved, or that space is both finite and unbounded. When you point out that the physicist is talking sheer nonsense (which, in my opinion, is exactly what is happening!) the physicist will look at you pitifully and say, 'It's the maths you know. We've proved this over and over again. It's been the consensus for years.' This reply is disarming.

The general issue is that theories often find themselves in competition with common sense intuitions. And if we stand by common sense, we are reminded that for years flat Earthers boldly hung out in the name of common sense against the theory that the world was spherical. And when Copernicus and then Galileo declared that the Earth moved (both on its axis and through space), people laughed at them and said, 'Then why don't we all fly off into space?' But just because common sense has had to surrender to theory, does it mean it always should?

Here's a general tip. The best approach, if you can do it, is to use the theory in some way to *explain away* the contrary common sense intuitions – to explain why, to common sense, it all seems so different. For example nobody with a little tuition believes that the stick partially immersed in water bends at the water's surface, despite the obvious evidence of our eyes. This is because the theory of refraction of light can itself be used to explain how and why the stick (wrongly) appears to bend.

2. What is Truth (1) – Is Truth a Relation?

Probably the most common of all intuitions is that when we describe something as true we are relating it to something else. Moreover, that something else is what *makes* it true. But among those who hold that truth is a relation, the most hotly debated question is what that something else is.

Sometimes we can know a relational statement to be true without knowing the identity of the other *term* of the relation.

Thus:

   (1) Helen is married

And:

   (2) Bill is employed

are both relational statements, because each asserts that their subject (Helen, Bill) is related to another (a husband, an employer). But you can have reason to believe these statements are true *without having any idea as to the identity of the other term*. For example you can know that Helen is married, but have no idea who her husband is, and you can know that Bill is employed, but have no idea what he does or who is Bill's employer. In short, you can (sometimes) know a relational statement to be true, without knowing *the identity* of the other term.

Thus it is possible (I am not saying it is true) that you could have a relational theory of truth – that calling something true is relating it to something else that makes it true – without yet having any idea as to what sort of thing that might be.

But we are getting ahead of ourselves. Before we worry about what the other term of the truth relation (assuming that's what it is) might be, what about the first term. What is it that is the *bearer* or *vehicle* of truth? This is a question within that part of Epistemology known as *philosophical logic* ('philosophical' because it is not concerned with the technical or computational questions of logic, which do not form part of Epistemology).

A natural answer is the sentence. We talk in sentences. We write in sentences. So it is sentences that are true or false. Already this requires qualification. *Imperative* sentences (those which express commands such as 'Report at 8.00 p.m. sharp') are neither true nor false. *Interrogative* sentences (those which convey questions such as 'When is the first assignment due?') are neither true nor false. We mean *indicative* sentences (those that purport to convey information such as 'Sydney is between Brisbane and Melbourne'.)

Sounds simple. In which case, how many sentences do we have below?:

(1) The sky is blue

(2) The sky is blue

And:

(3) Il cielo e' blu.

There are two possible answers: two or three. On either version (3), the Italian translation, is a different sentence from the others. It comprises no English words, unlike the others, so it must be a different sentence. But do (1) and (2) constitute two sentences or one. The answer, you will not be surprised to learn, is that it all depends ….

Consider a seemingly unrelated question. How many coins are there in the Australian currency? There are two possible answers. One is six. The other is several (I don't know how many) millions! What's the explanation? There are six coin *types* (namely, the 5 cents, 10 cents, 20 cents, 50 cents, 1 dollar, and 2 dollars denominations). But there are several million coin *tokens,* i.e. exemplifications of each type.

The American philosopher **Charles Sanders Peirce (1839 – 1914)**, the originator of what came to be known as the American Pragmatist movement in philosophy, applied this distinction to language. He distinguished between word types and word tokens. (Thus there are more word tokens on this page than there are word types. Can you see why?) Similarly there are *sentence types* and *sentence tokens*. And while (1) and (2) are different sentence tokens, they represent only one sentence type. Thus if we are counting sentence tokens the answer is three; if counting sentence types, the answer is two.

But *how many truths* are there stated by (1), (2), and (3)? (Assume they are said on a cloudless sunny day!) Do any of them add to, or detract from, what any of the others say? Presumably not. In which case we have expressed *exactly one truth.* So if there is only one truth, there is only one thing to be true; there is only one vehicle or bearer of truth, in this particular case. And this leads to the view that the vehicle of truth is not a sentence (we've just shown that is impossible), but *that which is expressed by a set of synonymous sentences* (tokens or types – take your pick; it doesn't matter at his point). And the preferred word for this is a *proposition* (though some, such as Strawson in his earlier writing, use the word *statement* to the same effect).

There are big philosophical questions about propositions which need not detain us. Are they real entities, in which case they are non-physical entities (and what's wrong with that? Is that all too spooky for us?) This is the *realist* theory of propositions. Or are they just *a convenient manner of speaking*; in other words, hypothetical entities postulated *heuristically* (i.e. for theoretical convenience, but not to be taken as literally real)? This is the *nominalist* position.

Let us say then, while leaving it open how this is to be interpreted philosophically, that it is propositions that are true or false. The relation theory holds that truth is a relationship between a proposition and X. What is X?

There are three common competing answers; namely the world (the correspondence theory of truth), other propositions (the coherence theory of truth) and utilities (the pragmatist theory of truth).

The most common is probably that truth is a *relation of correspondence between a proposition and a fact.* This theory was held by Russell, by the early Austrian-born Cambridge philosopher **Ludwig Wittgenstein (1989 -1951)** and the Oxford philosopher **John Langshaw Austin (1911 – 1960)** (not do be confused with the earlier London positivist jurisprudentialist John Austin).

So if:

(1) The cat is on the mat

is true, then an ordered pair of a designated cat and a designated mat, will be in the *on* relation. That will be the fact with which it corresponds, and which makes it true.

The theory works well on the face of it, but only, it seems, for simple affirmative propositions, or so Strawson argues. Consider the proposition:

(2) The cat is not on the mat.

With what does that correspond? The cat up the tree? The cat across the road? What is the fact that makes it true? Or does the world contain negative facts along side (positive) facts? All of a sudden the theory moves from clarity to obscurity, from simplicity to complexity.

And consider:

(3) Either the cat is on the mat or it is under the bed.

Do we postulate disjunctive facts to make that true? I am not suggesting these questions cannot be answered (although Strawson makes a good case that they cannot be). Suffice it to say the theory quickly becomes exceedingly messy.

What of the Coherence Theory of Truth? This is associated with the late nineteenth early twentieth century English Absolute Idealist philosopher **Francis Herbert Bradley (1846 -1924)**. The Coherence Theory holds that what makes (1) true is the extent to which it coheres (sits well with) all the other things we accept as true. For example it would not sit well with the contemporaneous belief:

(4) (But) I can see the cat outside in the garden.

On the coherence theory, this requires an adjustment, and you will dismiss as untrue the proposition that it is easier to dispense with.

TASK 4: The coherence theory has been described as (i) a relativist (i.e. a non-absolutist) theory of truth – i.e. it means whether or not this is judged to be true is relative to (is dependent upon) what else has been judged to be true, and (ii) a subjectivist theory of truth – i.e. that something could be true for me and false for you. By this is meant not just that, in the interests of comity, we just have to agree to differ, but that <u>there is no further fact of the matter that makes one of us right and one of us wrong (or possibly both wrong).</u> Do you think these considerations raise insuperable objections for a coherence theory?

The Pragmatic Theory of Truth is associated with C.S. Peirce and the American Bostonian **William James (1842 – 1910)** who simultaneously held the Chair of Philosophy and that of Psychology at Harvard University. The Pragmatic Theory is best summed up in the aphorism *'the true is the expedient in belief, just as the good is the expedient in action'*. This makes truth goal-relative. To say the good is expedient in action is a variety of utilitarianism, according to which conduct is good to the extent that it is useful for achieving your goals and purposes. Similarly, for a proposition to be true is for its acceptance to be useful for achieving your purposes. (This is not quite as crude as the aphorism might make it sound. If you just believe what you *want* to believe you will get yourself into all sorts of bother. Believing what you want to is by and large not useful, e.g. if you want to survive, have a decent living, stay out of prison, and so on.)

TASK 5: Is the Pragmatic Theory like the Coherence Theory is commonly argued to be in respect of being (i) relative and (ii) subjective? Make as strong a case as you can for the Pragmatic Theory, anticipating possible objections, and then doing the best you can for the theory in response. In the end, how do you think it stacks up?

3. A Solution? – A 'no theory' theory.

What if truth is nothing? I don't mean the absurd theory that 'there is no such thing as truth' – absurd because the only way that theory can be true is if it is false. No, what if the word 'true' does not stand for anything. It does not stand for a property only true propositions have (for there is no such property). It does not stand for a relation between true propositions and some other *relatum* (the *relata*, in techno-speak, are the *terms* of a relation). It does not stand for any of these because it is not, as a primary teacher might say (or used to say), it is not a 'standing for' word.

Just such a view was put forward by yet another philosopher with a more famous brother. (William James, mentioned above, was the brother of the famous Boston novelist Henry

James). This was the Cambridge philosopher **Frank Plumpton Ramsey (1903 – 1930)**, brother of a long serving Archbishop of Canterbury.

Consider the propositions:

(1) Rome is the capital of Italy

and:

(2) It is true that Rome is the capital of Italy.

Ramsey asked the question, what additional information does (2) provide over (1)? His answer? Nothing. They both say *exactly the same thing*. Hence this became called the Redundancy Theory of Truth.

Consider now the proposition:

(3) It is false that Berlin is in Italy.

What does this say that is not said by:

(4) Berlin is not in Italy.

Again the answer is – nothing.

But it might be objected, if the Redundancy Theory is correct, why do we have words 'true' and 'false'. The answer, developed in some detail by P. F. Strawson, is that they do have a function, but that function is not to *add information* or *to describe*. Rather it is *to express*. To call something true is to express one's agreement with it; to call it false is to express one's disagreement. To paraphrase Strawson, the use of the phrase 'is true' (and, *mutatis mutandis* 'is false') always glances forward or backward to an actual or anticipated disagreement. An economist delivering a speech might say in the course of it, 'It is true that the rate of inflation has been contained'   and - guess what? - that will be followed by a 'but' or a 'however'. The speaker is acknowledging that the proposition about inflation is likely to be urged against him as an objection, and he is, in anticipation, conceding it.

The Redundancy Theory is in a long tradition of showing that concepts which have proved most mystifying to us, and the source often of ill-conceived and pompous grand theorizing (examples along with truth are *existence* and *identity* have mystified us because we make assumptions about the work they are doing and we don't look at the work they are actually doing. Do that and the bubble of mystery is deflated, and with it all associated pretensions (until the next one comes along!)

Reading for Week 3: As for Week 2, and Feldman chapters 2 and 3.

Week 3

HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 3.

Reading: Richard FELDMAN, *Epistemology,* Upper Saddle River NJ: Prentice-Hall/Pearson, 2003. Chapters 6 and 7.

1. The problem of Justification.

There is widespread agreement that for a person 'X' to know that some proposition 'P', then it must be he case that:

(1) P is true,
(2) X believes that P,

And

(3) X is justified in believing that P.

Some analysts also add a further condition:

(4) X is confident (sure, certain, convinced) that P.

It is true that, typically, when we claim to know that P, we do not just believe – we are *confident* that P. But is the confidence condition strictly necessary? Normally, when we *claim* to know something, we are confident that we are right. But what about when we look at the matter retrospectively? You study hard for a Geography examination. One of the questions is to name the three longest rivers in Queensland that flow into the sea. You did not anticipate this question but you have studied the rivers of Queensland pretty thoroughly. You think very hard about it and write down the three you think meet that test. You are not confident of your answer. (This is shown by the fact that, in your paper, you have crossed out a couple of rivers that you first thought of before settling on your final three.) Your friends asked you how you went in the exam. You tell them you think you did OK overall but it was pretty tough; for example I really struggled with the one about the rivers and I wouldn't be surprised if I got it wrong. The results come out and you have done spectacularly well, including full marks for the question about the rivers. You tell your friends: "I'm really relieved – especially to find out that I really did know the names of those rivers." (No doubt you can think of a real example of something like this from your own experience.)

Are you wrong in claiming that you knew the names of the rivers – you just didn't think you knew them at the time? There is disagreement on this point however most intuitions of which I am aware agree that you really did know, even though you did not think you knew

at the time. Why? Probably because you were *in fact justified* in your answer, despite your genuine lack of confidence at the time. (*A NOTE ON 'INTUITIONS':* When we talk of people's intuitions we simply mean how people find it natural to describe something. We are not referring to any special faculty of deep insight.)

TASK 1: What do you think about this example? Why?

I contend that we can ignore the confidence condition. While it is true that we normally don't claim to know something unless we have a significant degree of confidence that we are right, why should we say that unless you feel (or felt) confidence, it cannot be true that you know (knew) the matter in question? Confidence relates to your personal psychological attitude to your belief – the subjective strength of your conviction. It is not *internal* to the *content* of the conviction. Some people are naturally cautious and are suspicious of any temptation to be confident about anything. It seems harsh to say that, for that reason alone, a cautious person, *ceteris paribus* [a commonly used and convenient Latin phrase that means, literally, 'all other things being equal'], knows less than a less cautious person, or – to take an extreme example – that *ceteris paribus*, the people who know the most are those who are extremely self confident, to the point of foolhardiness!

2. A Basic Account of Justification.

In its simplest form, it goes like this:

(1)　X knows that P

Iff [a common and useful shorthand for 'if, and only if']

(2)　P is true

And

(3)　X believes that P

And (the justification condition)

(4)　X is *justified* in believing that P.

But what makes (4) true (i.e. what makes it true that a person is justified in believing that something)?

Here's a first pass:

(4') X is justified in believing that P

Iff [there's that shorthand again!]

    (5)   X also believes that Q

And:

    (6)   Q is true

And:

    (7)   Given Q, P is more likely true than not.

A worked example (using corresponding numbering):

    (1)   George knows that Helen is at home

Because

    (2)   It is true that Helen is at home

And

    (3)   George believes that Helen is at home

And

    (4)   George is justified in believing that Helen is at home

Because:

    (5)   George also believes that the light is on in Helen's room

And

    (6)   It is true that the light is on in Helen's room

And

    (7)   Given that the light is on in Helen's room, it is more likely than not that Helen is at home.

3. So far so Good – but how Far is far Enough?

I guess most people find the above pretty convincing; indeed it might seem almost trivially obvious. So, can we stop there and move onto another topic? Have we now solved 'the problem of (propositional) knowledge? Unfortunately not. Consider the question; does George also have to believe (7)? Suppose you asked him and he said he does not believe it? Can we any longer say he was justified in believing Helen was at home, if (absurdly) he does not think that the 'justification' he gave actually works? Although this is an unlikely response (assuming George is not unusually bewildered), we should, in the name of complete rigour, add a clause that indicates he believes (7). So, to return to our original skeletal schema, we need to add:

(8)　X believes that, given Q, P is more likely than not.

But is it *enough* that X believes, given Q, P is more likely than not? (I.e. Is it enough that George believes that, given the light is on in Helen's room, Helen is more likely at home than not?) Or must it also be the case that:

(9)　X is *justified* in believing that, given Q, P is more likely than not.

But then, in parallel with the steps (4) to (7) above, don't we have to say that (9) is true, iff:

(10)　　　　　X also believes that R

And:

(11)　　　　　It is true that R

And

(12)　Given R, it is more likely the case that given Q, P is more likely than not.

To return to our worked example:

(8)　George believes that, given that the light is on in Helen's room, it is more likely true than not that Helen is at home.

But George must be justified in the belief referred to in (new) (8). So we need to add:

(9)　George is justified in believing that, given that the light is on in Helen's room, it is more likely than not that Helen is at home.

So we add (say):

(10)　　　　　George believes that hardly ever does anyone go into Helen's room except with Helen

And:

(11)　　　　　It is true that, hardly ever does anyone go into Helen's room except with Helen

And of course:

(12)　　　　　Given that hardly ever does anyone go into Helen's room except with Helen then, given that the light is on in Helen's room, it is more likely than not that Helen is at home.

TASK 2: Can you see where all this is heading? And, if you can, do you see why there's a problem.

Plainly, this move can be repeated again, and again, and again … To simplify, each step in the justificatory process invites us to make good on a further justificatory step, *ad infinitum.* If we have to be justified in a belief for it to be knowledge, then we have to be justified in that justification, but then of course we must be justified in our justification for that justification, and so on ad infinitum. Inevitably, we are off on an *infinite regress.*

Does this matter? It all depends. It depends on whether the infinite regress is *vicious* or not, i.e. on whether it comes back to bite you. Not every infinite regress is vicious. Consider:

(1) Snow is white.

This *entails*:

(2) It is true that snow is white.

[A proposition P *entails* a proposition Q iff it is *logically impossible* for P to be true and Q false, or in other words iff to affirm P while denying Q would be a *contradictory* position.]

But (2) in turn entails:

(3) It is true that it is true that snow is white

This in turn entails:

(4) It is true that it is true that it is true that snow is white

Which in turn … and so on, *ad infinitum.*

The infinite regress of truth, as just illustrated, is not vicious (sometimes it is said to be, by contrast, 'virtuous'). Why, because in order to establish (1), you do not have to first establish (2), and in order to establish (2), I don't have to first establish (3) etc. etc.

But it is a different story with the infinite regress of justification. For, *in order to* establish that X knows that P, I must *first* be satisfied, *inter alia* [i.e. among other things] that X is justified in believing that P. And in order to establish that X is justified in believing that P, I must first establish, *inter alia,* that X is justified in whatever it is he offers as his justification for believing that P. And away we go.

This is a vicious infinite regress, because in order to establish my original claim, I have to first go through an infinity of steps, each requiring the next step to be completed in order that it may be established. It can't be done. So nobody is ever justified in believing anything.

What do we conclude from that?

Option 1: Hard line scepticism. Nobody is ever justified in believing anything, so therefore, given that justification is a necessary ingredient of knowing, nobody ever knows anything.

Option 2: Sooner or later we come to something which is self-justifying – a belief which you are justified in holding, but not because of anything that requires a justification.

Option 3: The chain of justification ends when we reach a common sense consensus. People who are regarded as reasonable just accept that this is enough. (Although we could go on in principle, there is no need, so no need to do the impossible and completely execute the infinite regress.)

Note that with Options 2 and 3, it need not be an either/or. It may be possible to hold that there are some things that are self-justifying, and some where it is enough to get to the point of consensus.

As for the 'heroic' option 1: there are people who have held this view. (If it is true, then we have finished the course!) A more common approach today is to say that what all this really shows is that, deep down, our ordinary everyday concept of knowledge is flawed and ultimately incoherent. This, such critics would argue, is true of many every day concepts which are perfectly serviceable at the superficial level (all we need for practical purposes) but that, if you subject them to rigorous analysis, they just collapse.

You might find it interesting, in considering this last point, building standards. Take any modern Gold Coast building. It is (supposed to be) built to certain standards which will give it a reasonable life expectancy against the sorts of climatic and geological pressures

to which it may reasonably be expected to be subject. But how many buildings would survive if we were to have cyclonic winds of an intensity that is far greater than we have ever experienced so far (but are experienced in some parts of the world)? How many would survive not just more than the usual occasional tremors but a major earthquake of the sort we consider, though just possible, extremely unlikely? The answer is, precious few, and then by luck rather than design. But does that mean it is irrational to stay in a Gold Coast building; to study and learn in one just as we are doing now? I will leave you to think through and assess the analogy.

TASK 3: Assuming that the justification of claims to knowledge involves an infinite regress as argued above, does it follow that we cannot use it sensibly?

Option 2 takes on the road to Foundationalism. Foundationalism maintains that the regress is not infinite but finite, coming to rest which you reach 'the foundations of knowledge'. These are things (assuming they exist) which are:

(1) known to be true

and:

(2) Not justified by reference to anything beyond themselves.

One example which has frequently attracted some epistemologists is *statements of immediate experience.* These are sometimes called *avowals,* and the sentences which express them have been called (somewhat oddly) *protocol sentences.*

Regarding these experiences, it is claimed (i) they are known to you non-inferentially (i.e. you do not infer you are having them from anything else) and (ii) you cannot be mistaken in your belief that you are having them. On these two grounds they are claimed to be knowledge. (Some say they are claims to knowledge which *have no need of a justification.* Others describe them as *self-justifying.* The choice is yours. Either way, they break the infinite regress because the claim to knowledge does not depend for its soundness on a justification.)

Some examples:

(1) I am having a visual impression as of a red, round, shiny surface in front of me now

(2) It seems to me now I hear a bell chiming in the distance now.

(3) I am in pain now – it is as if it is from my left foot.

(4) I am having a memory impression as of a face that seems to remind me of Queen Elizabeth II.

TASK 4: Consider the above list; then make up some more examples of your own which seem to be of a similar kind.

Let us consider the above examples (and you should consider any you can think of yourself). Consider firstly the claim that you are aware of these things *non-inferentially*. The argument is, regarding for example (1), that your having a visual impression as of a red, round, shiny surface in front of you now is not an inference from anything further, and therefore there is no inference that has to be justified. Moreover, the content of your claim is both *incorrigible* (not open to correction), and *infallible* (not capable of being wrong). Therefore it is completely and perfectly justified (or, if you prefer, has no need of a justification).

There is however at least one thing you could be mistaken about. You might use language that mis-describes it. Maybe you make a slip of the tongue and say 'red' when you should have said 'green', or maybe your English is poor, and you should have said elliptical rather than round. But – all that acknowledged – it is insisted that your content cannot be mistaken; only the words with which you chose to express it.

(Let us work through the other examples and satisfy ourselves as to whether *mutatis mutandis* [making the appropriate changes] the same points hold.)

But, all that granted, do these 'statements of immediate experience' provide a base line, a foundation for the claims that are built upon them. Stick with the first example. Your original claim to knowledge might have been that there was in front of you a ripe Jonathan apple. The more cautious statement of immediate experience is your ultimate justification for it; the resting place. But how do you get up from your resting place? While we may grant that the statement of immediate experience does not need to be justified, we still have to justify the step of passing from it to a claim about a ripe Jonathon apple. How do you justify the step from *looks to me like* to *is in fact?* To adapt David Hume, every step from *seems* to *is* takes a risk. The world of the wholly subjective is safe. Once we step beyond it, it is no longer safe – there is the real risk of error, and not just verbal errors from slips of the tongue or linguistic ignorance.

If statements of immediate experience provide the foundations for knowledge we must be able to build on them. But how? How do we justify the leap from the subjective to the objective?

The foundationalist approach is usually traced back historically to the French philosopher **Rene Descartes (1596 -1650.)** As we noted previously in passing, he set out to reject everything of which he was not certain, to see what, if anything remained. He found that there was one thing that survived his method of doubt, and that was his belief that he was

doubting. For to doubt that you are doubting is thereby to confirm it! Now doubting is a form of thinking (thinking is the generality, doubting a particular form of thinking). So, given that he is doubting ('I doubt' in Latin – the language in which Descartes wrote - is *Dubito)*, he must be thinking ('I think' in Latin is *Cogito*) So, if I am thinking, I am. In other words, from the fact that I am thinking, it follows that I exist ['I exist' in Latin is *Sum*. The Latin for 'therefore' is *ergo*] Hence the famous rendition of Descartes' argument, left as it typically is in the original Latin, *Cogito ergo sum*. But having established that he is, he still needs to establish what he is. Once again, he contends that it follows with tight logic, that – whatever else I may turn out to be – I am (at the very least) a thing that thinks (*Sum res cogitans).*

So far so good. But he hopes to establish a lot more than that. He notes that within that thinking thing there is the idea of God. It is the idea of a being greater and more perfect than any other. Therefore there must be such a God. Why? For if there were not, it would not be as great as a God that really did exist. Therefore God exists. This is a version of what is sometimes called the *ontological argument for the existence of God.* He also has another argument for the existence of God based on the same source, the contents of his mind. The cause of any effect must be at least as great and potent as the effect. My idea of God is of a being greater and more powerful than any other being that can be conceived. But only a cause even more powerful than that idea could have implanted that idea in me. Therefore God exists.

TASK 5: How good do you think these arguments are for the existence of God?

Descartes then considers what all this has to do with avoiding scepticism and putting knowledge on a secure foundation. His answer is that the God whose existence he has proven is *an all good God* and for that reason *would not allow* him to be constantly deceived. But Descartes immediately recognises there is a problem with this argument. The problem now is how he could *ever* be mistaken about *anything*. For, if God is all good he would not want him to be deceived about anything, and if he were all powerful he could prevent it.

Descartes' answer is that God has also given him the gift of free will. One of the consequences of this wonderful gift is that he is free to wander into error. He contends, somewhat contentiously, that all error and mistake is the result of the exercise of his free will, in terms of his following false leads and making hasty inferences. Descartes argues that it is better that he has free will, with all of the attendant risks, than that God had created him as an automaton who never got anything wrong. (Note that this is very similar to one 'solution' to the problem of pain and suffering – the problem, often presented by atheists as a refutation of the existence of an all good and all powerful God, that the world contains (some) unmerited pain and suffering. If God is all good he would not want the innocent to suffer. If God is all powerful he has the power to prevent it. But the pain and suffering of the innocent exist. Therefore there cannot be a God who is all good and all powerful. Since these are defining attributes of God, it follows that God does not exist.

Defenders of God's existence against this argument argue that the pain and suffering of the innocent is an inevitable by-product of the exercise by them and others of the great gift of free will. How convincing do you consider this argument?)

TASK 6: Can error be explained, as Descartes suggests, as the inevitable consequence of human free will?

Thus the Foundationalist approach to breaking the infinite regress of justification does not look to be very promising. This leads us to Option 3, which I call *Conventionalism.* The conventionalist approach accepts that there is a vicious infinite regress but rests content with what appears to be our actual practice. We only push people for justification to the point where we are satisfied that, in our terms, their position makes sense and is reasonable or, in our terms, their position is manifestly hopeless. In other words we demand justification only up to the point that they demonstrate that their claims are anchored in a justification which we consider reasonable, or up to the point at which we consider there is no point in discussing it further because they have shown that their position is one which we consider ultimately unreasonable.

On the conventionalist view, we have to understand the demand for justification in terms of our actual practice, which is quite simply that of seeing where another is coming from. We cease making demands when we reach the point at which we are satisfied that we know where they are coming from, and we recognise that place as one which we accept, or one which we consider quite alien. At that point there is no point in discussing it further.

The conventionalist accepts that the regress of justification is both infinite and vicious, but also contends that this does not matter, for the whole point of offering and seeking justification is to determine whether or not your and my claims are anchored at some point on a platform of agreement. If they are not, we just have to agree to disagree. If they are anchored on a platform of agreement, then there is a reasonable prospect of working forward from that platform to resolve any disagreements we have.

TASK 7: Critics regard the Foundationalist approach as a 'cop-out'. Why do you think they take this view? What do you think, and why?

Reading for Week 4:

Feldman, Chapters 4 and 5.

Week 4 Content

HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 4.

Reading: Richard FELDMAN, *Epistemology,* Upper Saddle River NJ: Prentice-Hall/Pearson, 2003. Chapter 7

1. **Reasoning Forwards and Reasoning Backwards.**

We are often confronted with a bunch of data, and wonder what inference we should draw. For example, a hospital may notice that today there is a statistically abnormal increase in the number of patients admitted to the emergency department suffering from food poisoning. So, what inference can be drawn? First, we look to see if there are any common factors among the patients. What did they have to eat in the last 24 hours? Did they dine at any restaurants – if so which ones? Did they purchase and consume take-away cooked food – if so, what items and from what vendors? Perhaps it turns out that they all purchased and consumed battered kangaroo-burgers from the 'El Greasy Spoon' food-to-go drive in take away on Main Street. This prompts them to form the hypothesis that the battered kangaroo-burgers were contaminated. This leads them to take the next step; ask the authorities to send inspectors to the vendor's premises and to issue a public health warning to avoid the product pending the outcome of the investigation.

This is a simple example of *reasoning forwards*. You wonder what conclusion to draw and, drawing on your experience and general knowledge, you come up with a set of possible explanations, and then proceed to narrow them down.

Now consider the following example. You are engaged in conversation with someone who as yet does not speak English very well. In the course of your conversation you describe a statement by a local politician as "ridiculous". The other person is not sure what this means, so you explain the meaning of "ridiculous", possibly with a few examples, until he gets it. He then expresses puzzlement that he has not come across this word before, and asks you whether you are sure "ridiculous" is an English word. You reply, "Of course it is – you will find it in any English dictionary."

What you did was *justify* your statement that it was an English word, by pointing to its inclusion in any standard English dictionary. And that is a pretty good everyday justification. But, your inquisitive interlocutor asks, "Have you ever looked it up?" Being always honest you reply "No – but I'll bet you $5.00 you will find it there." Impressed by your willingness to put your money where your mouth is, he accepts your justification and changes the subject.

Notice the difference (in structure, not just in content) in this case from the first. In the first case you thought your way forward to your conclusion; in effect you asked yourself what conclusion am I justified in drawing, at least provisionally, from this data set. And that is typical of the way a researcher in the natural or social sciences works; it is how diplomats

work when they are trying to detect changes in the international situation, or a detective who is trying to determine a motive for a crime. But in the second case it was not our reading it in an English dictionary that led us to conclude that "ridiculous" was an English word. Rather, it was our certainty that "ridiculous" was an English word that led us to conclude that it would be found in any standard English dictionary. This second case is one of *backwards justification*. Most of us could not say what led us to believe it was an English word – we have forgotten, or it was just an incidental part of the process of learning to speak English, either as a native or as a second language. Normally, you provide a backwards justification when someone challenges something you believe, or when you anticipate someone might challenge it. This too is something any researcher does from time to time. If you are writing an essay, or a thesis, in any field at all – including the humanities and the professional disciplines as well as the natural and social sciences – you will try and make it 'bullet proof'; you will try and think of *possible* challenges to your claims, and then formulate justifications of them which will buffer them against any possible challenge.

Is one direction of justification superior to another? No – they both have to meet exactly the same standards. The point of making the distinction is to recognise that sometimes we reason from the known to the (as yet) unknown, as in the hospital example, and sometimes we reason from the known not to the unknown, but to something else we know (or think we do) which lends support to our original knowledge claim. Typically, this is to something which will enable a critic or doubter to test the claim, and be satisfied that the original claim was correct.

In the first case our original data set, together with the generalizations we drew down from our general knowledge (general knowledge about common causes of clusters of food poisoning) was what *led us* to our conclusion. In the second case, we may have no idea of what, in our personal history, led us to the claim that is now being challenged. Rather, our confidence in our now contested claim is what leads us to think of simple ways in which we can satisfy another that we are right.

What is the moral of this tale? Do not confuse the question of what justifies me in my belief, with the question of what led me to my belief. They *may* coincide (as the first example suggests), but they *need not* (as per the second example.)

2. Induction and Deduction.

Induction and deduction are two modes of argument. There are two elements to an argument; one is the *conclusion*, the other is the *set of premises*. How many premises must an argument have? The minimum is one. The upper limit is …. there is none. An argument can have any finite number of premises.

Some examples. Here is an argument with one premise:

(Argument 1):

Mary is a spinster. (premise)
So (inference marker – to indicate that what comes next is based upon what has come before)
Mary is unmarried (conclusion).

Common inference markers in English are: "So", "Therefore", "Accordingly", while mathematicians and logicians commonly use the Latin word *"Ergo"*.

Here is an argument with five premises:

(Argument 2):

George is a student in the front row and is under 30.
Helen is a student in the front row and is under 30.
Ian is a student in the front row and is under 30.
Jane is a student in the front row and is under 30.
Kevin is a student in the front row and is under 30.
So:
All of the students in the front row are under 30.

The first argument happens to be deductive; the second inductive. What is the difference? It has nothing to do with the number of premises. Here is an *inductive* argument with just one premise.

(Argument 3):

All of the metals we have examined and tested expanded when heated.
So:
All metals expand when heated.

And here is a deductive argument with two premises (the sort that Aristotle favoured, which led generations of students to wrongly think a deductive argument always had two premises. (Incidentally, if you were to receive a dollar for every time this example has appeared in a textbook you would never need to work again.)

(Argument 4):

All men are mortal.
Socrates is a man.
So:
Socrates is mortal.

This last example is a *syllogism*. These were, from the time of Aristotle until the late nineteenth century, the favoured form of argument. Aristotle believed that, stripped down to fundamentals, all propositions were of one of *four forms*.

1. All S are P
2. No S are P
3. Some S are P
4. Some S are not P

(Note that 'some' as used by logicians, means 'at least one' – as in 'There is *some*one at the door.) For Aristotle any two classes S and P whatsoever must be related to each other in at least one of those four ways. His syllogistic was an exhaustive account of deductive patterns involving two premises and a conclusion based on these four forms. It is now studied only for historical interest.

One obvious difference between deductive and inductive arguments is that inductive, but not deductive, are *risk taking*. Inductive arguments take a step, however small, beyond the premise(s). This is sometimes expressed by saying *only deductive arguments are truth conserving*. This makes deductive arguments sound 'superior' to inductive ones. One could be forgiven for thinking this if one relied on the interests of logicians who, for the most part, are only interested in deductive arguments. Yet it is via inductive arguments that knowledge of the world is advanced. That is why, while logicians (like pure mathematicians, with whom they have a lot in common – it was thought for many years that mathematics was simply a branch of logic) study deduction, *epistemologists* study induction.

Another way of putting this is to say that, in the case of deductive arguments, the conclusion is *already wholly implicit* in the premise set – the argument simply brings it out, and thus makes it *explicit*. But the conclusion of an inductive argument, while it may be 'suggested' by the premise set, is not wholly implicit in them.

TASK 1: Satisfy yourself that this is so by reviewing the examples of inductive and deductive arguments (Arguments 1,2,3, and 4) above.

A slightly more formal way of expressing all this is as follows:

An argument is a valid deductive argument if, and only if, it is logically impossible for all the members of the premise set to be true and the conclusion false.

To say something is '*logically* impossible' is to say that it is, at least implicitly, self-contradictory.

Does all this mean that the conclusion of a valid deductive argument must be true? No – consider the following:

(Argument 5):

No socialists are politicians
All French people are socialists
So:
No French people are politicians.

This is a perfectly valid deductive argument. Yet – manifestly – the conclusion is false. However, a corollary of the definition of a valid deductive argument given above is that:

If the conclusion of a valid deductive argument is false, then <u>at least one</u> of the premises must be <u>false also</u>.

A valid deductive argument *in which every member of the premise set is true* is a *sound argument*.

In other words, if a valid deductive argument is sound, then its conclusion must be true.

Note that whether or not premises are true is generally not a question of logic, but something that can be ascertained only by reference to our experience of the world.

The words 'valid' and 'sound', if used strictly as most logicians do (but, regrettably, not all) only have application to arguments which purport to be deductive.

What then is an inductive argument?

An inductive argument is one in which it is <u>at least logically possible</u> for every member of the premise set to be true, and the conclusion false.

Something is logically possible if it is not self-contradictory (a good practical test is whether what it states is imaginable). The expression 'logical possibility' casts a much wider net than 'scientific possibility' or 'practical possibility'. Something is only scientifically possible if it does not contradict the laws of science. But to be logically possible it is sufficient that it does not contradict the laws of logic,

Thus the following are examples of logical possibilities:

Pigs can fly.
There is a pink elephant in the next room.
There is a perpetual motion machine.

(Here is a more contentious example:
The same surface can be uniformly red and green all over at the same time.
What do you think?)

TASK 2: Review Arguments 2 and 3 above and satisfy yourself that, in each case, it is at least logically possible for every member of the premise set to be true, and the conclusion false.

It is sometimes possible to 'convert' an inductive argument into a deductive one by *adding an additional premise*. Suppose we were to add the following additional premise to Argument 2:

Apart from George, Helen, Ian, Jane, and Kevin there are no other students in the front row

So that it now read:

(Argument 2')

George is a student in the front row and is under 30.
Helen is a student in the front row and is under 30.
Ian is a student in the front row and is under 30.
Jane is a student in the front row and is under 30.
Kevin is a student in the front row and is under 30.
Apart from George, Helen, Ian, Jane, and Kevin there are no other students in the front row
So:
All of the students in the front row are under 30.

We now have a valid deductive argument. But the conclusion no longer involves us in taking a risk.

A cautionary note on terminology: Some writers call arguments such as Argument 2' cases of *enumerative induction*. This is infuriating because it is actually a variety of deduction. Sadly, it is not the only example of misleading terminology. In mathematics, it is not uncommon, as a means of proving (say) that all the positive whole numbers have a certain property (call it P), to argue by following pattern.

Step 1: Prove that the number 0 has the property P
Step 2: Prove that if any arbitrarily selected number (call it *n*) has the property P, then *n* + 1 must have P also.
Conclusion: Every positive whole number has the property P.

This type of argument is used when you have to prove a conclusion about an infinite set. But, terminological warning, this process is called *mathematical induction.* Once again it is actually a case of deduction.

We will not be particularly concerned with either enumerative induction or mathematical induction. This is simply mentioned as a terminological warning if you come across these phrases in the literature. Why this confusing terminology? I haven't the slightest idea.

3. The Hypothetico-Deductive Method

You could be forgiven at this point for thinking that, unless you are doing advanced work in logic or mathematics, you will only ever be concerned with inductive reasoning, or inductive arguments. However in truth you will probably be involved in a mix.

Consider the following argument:

(Argument 6)

This thin copper wire conducts electricity.
This thick copper wire conducts electricity.
This copper rod conducts electricity.
(*Hypothesis)* Copper conducts electricity.
So:
(*Prediction)* A copper surface will conduct electricity.

This is actually a deductive argument. The hypothesis (added as the fourth premise from the top) has been reached inductively. The predictive conclusion follows logically from the premise set.

This is widely believed to be typical of the way much science (including the social sciences) actually works. The prediction is a way of testing the hypothesis. If it turns out false we must do one of two things: either reject the hypothesis (which can be by rejecting it outright or by incorporating a qualification, thereby modifying it) or reject the conclusion (e.g. this is not 'coppery' enough. This suggests that, after further testing with larger samples of copper, we might once again modify the hypothesis to something like 'Things with a constituency of Q percent copper conduct electricity.'

How many correct predictions do we have to make to justify saying we have proven our hypothesis? In practice all we can really say is 'A lot'. And, in practice, we need to make correct predictions in relation to the sorts of circumstances which, based on general experience, we think might affect predictive accuracy (e.g. the temperature of the copper sample, the height above sea level, the geographical and geological source of the copper, the extent and the way in which it has been prepared for the conductivity test. When a hypothesis is universal in scope, and applies to a class which is open to the future (e.g.

copper that does not exist yet) as well as the past (all the copper that has ever been, most of which nobody has ever seen) we can never even say we have examined a particular percentage of the class (things made of copper). For it is certainly less than 50 percent, certainly less than 10 percent and, for all we know (because we do not know how much there is, not to mention how much, over the next few centuries, will come into being) a lot less than one percent.

How many incorrect predictions do we have to make to establish that our hypothesis is false? For many years (and some still say this) the standard answer, following Sir Karl Popper, was *one*. The mantra was *No number of correct predictions will prove an inductively derived hypothesis to be true, but it only takes one incorrect prediction to prove a hypothesis false*.

This looks reasonable. The first part is uncontroversial. That is why people prefer to speak of successful predictions as *confirming* a hypothesis rather than *verifying* the hypothesis. *An accurate prediction confirms a hypothesis if, and only if, it is exactly what you would expect to happen if the hypothesis is true.* That is a long way short of conclusive verification which, if the hypothesis is open-ended to the future, is an impossible dream.

So what is wrong with the (once) standard mantra? People soon realised this was not the way in which natural and social scientists behaved. At first this was dismissed, somewhat arrogantly, by saying that working scientists were methodologically sloppy. They don't do things by the book! But this was soon recognised as too harsh. If the hypothesis was a cherished hypothesis, which fitted in beautifully with an otherwise very successful theory, working scientists were very reluctant to let it go. So they put the unsuccessful predictions down as anomalies, pointing to the need, when more is known, to refine the hypothesis somewhat – though exactly how and exactly why remained open questions, to be the subject of future research. (So one sees in the scientific literature papers with titles like 'An Attempt to Explain the XYZ Anomaly and a proposed Modification of the XYZ Hypothesis.' The subject of revision and abandonment of hypotheses is one to which we will return later in the course.)

In sum, the hypothetico-deductive method involves:
(1) Observation and recording of data in the field (and/or the laboratory)
(2) Noting of a common quality or characteristic (Source: observation and measurement)
(2) Formulation of a general hypothesis under which the data can be subsumed (Source: hunch) – nature of step, induction.
(3) Derivation of predictions from the hypothesis – nature of step, deductive.
(4) Testing of the predictions (Source: observation and measurement.)

   4. The Justification of Induction

Manifestly, we commonly employ inductive reasoning. In induction, we commonly argue from the presence of a characteristic in a sample from a class, to a conclusion that predicates that characteristic of every member of the class. But what justifies us in taking that step? A general answer is: In the past whenever we have generalised from the presence of a characteristic in a (large, diverse, and representative) sample of a class, to the presence of that characteristic in every member of the class, we have been more often right than wrong.

But this simply shifts the problem. It now becomes: why does the fact that, following a particular method in the past has more often than not been followed in the past by what has turned out to be a correct conclusion *justify us in thinking that, on this occasion,* following that method will, more likely than not, yield a correct result?

In other words, how does the fact that something has proven to be a fairly reliable method in the past of predicting the future, *have the slightest tendency to prove that*, on this occasion, following that method will more likely than not be successful in predicting the future?

We make this assumption *all the time,* in both everyday common sensical reasoning and serious scientific reasoning. But, according to the Enlightenment Scottish empiricist philosopher **David Hume (1711 – 1776)** it is a method that cannot be justified. It cannot be justified deductively (or, as Hume expresses it, by demonstrative or *a priori* reasoning), nor cannot it be justified inductively (or, as Hume expresses it, by moral reasoning). Any attempt to justify it inductively is doomed to be a case of *begging the question*. In other words to use an inductive argument to legitimize the use of inductive arguments would be *to assume exactly what has to be proved*!

So, are we driven, once again, to scepticism? Are we doomed to acknowledge that the reasoning we use to justify most of our conclusions cannot be justified?

One attempt to avoid this outcome is modelled on the way in which the Oxford Absolute Idealist philosopher **F. H. Bradley (1846 - 1924)** dealt with the ethical question, *Why should I be moral?* Notice he does not mean, Why should I do what other people think is moral? He means this question: Having come to the conclusion that a particular form of conduct is the moral thing for me to do, why should I do it? And, according to Bradley, this question contains its own answer. *To judge that something is the moral thing for me to do is to judge that it is what I should do.* To demand a further justification (e.g. that it is in my interest, or it will make me respected by others, or it will make me happy etc. etc.) *at best* shows you do not understand what you have just judged in judging it to be the moral thing for you to do, or *at worst* that you are quite simply wicked. That something is the moral thing for me to do is a *logically sufficient* reason for doing it, and always overrides *any reason whatsoever* you may have for not doing it.

Can we defend inductive reasoning in a similar way? That something embodies what is accepted as a standard pattern of reasonably reliable inductive reasoning *is just what we mean* by a rational way of proceeding. It is a *paradigm* of rationality. The questioner is demanding to know why it is rational to be rational? And, so it is argued, this question contains its own answer.

Do you consider that the case of induction is really similar to what Bradley says about morality? Or is this approach, in the case of induction, just a copout?

WEEK 5 EPISTEMOLOGY AND THEORY OF KNOWLEDGE.
HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 5.

Reading:
Feldman, R., *Epistemology* Upper Saddle River NJ: Prentice Hall-Pearson, 2003.   pp. 157 – 166.

1.   Sociological and Philosophical (Normative) Epistemology.

We can distinguish two different modes of enquiry into knowledge. One, known as the *sociology of knowledge*, is an inquiry into what people in fact know, how they came to know it, and what are the circumstances in which there are major expansions or transformations of knowledge. It is, in essence, a *descriptive* discipline. It attempts to answer these questions with descriptions of patterns and hypotheses about causal relationships.

It should be said at the outset that the name "sociology of knowledge" is in fact a misnomer. It *should* be called "sociology of belief". The reason for this is that what it really studies is not knowledge but, what people in different places and times *take* to be knowledge, or *regard* (then and there) as knowledge. Much of it is of course simply wrong, and therefore not knowledge at all. The danger of the name "sociology of *knowledge*" is that it harbours an incoherent relativism that effectively disallows going behind claims to knowledge to see if they are in fact true. This is reflected in a trashy pop multiculturalism in which, for example, the tribal beliefs of primitive communities are described as their "knowledges" (an illiterate description as "knowledge" is a *definite singular term* and accordingly cannot have a grammatical plural). It also has the rhetorical effect of inhibiting criticism of knowledge claims which may be widespread within and/or typical of an alien culture, on the spurious ground that "attacking their knowledge is culturally insensitive". Knowledge, unlike intellectual property, is not something that can be privatised. There is no such thing as *their* knowledge, any more than there is any such thing as *our* knowledge. There are their (or your) *claims* to knowledge, and our (or my) *claims* to knowledge. Such claims are always contingent (i.e. may be true, or may be false), irrespective of who makes them. To point out that someone's claims to knowledge are false, and to attempt to

convince them that this is so, is – far from being culturally insensitive – to perform a public service.

When you see statements about knowledge in the literature of your primary discipline, be careful to be clear as to whether the author is stating, or implying, that what has been referred to as knowledge *really is* knowledge (in which case the author is committed to its being true), or whether it is yet another example of the incorrect (and dangerously misleading) practice of calling something knowledge on no better or stronger ground than it is believed to be, or claimed to be (somewhere, some time, by someone) knowledge. It is a good discipline to make sure that you do not infect your own writing with this confusion. The result will be that your writing embodies a greater clarity, and that is of inestimable benefit to you and your reader alike.

The discipline which should be called the sociology of belief is a very useful and interesting empirical discipline, and it is one which is relevant to a number of fields pursued in this Faculty including, for example, education (e.g. by finding out more about the circumstances in which people are more likely to acquire or change their belief(s)), journalism (e.g. by finding out more about the circumstances influencing the speed at which a given belief or belief set is acquired or changed) and international relations (e.g. by finding out more about the factors which influence the intensity of a given belief or belief set). These examples could readily be multiplied.

TASK 1: Are there areas within your primary discipline in which questions in the sociology of belief are relevant? Can you formulate any specific questions relevant to areas in which you are currently working?

We should contrast what has been erroneously labelled the sociology of knowledge, i.e. the *descriptive* investigation of the sociology of belief, with *philosophical* or – an even better term – *normative* epistemology. An analogy with ethics may be helpful. *Descriptive* ethics is a sociological enquiry into what values a person, a group of people, or a society in general have, or did have, at a given time and place. What do (or did) you, or me, or us, or them, *regard* as good, or bad, or right, or wrong. Thus we can say that in certain communities, sexual promiscuity is regarded as, or *claimed* to be, right, or a good practice; in others, it is regarded as wrong (or bad); in others still it may be regarded with indifference. This is descriptive ethics. It is *neutral* on the question of whether e.g. sexual promiscuity *really is* right, wrong, or a matter of moral indifference (like putting tomato sauce on fried chicken). Descriptive ethics is, or should be, a *value neutral* activity – exactly as descriptive epistemology (or the sociology of belief) is, or should be. (You will no doubt encounter the mantra that "value neutral inquiry is impossible". I would contend that this is a demonstrably absurd claim, which is often, unfortunately, asserted dogmatically by an author or speaker to give a fraudulent legitimacy to their pushing *their* values (otherwise inappropriately) into their text or speech.)

Philosophical or normative epistemology is concerned with when people *ought* to make a claim to know something, or under what conditions *they are justified* in claiming to know something, as opposed to descriptive epistemology which is concerned with when people *in fact* make a claim to know something, or under what conditions or in what circumstances they *claim* to be justified in knowing something.

Both sorts of enquiries, provided terminology is used accurately, are perfectly legitimate and very useful in relation to their, again perfectly legitimate, respective purposes. The danger lies in confusing them. And when modes of enquiry are confused, then – inevitably – no matter how long and comprehensive the enquiry, the output will be at least as confused. The moral? The same advice that your mother used to give you – be careful that you know what you are doing.

Now that we've got all that, it is time to muddy the waters! There are some epistemologists who, sensing what they take to be the inevitability of scepticism when one pushes really hard and long on the questions of normative epistemology (e.g. Under what conditions is a claim to know something justified?), believe that the discipline of normative epistemology should be abandoned, leaving only questions of descriptive epistemology. Notice they are careful *not* to say (as they are often wrongly misunderstood as saying) that descriptive epistemology *answers* the questions of normative epistemology. On the contrary, they are saying that their despair with normative epistemology does not extend to descriptive epistemology.

See: Feldman, *op.cit.* , pp. 166 – 175.

This is not all that different from the way in which some moral philosophers have responded to a comparable drift (inevitable, as they see it, though as in epistemology this is highly controversial) to *moral scepticism.* They push long and hard on such questions as what makes an action right or wrong, good or bad, and find that all the answers that people have come up with lead to (as they see it) absurd or sceptical consequences. So they despair of the entire enterprise, noting however that this still leaves the discipline of descriptive ethics unscathed.

2. Reason, Rhetoric, and Sophistry.

We often hear of things being condemned as rhetoric, as if rhetoric were in some way something improper. This is a common mistake. Rhetoric was once a major discipline of study, a standard offering in any liberal arts degree. Over two millennia ago, Aristotle recognised that there were two elements involved in using reasoning to persuade someone of something – whether in conversation, a major address or, in recent times, a newspaper column or a thesis for examiners; indeed anywhere persuading is the objective. One is *logic*, the other is *rhetoric.* The finest persuasive efforts, i.e. the ones that most deserve to be effective, involve sound logic and high quality rhetoric. But although these two elements coalesce in the text of the speech or written piece, they are very

different in character. For Aristotle, *logic is a science* and *rhetoric is an art.* If we think of some of the greatest speeches we have heard or read, such as some of those of Martin Luther King Jr., or Abraham Lincoln, or Oliver Wendell Holmes we find that it is not just the logic of the argument that they were presenting, but the *manner* in which it was presented, that was important. Even a fictional speech can be a source of great rhetoric. Think for example of some of the speeches in Shakespeare, one of the greatest being from *Richard the Third* ("Now is the winter of our discontent, made glorious summer … "); the speech in which the usurper, the future Richard III, explains his plan to seize the throne, a speech which is wholly malign in intent, yet logically tight and rhetorically seductive.

Unfortunately, we (wrongly) tend to equate rhetoric with *mere* rhetoric, as if its presence signalled the weakness of the logic of the persuasive effort. The result is a regrettable tendency to favour blandness in academic writing, with some writers making conscious efforts to strip any rhetorical gestures from their endeavours, often because they anticipate (sad to say, often correctly) that such contributions will not be welcomed by the examiners or referees. In my experience the best academic literature in any of the disciplines with which I am familiar is also the best writing – but you are wise to be prudent and take a cautious approach to rhetoric when writing for examiners (unless I am one of them!)

The use of rhetoric is often condemned as sophistry. But the two are in no way to be equated. The word 'sophistry' derives ultimately from *the Sophists*, itinerant self-employed professors of higher education who emerged in the fifth century BC (and therefore among the thinkers classified as *Pre-Socratics*) and flourished in the wealthy Athens of the third century BC. They were not a school or a movement, but competing free market individuals you could hire to instruct you in the finer disciplines of life and learning. That is how they earned their living, many being exceptionally successful. Later they acquired a less savoury reputation, as 'hired guns' you could engage to argue anything you wanted argued – for a fee. (Today we call them lobbyists or barristers.) Their reputation (in many ways quite undeserved) was as people who cared not whether what they were engaged to argue was true or right, and cared not whether the logic they used was sound or unsound, provided that, so far as their intended audience was concerned, it looked sound. (This unsavoury reputation was inflated by the philosophers of the two great schools, the Academy founded by Plato and the Lyceum founded by his former pupil Aristotle. The motive appeared to have been commercial – to sully the reputation of the Sophists so that people would instead enrol in their respective schools.)

Whatever the real history, the English word "sophistry" came to mean the device of deliberately using an argument which you knew to be bad, and cloaking it in fine rhetoric so that the audience would not spot the hole in it. Are we ever justified in using an argument we know to be bad in order to persuade people of a conclusion we want them to accept? When Al Gore's film *An Inconvenient Truth* was first released one eminent scientist was reported as saying, "A lot of the science in it is pretty bad but at least it will have the right effect." Even God is supposed to occasionally use bad arguments to

persuade people. In the 13th century the theologian and philosopher St Thomas Aquinas produced his celebrated *Five Ways* – five arguments he believed to be logically impeccable to demonstrate the existence of God. But he also noted some arguments which were in circulation but which he considered unsatisfactory. One was the Argument from Miracles. Now Aquinas contended that if you *already* had a compelling reason to believe in God (e.g. via one of his *Five Ways*) then it would be reasonable to believe in the reality of miracles and that they were God's work, *because you already had reason to believe that there is a God and that he is the sort of being capable of causing miraculous events.* But if you did not already believe in God, it would not be reasonable to believe in miracles or, if you did believe you had good reason to believe in them, their reality is not a good reason for believing that they were caused by God (as against anything else that might be claimed to be their cause, or even against the idea that you simply did not know what caused them.) So, why did God facilitate miracles? Because, argued Aquinas, God rightly knew that most people had neither the time, nor the inclination, not the capacity to grasp the intricate logical proofs of his existence, but they would be persuaded (however illogically) by the awesomeness of miraculous events. Thus for Aquinas, the end (getting people to believe in God) justified the means employed by God (the production of events which, though they don't *justify* the inference, will naturally *cause* people to make the inference).

TASK 2: Do you think it is ever legitimate to use an argument you know to be bad, provided you can make it <u>appear to be good</u>, to persuade your audience (an examiner?) of a conclusion that you dearly want them to accept?

As an aside, it is perhaps worth noting the (somewhat sad) history of the English word 'sophisticated'. This was, until the 1930s, a term of denigration. To call a person sophisticated would be to imply he or she was a person who was, by demeanour and/or dress (or make up) attempting to pass themselves off as a cut above their real station, i.e. as pretending to a class which they had not attained. (The very lavish motion picture palaces of the 1920s were condemned in contemporary architectural publications for their 'sophisticated architecture and décor' i.e. for having an architecture and décor by which they pretended to be finer architectural creations than they really were.) But then the usage changed so that calling something, or someone, sophisticated became the height of praise, and through this misuse the word lost its connection with the original sophistry. This is a good example of how, in linguistic evolution, using a word or phrase wrongly often enough causes it to gain acceptance by (some) linguistic authorities as right.

Accordingly, it is important to note that when you read a nineteenth century scholar describing an argument or a position as sophisticated, the author is not praising it for its cleverness or ingenuity!

Rightly or wrongly, it was believed that in their later years, the Sophists had what was in effect a kit of intellectual 'dirty tricks' - a catalogue of what they knew were bad ways of arguing that could be made to look good, and which they would use whenever they were

useful. (Again, consider whether there are people/professions today who knowingly do this? Are politicians (of all persuasions) immune from this practice? Are there any other categories of people you might cite for this practice?) These have come to be called *fallacies* and many of them occurred so frequently as to be given names. Not all the things labelled fallacies were in fact fallacious.

3. Fallacies – 'the counterfeit of argument'

It is customary to divide fallacies into *formal* and *informal*. The formal fallacies are those which embody a *pattern* which violates a valid pattern of argument.

One of the most common valid argument patterns is *modus (ponendo) ponens*. This is the pattern:

(Premise 1) If P then Q.
(Premise 2) P.
So:
(Conclusion) Q.

Example: let 'P' be 'It is raining heavily' and 'Q' be 'The grass is wet.'
(Test the pattern – remember in regard to the propositional variables 'P' and 'Q', that you must use *the same value for* P, and *the same value for* Q, throughout the example.)

Now consider the following actual argument.

If global warming is a reality, Australia can expect prolonged droughts.
Australia is experiencing a prolonged drought.
Therefore: Global warming is occurring.

This is in fact fallacious; the fallacy is called *affirming the consequent* and it is one of two counterfeits of modus ponens. Notice that the modus ponens pattern has a premise which is *conditional* (also called a *hypothetical*), and a conditional proposition has an *antecedent* (the 'if' clause) and a *consequent*   (the 'then' clause).
In other words the pattern embodied in the above argument is:
If P then Q.
Q.
So:
P.
The above represents the pattern of an argument that embodies the fallacy of affirming the consequent. Note that just because such an argument is fallacious, it does not follow that the conclusion is false.

Here is the second counterfeit to modus ponens. Consider:

If it is raining, then the grass is wet.

It is not raining.

So:

The grass is not wet.

(But what if somebody had been hosing the lawn? (Remember hoses?))

This embodies the fallacy of *denying the antecedent.* Can you see why?

On the other hand, *denying the consequent* is not a fallacy.
Consider the pattern:

(Premise 1): If P then Q.

(Premise 2): Not Q.

So:

(Conclusion): Not P.

In fact this is a sufficiently common valid argument pattern that it has a name: *modus tollendo tollens.*

The final formal fallacy we will consider is known as the *modal fallacy.*　Any proposition must have one of three modalities. They are apodeictic, assertoric, and problematic.

Apodeictic mode: It is necessarily the case the P.

Assertoric mode:　(It is actually the case that) P.

Problematic mode: It is possibly the case that P.

I have enclosed the assertoric modal qualifier in parentheses as we normally do not use it, except to avoid ambiguity or misunderstanding. That is because we normally speak and write in the assertoric mode, making it necessary to incorporate a modal qualifier only when we depart from that mode.

Notice that there is a one-way entailment relationship among the modes. Each of the above three forms entails the one below it. But there is no valid inference pattern up the list.

The modal fallacy occurs when we wrongly incorporate the necessity with which a conclusion follows from the premise set into the conclusion itself. Compare the following side by side examples:

(I)	(II)
All spinsters are unmarried	All spinsters are unmarried
Jane is a spinster	Jane is a spinster.

So, necessarily: *So:*
Jane is unmarried.   Jane is necessarily unmarried.

Argument (I) is valid. Argument (II) is fallacious. Argument (II) is fallacious because the conclusion does not follow from the premises. Jane is not necessarily unmarried. She is contingently unmarried. She might be planning to change her status tomorrow.

Argument (II) wrongly projects the necessity with which the conclusion follows from the premises (correctly recorded in (I)), into the conclusion itself.

Turning to informal fallacies (so-called) they are a decidedly mixed bag – some are not fallacious at all. Consider first *begging the question (*also called *circular argument).* This is any argument in which one of the premises *assumes the truth of the conclusion it seeks to prove.* Now this is not actually fallacious. On the contrary, all other things being equal, it is a perfectly valid pattern. (It is just rhetorically useless.) For the pattern:

(Premise) P.
So:
(Conclusion) P.

Is a valid deductive pattern of argument. (It is logically impossible for the premise set to be true and the conclusion false.) It is useless because it does not take us anywhere.

Note incidentally a very common misuse of the expression *begging the question*, an abuse increasingly practiced among Austrlalian journalists, and a sad confirmation of the declining quality of standards of editorial control. This is to use the expression 'begs the question' to mean 'raises' or 'prompts the question'. This is quite a different concept, and not a case of begging the question at all. Example: "The Prime Minister has announced that he is going to Tonga next week. This begs the question of whether he will announce the date of the election while he is overseas."

Here are some more examples of what are commonly called informal fallacies. In each case we must check whether or not it really is a fallacy. They are generally known as the *argumenta. Let* us consider them very briefly.

- *Argumentum ad ignorantium (= Appeal to Ignorance)* 'P is true' 'Why?' 'Prove that it isn't.' (NOT fallacious, just changing the argument).

- *Argumentum ad majoritatis (= Appeal to the majority).* Generally fallacious – it depends on which majority and why it was chosen.

- *Argumentum ad miseriam (= Appeal to Emotion).* Generally fallacious – it may incline the audience to accept your conclusion but in itself it does not justify its acceptance.

·   *Argumentum ad baculum (= Appeal to Force).* Generally fallacious – like an appeal to emotion, it might incline the audience to accept your conclusion (e.g. through fear) but in itself it does not justify its acceptance.

·   *Argumentum ad verecundiam (= Appeal to Authority).* NOT fallacious (provided the authority really is a relevant authority).

·   *Argumentum ad hominem (= Appealing to the (presumed) personal flaws of one's opponent).* Generally fallacious. Two sub-types *tu quoque (= lit. 'you also')* Trying to refute an accusation by showing the speaker is guilty also; and *poisoning the well.* Trying to refute an argument by showing that the speaker has an unworthy motive ('the source is contaminated') for putting it forward.

·   *Post hoc ergo propter hoc (= lit. 'After that, therefore because of that')* Generally fallacious. The mere fact that one thing happens after another has by itself no tendency to show that the latter was either the cause or the reason for that happening

·   *Non sequitur (= lit. 'It does not follow')* Two common sub-types. *Diversion* (trying to support one proposition by arguing for a distinct proposition) – generally fallacious *provided* that the truth of the distinct proposition does not enhance the probability of the disputed proposition; and *straw man* (trying to refute one proposition by refuting a distinct proposition) – generally fallacious provided that the falsity of the distinct proposition does not diminish the probability of the disputed proposition.

In your research or advanced study you will almost certainly encounter examples of most of the above sorts of reasoning. Note that you still need to check whether it is fallacious in a particular case (don't 'brand and run'). Also, make sure you check your own written and other presentations to ensure that you do not commit fallacies. Your critics (and examiners!) will be looking for them, anticipating their 'aha!' moment at your expense!

Analogical arguments. Where logic and rhetoric meet:

A is similar to B. A has property F. So (probably) B has property F also.
Note that the first premise of this argument is consistent with: B is similar to C. However (let us suppose) it is also true that C does not have property F. So, if the first argument is permissible, then so too is drawing the following conclusion in the second case: So (probably) B lacks property F also. Can both arguments be right? As a tie breaker it might be claimed that A is *more similar* to B than B is to C. Note that much legal and policy argument is of this character.

Transitivity and the transitivity statistical fallacy:

    If P implies Q, and Q implies R, then it follows that P implies R. But if P implies that probably Q, and Q implies probably R, it does not follow that P implies that probably R. (Probabilities may diminish through an inferential chain.)

Transitivity and Sorites Paradoxes:

    If Peter has a full head of hair, then removing one hair will not make him bald. If a person is not bald, then removing one hair from his head will not turn the person from a non-bald to a bald person.

    So you cannot become bald if you lose one hair at a time! (What's gone wrong?)

Reading for Week 6:

Rosenberg, A., *Philosophy of Science: a contemporary introduction.* New York: Routledge, 2000. Chapters 2 and 3.

Week 6: Epistemology and Theory of Knowledge

HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 6.

Reading:

Rosenberg, A., *Philosophy of Science: A Contemporary Introduction.* (Second edition). New York: Routledge, 2000. Chapters 2 and 3.

1. Does everything have an explanation?

In every field of advanced study or research, part of our concern will be with explanations. Sometimes we will want to assess the merits of an explanation put forward by another. Perhaps we can come up with a different and superior explanation. (What makes it superior?) On other occasions we will be concerned with creating an explanation for something that has not been explained. (What makes our explanation a good one?)

Is everything explicable? It is generally contended that, in both the natural and the social sciences, everything is explicable. And 'everything' means everything that does happen, has happened, or will happen. It also means everything that does not happen, has not happened, or will not happen – indeed sometimes it is more important to explain why certain things don't occur than why other things do.

While, by general consensus, all sciences (natural and social) proceed on the assumption that everything is explicable, it is also argued that this is an article of faith – that we cannot *prove* everything is explicable, but rather proceed on this *assumption*. Some epistemologists, following the 18th century Scottish Empiricist and Enlightenment

philosopher **David Hume (1711 – 1776)**, argue that, in the end we must come to *brute facts*, facts which are facts, but not because of any further facts. They note that even those who believe that the quest for explanations must ultimately lead to God deny that God needs an explanation, God just is. Hume's view (he was an agnostic) was that if it is acceptable to say God just is, then why is it not acceptable to stop short of the step to God, and say that certain facts just are?

If we acknowledge that the chain of explanations cannot go on forever (and why can't it?), there is a big step involved in passing from the proposition that there must in the end be certain facts that just are, to the conclusion that we have stumbled upon such facts. The scientific mind always, and usefully, proceeds on the basis that we are not yet at the end point where explanation just stops, and we can never allow ourselves to believe we are. (Ask yourself, how would I decide whether my inability, after a lot of hard work, to explain something was due to its not having an explanation, as opposed to me not working hard enough, or being clever enough, to find the explanation.)

Indeed *the principle of explicability* is best seen as a *heuristic* principle – one that is useful for guiding our inquiry – rather than a *constitutive* and *demonstrable* principle – one that can be shown to be universally true.

2. What is an Explanation?

Consider the death of Princess Diana in a car crash in a Parisian road tunnel. A coronial inquiry is currently trying to find an explanation, or the best explanation, for this event. There are a number of explanatory hypotheses which have been floated. These include, for example:

- The Princess and her travelling companion were murdered under direction from members of the British establishment
- The driver was speeding
- The driver was under the influence of alcohol
- The car was clipped by another vehicle, causing the driver to lose control
- The car was being vigorously pursued by press photographers, and this pursuit distracted the driver.

No doubt you have heard others. Notice the following about these putative explanatory hypotheses:

- Some involve citing facts which are generally agreed, such as the second and the third, while others, such as the first and the fourth, have a low level of agreement.
- One involves a hypothesis with a very low antecedent probability (the first)
- Some on the face of it seem to have a higher initial plausibility than the others, meaning that, in terms of our general knowledge, some – for example the second,

third, and fourth – are widely recognised as being the sorts of things that *often* cause car crashes.

- All of them are incomplete in themselves as explanations (e.g. in the case of the first, even if we accept there was a murder plot, we would still need to know how it could be implemented by shaping the events that actually seem to have occurred, and if we go for the third we also need more, for we know that most cases of drunk driving do not result in car crashes.
- The hypotheses are not mutually exclusive and the final explanation might give a certain weight to several of them, so that the explanation is in terms of a combination of circumstances (n.b. some integrate well with one another, e.g. we know that alcohol can effect coordination and response times and can increase a willingness to take risks; on the other hand it is more difficult to integrate the first with any of the others).

The easiest way of thinking of an explanation is that it is a story that *makes plain* how and why something happened (or failed to happen). That is what the British coronial judge is trying to do in relation to Princess Diana's death. Notice that *none* of the five dot points enumerating explanatory hypotheses is *by itself sufficient* to explain the crash. In each case we need more. We know that alcohol, or speeding, or a clip from another vehicle for example *can* cause car crashes but we also know that *in most cases they do not*. In each case we need more. We need the explanatory story to tell us precisely *how and why* (say) the murder plot (assuming that we have, which we do not, credible evidence that such a plot ever existed), or the alcohol, or the speeding, or the clip, or the distraction of the pursuit, either singly or in combination, *caused* the crash *on this particular occasion*.

Let us pause and review the elements of the explanatory process to date:
- We have a number of explanatory hypotheses, each of which states something that experience teaches us can result in car crashes
- Some of these explanatory hypotheses (e.g. the alcohol, the speeding) are well established as factual in this case; others such as the clip from another vehicle and the distraction of the pursuit, are plausible but not (to date) well established as factual in this case; and there is at least one other (the murder plot) for which there is no evidence, and which can safely be dismissed as fanciful.
- None of the explanatory hypotheses is singly sufficient to explain the crash.
- Although they may have stronger weight in combination (e.g. alcohol plus speeding plus a clip from another vehicle) even that is not sufficient to explain the crash. Why not? Because we know that alcohol plus speeding plus a clip from another vehicle in a confined space such as a tunnel *do not make a crash inevitable.*

The last dot point is our best clue to what we do want. Ideally the explanation should provide us with a list of factors, each of which is established as true, such that, were we aware of them in advance, *we could have predicted the crash with certainty*. That is an ideal which we rarely achieve. So, what is the next best thing?

The *least* we want is a set of factors, each of which is at least *fairly* well established as true (each with a probable truth significantly nearer 1.0 than 0.5) such that, were we aware of all this information in advance, we could have predicted the crash with a high degree of probability (certainly greater than 0.5). Typically the *best* we can do is come up with an explanation that has a retrospective predictive power somewhere between 0.9 and 1.0. (It will be interesting to see whether the coroner succeeds in doing this in the Diana case. If he fails then brace yourself for a new and even more fanciful series of rival explanations!)

Let us generalize this. We have an explanation of a phenomenon (be it social or natural) when, but only when, we have identified sufficient information such that, were we in possession of it in advance, we could have shown the phenomenon to be explained to be (pretty close to) inevitable.

TASK 1: Test this claim about what an explanation is by reference to some examples of explanations in your own field of advanced study or research. How good is the fit? Now consider something that you personally want to have explained (whether from your academic work or some other aspect of your life). Is getting what is described above a good general account of the sort of thing you are after? If not, where does it fail?

3. Bad Explanations.

There is a minor industry among the political commentators of offering explanations of the significance of public opinion polls *after* they are published. Such explanations usually involve citing certain facts that the commentator believes must have operated on public consciousness. But the question to ask is; given that these facts were known *before* the poll was taken *why did the commentator not write a column predicting precisely this poll outcome?* It is always possible to produce a *rationalization* of any phenomenon, i.e. to point to certain facts and contend that it is (or was) because of these that the phenomenon is (or was) as it is (or was). What the commentators do, if they want to 'explain' why the polls show a 5 percent swing away from the Sensible Party, in favour of the Silly Party, is to look for something different that one of the parties did in the week prior to the poll. Let's say the Leader of the Silly Party had his picture taken with glamorous pop star Daisy Dumpling, then (obviously!) this 'softened' or 'warmed' the Leader's image. But suppose instead that there had been a swing away from the Silly Party of 5 percent. Then (obviously!) the public was not impressed by the Leader's shallowness in having his picture taken with a flip like Daisy. (Sound familiar? The same fact can be used to explain opposites which means it has no predictive and therefore no explanatory value at all.)

A common indicator as to whether something is a bad explanation is whether it can be used to explain contradictory outcomes. Thus a standard criticism (one of very many) of the claim of global warming theories to be genuinely scientific (as opposed to – as some critics contend – essentially religious theories or political theories) is that whatever

happens to the weather, it is regarded as explicable in terms of global warming! Such an 'explanation' in reality explains nothing.

Rationalizations often have a 'feel good' quality; it all seems to fit together nicely. But that is never sufficient for something to be a (good) explanation.

TASK 2: Consider the writings in your primary study area; do any of them seem to offer mere rationalizations when they should be offering explanations? Why do you think this is so? Consider also media commentary on current events. Can you find any examples of rationalizations being passed off as explanations?

4. Multiple and Rival Explanations

Can there be more than one explanation of the same event? Indeed there can. But surely there can be only one correct explanation of a given event? For are not alternative explanations *rival* explanations? Indeed they are.

Consider, for example, two rival explanations of the apparent movement of heavenly bodies. For many centuries the prevailing explanation was the *geocentric* theory, articulated by the 3rd century AD Alexandrian astronomer Ptolemy. This is the theory that the Earth is a sphere at the centre of the universe and all of the heavenly bodies, including our sun and moon, revolve around it in circular orbits (or circular orbits as later refined with epicycles and other little circular adornments). By the time of the late 17th century the generally preferred theory (developed by Copernicus and Galileo among others) was the *heliocentric* theory. This is the theory that the sun is at the centre of our solar system (not the universe – its overall shape, and therefore the sun's position, was regarded as an unknown), and the Earth and the other planets revolve around the sun in elliptical orbits, in the case of Earth completing one orbit in one year. In addition, in contrast to Ptolemy's view that the Earth was rigid; the later heliocentric theorists such as Galileo contended that the Earth moved not only around the sun but also on its own north-south axis, completing one revolution every 24 hours.

Both theories attempted to explain *exactly the same observations of the heavens.* Both theories had considerable predictive power. Neither was infallible in its predictions, both had an error rate which was higher for the geocentric theory (but it always proved possible to patch both theories as they went to address the erroneous predictions, thus steadily improving predictive power over time).

Were these mutually compatible explanations of what we could observe in the heavens? Indeed they were; for example only on the heliocentric theory does the Earth move. But is there anything that can be explained on one theory that cannot be explained on the other? There was not. But has not the geocentric theory been refuted? It has not. Rather, it has been *abandoned.* Eventually, scientists just quietly walked away from it.

So, why did the heliocentric theory win as the preferred explanation of our observations of the heavens, and in particular planetary motions?

There were four reasons, and these reasons are indicative of general considerations which give rise to one explanation being preferred over another.

First, the mathematics was much easier on the heliocentric theory. To use the geocentric theory predictively, one had to engage in very complex mathematical procedures. Not so for the heliocentric theory. This points to our first general principle, the *principle of least effort* or, for short, *the laziness principle*. If we have a choice between two methodologies, both of which are up to the task, we will take the one that is easier to operate.

The second factor was that of *lateral explanatory integration.* At the same time as the heliocentric theory (in its Galilean form) was gaining currency, work in physics on gravity and on theories of the transmission of light was proving extremely fruitful. And this work, though not itself astronomical, fitted beautifully with the heliocentric theory, but more awkwardly with the geocentric theory. So in the battle of *lateral explanatory fit*, or how it sat with other scientific work in other fields, the heliocentric theory won out.

But when it came to the third factor, vertical explanatory fit, the geocentric theory did much better. This was because it sat very will with the traditional Christian view of man's place in God's universe. It was only natural that man, the highest form of created life, should be at the centre of God's creation. The views of Ptolemy sat very well with this Christian view of the cosmos; so much so that followers of Copernicus were executed for witchcraft and Galileo twice faced the Inquisition for denying that the Earth was at the centre of the solar system and for teaching that the Earth moves. These scientific doctrines were regarded by the Church as a repudiation of Christian truths, so well was the geocentric cosmology vertically integrated with Christian theology. This was not a lateral fit with another branch of science but a vertical fit with something regarded as higher than science (science was seen as the hand maiden of theology.)

So at first the heliocentric theory lost out (and painfully so!) on the issue of vertical explanatory integration. Nonetheless it did come to prevail in the years to come. This was because the Church quietly abandoned its engagement with the geocentric theory. The heliocentric explanatory theory no longer had a vertical integration problem, because the Church had loosened its attachment to scientific detail.

Finally, there is an *aesthetic* consideration. Which explanation is the more elegant? Elegance is an intuitive notion, hard to describe (like the aroma of coffee!) But I bet you recognise it in your primary field of study. With your reading of many alternative explanations of certain phenomena, some will strike you as having a more elegant character than the others. *Elegance is essentially subjective aesthetic fit.* Like fine wines, it is almost impossible to explain to a non-drinker why this wine is finer than that, and experienced wine tasters will not always agree, but the one thing that is clear is that the

more reflective experience you have, the more likely you will be to be able to identify the finer qualities of a fine wine (Trust me!).

So, in sum, we can list these principles of explanatory choice:

- The principle of least effort (the laziness principle – which explanation is easier to use in practice)
- The principle of horizontal fit (how it fits with explanations of parallel related phenomena)
- The principal of vertical fit (how it fits with broader or more comprehensive or more fundamental theories in wider areas of human inquiry)
- The principle of elegance (or the principle of intuitive aesthetic fit).

5. Explanations and Relativity – should we be Worried?

If you consider the four dot points above you will notice that they have a degree of relativity about them which is concerning to some. The first one, the laziness one, makes a principle out of our desire for an easy life. Critics ask, why does the fact that something is easier make it more likely to be true? It does not of course. Remember however that the principle of laziness is not a test of truth, but one basis for choosing one explanation over another when they are both equally adequate to the apparent facts.

The second and third principles are explicitly relative, horizontally and vertically respectively. But this makes the test for which explanation to accept depend upon what else we accept. What if these other things turn out to be wrong? Well, we would have turned out to have made a very bad choice. Behind the second and third principles is another principle called the *unity of science.* (It could as well be called, indeed possibly more accurately, the principle of the unity of human knowledge.) This is the principle that all human knowledge must in the end form a totality which is *comprehensive, consistent, and coherent.* This is not an arbitrary principle, but is based on what is an objective assumption about the world – that this is a single world, and our emerging scientific (in a broad sense, encompassing natural and social) should mirror this fact. It is against this background that the principles of horizontal and vertical integration have their justification, and while they are 'relative' they would appear none the worse for that, for it is their ability to relate to what else is considered acceptable that is a reasonable test of whether they can form a constituent part of an *ultimately unified science.*

It is the last principle, the principle of elegance that most critics find provocative. Why should the truth be neat? Might not the world be an inherently messy place? Of course it might. But the aim of science in its broad sense is to *impose an orderly system of understanding* on this mess. As the eminent Israel historian of science Sambursky has frequently observed, the *aim of science is the comprehension and the conquest of nature.* We can construct explanations which are difficult to comprehend and explanations which are easy to comprehend. Those that are easy to comprehend are in general more

satisfying because they have a structure which in some way marries with the structure of the mind. Notice that elegance and satisfaction are not being used as a *test* of *the truth* of an explanation; the elegance test is one of four principles which are used *together* to determine which of several apparently equally adequate (to the data) but mutually incompatible explanations it is more reasonable to accept.

Elegant explanations are easier to grasp, and easier to communicate, both important utilities. And, given that our aim is not merely the comprehension but the conquest of nature, these qualities contribute in no small way to the second limb of Sambursky's thesis as to the aim of science.

TASK 3:   Do you consider these principles of selection reasonable? Can you find any examples in your primary field of study of rival explanations which on the face of it are equally adequate to the data? Do these principles provide a useful basis for determining which one to prefer?

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Reading for Week 7:
Rosenberg, *op. cit.* Chapters 3 and 4.

Week 7 Content
HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 7.

Reading:
Rosenberg, A., *Philosophy of Science: A Contemporary Introduction.* (Second edition). New York: Routledge, 2000. Chapter 4.

1. **The Pervasiveness of Theories.**

The word 'theory' is one that has wandered through our vocabulary giving us the false impression that a theory is something both important and elusive. Care is needed. One common use of 'theory' is to refer to something we do not yet regard as a fact. Critics of biological evolution, for example, are fond of saying that 'evolution is a theory, not a fact'. The late Pope-John Paul II, in confirming in the 1990s that the Roman Catholic Church had no quarrel with the Darwinian theory of evolution, reportedly said that the theory of evolution is not a theory, it is a fact. In everyday speech the word 'theory' often refers to something that is no more than a speculation, or at best a hypothesis. Asked what you think of the latest mystery novel, you might observe that 'my theory is the butler did it.'

Thus one use of the word 'theory' is to refer to something which is not yet established, and possibly never will be. Sometimes it is used dismissively. ('It's only a theory.')

Yet there is another much grander use, as in the Ptolemaic Theory of the Universe, Einstein's Theory of Relativity, Newton's Theory of Motion, The Kinetic Theory of Gases, Darwin's Theory of Evolution, Freud's Theory of the Unconscious, and Marx's Theory of History, for example. In this use, it functions as part of the proper name of a recognizable integrated (at least loosely) set of descriptive and explanatory propositions about a very general subject matter. It typically has a high degree of generality, under which there are local theories of more particular phenomena or events. In this use it is not dismissive, nor does it imply that what it describes as a theory is merely speculative. Perhaps it is, but this use is, as such, neutral as to whether what it describes as a theory is merely speculative, well-established, or something in between.

This use might lead one to think that a theory must *always* be something comprehensive or very general. Some theories certainly are that, but not all are. It is common these days for litigation lawyers to talk about their 'theory of this particular case', or for police investigators to talk about their 'theory of this particular crime'. When a litigation lawyer talks of his or her theory of the particular case, it is framed around the strategy that is going to be used to maximize that side's chance of winning. It will involve elements of interpretation of the factual issues which are the subject matter of the case, where each interpretative element is designed to attract a general principle of law which is favourable to the client, and exclude those principles of law which are favourable to the opposing side.

When an investigating officer provides a theory of a particular crime, there is similarly a set of interpretations of the elements of the event or situation in question, each of which attracts a general principle or method of further investigation, to be pursued in order to identify suspects and ultimately solve the crime.

Is it possible to give an *essence* of a theory, in such a way that it covers everything that we call a theory, and nothing else? Here it is useful to make some general observations about language which have much wider application, and may be of use to you directly in your primary field of advanced study or research.

First we can distinguish between the *denotation* (sometimes called *extension*) and the *connotation* (sometimes called the *intension*) of a word.

The denotation of a word is the *set of things in the world* to which the word properly applies. Thus the denotation of the word 'theory' is every thing in the world which is properly called a theory.

The connotation of a word is *that in virtue of which those things, and only those things,* are properly called by that word. Thus the connotation of the word 'theory' is that in virtue of which, all – and only – things of the sort listed above are properly called theories.

Two words may have the same denotation but a different connotation. For example the words 'unicorn' and the word 'dragon' have the same denotation (namely nothing) but different connotations.

It is common to attempt to capture the connotation of a word in a *definition* – a brief formula of other words (or – as we shall see – a procedure) which successfully marks off all, and only, those actual (if any) *and possible* things to which the word applies.

Definitions may be divided into important sub-classes. There are *verbal* (or 'word – word(s)' definitions, and there are *ostensive* (or look, point, and test) definitions. Some words can only be defined ostensively. For example colour words cannot be defined verbally. So, how do we teach someone the meaning of the word 'red'? By pointing at a red surface and getting the person to look at it, then another (perhaps a red liquid), then another (perhaps a red light) until the pupil can continue identifying red things unaided. (Some words which are verbally definable are also ostensively definable e.g. 'horse'. Most children are naturally taught for some time entirely by ostensive definitions.)

Verbal definitions can further be divided into those which are *lexical* (which attempt to record standard usage accurately) and those which are *stipulative* (which do not attempt to record standard usage accurately, but lay down (stipulate) a particular meaning that the word will have in a particular context or for a particular purposes. (For example, 'In this paper I shall mean by a *theory* any thing which is …) Stipulative definitions are common and useful where it is necessary to avoid pitfalls that may be associated with an ambiguity or vagueness in ordinary use.

When you are doing an analysis, or writing an essay or a research paper, you may find it useful to make explicit use of some of the above technical distinctions – certainly, it can help avoid misunderstanding on the part of the reader or assessor.

Where a word does have a verbal definition, and in particular when it has a lexical definition, it is sometimes said (though not so often today) that the formula which expresses its connotation, i.e. which accurately reflects its correct usage, captures *the essence* of whatever it is that has been defined. The word 'essence' is decreasingly used because of its historical metaphysical use in which the essence of a thing was thought to in some way inhabit the thing and actually make it the sort of thing it is! Insofar as it is used today, it is for all practical purposes the same as connotation.

Back to theories. Given all those things we gave as examples of theories at the start, can we capture the connotation of the word 'theory'? (Or in old-speak, can we formulate the essence of a theory?) I have never seen it done. If that is right, does that mean that the

word 'theory' is ambiguous? Not necessarily; indeed in this case probably not. When a word is ambiguous it usually has two (or more) sharply differentiated meanings. Take the noun 'bank' for example. There is no continuity between a bank in the sense of the side of a river, and a bank in the sense of a financial institution. Indeed the fact that English uses the same word for both is a historical accident. The word 'bank' in the sense of a financial institution is (probably) French in origin (spelling notwithstanding). But in the sense of the side of a river, it is Anglo-Saxon. They have completely different linguistic pedigrees. While this is not necessarily the case when a word is ambiguous, it is often the case. It is certainly not the case for the word 'theory'.

To help us understand what might have been going on with the word 'theory' I would like to introduce you to a concept first introduced by the Austrian-born Cambridge philosopher **Ludwig Wittgenstein (1889 -1951)**, namely, the concept of a *family resemblance* term. He illustrated this concept by reference to the example of the word 'game'. Consider all the things we call games. Some can be played alone, some in pairs, some in large teams. Some are paid for relaxation, some are played seriously (e.g. the Olympic Games) and some are played for commercial profit (e.g. professional golf). Some are governed by a body of rules, some are not (e.g. a solitary child playing a game with a ball.) Wittgenstein's contention was that, try as you may, you will find *nothing that is both common to, and peculiar too, all and only things properly called games.* (Try it!) It follows that the word 'game' is incapable of a lexical definition. But it is not an ambiguous word. Wittgenstein calls it a family resemblance term because there is a resemblance between games which is like the family resemblance among family members of the same sanguinity. There is the characteristic nose (but Cousin Willy and Aunt Flossy do not share it); there is the distinctive brow (but Uncle Henry and Cousin Katie are different … and so on). If you scan the family portrait, you get a sense of the family resemblance; indeed it often jumps out at you, but there are no characteristics such that they are both common to and peculiar to every member of the family.

Here is an abstracted way of how this works for language. Suppose a community has been using the word W for (1) things with properties A, B, C, and D. But then something comes along (2) that is B, C, D, and E – it is natural to call it a W also as it has most of its properties in common with (1). But then they encounter something (3) with properties C, D, E, and F, and so call it W also. Then later they find something (4) which is D, E, F, and G, so it is naturally called W as well. Then they meet something (5) which has properties E, F, G, and H, and so on. In the history of their use of the word W, no doubt over many years, each new application is to something with most of its qualities in common with its predecessor – the application of the word W is simply done naturally and unthinkingly. But by the time they get to (5) we are dealing with something that has *none* of its properties in common with (1).

(1)　　　A　B　C　D

(2)　　　　　B　C　D　E

(3)   C   D   E   F

(4)   D   E   F   G

(5)   E   F   G   H

This is an abstract representation of a family resemblance portrait. Moreover, it is a perfectly good natural explanation of how a natural language easily applies to newly encountered objects. It also illustrates why the relation 'very closely resembles' is *non-transitive.*

A relation R is *transitive* iff (if and only if): If A has R to B, and B has R to C, then A has R to C. (e.g. the relation 'is taller than')

A relation R is *intransitive* iff: If A has R to B, and B has R to C, then A *does not have* R to C. (e.g. the relation 'is mother of')

A relation R is non-transitive iff: it is neither transitive nor intransitive; i.e. if A has R to B, and B has R to C. then A may or may not have R to C. (e.g. the relation 'is a former colleague of').

I contend that we cannot formulate a definition of a theory (unless it is a stipulative one, which of course is always possible) because of the size of this family!

2. Scientific Prescriptivism

During the 20th century there was a strong and very influential movement to develop an account of a scientific theory which would then be the template for all theories worth the name. Not only did this fail for science but it had a perverse influence on the social sciences and the humanities.

To generalize, the model proposed was the hypothetico-deductive model of theories. A theory involved three elements:

(1) A set of (explanatory) hypotheses, each bearing on a common subject matter – the greater the number and/or generality of these hypotheses, the more comprehensive the theory.

(2) A set of descriptions of the sorts of data to which the theory would apply, i.e. which could be *subsumed* under the hypotheses - sometimes these are described as *initial conditions.*

(3) A set of deducible consequences; i.e. for any given sub-set of the data (i.e. for any given specification of a sub-set of initial conditions) there would be a sub-set

of consequences which could be deduced from the conjunction of those initial conditions and the hypotheses under which they are subsumed.

A theory would be tested by establishing whether, as a matter of fact, the deduced consequences actually were the case. If they were, this would be taken as *confirming* or *corroborating* the theory. Notice that there could be no such thing as a complete proof or verification of the theory; only increasing degrees of confirmation, with no upper limit.

If the deduced consequences were not the case, then it would be concluded that there was something *wrong*. This gave us two choices: to abandon the theory as *falsified* or *refuted* or, more commonly, to look for a way of *modifying* the theory to eliminate the problem, and then trying it (i.e. testing it) once again.

How long we persist with the process of modification would be determined primarily on whether a rival theory was conveniently available. If there is none (if this is all we have) then we will persist. If there is a rival theory that did not have this particular problem, we would gravitate to it and simply walk away from the first theory.

One group of thinkers who were particularly attracted by this type of view of theories (and therefore endorsed prescriptions such as this) were the **logical positivists**, many of whom belonged to the **Vienna Circle.** This was a group of scientists (mainly physicists), mathematicians and philosophers who gathered in Vienna during the 1930s. These included **Rudolf Carnap, Friedrich Nagel, Otto Neurath, Friedrich Waisman** and **Moritz Schlick** (the only philosopher, so far as we know, to have been murdered by one of his students). Other logical positivists who were non-members or only loosely associated with the Vienna Circle were **Sir Alfred J. Ayer** and **Sir Karl Popper**. Most of them were non-observant Jews and with Hitler's rise to power they fled, the majority to United States universities where they were welcomed with open arms, and some to the United Kingdom, especially the University of London.

One of their aims in developing a prescriptive template for scientific theories was to distinguish science from what they called *pseudo-science* (stuff that has a look and feel of the scientific about it, but is really not science at all.) Their principal targets were religion, metaphysics (general philosophical theories of the nature of reality) and psychoanalysis–based psychiatry, notably – but not exclusively - anything of Freud's.

What made all these things pseudo-science is that it did not matter what happened in the world, it did not count against their 'theory'. They were unfalsifiable. Thus, to over-simplify, if a Freudian were to contend that all desire is ultimately a longing for sexual gratification, and an example is produced of a desire which reveals no evidence whatsoever of a longing for sexual gratification, then it would be replied that this is because it is a case of repressed or subconscious sexual longing. (The subconscious was particularly in their sights as a bogus pseudo-entity.)

Some of them elevated this into a general principle of scientific meaningfulness: a statement is not scientifically meaningful unless it is capable in principle of being falsified by a finite set of observations. If it wasn't scientifically meaningful, then the best it could be is poetry! (Let us call this *the Principle of Falsification,* or 'F' for short.

The problem with this as a test for scientific meaningfulness is; what finite set of observations would show F to be false? If the answer cannot be given (and it could not, at least convincingly) then F is not scientifically meaningful. In other words it fails itself (and is therefore, at best, poetry!)

This principle of scientific meaningfulness was quietly abandoned but the rest of this prescriptive template was maintained. It continued to be used to distinguish science from pseudoscience. (Its latest victim is anthropogenic, i.e. human induced or human compounded, global warming, which it classifies as a pseudoscience, defended in ways more characteristic of a religion.)

The hypothetico-deductive template remained influential until the last years of the 20th century and still lingers. However it was increasingly adopted by the social sciences, anxious to legitimise themselves in universities where academic promotions and allocations of research funds were increasingly controlled by committees typically dominated by representatives of the natural sciences who applied their model not just to research, but to the nature and frequency of research publications, and the insane requirement (for the humanities and several of the social sciences such as Sociology and Education), that the minimum condition for an academic careers is a doctorate.
(The book is yet to be written on just how much damage the influence of the natural scientists in western universities has done to the nature and quality of the academic culture.)

Plainly this model of a theory does not work well for several of the social sciences (e.g. interpretive sociology, many parts of education) and it does not work at all for any of the humanities except possibly anthropology (which has elements of the social sciences within it.)

But – spectacularly – the hypothetico-deductive method is a failure for several of the natural sciences, notably biology. Try placing Darwin's Theory of Evolution within the hypothetico-deductive model. Darwin's theory has three core elements:

   (i)   random mutations
   (ii)   competition and struggle for survival
   (iii)   survival of the fittest.

But what predictions does it make? Answer – nil. It cannot be tested by deriving observable consequences from its central explanatory hypotheses ((i), (ii), and (iii) above). Are we to regard it as pseudoscience – a religion or a metaphysic?

Another sad consequence of the prevalence of the hypothetico-deductive model of theories is that many younger disciplines, comparatively new to universities such as Education, Creative Arts,   and Sociology, feel the need to write an enormous amount of material on the theoretical frameworks for their research; the research not being considered 'legitimate' unless it is properly embedded in a theoretical framework. I have yet to see one case in which this adds any value to the research, and in many cases the theoretical component is, in my opinion (and I suspect I am not Robinson Crusoe!) more tendentious than the research embedded in it. But that is a story for another day, and another place.

At least we are now largely liberated from the inappropriate shackles of the hypothetico-deductive theoretical model and with that, I suspect, from any universal model of a theory whatsoever. What do you think, so far as your own discipline is concerned?

Week 8 Content.
HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 8.

Reading:
Rosenberg, A., *Philosophy of Science: A Contemporary Introduction.* (Second edition). New York: Routledge, 2000. Chapters 5 and 6

Feldman, R. *Epistemology*: Upper Saddle River NJ., Prentice-Hall – Pearson, 2003. Chapters 6, 7, 8, 9.

1. **From Then To Now – A Sketch of Western Intellectual History.**

The purpose of this sketch is to locate a movement which has had a significant influence on a number of disciplines since the 1970s, the movement known as *Postmodernism.*

It is customary to break up the history of western thought into a number of ages. While it is broadly agreed that there are several ages, there is no agreement on the exact boundaries (they can differ by centuries, particularly when it comes to the distant past) and there is a difference in nomenclature. But here is a rough guide.

(1) *The Ancient World:* This covers the period from 10th century BC to about 500 AD and picks us the ancient civilizations of the Middle East, notably Babylon and Egypt, the ascendancy of the early Roman Empire with its contribution to military logistics, infrastructure construction, and administrative law and practice, and the Hellenic Period, roughly the 5th century BC to 300 AD, which is the period of the flourishing of Greek intellectual life, particularly in philosophy, logic, and geometry.

It was during the latter part of this period that history emerged as a discipline, notably in Rome, but also in Greece.

(2)　*The Medieval World*: This covers the period from approximately 500 AD to the 15th century AD. Once called 'the Dark Ages' with the implication that nothing of intellectual significance happened in the west between the end of the Hellenic Period and the Renaissance, this description has fallen into disuse as our knowledge of the period has grown. It encompasses *inter alia* the birth of Islam in the 8th century AD, the birth and growth of the Ottoman Empire – a Turkish Muslim empire centred on Istanbul (the ancient city of Constantinople) - from the 14th century, and lasting in some form or other until the 20th century It also includes the Crusades, in which the Christian Church, in the first instance under the aegis of the papacy, endeavoured to recover the Holy Places of Palestine from Muslim occupation. While the Crusades ended, unsuccessfully from a Christian point of view, in 1291, with the final expulsion of the Christian west from Palestine, there was a huge legacy in East-West trade and commerce, which included as a by-product the transmission of much Eastern knowledge and culture to the west. It also included the birth of the southern English dialect as the literary language of England, with the publication of Geoffrey Chaucer's *The Canterbury Tales* in the 14th century. During this entire period Latin remained the universally dominant intellectual language of the west. So it can be seen that this Age was far from 'Dark'.

(3)　*The Renaissance*: This period begins in the 14th century and runs through the 16th century; the 'High Renaissance' was the period 1500 – 1520 in which the Italian artists Leonardo da Vince, Raphael and Michelangelo took the classical artistic concepts of balance and harmony to a new peak. Broadly speaking, the Renaissance encompasses *inter alia* not just the events generally included under that name, but also the Reformation. The Renaissance (French for 'rebirth') was a movement, centred originally and principally on Italy but later spreading to Holland, Germany, and – to a lesser extent – the British Isles. Other intellectual and artistic giants of the Renaissance included Petrarch, Dante, Boccaccio and Machiavelli. It was a period of an extraordinary explosion in the growth of the arts, especially painting and sculpture but also music and poetry. Of particular significance was the 'back to the books themselves' movement – the rediscovery of the great writings of the Hellenic Period and of Rome; but now reading them directly rather than through the filter of sanctioned Church commentaries. The Reformation freed the new denominations of the intellectual constraints which (they argued) had been imposed by the Roman Catholic Church on creative intellectual inquiry; an issue largely addressed by the Catholic Church in the Counter Reformation. The Renaissance is regarded by many as setting the stage for 'the modern era'.

(4)　*The Modern Era*: The "modern era" is generally considered to be the period from the late 17th century to the beginning of the Great War (later called World War I),

with the period after that commonly referred to simply as "recent" – in historical terms. It begins with the Age of Science, and also coincides with the Age of Enlightenment (also called the Age of Reason). It is a period of spectacular growth in the natural sciences; a period of optimism marked by the triumph of reason over faith, tradition, and superstition, and a new respect for experience as recorded via systematic observations – an approach inspired philosophically by the British Empiricists (Locke, Berkeley, and Hume). "Systematic" became a key concept in all disciplines concerned with recording, explaining, and linking discoveries in an orderly way, grounded in a Cartesian-like foundationalism, augmented in the late nineteenth century by the birth of post-Aristotelian logic with the inventions of the propositional and predicate calculi, and set theory ("Boolean algebra") – the intellectual platform that made the birth of computing science possible. It was a period in which the developed economies transformed themselves from post-feudal village-anchored agrarianism to urban industrialisation and with it a rapid rise in the standard of living and life expectancy, the growth of artificial canals and railways, and the shift from sail to steam power for ocean-going vessels. Mass education was embraced as an industrial necessity. Social institutions were secularised, the political left was born, and the driving spirit was one of inevitable progress.

But within this period there was also a reaction, and that reaction was a movement known as *Romanticism.* This movement began in the late 18th century as a reaction against the very strengths of the Enlightenment: the authority of reason, the strength of system and order (whether scientific or social), classicism and scholarship, and the desirability of industrial and social progress. It had an almost pantheistic attitude to the environment, and glorified the primitive, and man's unfiltered relationship with nature. Its principal philosophical representative was the French philosopher **Jean-Jacques Rousseau (1712 – 1778),** whose principal theme was that natural (or primitive) man is 'perfect' but is contaminated by corrupt society. Rousseau was not referring to financial or legal corruption but essentially *anything* that *required* people to behave other than in the ways they spontaneously wished or were inclined to behave. His manifesto that 'Man is born free but everywhere is in chains' is seen by many as capturing the essence of Romanticism.

Romanticism is a movement which was not just philosophical but was manifest in the arts, music, architecture, and literature. It had little influence in Britain and the United States and such influence as it had was mainly in literature and music. The English poets Wordsworth, Shelley, Byron, and Keats are often classified as Romantics but sometimes this seems to say no more than that they were disposed to write soppy love poetry.

Romanticism was officially pronounced dead by the start of the Great War, but like many movements pronounced dead it had already begun to regroup under a new

name: that new name was *postmodernism,* which dates from developments in music, painting, and architecture in the late 19th century, and was more clearly identified as such (in order to escape the 'dead' tag of Romanticism) after the end of World War I*.*

(5) *Recent Times*: This is the age we entered at the time of World War I, and in which we now live.

Postmodernism is a loose alignment of developments in architecture, the arts generally, literature, philosophy, and – more recently – education, which are hostile to the very idea of the systematic, or of the systematic as preferable to the loose or unstructured. It condemns "high culture" as an elitist concept concerned essentially with preserving the social power of establishment critics, and inflating the asset value of "anointed" art works which play the same commodity role for the wealthy economically as do precious metals (e.g. gold).

2. Some Aspects of Postmodernism

It is difficult to define Postmodernism but it is possible to state some of the more significant influences and elements:

- *The Influence of **Friedrich Nietzsche (1844-1900**). Nietzsche predicted (accurately, but several decades later than he expected) the collapse of traditional moral, social. and aesthetic values, and the received ways of interpreting historical, social, and cultural phenomena, and wanted to go beyond the inevitable consequential nihilism he predicted.

- *The Reduction of Authority to Power*. Inversion of the traditional view that legitimate power is a consequence of legitimate authority, to the view that all authority is a manifestation of (more or less disguised) power, and all power (or all except ….) is illegitimate and may be justly resisted and overturned (fill in the dots with your preferred post-revolutionary power bearer). Examples: **Karl Marx (1818-1883)**. Law (and custom) is the power instrument by which the ruling class, ruling in its own economic interest, exercises "authority" (i.e. power) over the ruled. **Sigmund Freud (1856-1939**). A person's "authority" over his or her mental states (motives, desires, attitudes etc.) is a generally unacknowledged manifestation of the power of the libido.

- *New wave feminism* (post 1960) cherry-picked aspects of each of the above to generate its doctrine of social authority as a reflection of male (wrongly called masculine) sexual (wrongly called gender) power.

- *Critical Legal Studies* (Harvard 1965 +) cherry-picked all of the above together with post-de Saussurian linguistic theory (*vide infra*) to develop a post-Marxist sceptical analysis of legal reasoning (as practiced in common law jurisdictions) and held that the common law doctrines of *precedent* and *stare decisis* were simply extensions of a Marxian analysis of law. A group of philosophers and sociologists deriving from the Frankfurt School (University of Frankfurt 1923 +) extended this thinking into epistemology via the new sub-discipline of the sociology of knowledge.

- *The Resurrection of Relativism.* It is important to get the right opposites. The opposite of relative is absolute (not objective). The opposite of subjective is objective (not absolute). Something can be relative and objective (e.g. space) and something can be absolute and subjective (e.g. my sensation of pain). Moral (or ethical) relativism is the view that whether something is right or wrong, good or bad, is always relative to a society or culture. Long thought discredited by Plato over two millennia ago, it underpins the postmodern political doctrine of multiculturalism which, originating in Canada (where it replaced Anglo-French bi-culturalism, in deference to other significant ethnic minorities, notably Ukrainians) and South Africa (where it was an intellectual underpinning of apartheid) in the 1960s, attempts were made in the 1970s (with partial success) to extend this doctrine to the UK, France, Germany, and Australia, and (with more limited success) to USA. Postmodernists generally reject the nineteenth century doctrine of liberal pluralism as developed notably by **John Stuart Mill (1806-1873**), and saw it as being displaced by multiculturalism. Cultural moral relativism says that whether something is right or wrong, good or bad, is always relative to the standards of a particular culture. As a description of when something is regarded as right etc. this is (fairly) uncontentious. But the relativist holds that this is constitutive of rightness etc. There is no right or wrong, good or bad, beyond conformity or disconformities with the standards of a particular culture. So (it is argued) is wrong for one culture (say, a majority culture in a culturally mixed society) to impose its standards on the members of another culture. But, as Plato pointed out, this is itself a moral judgement which has been generalised transculturally. And consider the case, within a culture, of the moral crusader, who wants to reform the standards of his or her own culture (e.g. as in 18th century England, to persuade people that slavery is wrong). Ex hypothesis it is the reformer who is morally wrong – always and everywhere!

- The linguistic legacy of the Swiss linguist **Ferdinand de Saussure (1857-1913).** He drew a sharp distinction between the language in the mouth of the individual speaker and the common tongue. That each of us is using any word in precisely the same sense as every one of our fellow speakers is a constantly tested but never provable hypothesis. Suppose a world in which all and only cubes are red, and the language has one word for such 'rubes'. Then tonight a foreigner brings in a red sphere (they have never seen a sphere before). Half say it is a rube. Half

say it can't be – both say, "but look at it – can't you see?" Did they mean something different by 'rube' all along? This can be asked regarding every word in every language. For some this leads to *scepticism regarding all meaning*. This is reflected in the postmodernist theory of *deconstructionism*; that the only worthwhile way of considering a text is as a social object (whatever that means!)

3. The Collective Impact.

Taken together these developments undermine traditional authority in virtually every field, precisely as Nietzsche predicted (and from which he feared anarchic consequences would flow). This impact, particularly that of relativism, has significantly impacted recent epistemological thinking. What is epistemological relativism? Siegel's definition: Knowledge (K) that P (and/or truth (T)) is relative to time (*t*), to place (*p*), to society (*s*), to historical epoch (*h*), to conceptual scheme or framework (*f*), and personal training and/or conviction (*c*) , so what counts as knowledge always *depends on the values of these variables*. But this is pretty uncontentious as a definition of when something is *counted as* knowledge (or counted as true). It does not tell us that knowledge is relative. So, look instead at Stephen Stich's definition: (see Routledge Encyclopaedia of Philosophy On-Line www.rep.com/) "… an account of what makes a system of reasoning or belief revision is a good one is relative if it is sensitive to facts about the person or group using the system."   Absolutism (on this view) is that there is a uniquely correct (albeit possibly not yet reached) system of belief revision for any given field of inquiry. But as Feldman points out, this is surely incorrect. What do you think?

3. Quine and the Under-Determination of Theories by Data.

- *A Reminder of the Failure of Cartesian Foundationalism.* Descartes attempted to bridge the gap between *sense data* (our sensory 'inputs' – the subjective sense impressions (sensory sensations) that are the data from which we infer the character of our immediate physical environment, and that physical environment itself. The problem is, what justifies us in getting from the data to the conclusion (that I am in the vicinity of such and such physical objects, which are causing these data in me)? His answer was – the certainty (on account of his putative proof of it) of the existence of a perfect God who would not allow me to be deceived. *But* if, as most believe, Descartes' 'proof' is fallacious, how do we solve the problem?

- *The Inductive 'Solution'.* The inference from sense data to objectivity is justified on this occasion because it has nearly always worked in the past (nearly, because there have been occasional e.g. optical illusions etc.). So, it is a textbook example of a *pretty reliable inductive inference*. (Nearly all prior cases of A have turned out to be B, so, in this case …) *But* how do we know *any* of the past cases have turned out to be right? How could we

ever get behind the sense data to verify objective presence? All we get are more sense data! We are perpetually 'trapped' within them. Conclusion, we should therefore be *thoroughly sceptical* about the existence of an objective world (a world of independently existing perceptible entities). In short, we cannot claim to *know* the truth of *any* of our 'common sense' beliefs, because these beliefs have no credible justification. Therefore, they cannot serve as a foundation for anything else.

- *The Reductionist 'Solution'.* The dot point above shows we have failed to bridge the *gap* between subjectivity and objectivity. The Reductionist contends there is no gap to be bridged. The physical objects we claim to perceive are *nothing but logical constructions out of my (and yours, and everyone else's) sense data*. The sense data are not *evidence* of the presence of physical objects – they are the physical objects. Talk of external physical objects is 'heuristic shorthand' for (a convenient way of speaking of) a complex conjunction of propositions about my (yours, and everybody's) actual and/or hypothetical sense data given an equally complex (to articulate) set of conditions. ***In general, a reductionist solution to an inferential problem is one that reduces the putative conclusion to (i.e. renders the conclusion's semantic content as logically equivalent to) the best evidence we can cite for it, thereby closing the gap between premise(s) and conclusion.***

- *Phenomenalism as one example of Reductionism.* Phenomenalism was originally generally called Idealism, reflecting an old use of the word 'idea' to mean any item that has a purely mental existence, prior to the present more restrictive use which limits 'idea' to a mental item which is conceptual or intellectual in character. It was first developed by the Irish philosopher (and bishop) **George Berkeley (1685 – 1753)**. He based his 'proof' of God's existence on it, contending that the doctrine that God created independently existing physical objects which cause our sense impressions of them was blasphemous ('the Deity has no need of an instrument'). It was embraced in secular fashion by the ***logical positivists***, an influential group of anti-metaphysical pro-physical sciences group of epistemologists known as the ***Vienna Circle (Wiener Kreis)* (circa 1907 -1938**). Mostly Jewish, or Marxist, or both, they dispersed, generally to the US, some to the UK, with Hitler's ascendancy. Influential members/followers included Otto Neurath, Rudolf Carnap, Kurt Gödel, Sir Karl Popper, Moritz Schlick, Friedrich Waisman, and Herbert Feigl. (Many later became leading critics of Marxism.) Their reductionist spirit is expressed in their widely shared principle that, "to understand the meaning of a statement, ask what observations would verify it or falsify it"; if none would, then it is a pseudo-statement – something with the form of a statement but without any real content; we are deluded by its grammatical

form into falsely assuming it to be meaningful. All statements of religion and metaphysics are of this character, i.e. they are nonsensical – they fail "the verification principle".

- *Behaviourism as a Reductionist Solution to the Problems of Mind*. There are two classical problems about mind – a *metaphysical* problem (What is mind?) and a double-barrelled *epistemological* problem: (a) How do I know that what goes on in your mind (e.g. when you say you experience a sense datum of a red patch, or feel a sensation of pain) is *qualitatively similar* to what goes on in my mind when I report these experiences?; and (b) How do I know that anyone in the universe other than me has a mind at all? We attribute mental life to another and/or specific mental states to that other on the basis of observable behaviour. But there is a gap between the behavioural evidence and the mental states that we attribute, justifying these attributions by the behaviour. How do we know the inference is successful? We can never get behind the other's behaviour to perceive the mental states of that other directly, therefore confirming the soundness of the inference. Scepticism about the mental life of everyone except me is a consequence.

- *Parallel between Behaviourism and Phenomenalism*. The behaviourists (e.g. Oxford philosopher **Gilbert Ryle (1900-1976)** and Harvard psychologist **B.F. Skinner (1904-1990)**) maintain that statements about the mental (including sense data) are reducible to statements about actual and potential behaviour. There is thus no gap to bridge. The reductionist methodology is identical in Behaviourism and that employed to justify Phenomenalism. The problem is, *they can't both be right*. Phenomenalism reduces the material or physical to the mental, and Behaviourism reduces the mental to the physical. They are *mutually incompatible forms of monism.* Yet the route to both is methodologically identical. So, it would appear there must be something wrong with the methodology. That error is commonly located in the verification principle itself. Moreover both seem to lead to *sceptical* problems of their own. Phenomenalism is argued to lead to *solipsism,* the view that all that exists in the universe is my mind and its mental states. Behaviourism is argued to lead to denial of the existence of my own mind and its mental states. If these objections are sound then, if Phenomenalism is true all that exists is my mind, while if Behaviourism is true, the one thing that certainly does not exist is my mind!

- *Linguistic Meaning and Interpretation*. Consider an anthropologist learning (so as to develop a translation manual) a totally alien language (one with no linguistic connections to any other known language). A rabbit scurries by. The native points and says 'Gavagai'. Following this and a few other

examples the anthropologist hypothesises that 'gavagai' means 'rabbit'. But has the anthropologist gone beyond the evidence. A rival anthropologist translates 'gavagai as 'complete set of undetatched rabbit parts'. All evidence seeming to confirm one translation will confirm the other. The anthropologists differ in the *metaphysic* (general theory of the structure of reality) they attribute to the natives. Harvard philosopher **Willard Van Orman Quine (born June 25** (anti-Christmas) **1908 - died December 25** (Christmas) **2000** developed this argument**.** Quine's general point is that *linguistic meaning is under-determined by data*, and that this applies to common speakers within a linguistic community (you and me) as much as to us and aliens.

The common moral of all these tales: ***All theory is under-determined by the totality of available evidence that might be proffered in its support.*** This is the source of the gaps. (For our purposes any entity or property of an entity that is evidenced by data that cannot add up to a direct confirmation of its existence is a theoretical entity or property.) One possible moral, in the -spirit of logical positivism: all these theoretical entities (minds, physical bodies, determinate meanings) are nonsensical suppositions that ought to be banished from any proper scientific understanding of the world. Philosophical epistemology should be scrapped in favour of cognitive psychology, making an empirical study of the causal relationships between sensory inputs, tentative belief formation, neural processes to make adjustment of that belief in accordance with the totality of beliefs in the neural network, and the consequent incorporation (or rejection) of that belief. What do you think?

4. Back to Theories – the Accidental (or is it?) Confluence of Postmodernism with the Epistemological Doctrine of Theory of Theories.

Your view about what any given English word means is, in W.V. Quine's sense, just another example of a theory which is perpetually under-determined by data. A further source of linguistic scepticism is: if we know a language, does that language shape the way we think? How do we get behind the "veil of language" to examine what the world is really like unmediated linguistically? This is the third generation of a sceptical problem generated by the British Empiricists: how do we get behind "the veil of sense data" to find out what the world is like unmediated by our perceptual organs? Or the post-Kantian challenge: how do we get behind "the veil of our concepts and categories" to find out what the world is really like unmediated by our peculiarly human way of thinking about it? To generalize: Do our perceptions, our thoughts, and our languages, reveal reality or distort it? And how could we ever know?

On Quine's view, when you have a conversation with someone, you are constantly entertaining hypotheses as to what their words mean. When they say something you don't expect them to say, one option is that you have misinterpreted them (maybe all along.)

Our 'theory' – and for Quine it is just like any other theory - as to what a person means is like any other theory. Moreover, like any other theory, it is *perpetually under-determined by all the data on which you base it.* In other words your attribution of meaning to someone always and inevitably goes beyond the data. One reaction is *meaning scepticism.* And it is here that we detect a parallel between where we are led (if we are led) by postmodernism, and where we are led by Quinean epistemology,

TASK: consider whether there is a parallel between postmodernism and Quinean epistemology. What implications do you draw from your answer?

Week 9 Content.
HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 9.

Reading:
Rosenberg, A., *Philosophy of Science: A Contemporary Introduction.* (Second edition). New York: Routledge, 2000. Chapter 5 (Section 5.5), Chapter 6 and Chapter 7.

Feldman, R. *Epistemology*: Upper Saddle River NJ. Prentice-Hall – Pearson, 2003. Chapters 8 and 9.

1. **Why is theory (inevitably (?)) 'under-determined' by data?**

We are now familiar with the idea that there is always more than one theory that is consistent with all of the available data, but inconsistent with each other. But we now need to address the question: why always? How do we know? What guarantee (if any) is there that there will always be, at least in principle, more than one? And we also need to consider the question: what does it mean to say that two theories are *inconsistent with each other*? Does not 'P is inconsistent with Q' mean 'It is logically impossible that P and Q should both be *true* at the same time'? But are theories properly describable as true or false?

Consider the following exercise, of the sort that is common in intelligence tests, such as those increasingly forming part of the 'psychological testing' that potential new recruits are subjected to (controversially) as part of the standard selection process.

Continue the series to three places:

1,   3,   5,   7,   9,   ___,   ___, ___.

The test requires the candidate to *find the rule implicit in the series,* as revealed by the first five numbers. This serves as an IQ test, on the assumption that it requires the exercise of

intelligence to work out the rule, and then to plot the next three members of the series accordingly.

Now consider the answers from two applicants:

Sue writes:

1,   3,   5,   7,   9,   11,   13,   15.

She gets a tick – she correctly discerned that the rule implicit in the series was, *Add by 2*.

But Helen writes:

1,   3,   5,   7,   9,   13,   17,   21.

Helen gets scored down. She has flunked a simple IQ question, so she is going to be a hiring risk. Poor Helen.

But maybe it's really smart Helen. Stunned by her rejection she seeks feedback (which in practice she would be unlikely to get, but let us pass over that). She is told that she failed to grasp the rule implicit in the series. 'Not so', she bravely replies. 'I clearly spotted the rule – it is add by double the number of digits in the next whole number after each one that is supplied.'

Helen continues, 'My rule clearly explains all the cases provided. The whole number after '1' is '2' which is a one-digit number. The next number in the series '3' was generated by adding 2 to '1'. And so on until we get to '9'. The next whole number after '9' is '10'. But '10' is a two-digit number. So the rule requires that I add double the number of digits in '10' which means adding 4 to '9', which generates '13', and so on to yield '17' and '21'. So please tell me kind sir, where did I go wrong?' At this point the human resources officer remembers he has another urgent appointment.

'Not so fast' says Leslie, who supplied the following answers.

1,   3,   5,   7,   9,   11,   13,   17,   19.

'I picked up the real rule, and I should not have been scored down. Helen got the wrong answers because she got the rule wrong, but the correct rule is not the one you claim it is,' insists Leslie. 'The rule implicit in the series is, 'Supply the next prime number.' (Note: *A prime number is a whole number divisible without remainder only by itself and 1.*)

'Well you can't be right Leslie' declares Mr. Smartypants, the human resources officer. 'If you look at the numbers supplied you will see that they do *not* include '2' (which is a prime

number), and they do include '9' (which is not a prime number, being divisible without remainder by a number other than itself and '1'; namely '3'). 'So how do you explain that?'

'It's very simple,' replies Leslie. 'The non-inclusion of '2' is obviously a careless oversight by whoever set the test, while the inclusion of '9' is obviously a misprint. You people should be more careful than to subject people to incompetently prepared tests.'

'But,' splutters Mr. Smartypants, 'why should I prefer your rule Leslie to Sue's (which is obvious, simple, and easy to use) or even to Helen's (which is far more complex and inelegant but at least it is consistent with the data supplied)?

'But you just don't get it,' declares Leslie. 'The concept of a prime number is a much more powerful concept, of great explanatory value in arithmetic, with innumerable applications, than your and Sue's pathetic trivial rule, or Helen's inelegant and awkward rule, which incidentally has no useful application that I can see. While I acknowledge my rule is not exactly compliant with the data supplied, we all know that it is easy to fail to include a relevant datum ('2' in this case), or that an incorrect one occasionally gets included ('9' in this case), sometimes due to something as trivial as a typographical error. These things shouldn't happen but they do. That's par for the course so far as the human condition goes. And the rule I have spotted is so powerful that the most reasonable conclusion is that the data set you have supplied is a bit dodgy.'

At this point Mr. Smartypants leaves to advise his supervisor that the candidates are all trouble makers and the job should be re-advertised.

What are the morals of this little tale? The first one is one that was (to the best of my knowledge) first pointed out by the Austrian-born Cambridge philosopher **Ludwig Wittgenstein (1889 - 1951).** It is illustrated by two of the three answers (the tester's – and Sue's - 'officially correct' answer, and Helen's (officially incorrect) answer). *Given any finite set of data, there is always* <u>more than one rule</u> *that is perfectly consistent with the data supplied, but which will generate incompatible projections as to what further data to expect.* This is not a matter that can be fixed by supplying a bigger data set. For *no matter how large the initial data set*, Wittgenstein's maxim will still apply.

From this, a terminological moral is derivable. It is that while, given a rule and a set of initial data, we can *uniquely determine* the subsequent data for as long and as far out as we like, the reverse is *not* true; i.e., given a set of data, however large, then we *cannot uniquely determine* a rule that is consistent with the data. For example (back to the intelligence test), (i) *given the initial set of numbers we were given*, and (ii), *given (which we were not) an applicable rule, then* <u>the rest of the data, for as far out as we like, are uniquely determined.</u> BUT, (i) *given the initial set of numbers we were given* and (ii), <u>*asked to continue the series in a way that accords with a rule which is not merely consistent with the given initial set of numbers*</u> (easy, at least in principle, because there is, according to Wittgenstein, an *infinite number* of such rules) *but is* <u>*uniquely determined by*</u>

the given initial set of numbers, we cannot do it, quite simply because what is demanded is logically impossible.

We might express this by saying, an initial set of data, plus a rule, can – indeed will, if the rule is unambiguous – uniquely determine a series, but the reverse is not true; an initial set of data always *under-determines* a rule for its generation.

TASK 1: Do you think this shows there is something shonky about the use of these sorts of questions in intelligence tests for e.g. job applicants? Or do you think the use of such tests is defensible? Why? /Why not?

You will be familiar with this word 'under-determine' from our previous discussion of theories. This brings us to the second moral of this tale. Our discussion of rules is (I submit) a perfect model for our previous discussion of theories. It takes us right to the nub of the issue, even to the question of – given there is no uniquely correct theory (rule) determined by the available data (or any possible set of such data) - what considerations make one theory (rule) more or less preferable to another. (Sue's – and the tester's rule – was simple; Helen's is inelegant and more complex and, if Leslie is right, of little useful application.)

This indicates how important issues of comparative utility and aesthetic considerations (for short, *pragmatic issues*) are in choosing which of a number of theories is preferable to cover a particular set of data.

The third moral of this tale is also illustrated by Leslie's response to the correct observation that her rule is actually inconsistent with some of the data. It is not at all unusual, when a very powerful theory is being considered, to reject some of the data you originally accepted and which now stand in the way of the theory under consideration. Human error is a reality, and the theoretician has to consider; which is more likely, that this theory is inappropriate, or that there were a small number of omissions, errors, or miscalculations in the collection of the initial data? In this judgement the apparent *weight* of the theory under consideration will motivate the theoretician to find fault with some aspect(s) of the initial data collection.

We also asked the question: how can two theories be inconsistent with each other unless, if one is true, the other must be false – an answer that implies (contrary to much now received wisdom) that theories are capable of being true or false, as opposed to (on pragmatic grounds) better or worse?

The above tale about the rules will help us. The way in which the three candidate rules are mutually inconsistent is that their application leads to inconsistent results. This does not require us to say that one rule is true and the other two false, nor does it even require us to say that a rule is capable of being true or false. The inconsistency lies in the results of their application, and that is why we describe the rules as inconsistent.

So it is with theories.

2. Essentially contested concepts and persuasive definitions – a prelude to 'paradigms'

We have noted previously the distinction between the connotation (intension) and the denotation (extension) of a word – the denotation is the set of things (in a broad sense of 'thing') in the world (in a broad sense of 'world') to which the word applies; the connotation is that in virtue of which the word applies to just those things.

But there are some words where this distinction is difficult to apply. This is because, in addition to a word's connotation – which, for the purpose of the distinction I am about to introduce – is also called that word's *cognitive meaning*, many words also have what is called an *evaluative meaning*. (The evaluative meaning is also often called its *emotive meaning*; but, be careful, sometimes this reflects the fact that the person who is making the distinction regards evaluation as purely a matter of emotion; a thesis which is controversial.) A word like 'horse' or 'chair' is low (to the point perhaps of zero) in evaluative meaning. But words like 'freedom', 'democracy', 'authority', 'totalitarian', 'education', 'learning' and 'legitimacy', for example are high in evaluative meaning.

A rough test of a word's being high in evaluative meaning is whether, simply from the fact that a person describes something by that word (without adding any *explicitly* evaluative word, such as 'good', 'bad', 'fine', 'right', 'beautiful', 'ugly', 'sublime'), is sufficient to warrant the inference that the speaker or writer is praising (or condemning) that which he is describing with that word. Thus if a person describes a society as 'a democratic society' it is a reasonable inference that he or she is praising it. 'Democratic' is high in evaluative meaning. Similarly, if a person describes an ornament as a 'replica' he or she is probably criticising it: 'replica' is also high in evaluative meaning.

TASK 2: Make a list of some more examples of words which are high in evaluative meaning (while not being explicitly evaluative words) and indicate whether the evaluation typically being conveyed is, for each example you provide, positive or negative.

Words which are high in evaluative meaning and of particular interest in the formulation of theories (especially, but not exclusively, political, social, and educational theories) are said to convey *essentially contested concepts*. This means it is not a simple matter, in trying to formulate the connotation, of starting off with an agreed denotation. This is because, if a word is high in evaluative meaning, this will colour whether or not any given denotatum (thing supposedly denoted by the word) is properly so described.

For example, communist societies always and everywhere have described themselves as *democratic*. Yet many political theorists define a democratic polity as one in which, *inter alia*, rival political parties (possibly with some restrictions, as there are in most societies

called democratic) are legally permitted to periodically compete for governmental power. This entails that no communist society can be a democracy because all such societies are one party states. (The only lawful party is the Communist Party, on the ground that any other party would be a sectional class party, and such is impossible in a communist society because there is only one class (the working class). Within the Communist Party members can compete for electoral office.) So there is a stand off: for the non-communist, a democratic communist society is a misnomer; for the communist, it is a pre-eminent exemplar of democracy.

Is this disagreement capable of resolution? Probably not because the high degree of evaluative meaning for democracy is that each side will gerrymander what they regard as the correct denotation to square with those societies they value highly, and to exclude those they value less favourably. The best you can hope for is to *understand why the concept is one that is essentially contested.* It is because there is a prize that goes with it.

When you are examining or constructing theories within your primary discipline or area of advanced study or research, watch out for essentially contested concepts. They are not necessarily to be avoided, but ought (i) always be identified as such, (ii) be subject to examination and explanation as to the source of their essentially contested character, and (iii) be used with the recognition that they will have little persuasive force in communicating with those whose relevant values are significantly different.

Closely related to essentially contested concepts are concepts which are subject to 'persuasive definition'. This is a term coined by the American moral philosopher **Charles L. Stevenson (1904 – 1979)**, notable for his development of the emotivist theory of ethics (that all ethical statements are ultimately just expressions of emotion towards the object of the judgement.) Consider the following passage from a famous novel:

But if you want to be free, you've got to be a prisoner. It's the condition of freedom – true freedom.

"True freedom!" Anthony repeated in a parody of a clerical voice." I always like that kind of argument. The contrary of a thing isn't the contrary; oh, dear me, no! It's the thing itself, but as it *truly* is. Ask any die-hard what conservatism is; he'll tell you it's *true* socialism. And the brewer's trade papers; they're full of articles about the beauty of true temperance. Ordinary temperance is just gross refusal to drink; but true temperance, *true* temperance is something much more refined. True temperance is a bottle of claret with each meal and three double whiskies after dinner …

"What's in a name?" Anthony went on. "The answer is, practically everything, if the name's a good one. Freedom's a marvellous name. That's why you're anxious to make use of it. You think that, if you call imprisonment true freedom, people will be attracted to the prison. And the worst of it is you're quite right."

(Extract from Aldous Huxley, *Eyeless in Gaza*, quoted by Charles N Stevenson, *Ethics and Language* New Haven: Yale University Press, 1944   pp 214 -215.)

The most common marker of a persuasive definition is the presence of the qualifying adjective 'true', 'real', or 'genuine'. The most infamous users of persuasive definitions are Anglican clergy, in their homilies and sermons. 'True love is not [insert here your own favourite example of what is clearly a case of love]: on the contrary it is [insert here your own favourite example of what is clearly something that is not a case of love, but which the priest in question is keen to promote].' Thus we get nonsense like 'True courage is not risking your life in a battle in which the odds favour the enemy; it is being prepared to go to gaol for your belief in peace.'

Persuasive definitions are not by any means restricted to essentially contested concepts. On the contrary, they are often words which have a pretty much agreed denotation, if not connotation also. The purpose of a persuasive definition is *to get you to apply the word (with its high degree of evaluative meaning)to something to which it does not in fact apply; in other words to get you to misuse the word.* The intention is transference of the evaluative component of the word's meaning to the thing to which it has been (deliberately incorrectly) applied. People get away with persuasive definitions because the use of the auxiliary 'true', 'real', 'truly genuine' or whatever gives what follows an illusory profundity, and who wants to be caught out not recognising something profound?

The moral? Don't use persuasive definitions (unless you are a somewhat vulgar polemicist, which I am sure you are not!) and expose them for what they are when others use them.

3. Paradigms – and Paradigms

In ordinary linguistic usage it is perfectly clear what a paradigm case of something is: it is a patently clear unambiguous example of something. The whooping cough is a paradigm case of a disease; it is an uncontroversial case that appears incontestable. On the other hand alcoholism is not. Some would argue that alcoholism, while it is conducive to the onset of various forms off organic deterioration, and it is a condition for which there may well be physiological, possibly genetic markers of a predisposition to alcoholism, is *not itself a disease.* Such critics tend to take the same line with all so-called addictions. They are not diseases but moral faults, the moral fault being weakness of will. And the way to deal with weakness of will is not with medication, therapy, or rehabilitation, but with discipline and punishment.

What is important to us in this context is not which view about alcoholism is correct; rather it is to grasp the distinction between a *paradigm case* of something, and a case which is *non-paradigm.*

TASK 3: Give paradigm, and non-paradigm cases of instances of the following words: 'house', 'yellow', 'brave', and 'knowledge'. Explain of each example why it is, or is not, paradigmatic.

A paradigm case of something is a case which would be perfectly suitable for giving someone an ostensive definition of that thing; a non-paradigm case would not. For example if you wanted to teach someone the meaning of the word 'disease' whooping cough is a perfectly good example; alcoholism is not.

The terminology of 'paradigm case' is comparatively new, though the concept behind it is much older. In fact it was used by one prominent Cambridge philosopher **George Edward (G.E.) Moore (1873 – 1958)** – though not under that name – to combat epistemological scepticism. Moore was known for 'the philosophy of common sense.' (It has been said that there is no proposition so absurd that no philosopher can be found who, at some time and at some place, affirmed it as the truth'.) Moore argued as follows (to paraphrase liberally):

1. It is contended that there is no such thing as knowledge (the sceptic's thesis).
2. This implies that, for example, I do not know I have a right hand.

But

3. I do know I have a right hand.

Therefore (conclusion):

4. The sceptic's argument is unsound.

How does Moore defend this argument? He reasons as follows. I am more certain that I know I have a right hand than I am that any philosophical argument is sound. I acknowledge that I cannot find a hole in the sceptic's argument. But I also acknowledge that I am fallible: that just because I cannot find a hole, it does not follow that there is no hole there to be found. What I must decide is which is more certain: that I know that I have a right hand or that I know there is no hole in the sceptic's argument. Plainly, the honest answer is the former.

Of course I can imagine that a circumstance could arise in which I did not know I had a right hand. Imagine I am involved in a dreadful motor accident. I am trapped and I cannot move my head. I feel numb. I notice a number of body parts scattered around the wreckage, including a male right hand. I wonder whether it is mine. I do not know. At that moment I do not know whether I have a right hand.

But, happily, I know right now that this is not such a moment. And if you demand that I prove conclusively that this is not such a moment, I will acknowledge that I cannot. But I point out that I am more certain that this is not such a moment, than I am that I would have the ability necessary to prove that it is not such a moment.

In other words what Moore contends is that he is entitled to affirm that he has knowledge by giving what was (later called) a *paradigm case of knowledge*. And in reply to the argument that he cannot prove that his claim to knowledge is true he concedes that he cannot, but insists that this does not disqualify him from legitimately claiming that it is a case of knowledge. Why not? Because he is more certain of the truth of his claim to knowledge than he is confident of his ability to find a hole in the sceptic's argument.

Thus he uses his certainty that he knows he has a right hand to argue to *an unspecified breakdown* in the sceptic's argument, *on the balance of probabilities.*

Any argument like this later came to be called a *paradigm case argument.*

TASK 4: Critically examine G.E. Moore's argument against epistemological scepticism. Do you consider that it is sound?

There is a second use of the word 'paradigm' in Epistemology which we must address and master, which is totally unrelated to that which features in arguments such as the paradigm case argument. Indeed it has little connection with any ordinary use of the English word 'paradigm'. It was introduced by the eminent Harvard historian and philosopher of science **Thomas S. Kuhn (1922 +)**. Kuhn's own background was in the natural sciences, especially physics, and he developed his account of scientific evolution, and particularly of the embrace and abandonment of theories, with an emphasis on the traditional natural sciences. Indeed some forty years ago he wrote that he doubted that there was yet any paradigm, in his preferred sense – of which more is to follow – in any of the social sciences, although he thought that eventually this might change. Despite this the social sciences are, critics would say, *littered* with references to paradigms. As Wittgenstein is reputed to have said of another subject in another context, 'When you see a reference to a paradigm, be sure and get your typhoid shot.' This is a subject we will pursue next week.

Reading:

 Kuhn, Thomas S., *The Structure of Scientific Revolutions (2ⁿᵈ edition)* Chicago: the University of Chicago Press, 1970. (Or any other edition.)

Week 10 Content
HUMR71-110 EPISTEMOLOGY AND THEORY OF KNOWLEDGE

Week 10.

Reading:

Kuhn, T.S., *The Structure of Scientific Revolutions, 2ⁿᵈ Edition.* Chicago, University of Chicago Press. 1970.

Rosenberg, A., *Philosophy of Science: A Contemporary Introduction 2nd Edition.* New York, Routledge, Chapters 6 and 7.

1. The Impact of Thomas Kuhn (1922 +).

By general consensus Kuhn's *The Structure of Scientific Revolutions* (first published in 1962) is "the most influential book in modern philosophy of science." The book involves a mixture of both philosophical investigation (what justifies the abandonment of a particular scientific theory?) and sociological description (how is scientific research actually practiced, and what are the cultural and institutional factors that shape the practice?) Kuhn (and most commentators) categorise it as a seminal contribution to a revitalised understanding of the history of science. It is important to notice that the sciences Kuhn is concerned with are the natural sciences, although we should also be aware that aspects of his work, including the notion of a *paradigm*, have been liberally applied in the social sciences: so much so that new researchers are commonly asked to identify which paradigm they are working within. This is despite Kuhn's reluctance to extend his account beyond the natural sciences, and his serious doubts, expressed in the 1960s, that *any* of the social sciences had yielded a paradigm, and his reservations about thinking that it was even appropriate to use the concept in relation to the social sciences. This reflected Kuhn's belief that there was a sharp discontinuity between the natural sciences on the one hand and the social sciences on the other.

Thus one question that must be considered is whether references to paradigms in relation to the social sciences, which are often linked to Kuhn's name, are misattributions of a concept of a paradigm, or simply misattributions of Kuhn's name? In other words, is there perhaps another concept of a paradigm, one which has only a verbal link with Kuhn, lurking in some of the social sciences? If so, how might it (or they) be articulated?

2. 'Normal Science'

For the most part and for most of their working lives, scientists operate within what Kuhn call's 'normal science'. A period of normal science may last for generations. Within this period scientists address *puzzles*. Within this period scientific advancement is regarded as *proceeding by accumulation.* Past results are built upon, added to, and utilised to solve puzzles. Much of the work involves replication of previous results, possibly in marginally different circumstances. Quite a deal of effort is designed to confirming predictions that have long been made according to some theory within the science, and which are uncontroversial. The vast majority of the 'discoveries' are unsurprising.

These scientists will be applying theories and laws that have been known for some time in general terms, and possibly working on the formulation of sub-theories or sub-laws that refine the generalities in terms of particular 'local' applications (for example the

development of a theory dealing specifically with tidal movement, subordinate to a general theory of gravitational attraction).

Groups of accumulated 'discoveries' that are of general application, as well as the general theories and laws to which they are subordinate, are listed in text books for the discipline. These text books, including the advanced text books, as well as the practical instruction in laboratory settings, are all processes of the *induction of new researchers.* To what are they being inducted? Kuhn's answer is, in his special sense, a **paradigm**. Paradigms in this sense have two features. They involve a series of linked theories, laws, and discoveries that are (i) sufficiently *striking and enduring* to attract scientists away from other paradigms (other integrated sets of theories, laws, and discoveries dealing with what is essentially the same broad subject area), and (ii) sufficiently *open-ended* in their scope and application that there is plenty of work for new researchers to do in confirming predictions, solving residual puzzles, and accumulating more results.

An example of a paradigm is the Ptolemaic theory of astronomy. This comprises all of the elaborations and applications of a theory of the structure of the universe that dates back to **Ptolemy of Alexandria (2nd century AD)** – also known by his Roman name of Claudius Ptolemaeus – who was an Egyptian mathematician, astronomer, and geographer, noted for his comprehensive mathematical elaboration of the *geocentric theory* of the universe; the theory that the Earth is at the very centre of the universe, around which the heavenly bodies, including the sun, revolve in circular orbits. This is quite comprehensive in its scope and includes a number of subordinate theories and laws, as well as plenty of scope for future mathematicians and astronomers to make predictions about future observations (of relevance not only to scientists but also, in those times especially, to astrologers). It meets Kuhn's standards for being a paradigm in that it is both striking and enduring – it lasted virtually unchallenged for thirteen centuries – and also it is open-ended. There were many puzzles to be solved, and predictions to be made.

However there is more to a paradigm than these two defining features; it also begets a culture. This culture includes a set of shared beliefs about what is acceptable and what is unacceptable scientific conduct, and what are appropriate and what are inappropriate methods. These beliefs are enforced and maintained by *mandarins* within the paradigm culture, who function (although they do not think of their function in this way) as *maintenance engineers* of the paradigm. They are people who emerge within the culture (possibly by some process of internal selection, although often self-appointed) as its *enforcers*. Their job is to reward and advance the upholders of the paradigm and to punish the deviants.

This can be illustrated with two real life modern examples. The first concerns Evolution. Evolutionary theory is the paradigm within which all biological and genetic research today takes place. Central to that paradigm is the theory of natural selection, or simply Darwinian evolutionary theory. (Sometimes I read Kuhn as saying Darwinian evolution is today's paradigm, although it is to my mind far more plausible to regard the paradigm as

Evolutionary Theory, within which the dominant theory is the theory of natural selection. This is by the way an indication of what critics say is the vagueness or instability of Kuhn's notion of a paradigm.)

Evolutionary theory is the theory that new species come into existence by evolving from pre-existing species. As a paradigm it supplanted Biblical Creationism and its associated doctrine of the fixity of species – that all species came into existence through an act of creation by God. The first theory within the evolutionary paradigm was not Darwin's but that of the French naturalist **Jean-Baptiste de Monet Lamarck (1744 – 1829)**. Lamarck's hypothesis was that, in the struggle for survival, some members of the species are able to develop skills and techniques (which often have a physical impact on their characteristics) which make them much more adaptive, so that their chances of survival are much greater. These successful adapters increasingly interbreed (possibly because there comes a point where they are the only survivors) and their descendants are born with the adaptive characteristics, thereby ensuring the continuation of the 'new species'.

Charles Darwin (1809 – 1882), the British naturalist, accepted two planks of Lamarckian evolution theory – the doctrine of the struggle for survival, and the doctrine of the survival of the fittest. But, like most other naturalists at the time, he rejected Lamarck's doctrine that the acquired characteristics that gave the survivors a competitive advantage were transmitted from one generation to the next. He rejected it because all the experimental evidence suggested that a characteristic acquired by a member of a species post-natally could not be transmitted to the next generation. So Darwin replaced the doctrine that the adaptive characteristics were acquired within the lifetime of the first generation, with the doctrine of random mutations. Most random mutations are maladaptive (e.g. deformities) but a few emerge (over a long period of time) that are highly adaptive. Although the mechanism of transmission was not clear to Darwin the fact that it could occur was clear. After all, if a person loses a limb as a child, and marries someone who also lost a limb, (their one-legged status thus being an acquired characteristic in each case) there is not any statistical increase in the likelihood of their children being born one-legged, or of succumbing to a limb loss during their lifetime. But the situation is different if one of them is born with a deformed leg – there *is* (and this was known to Darwin) a statistically significant increase in their children and/or grandchildren being born with a comparable deformity. Thus the 'random mutation' can be inherited; the acquired characteristic cannot.

The Darwinian theory supplanted the Lamarckian theory, except in the Soviet Union where Stalin favoured the Lamarckian theory on communist ideological grounds, and found an enthusiastic champion in **Trofim Denisovich Lysenko (1898 – 1976**) the Russian biologist whose Lamarckian doctrines effectively crippled Soviet agriculture and animal husbandry for a generation.

However a contemporary Australian biologist **Ted Steele**, late of the University of Wollongong and now working at an affiliate of the Australian National University in

Canberra, contends he has scientific evidence in support of the Lamarckian thesis that acquired characteristics can (in some circumstances) be inherited. At first his findings attracted considerable interest and indeed were taken up in the semi-popular scientific journals such as *Nature*. However, as Steele and his small body of supporters contend, the biological establishment quickly closed ranks. Grant money dried up. He found it virtually impossible to publish. His supporters claimed that his applications for grants were rejected because the mandarins of biology (the enforcers) quietly put it round to their peers on the funding bodies that 'of course Ted's a crackpot'. They would look ridiculous if they funded his research.

I stress I have no personal knowledge of whether these claims are true. But I cite them as an example of what is incontrovertibly true (and pointed out by, among others, Kuhn); namely that enforcement of prevailing orthodoxy is a normal part of normal science, and that this enforcement is not a matter of a happy spontaneous consensus (rarely is this so) but of mandarin pressure, which becomes peer pressure, which shapes who is 'in', and who is 'out'. The idea that the natural sciences represent a domain of free and open inquiry, invaded only by external pressures (e.g. from big business or big government) is an exotic myth which is also an official part of the culture, which is an inherent part of the prevailing paradigm.

A second and more naked contemporary example concerns climate change. Climate science does not have a paradigm in Kuhn's sense. It draws on bits and pieces of other sciences, some of which e.g. meteorology are at a very early stage of development, so that no paradigm has yet emerged. But it does have its enforcer mandarins. In Britain the Royal Society, a historically established society of some of the most successful scientists and thinkers more broadly of the age, which appoints its own members. Two years ago it took the unprecedented step of writing to all British research funding authorities, governmental and private, public interest and commercial, urging them not to provide any financial support for any research predicated on the hypothesis that climate change may not be real, or that it may not be due in large part to human activity. Australian scientists (mainly geologists and solar scientists) who are sceptical about whether climate change is real, and – if it is real – if it is due largely to carbon dioxide omissions and – if it is – whether human activity really constitutes a significant proportion of such emissions, contend that it is a waste of time applying for funding, because the word has been put around the funding authorities that their views are loopy, and that the funding agencies will be held up to ridicule among their peers and in the media (and therefore their appointments would be unlikely to be renewed).

There are other ways in which 'mavericks' are kept in checks. It is normal in universities for senior promotions committees to include a majority of members who are not experts in the discipline in which the applicant works. It is common to invite one or two external experts to join, who are very well regarded leaders in the field in question. A common question in such committee hearings is for one of the non-expert members to ask, 'And how would this university look if we promoted the applicant?' Any suggestion that it would

not have a good look is generally lethal. Thus the prevailing orthodoxy is reinforced, and young researchers quickly get the message.

Reality or academic paranoia? I am of course content to leave it to you to observe and judge. The point to take out is that within each paradigm there are mandarins, and they include many who (no doubt sincerely believing they are acting in the name of scientific integrity and quality) are enforcers.

It is worth noting one of Kuhn's observations about any science in its pre-paradigm stage of evolution. "History also suggests (that in) the absence of a paradigm or some candidate for a paradigm, *all of the facts that could possibly pertain to the development of a given science are likely to seem equally relevant. As a result, early fact gathering is a far more nearly random activity than the one that subsequent scientific development makes familiar."* (Kuhn Chapter II p.15 – *italics added*). Given Kuhn's view and assuming – which he disputes – it is appropriate to talk of paradigms in the social sciences, though there are none yet, then it is appropriate to ask whether any of the social sciences are currently in a pre-paradigm state with the characteristics Kuhn describes. If they are not, what are the implications?

3.   Paradigms, normal science, and puzzle-solving.

According to Kuhn, a paradigm *determines what problems are genuine problems that require solution.* For example, as noted the Ptolemaic paradigm required that heavenly bodies moved in continuous circular orbits. However an anomaly was soon observed; namely what came to be called planetary *regression.* This is the appearance of back tracking. There was a great deal of speculation as to how this might be explained, including one view that it must be an optical illusion of some sort. Eventually an ingenious method of explaining it was devised, according to which the planets moved not in the circular orbits originally postulated, but rather in epicyclical motion around a continuous circular line, on which the epicyclical motion was centred. Brilliantly, this explained the apparent regression (the body was progressing around the far side of the epicycle, which from Earth looks like a reversal). But more importantly it preserved a central plank within the paradigm, namely that motion in the heavens was circular.

Why was this important? The answer was because Pythagoras, more than six centuries earlier, had claimed that the sphere was the perfect three dimensional form, and the circle was the perfect two dimensional form. Notwithstanding that Pythagoras was later regarded as essentially a fruitcake, this idea lingered in serious Greek thought and was embraced by the early Christian Church which adopted Ptolemy's geocentric theory, and determined that God would only ordain circular motion for He would ordain only that which was perfect.

Even Copernicus and Tycho Brahe worked within the theory that planetary orbits were circles, complicating even further the doctrine of epicycles, and it was not until **Johannes**

Kepler (1571 – 1630) that the doctrine of elliptical orbits was proposed. The jettisoning of circular orbits, coupled with Galileo's contention (via his telescope) that there were mountains on the moon (which therefore was not a perfect sphere, as hitherto believed) shocked the Roman Catholic Church, which had made a huge investment in the Ptolemaic theory, notwithstanding its secular origin. (Ptolemy was not a Christian.)

Notice that the value proposition, circularity is the perfect two dimensional form, shaped and restricted the range of possible solutions to the problem of apparent regression *within the Ptolemaic paradigm*. Paradigms not only shape the puzzles to be solved, but also set limits to the range of possible solutions.

4. Scientific Revolutions.

The Ptolemaic paradigm gave way to the heliocentric (sun-centred or, as it is sometimes known, the Copernican) paradigm. This paradigm not only had a fundamentally different view of the structure of the universe. *It also embodied no preferential views as to which shapes or motions were more valuable than others.* The perfection of circularity was not displaced by the perfection of something else. Perfection was simply abandoned as a standard to guide what was permissible within the relevant fields of science.

A scientific revolution, because it involves the abandoning of one paradigm in favour of another, is so-called on analogy with a political revolution (as contrasted with a mere change of government e.g. a royal succession, a newly elected political party, or whatever). A scientific revolution is not an event that can be dated but (as with the heliocentric revolution) takes place over a period, and can only be clearly identified from hindsight. (The heliocentric revolution took place over the period from Copernicus, via Brahe and Kepler, to the period not long after Galileo's death, when the Roman Catholic Church quietly abandoned all practical measures for enforcing the Ptolemaic theory.)

A scientific revolution does not occur just because the current paradigm is problematic. Problems within the paradigm are not what lead us to abandon it. We will see them as further puzzles to be solved, or more anomalies that require some more or less major internal theoretical adjustment (e.g. the introduction of epicycles). It is not until a new paradigm has been developed, and road tested to some extent by a few maverick scientists who are bucking the consensus, that   a new paradigm is genuinely on offer.

  It should be noted that the new paradigm will typically be quite under-developed relative to the one it displaces. It will have the *potential* for theories, laws, and discoveries which are striking and enduring, but it would be premature to say that it actually has these elements. When scientists abandoned the Ptolemaic theory in favour of the heliocentric theory they recognised that all of the things that could be accounted for on the Ptolemaic theory would probably be explicable on the heliocentric theory, and further that it may source promising ways of tackling puzzles that had proved difficult on the Ptolemaic theory, although actually doing this lay in the future.

Many commentators have taken the Austrian-born London philosopher **Sir Karl Popper (1902 – 1994)** as the nemesis of Kuhn, and have contrasted Kuhn's approach with what they have called Popper's rationalism (although Popper regarded himself not as a rationalist in the Continental Rationalist tradition, but as a legatee of the sceptical Scottish philosopher David Hume, and as an empiricist firmly in the great tradition of British Empiricism). Kuhn's approach is often called one of Descriptive Realism. Popper did not purport to describe how scientists actually proceeded and as such he would not necessarily have any quarrel with Kuhn's account. Rather, he attempted to give a rational reconstruction not of scientific practice but of what he called (the title of one of his important books) 'the Logic of Scientific Discovery'. His test of whether a proposition was genuinely scientific was whether it was empirically falsifiable. He could readily acknowledge that scientists do not easily abandon a central proposition in the light of what appears to be one counter-example, but will look for a way of saving it, e.g. by amending it or amending something else in the containing theory which would forestall the counter-example; in other words look for a patch. The reason they have to do this is because they recognise the incompatibility. Popper does not purport to be describing the practice of scientific evolution historically, so one could argue that they are answering different questions, not offering competing answers to the same question(s).

The main criticism of Kuhn is that his notion of a paradigm is itself too under-developed and unclear to be a useful conceptual tool in explaining scientific revolutions. By and large there is acknowledgement that there is more to a scientific position than a bunch of theories, laws, and discoveries; there is also what might be called the culture of scientific practice, including social and professional practice, within which the theories and laws and discoveries are embedded, and which, via its enforcers, determines the legitimacy or otherwise of practices and practitioners within that scientific position.

5. Kuhn and the Social Sciences.

Kuhn is surely correct in his contention that by and large his notion of a paradigm does not have application beyond the natural sciences. Many of the social sciences are concerned not so much with discoveries that can be built upon and accumulated but with, for example, techniques for analysing situations, and techniques for achieving specific social objectives.

When practitioners of these disciplines talk of paradigms they sometimes appear to be talking of methodologies for achieving whatever are the objectives of the social science (which themselves may be contentious) and sometimes of what are better described as ideological frameworks, where an ideology is a collection of beliefs and values held for other than purely epistemic reasons (reasons to do with adding to knowledge) such as normative reasons – e.g. bourgeois values which are values which favour a particular economic class, or nationalistic values which are values which favour the wellbeing or advancement of a particular nation.

Ideologies are common among practitioners in economic theory, educational theory, and history for example. These are very different from Kuhnian paradigms. What account would you give of what has been *called* a paradigm in the social science(s) with which you are most familiar.