Knowledge and the Nature of Reality

Lecture 1: What is Epistemology?

Central Questions

- What is knowledge?
- What do we mean by the word 'knowledge'?
- How can we tell if we have knowledge?
- What are the conditions for obtaining knowledge?
- Are there limits on what can be known?
- Classic problem – the brains in the vats problem

Scepticism

- Much of epistemology is based on the philosophy of scepticism, which is a key source of problems in epistemology
- Scepticism comes in different varieties
- Global scepticism refers to doubts about the core nature of reality itself; brains in the vats
- Limited forms of scepticism relate to more specific issues, such as the validity of induction, morality, other minds, theoretical entities, etc

Questions Distinct from Scepticism

- There are a number of epistemological questions aside from those related to scepticism
- For example, analysis of the structure of knowledge – is some knowledge more fundamental than others?

Multiple Senses of Know

- It is important to note that verbs like 'know' do not always have exactly the same meaning in different languages
- In English there are multiple different uses of the word
- Propositional knowledge: 'I know that…'
- Acquaintance: 'I know you'; this doesn't actually state any propositional knowledge
- Know how: 'I know how to ride a bike'; it is possible to know how to do things without being able to explain it to anyone, and visa-versa
- The primary focus of epistemology is with the first variety

Knowledge and Belief

- It is generally accepted within epistemology that knowledge and belief are closely related
- Specifically, knowledge is held to be a special subset of belief
- To believe is to hold true some proposition; the way you think the world is
- It is possible to believe with little if any good reason; no good evidence
- Some reasons for believing something do not actually count as supportive evidence of the belief itself (e.g. I believe in the afterlife because I like the idea)
- Justified beliefs are those that are held based on good evidence and reasons

Belief as True or False

- Beliefs can either be true or false (right or wrong)
- Indeed, even justified beliefs could be false
- This is the big different with knowledge, as knowledge cannot be false
- If what you thought you knew turns out to be false, it turns out that you never really knew it
- Thus, in order to know something, one must believe it, be justified in believing it, and it must actually be true
- There are, however, problems with this standard 'justified true belief' definition of knowledge

Basic Definitions

- A priori: known independently of experience (logic, mathematics, some philosophy)
- A posteriori: known on the basis of sense experience (empirical science, common sense)
- Rationalism: knowledge comes from the intellect
- Empiricism: knowledge comes from experience
- Foundationalism: knowledge has foundations upon which all else is based
- Coherentism: knowledge is holistic; an interconnecting web

Lecture 2: Is Justified True Belief Knowledge?

Multiple Senses of Know

- Propositional knowledge ("know that …")
- Acquaintance
- Know how

Knowledge is Closely Related to Belief

- To believe is to hold true
- Beliefs may be true or false
- Beliefs may be justified or unjustified
- Justified beliefs may also be false (e.g. the world is flat)

JTB Account of Knowledge

- S knows that P iff:
- S believes that P (belief)
- S is justified in believing that P (justification)
- 'P' is true (truth)
- This account of knowledge is a classical one, dating back to Plato
- Theaetetus: "True belief accompanied by a rational account is knowledge, whereas true belief unaccompanied by a rational account is distinct from knowledge"

JTB is Problematic

- Some reject analysis of knowledge into component parts
- Some reject requirement of justification
- Some want constraint on justification (fourth condition)

- Problems with JTB trace back to Edmund Gettier, 'Is Justified True Belief Knowledge?', *Analysis* published in 1963

Hunches

- Some philosophers think that JTB fits with ordinary intuitions about the meaning of 'knowledge'
- Others point to the fact that many people say they 'know' something even when they have no real reason or justification – it is just a hunch
- Is an unjustified (but true) hunches counted as knowledge?

David Bloor's Approach

- Some non-philosophers reject JTB outright, e.g. David Bloor, who defines knowledge as "whatever people take to be knowledge", what people "collectively endorse"
- He rejects the truth condition – people can collectively endorse false beliefs
- He also rejects the justification condition – people can collectively endorse what is unjustified

Karl Popper's Account

- Not all philosophers use JTB (e.g. Karl Popper)
- Popper does not believe that all knowledge can be justified, only that it has survived attempts to disprove it
- He also is a fallibilist, meaning that he rejects the truth criteria for knowledge, believing that such a criterion is too exacting

Gettier's Analysis of JTB

- The JTB offers necessary and sufficient conditions for knowledge
- Specifically, the three conditions are individually necessary and collectively sufficient
- Gettier challenges the joint sufficiency (not the individual necessity) of the conditions
- Gettier makes two explicit assumptions:
- One may be justified in believing a proposition that is false
- "If S is justified in believing P, and P entails Q, and S deduces Q from P and accepts Q as a result of this deduction, then S is justified in believing Q"
- Note that the two cases he puts forward are 'The Job' and 'The Ford'

Gettier Answers

- One potential answer to this is that justification must be based upon true premises and valid arguments, not just things that are thought to be true
- Another potential answer is that it is necessary to introduce a forth criteria to try to rescue the JTB account
- Probably the best is simply to require a better theory of justification

Lecture 3: Foundationalism

Introduction to Foundationalism

- Foundationalism: knowledge is like a house with foundations upon which everything else is based
- Some aspects of knowledge are more basic or fundamental than others – they support the rest
- These are supposed to be known beyond doubt, and hence further knowledge can be derived from them
- These can be either a priori facts that are deduced by themselves, or some basic sensory inputs

Introduction to Coherentism

- Coherentism: knowledge is like a leaky boat, all regions of which need to be kept in good repair to keep it afloat
- Knowledge is like a boat that springs leak at sea, and the entire boat must be repaired or rebuilt while staying at sea
- There are no beliefs (elements of the boat) that are truly fundamental, supporting all the others
- In this belief there may be some beliefs that are more central than others, but none that are truly foundational to the rest

Infinite Regress Argument

- Beliefs justified by other beliefs:
- Suppose belief B_2 justifies belief B_1: what justifies B_2?
- Perhaps further belief B_3 justifies B_2: what justifies B_3?
- And so on, leading to an infinite regress of justifying beliefs
- One argument for Foundationalism is that it is a mechanism of overcoming the infinite regress argument; some beliefs are foundational and need not be justified based on others

Versions of Foundationalism

- Cartesian: the foundational beliefs are *a priori*; clear and distinct ideas derived by the intellect
- Empiricism: foundational beliefs are based on sensory information, or 'basic observation reports'
- Mixed: having both sensory and a priori truths as a basis, such as Chisholm's "self-presenting properties"

Problems for Foundationalism

- Poverty of foundations: there are substantial limits on knowledge due to impoverished foundations – we cant know much of anything beyond the foundations
- Unjustified foundations: what justifies the foundations

Poverty of Foundations

- This problem comes back to the structure of knowledge, in that it relates to the question of how we derive subsidiary truths from the foundational truths – how does it fit together?
- De Carte derived his existence from his doubting, and then goes on to derive the existence of god, and from god he makes an argument that god acts as a 'gaentuar' of other aspects of our knowledge
- In this approach, his demand for certainty severely restricts the potential scope of knowledge

Limits of Strict Empiricism

- Strict empiricism bases knowledge upon direct sensory experiences
- The trouble with this is that it does not actually prove the existence of any physical objects beyond immediate experience – this requires ampliative inference
- There are also many realms of reality, such as the past, distant places, very large objects, invisible things, the very small, etc, that we cannot directly experience
- The most extreme version of this is referred to as the solipsism of present moment

Arbitrary Foundations

- What justifies a foundational belief?
- If a reason is given for a foundational belief, then it is not genuinely foundational; the regress has started once again
- But if no reason is given for a foundational belief, then it is unjustified and therefore arbitrary

BonJour's Dilemma

- If our intuitions or direct awareness or immediate apprehensions are construed as cognitive, at least quasi-judgmental ... then they will be both capable of providing justification for other cognitive states and in need of it themselves; but if they are construed as noncognitive, nonjudgmental, then while they will not themselves need justification they will also be incapable of giving it
- In other words, if an experience lacks 'information content' it does not need to be justified, but also lacks the ability to justify anything else – there is no basis for making additional inferences on it
- On the other hand if it does have information content, then it itself needs justification
- Hence it is argued that there is no way that foundationalist structure of knowledge can work

Popper's Swamp Metaphor

- The empirical basis of objective science has thus nothing 'absolute' about it. Science does not rest upon solid bedrock. The bold structure of its theories rises, as it were, above a swamp. It is like a building erected on piles. The piles are driven down from above into the swamp, but not down to any natural or 'given' base; and if we stop driving the piles deeper, it is not because we have reached firm ground. We simply stop when we are satisfied that the piles are firm enough to carry the structure, at least for the time being.
- This is in essence a form of Foundationalism that does not imply firm or certain foundations

Lecture 4: Coherentism

Coherentism/Holism

- The basic idea is that other beliefs always and only justify other beliefs, rather than the self-evident or non-justified basis of Foundationalism
- Rejects foundationalist idea of direct non-inferential justification of basic beliefs
- Beliefs form system, and so cannot be tested in isolation, but must be tested together

Neurath's Boat

- This is a metaphor of a ship at sea rather than house of knowledge
- Quine rejects analytic/synthetic distinctions, arguing that there is no sharp distinction between "a linguistic component and a factual component of any individual statement"
- Core vs periphery "web of belief": Empirical statements lie close to periphery, while statements of mathematics and logic are at the core, not immediately exposed to impact of experience
- When we observe some kind of sensory, empirical experience that seems to contradict our world view/body of knowledge, we can either revise some of the 'inner' elements of it (e.g. logic itself), or simply re-examine the way we connect these to the periphery

What is Coherence?

- Two statements are logically consistent with each other if they do not contradict each other
- However, statements may be consistent without supporting each other, without being coherent
- Coherence involves some idea of one belief actually providing support for another
- "Intuitively, coherence is a matter of how well a body of beliefs "hangs together": how well its component beliefs fit together, agree or dovetail with each other, so as to produce an organized, tightly structured system of beliefs, rather than either a helter-skelter collection or a set of conflicting subsystems"

Coherentism and Circularity

- One problem with Coherentism is that it leads to the potential for circularity, as one belief justifies another belief, which in turn supports the original belief
- One rebuttal to this is that larger inferential circles are not objectionable as small ones are (e.g. p therefore q, q therefore p is bad, but if you have one hundred intermediaries it is ok)
- Bonjour, on the other hand, rejects the linear conception of justification
- He argues that "the direction of argument on a particular occasion of local justification will depend on which belief (or set of beliefs) has actually been challenged in that particular situation. Hence, the apparent circle of justification is not in fact vicious *because it is not genuinely a circle*: the justification of a particular empirical belief finally depends, not on other particular beliefs as the linear conception of justification would have it, but instead on the overall system and its coherence"

Problems for Coherentism

- Alternative belief systems: what if we have multiple equally coherent belief systems that contradict one other? Does this lead to relativism?

- The input problem: a factual belief is justified by coherence with other beliefs, and hence requires no perceptual input from the external world. This seems to leave a gap between experience and knowledge
- The problem of truth: how does coherence of beliefs lead to truth a sense of beliefs actually corresponding to reality
- Another problem could be described as that of unreliable coherence: if one regularly has hallucinations, then a hallucinations will cohere with one's beliefs or worldview, and hence will count as 'true'

Bonjour's Observation Requirement

- "A coherence theory of empirical justification must require that, in order for the beliefs of a cognitive system to be even candidates for empirical justification, that system must contain laws attributing a high degree of reliability to a variety of cognitively spontaneous beliefs" (i.e. sensory inputs and experience)
- "The underlying idea is that any claim in the system which is not justified *a priori* should in principle be capable of being observationally checked, either directly or indirectly, and thereby either confirmed or refuted"
- Thus, beliefs can be caused by external experiences, but are justified only by their coherence with other pre-existing beliefs in our world view

Lecture 5: Reliabilism

Gettier's second case

- Golman's answer to this is that Brown's being in Barcelona has no causal connection and Smith's belief in his proposition p (namely that either Jones owns a Ford or Brown is in Barcelona)
- Thus the idea is the JTB can be rescued be simply making a requirement that the justification for the true belief must in some way be caused by the true belief

Barn Façade Counter-Example

- This is a potential rebuttal to the 'causal' explanation put forth above
- Henry is driving in the countryside with his son, and identifies various objects as they come into view
- Henry identifies an object as a barn when the object is fully in view, Henry has excellent eyesight, and he has enough time to look at it reasonably carefully
- However, unknown to Henry, the district he has just entered is full of papier-mâché facsimiles of barns which are indistinguishable from the real thing on the outside front, but lack back walls or interiors
- Having just entered the district, Henry has not encountered any facsimiles; the object he sees is a genuine barn, but if the object on that site were a facsimile, Henry would mistake it for a barn
- Given this new information, we would be strongly inclined to withdraw the claim that Henry *knows* the object is a barn

What is Justified Belief?

- In order to answer the fake barn problem, Goldman seeks to develop a statement of the JTB explanation without merely resorting to explanations and words that are essentially synonyms of 'knowledge' and the other things we are seeking to explain
- Such rejected 'epistemic' terms include justifiability, indubitability, self-evidence, incorrigibility, etc
- All fail to take into account how belief is caused: beliefs must be "appropriately caused"
- To define what is meant by 'appropriately caused', Goldman distinguishes between reliable and unreliable processes for generating beliefs

Unreliable vs Reliable Processes

- Goldman's basic idea is this: If S's believing p results from a reliable cognitive belief-forming process (or set of processes), then S's belief in p is justified
- Faulty processes of belief-formation: confused reasoning, wishful thinking, reliance on emotional attachment, mere hunch or guesswork, and hasty generalization
- These share the feature of *unreliability*: they tend to produce *error* a large proportion of the time
- Good processes of belief-formation: standard perceptual processes, remembering, good reasoning, and introspection
- What these processes seem to have in common is *reliability*: the beliefs they produce are generally true
- As such, "the justificational status of a belief is a function of the reliability of the process or processes that cause it, where ... reliability consists in the tendency of a process to produce beliefs that are true rather than false"

Historical Reliabilism

- Reliabilist justification depends on past causal history of belief, how it came about
- In contrast, most epistemologies are "current time-slice" theories
- For example, coherentism asks whether a belief coheres with existing beliefs in determining whether or not it is justified, with the origin of the belief not being important

Brandom's Fake Barn Objection

- Although the red barn our hero thinks he sees is indeed a red barn, it is, unbeknownst to him, located in Barn Facade County
- There the local hobby is building incredibly realistic barn facades. In fact, our man is looking at the *only* real barn in the county – though there are 999 facades
- Were our subject (counterfactually) to be looking at one of the facades, he would form exactly the same beliefs he actually did about the real barn
- That is, he would, falsely now, believe himself to be looking at an actual barn. It is just an accident that he happened on the one real barn
- The trouble with this is that there is no real firm basis for setting the 'boundaries' of where our methodologies are reliable
- For example, in red barn county, our hero's method is not reliable, but if fake barns outnumber genuine barns in the state, it *is* reliable relative to state
- However, if fake barns outnumber genuine barns in country, unreliable relative to country

- Nonetheless, it is not clear if Goldman needs to respond, as it could be argued that 'knowledge' our concept – we decide whether county, state, etc is a relevant class

Lehrer's Mr. Truetemp Objection

- Suppose a person, whom we shall name Mr. Truetemp, undergoes brain surgery by an experimental surgeon who invents a small device which is both a very accurate thermometer and a computational device capable of generating thoughts
- The device, call it a tempucomp, is implanted in Truetemp's head so that the very tip of the device, no larger than the head of a pin, sits unnoticed on his scalp and acts as a sensor to transmit information about the temperature to the computational system in his brain
- This device, in turn, sends a message to his brain causing him to think of the temperature recorded by the external sensor
- Assume that the tempucomp is very reliable, and so his thoughts are correct temperature thoughts. All told, this is a reliable belief-forming process
- Now imagine, finally, that he has no idea that the tempucomp has been inserted in his brain, is, but never checks a thermometer to determine whether these thoughts about the temperature are correct. He accepts them unreflectively, another effect of the tempucomp
- Thus, he thinks and accepts that the temperature is 104 degrees, but surely he does not know this, as he has no idea whether he or his thoughts about the temperature are reliable
- His thought that the temperature is 104 degrees is correct, but he does not know this

Possible Responses to Truetemp

- Bite the bullet: Tempucomp is reliable, so Truetemp's temperature beliefs are knowledge
- This involves a rejection of our intuition that this is not knowledge
- Indeed, experiments show responses to Truetemp depend on previous cases that they have been presented with, indicating that intuitions can be manipulated
- See 'The Instability of Philosophical Intuitions', Swain *et al*, forthcoming PPR
- One potential rebuttal to this is that he does not know that this belief forming process is reliable
- Virtue epistemology: Truetemp's temperature beliefs not formed on basis of any cognitive virtue possessed by Truetemp

Lecture 6: Virtue Epistemology and Externalism

Goldman's Initial Base Clause

- If S's believing p results from a reliable cognitive belief-forming process (or set of processes), then S's belief in p is justified
- But: the counter argument of the true-temp case seems to cast doubt on this base clause
- One potential rebuttal to this counter comes in the form of virtue epistemology

Virtue Epistemology

- The basic idea is that the exercise of intellectual virtue yields justified belief/knowledge
- Virtue epistemology can block Truetemp case: the tempucomp is not a "virtue"

- A virtue is something like a skill or competence: for example, when an unskilled archer hits the bulls eye it's luck, while when a skilled archer hits bulls eye it's skill
- But what is an intellectual virtue?
- Here's what Lemos (following Sosa) has to say…

Lemos on Virtue

- To have an intellectual virtue is to have an inner nature in virtue of which one would mostly attain true belief and avoid error in a certain range of propositions in certain conditions
- So, consider one's visual endowment, an endowment which includes among other things one's eyes, brain and nervous system
- In virtue of this, one would mostly be right about a certain field of propositions concerning the shape and colour of an object viewed at arm's length in broad daylight
- Such a field might include, for example, propositions about whether the object was red, green, or blue, or round, triangular, or square
- Thus, one's visual endowment makes one virtuous relative to that field of propositions and those conditions

Animal Versus Reflective Knowledge

- Sosa has two further distinctions which help with Truetemp case which combine coherentism with reliabilism
- Aptness: refers to a true belief formed by a reliable intellectual virtue
- Knowledge that is based on apt belief is referred to as 'animal knowledge'
- Justifiability: refers to a true belief that coheres with background beliefs and principles
- Knowledge that is based on both apt and reflective belief is referred to as 'reflective knowledge'
- Thus, Truetemp's temperature beliefs are animal knowledge, merely apt, and failing to cohere with his background beliefs (because they essentially come out of the blue)

Epistemic Externalism

- Basic idea: justification is external to belief; subject need not be aware of justification
- For a reliabilist, justification depends on how the belief was produced
- Justification does not require the subject to be conscious of how the belief was produced
- Externalist nature of reliabilism is illustrated by the Truetemp case – Mr Truetemp has no idea how his beliefs are generated, but nonetheless they are justified because the process was reliable

Epistemic Internalism

- Basic idea: justification is internal to belief; justification accessible to subject from within the system of beliefs
- The subject examines their beliefs from "within", and rejects beliefs that rest on insecure foundation (on the model of Descartes)
- The criterion of clarity and distinctness identifies indubitable truths
- Internalism, then, holds that epistemic justification of a subject's beliefs depends solely upon factors internal to the subject's perspective, factors directly accessible through reflection

Example of Semantic Internalism

- The meaning of words has two components: sense and reference
- Reference relates to the actual particular thing that the word refers to in the word
- Sense relates to the connotation and description grasped by mind in relation to the thing to which the word refers (e.g. water is a wet clear liquid)
- Terms with the same reference can differ in sense; e.g. 'morning-star', 'evening-star' both denote (refer to) Venus
- Another idea is that sense determines reference; e.g. the description "clear liquid found in lakes and streams that quenches thirst and extinguishes fire" picks out the reference 'water'
- Thus, what determines reference is something grasped by the mind, something "in the head", consistent with an internalist view of meaning

Putnam's Twin-Earth Thought Experiment

- Twin-earth is a planet just like earth with one exception
- On Twin-earth, the liquid that flows in streams, quenches thirst, etc, is a not H20, but a totally different compound called XYZ
- Thus the word 'water' as used by Earth speakers refers to H_20, while 'water' as used by Twin-earth speakers refers to XYZ

Putnam's Externalism

- Earth and Twin-earth speakers have same internal mental state when water is described
- As such, they associate the same description (sense) with 'water'
- But they refer to different stuff (references) with their uses of 'water'
- Thus, references are not determined by sense or internal mental state, but by extrinsic relationship to the world

Lecture 7: Pyrrhonism

Academic Scepticism

- Derives from Plato's academy in ancient Greece, hence the name
- Scepticism one of philosophical schools of late antiquity; others included Stoicism, Cynicism, Epicureanism
- The school came from Socrates: "All I know is that I know nothing"
- They attacked the "dogmatists", who were those that held both that knowledge is possible and that we do know something
- Academic sceptics asserted both that knowledge is impossible and that we know nothing
- The trouble with Academic scepticism is that it is self-defeating: if knowledge is impossible, we cannot know knowledge is impossible; hence the assertion that knowledge is impossible undermines itself

Origins of Pyrrhonian Scepticism

- Pyrrhonian skepticism originates with Pyrrho of Elis (c. 360-275 BC), from whom we do not have any actual writings but is associated with the founding of the school
- The theoretical formulation is attributed to Aenesidemus (c. 100-40 BC)

- Major extant text: Sextus Empiricus, *Outlines of Pyrrhonism* (c. 200 AD) (extract in *Reader*)

Basic Idea of Pyrrhonianism

- Academics say we know nothing; dogmatists say we know something
- According to the academic sceptic, both go too far
- The basic idea is that one should suspend judgment; withhold belief
- This applies to knowledge: suspend judgment about whether we have knowledge
- The ten modes of Pyrrhonianism are arguments that are supposed to support this form of skepticism

First Mode: Animal vs Human Sensation

- Animals have different sense organs: "the same objects do not produce the same impression in different animals"
- Human experience cannot judge animal perception: "we are ourselves party to the disagreement"
- "We shall be more in need of a judge than capable ourselves of judging"
- Example: different animals will perceive colour differently to us

Second Mode: Variation Between Humans

- Even if humans are more credible than animals, humans vary; people react differently to the same things
- Example: some made sick by food that doesn't affect others, some affected by insect bites while others unaffected
- People are "not affected in the same manner by same objects"; how are we supposed to adjudicate between them?
- We cannot judge how things really are rather than how they seem to us, and there is no reason to privilege any single person's experience.
- As such, we should suspend judgment as to how things really are

Third Mode: Differences between Senses

- A painting may look rough but feel smooth
- Perfume may smell sweet but taste disgusting
- Apple smooth to touch; sweet to taste; visually red or yellow; by smell a certain fragrance – presented four different ways to the senses
- Is this one property experienced four ways or four different properties?
- Sense experience cannot tell, so we should suspend judgment

Fourth Mode: Difference in Circumstances

- The same sense gives different output in different circumstances
- Senses affected by physical or mental state (e.g. emotions, health, temperature, fatigue, etc)

Fifth Mode: Difference in Position

- Perception varies with position of the observer
- Example: a tower looks round at a distance, but square close up; a oar looks bent in water, but straight when pulled out of water

Potential Rebuttal

- Perhaps variation of sense experience is due either to genuine difference in what is perceived or to faulty perception
- Genuine difference is unproblematic, but how do we tell when perception is faulty?
- Perhaps we could detect faulty perception by testing against normal perception in normal circumstances
- But why suppose normal perception yields truth?
- There is no external standpoint from which to assess veridical nature of perception
- We cannot remove ourselves from our senses to check their reliability against the world

Appeal to a Criterion?

- One option might be to find an objective standpoint, a neutral standard or criterion
- This could serve as neutral ground to arbitrate between different experiences
- An example of a criterion might be Descartes clear and distinct ideas

Problem of the Criterion

- There are three possible ways to justify any particular criterion
- 1. Adopt the criterion "dogmatically" (by assumption): But if no argument is given for the criterion, then it is adopted on the basis of no reason, i.e. non-rationally
- 2. Appeal to some other criterion: But how justify this other criterion? Appeal to yet another criterion? This leads to an infinite regress
- 3. To avoid the regress, appeal to the first criterion: But this is to argue in a circle, as to appeal to the original criterion in support of itself fails to provide support for the original criterion

Suspension of Belief vs Action

- Pyrrhonian says "suspend belief"
- But sceptics are humans who must act in the real world
- For example: if the sceptic feels hungry, he/she eats
- But why eat when hungry? Why not suspend belief about hunger?
- We must act on the basis of belief, and without belief, we cannot act
- The basic rebuttal to this was that for everyday life we are best suited to accept things as they appear to be, without asserting that this is how things 'really' are

Pyrrhonism and Knowledge

- Pyrrhonian does not deny knowledge
- Instead, he suspends belief about knowledge
- But what if knowledge is JTB?
- If we withhold belief, then there is no knowledge because there is no belief
- Moreover, we are to withhold belief because it is unjustified, so, again, no knowledge

Lecture 8: Radical Skepticism

Rene Descartes

- René Descartes (1596-1650), central figure, the 'father of modern philosophy'
- Contributions to mathematics, science as well as philosophy
- Proponent of Cartesian dualism: split between mind and body
- He also developed ontological arguments for the existence of God
- He was not actually a skeptic, but uses skepticism as a tool that enables him to develop justification for knowledge

Descartes' epistemological project

- To get rid of all false beliefs by demolishing his entire belief system and then rebuilding it on the basis of new, firmer foundations
- This is seen to be necessary because it would be impractical and impossible to examine all beliefs one-by-one
- The idea is that the edifice of belief is built on uncertain foundations, and so the whole edifice is insecure
- Perhaps all of our beliefs false because of poor foundations – so we must start from scratch

First Meditation Three Levels of Doubt

- Sensory error
- Dream
- Evil Demon

The Senses Occasionally Deceive Us

- The point is highly restricted, as the senses do not always deceive us; only occasionally
- How do we know that our senses deceive us?
- Sometimes senses provide erroneous information, e.g. stick in water seems bent
- But we use our senses to discover this: e.g. touch to feel that stick is straight, or remove from water and use sight
- Hence, we discover isolated error against the background of reliability

Are You Dreaming Now?

- Key claim: "there are never any sure signs by means of which being awake can be distinguished from being asleep"
- There are no tests to prove we are awake: e.g. shake your head, pinch self does not prove anything, as we could dream these tests
- Thus, we cannot say whether any experience is genuine or occurs in a dream
- Makes us doubt ability to discriminate veridical from non-veridical experience in any particular case

Limits of Dream Argument

- The dream scenario is not a wholesale illusion
- The key point is that we cannot know whether any particular experience is genuine, but the point is not that we are always under illusion

- ‘Any’ vs ‘all’: “Anyone could be below average height” ≠ “Everyone can be below average height”
- Similarly, “Any perception may be illusory”≠ “All perception may be illusory”.
- Also, even if we are dreaming, we generally dream about some types of things that are real (i.e. an image of reality)

The Evil Demon

- Massive illusion: all experience is erroneous
- Our bodies don’t exist, no external things exist
- It is not just that particular things don’t exist; general properties (colour, motion, location, time, etc) also aren’t real
- Not just that our senses deceive us; we have no senses
- Memory is false – not a true record of past events

The Way Out

- Having demolished the edifice, Descartes now rebuilds it on the basis of c*ogito* - clear and distinct ideas
- He has thus developed the criterion for recognition of certain truth
- But there is no guarantee that clear and distinct ideas are true – we need God for this

The “Cartesian circle”

- We possess the idea of God, a perfect being
- The idea of a perfect being cannot derive from us, so it must come from God
- Being perfect, God is not a deceiver; he would not have created a world of illusion
- As such, God guarantees truth of clear and distinct ideas
- The trouble with this is that Descartes has already used clarity and distinctness to argue for the existence of God

Lecture 9: Fallibilism

Descartes’ Epistemological Project

- Method of doubt to dispel false beliefs
- He then bases knowledge on the existence of clear and distinct ideas
- Descartes seeks certainty and indubitability, and assumes certainty is related to knowledge
- But is certainty necessary for knowledge?

What is Fallibilism?

- Certainty may be beyond reach of humans, and so is not required for knowledge
- Fallibilist response to sceptic: the sceptic assumes that knowledge requires certainty; we don’t have certainty (cf. Evil demon), so we don’t have knowledge
- The fallibilist would retort that we may have knowledge without certainty, so scepticism fails to show we don’t have knowledge

Certainty and Indubitability

- According to Descartes, the inability to doubt is either a criterion for certainty or it just is certainty – either way, inability to doubt is an indicator of certainty
- Objection: "The inability to doubt may be merely psychological"
- Psychological causes could include brain-washing, indoctrination, parental influence, peer pressure, culture, education, religion, etc
- The mere fact that one is psychologically unable to doubt does not show that a belief has secure or sound epistemic status
- Instead, we need an epistemic sense of certainty – if a belief is certain in epistemic sense, then it's impossible for it to be false

Contingency vs Necessity

- Some beliefs are necessarily true, e.g. 2+2=4
- Some beliefs are contingent, e.g. there are 50 students in class.
- As such, certainty ≠ necessarily true, so we might be certain about either contingent or necessary truth

What is Certainty?

- Certainty is an epistemic state, defined in terms of maximal justification
- For example, a certain belief is one that has a maximally high probability, e.g. 1
- Alternatively, a certain belief is one that enjoys highest possible level of evidential support
- As such, it is not merely psychological inability to doubt

Fallibilism vs Certainty

- Humans are fallible beings: we make mistakes, and we form justified beliefs on the basis of limited available evidence
- With new or changed evidence, we revise our beliefs
- The skeptics highlight various aspects of our fallibility with regard to knowledge (Pyrrhonian 10 Modes, Descartes on sensory error, dreams)
- But skeptics draw negative conclusions which fallibilism denies

Charles Sanders Peirce

- The founder of pragmatism
- He also coined the term 'fallibilism'
- His thinking was mostly about science, and he believed that fallibilism expresses the 'spirit of science'
- He thought that any commitment to certainty would block scientific inquiry: for example, taking a scientific law to be established would block inquiry, since the law is no longer open to challenge
- "We cannot in any way reach perfect certitude or exactitude. We never can be absolutely sure of anything, nor can we with any probability ascertain the exact value of any measure or general ratio"

Popper's Fallibilism

- Karl Popper rejected inductive inference, instead arguing that science proceeds through the process of 'conjectures and refutations'
- Falsificationist method: scientists propose conjectures (guesses) as solutions to problems which are rigorously tested, and rejected if the tests fail
- Theories not established with finality, and theories may be changed in light of new observations
- A fallibilist view of science: science open to change; theories not finally prove
- He did not, however, think this fallibilist conception was evidence for skepticism
- We should abandon the search for certainty, but we can still have truth and knowledge (just not certain knowledge)
- "Though we may seek for truth, and though we may even find truth (as I believe we do in very many cases), we can never be quite certain that we have found it"

Objection from linguistic oddity

- Consider the following claims:
- (a) I know that it is raining, but I might be mistaken.
- (b) I know this is Old Arts, but it could be the Old Quad.
- (c) I know that today is Monday, but perhaps I'm wrong.
- They sound odd in that they assert knowledge, then remove or weaken the assertion
- As such, there is something linguistically odd about these sentences
- These seem to be legitimate from a fallibilist perspective, but sound rather odd to us

Responses to Linguistic Objection

- Ordinary use of the word know might be sloppy and misleading, so if fallibilism is right, we should change linguistic usage
- Another approach is that although we may have good reason for belief, that does not conclusively prove it
- This, the admission that one may be wrong is simple admission that one's justification (along the lines of knowledge as JTB) is incomplete
- A third approach holds that these sentences themselves are defective, as they can be taken from two differing perspecties
- Perspective of inquirer: wants to know whether its raining
- Perspective of epistemologist: interested in the nature of knowledge
- The phrase "I know it's raining, but I may be mistaken" runs these perspectives together
- An inquirer says "I know it's raining", but does not add the second clause, while an epistemologist does not assert the sentence at all; just says knowledge is fallible

How far Does Fallibilism go?

- Radical fallibilism: all knowledge is fallible, without exception
- Restricted fallibility: fallibilim applies to only some areas of knowledge, e.g. natural science is fallible, but not immediate observations, or fallibilist about empirical knowledge, but not logic and mathematics

- However, Descartes' *cogito ergo sum* argument seems to be one about which we must be certain

Lecture 10: Common Sense

Moore 'Proof of External World'

- Moore's proof about the existence of the external world begins with the statement "Here is one hand, and here is another"
- Hands are external to minds, so at least two external things exist
- This can be repeated endlessly for other things
- This proves the existence of an external world

A Rigorous Proof?

- Moore says the proof is a "perfectly rigorous proof", as it satisfies three conditions of proof
- 1. Conclusion must be different from premise: Conclusion "Two hands exist" ≠ premise, gesturing while saying "Here is one hand, and here is another"
- The premise says more than conclusion, and also the conclusion could be true even if the premise were false. Hence the premise and conclusion are different
- 2. Premise must be known true: Moore says that it is absurd to suggest anything other than that we know that the premise "Here is one hand…" is true
- 3. Conclusion must follow from premise: "Two hands exist" follows from premise that "Here is one hand, here is another"

Does the Proof Work?

- Could one dream that one is holding up one's hand?, or might one be deceived by Evil Demon into believing one is holding up hand?
- Obviously the answer is yes, so how does this respond to Cartesian scepticism?
- Moore's responds that his proof of the external world is analogous to ordinary proofs, which we use to prove perfectly ordinary things in everyday life
- For example, in the same way that we prove existence of misprints by pointing to them on the page of a book, so too, can we prove existence of hands by simply raising them
- Tacit suggestion: ordinary standards differ from sceptical standards (cf. fallibilism)

Objection: Doesn't this Miss the Point?

- Moore's appeal to ordinary procedures of proof begs question against scepticism
- Scepticism is exactly a challenge to ordinary common sense
- As such, how can ordinary proof be used against the sceptic?

What is Moore up to?

- Moore admits his proof of the external world rests on knowledge that hasn't been proven
- Specifically, he hasn't proven that "Here is one hand…" is true
- To do this, he would have to prove *inter alia* that he's not dreaming, which he hasn't done
- Yet he argues that he has "conclusive reasons" to believe he's not dreaming
- Further, he argues that it is not necessary to prove something in order to base a proof on it

Interpreting Moore

- Scholars differ on how to interpret Moore
- Some try to show that it is a genuine proof that begs no question against sceptic
- Another interpretation is that common sense is more plausible than any philosophical argument against it (e.g. Michael Devitt)
- In particular, Bill Lycan interprets Moore's argument as a plausibility comparison

Plausibility Comparison

- According to this line of reasoning, Moore does not prove the existence of an external world, but the common sense approach that it invokes is more plausible than any philosophical arguments against common sense
- The view that I do not know for certain that this is a pencil (etc) rests an four distinct assumptions: (1) That I don't know these things immediately; (2) That they don't follow logically from anything that I do know immediately; (3) That, if (1) and (2) are true, my belief in or knowledge of them must be "based on analogical or inductive argument"; and (4) That what is so based cannot be *certain knowledge*
- The thing is, these assumptions can be challenged, and so isn't it more reasonable to simply accept the existence of the pencil rather than accept assumptions one to four?

Objections to Common Sense

- Some argue that common sense is not sacrosanct - it's the "metaphysics of the stone-age"
- Many aspects of common sense have been eliminated and disproved by science
- For example, Eddington presents a contradiction between his two tables: the table of common sense and the table of science
- The former is held to be substantial and permanent, whereas the latter is mostly empty space
- A potential rebuttal to this is that both of these descriptions of the table object are perfectly valid; they just apply to different ways of looking at the table, depending on what is useful

Lecture 11: Particularism

Moore and Chisholm

- Chisholm's particularism is closely related to Moore's 'Common Sense' proof of the external world
- Thus, Chisholm starts with insisting that in some particular instances we *do* have knowledge
- Chisholm then develops the implications of our having particular cases of knowledge
- Unlike Moore, Chisholm explicitly addresses the problem of criterion

The Diallelus

- 'Diallelus' means wheel, and was the ancient Greek name for problem of the criterion
- In attempting to justify a criterion, one gets on a wheel because of the circularity of defining the criterion
- We need a test in order to identify an item of knowledge as an item of knowledge
- To find a test, we need to be able to identify items of knowledge

- We cannot find a test for knowledge unless we have already identified items of knowledge
- So it's impossible to arrive at a test for knowledge

Chisholm's Two Questions

- Chisholm frames the problem in terms of the following two pairs of questions:
- A) "What do we know? What is the *extent* of our knowledge?"
- B) "How are we to decide *whether* we know? What are the *criteria* of knowledge?"
- Skepticism: "You cannot answer question A until you have answered question B. And you cannot answer question B until you have answered question A. Therefore you cannot answer either question"
- Methodism: first answer (B) "What are the criteria?", and then answer (A) "What do we know?" on basis of (B)
- Particularism: first answer (A) "What do we know?" first, then answer (B) "What are the criteria?" on basis of (A)

Chisholm Rejects Methodism

- Chisholm objects that methodism is arbitrary: How do we get the criterion? What reason is there for the criterion? Is it just an arbitrary choice?
- He argues that there are numerous uncontentious cases of knowledge; e.g. Moore's claim "here is one hand and here is another"
- On basis of such uncontentious cases of knowledge, we can formulate criteria that say what it is for a belief to be "epistemologically respectable"

Particularism and Reflective Equilibrium

- Chisholm's particularist approach contrasts with the popular method of reflective equilibrium
- In reflective equilibrium, judgments about particular cases are brought into balance with rules or principles
- To arrive at equilibrium, it may be necessary to revise judgments about particular cases, whilst also revising principles or rules
- Thus, there is a 'give-and-take' in which principles and cases are revised until a coherent balance is reached
- Rawls calls this a "process of mutual adjustment" (*Theory of Justice*, p. 20)
- Chisholm does not allow for revision of cases of knowledge, and instead criteria are made specifically and exclusively to fit with particular cases – no adjustment of cases

Does Particularism Succeed?

- In Particularism, we avoid the impossible task of answering each question before the other by first answering (A), and then answering (B) on the basis of (A)
- At the end of the paper, Chisholm concedes that the particularist must beg the question against the sceptic
- "But in all of this I have presupposed the approach I have called "particularism". The methodist and the skeptic will tell us that we have started in the wrong place. If now we try to reason with them, then, I am afraid, we will be back on the wheel"

- "What few philosophers have had the courage to recognize is this: we can deal with the problem only by begging the question. It seems to me that, if we do recognize this fact, as we should, then it is unseemly for us to try to pretend that it isn't so"
- Chisholm's conclusion seems to admit defeat – he concedes the problem of the criterion cannot be solved without begging the question against the sceptic; isn't this the point of scepticism?

Acceptable Question-Begging?

- What happens when one begs the question?
- Typically, when a question is begged in the context of a dispute, one side makes an assumption that is disputed by the other side, and so proves nothing
- However, Lemos argues that sometimes question-begging is legitimate
- E.g., one might base an argument on an assumption that one knows or justifiably accepts certain premises that the opponent disputes
- In such a cases, Lemos suggests the argument may be rationally conclusive even though it begs the question against an opponent
- Thus, an argument might be *rationally conclusive*, and yet might fail to persuade the sceptic
- But why worry about sceptic, rather than neutral third party examining the quality of this argument?

Different Kinds of Particularism

- Chisholm is a commonsense particularist: he appeals to basic Moorean truths (e.g. there are other people, they have bodies)
- Lemos claims there can be different kinds of particularism
- Cartesian particularist (e.g. based on introspection, such as 'I exist')
- Religious fundamentalist particularist (e.g. no evolution)

Potential Problems

- The trouble with this is that if different people "start off" in different places (with different bodies of assumed knowledge), who is to arbitrate?
- We can't appeal to epistemic criteria because these are developed on basis of particular cases
- Thus, different particular cases may give rise to different criteria
- Perhaps one could argue that one problem with Particularism is that it tries to construct a metaphysical definition or criteria for knowledge based on practical applications and instantiations of this (e.g. common sense things that work in everyday life)

Lecture 12: Relativism

Why Relativism?

- Relativism seems more widespread outside the philosophy classroom than skepticism
- E.g. social constructivism, postmodernism, cultural relativism, etc are prevalent in anthropology, sociology, political philosophy

- Relativism is also sometimes used to support attitude of tolerance toward other cultures, religions, political systems

Varieties of Relativism

- There is no one doctrine called "relativism": instead, there are various relativistic positions
- E.g. relativism with regard to morality, aesthetic judgement, truth, reality, knowledge, justification, concepts, language, etc
- Most relevant for our purposes is epistemic or epistemological relativism; i.e. relativism about knowledge and/or justified belief

The Core Doctrine

- For virtually all types of relativist, something depends on and varies with something else
- For example, knowledge (truth, justification, morality) depends on culture (language, theory, context, etc)
- As such, there is no absolute truth, invariant epistemic norms, or objective knowledge or morality
- What is true or right or justified is what is taken as such in a particular context (culture, etc)
- There is no "higher" objective truth, objectivity, etc., over and above context

Epistemic Relativism

- Knowledge or justified belief are relative to context (e.g. culture)
- Knowledge does not have universal validity
- Knowledge is whatever passes as such in given context
- Knowledge for one culture may not be knowledge for another: e.g. we know that the Earth is round, but once upon a time people knew that the Earth was flat

Scepticism and Relativism

- Both skepticism and relativism oppose the view that there is certain knowledge justified on the basis of objective standards
- As such, they are not always clearly distinguished
- However, Scepticism and relativism make substantive claims in opposite directions
- The Sceptic either denies knowledge or suspends belief
- In contrast, the Relativist allows knowledge: it's just relative to context (e.g. culture, etc)

An Example: Azande witchcraft

- The Azande believe that ordinary misfortune may be due to witchcraft; e.g. someone falls ill, crops fail, hut catches fire
- Witchcraft involves no spells or rituals, but incorporates psychic acts in which *mbisimo mangu* ("soul of witchcraft") leaves the witch's body and interferes with a victim
- Witchcraft is inherited from the parent of the same sex
- There are tests for witchcraft
- Post-mortem: witchcraft substance found in body of witch
- Poison oracle: poison given to chicken; how chicken reacts interpreted as answer to question re being witch

Alternative Forms of Thought

- One puzzle is why the Azande seem uninterested in the apparently contradictory nature of their beliefs about witches (e.g. the inheritance idea)
- How do we explain this? Perhaps it is an example of a totally different form of thought
- Perhaps it is irrationality or demonstrates a "pre-logical mentality"
- For Peter Winch, however, it's not the Azande whose belief system is flawed; rather its the Western anthropologist who takes Azande thought where it wouldn't naturally go
- "Zande notions of witchcraft do not constitute a theoretical system in terms of which Azande try to gain a quasi-scientific understanding of the world. This in its turn suggests that it is the European, obsessed with pressing Zande thought where it would not naturally go, who is guilty of misunderstanding, not the Zande"

The Zande Poison Oracle

- The poison oracle is a technique to determine the action of unseen forces
- Note that it was used to answer very broad range of questions including but not restricted to witchcraft (e.g. criminal matters, weather, decisions about war, etc)
- The process is thus: a poison (*benge*) is given to a chicken
- The chicken can reacts in various ways: e.g. spasms, dies, unaffected, survives
- Questions are posed in advance, and how chicken reacts indicates answer to the question
- In important legal matters, the oracle may be run with a second bird to confirm the result
- Thus, the Zande poison oracle served as an epistemic norm that can justify beliefs

The Relativist Diagnosis

- The Azande have their own set of epistemic norms
- We have another set of epistemic norms
- Neither set of norms is right in an absolute sense; within their context, the different sets of norms define what it is to be justified or not
- Azande are right in their culture, while we are right in ours. That's the end of it!

The Myth of the Framework

- The Azande case illustrates how recognition of cultural differences inspires relativism
- Popper thinks the "myth of the framework" underlies relativism
- The "myth" is that rational discussion requires a shared framework of assumptions
- Popper responds that cross-framework communication is challenging but worthwhile
- We do not need to share frameworks with others in order to attempt to engage with them
- In the process, we can improve our understanding of the world and ourselves
- Though we may be imprisoned by our language (which serves as our framework), through cross-cultural engagement we can escape from this prison into a wider one

Lecture 13: Introducing Naturalism

What is Naturalism?

- This is an influential contemporary tradition in philosophy, especially in epistemology, philosophy of mind, philosophy of science, etc

- Naturalism is a broadly empirical world-view that takes empirical inquiry seriously, holding that empirical methods of inquiry (e.g. the methods of science) are a reliable guide to truth
- We should employ these methods in determining our world-view

Naturalist Conception of Reality

- Reality is considered to be the natural world: no 'supernatural' or 'extra-natural' reality
- Materialist metaphysics: what exists is either material or physical
- The natural world is made up of naturally occurring things, e.g. rocks, chemicals, animals, planets, oceans
- All are subject to laws of nature, e.g. physical laws of motion, laws of chemical combination, biological development
- Note that the natural world is also taken to include human social relations and artificial artifacts

Our Place in the World

- Naturalism holds that the world was not made for or by humans
- There is a rejection of anthropocentrism – humans are not the center of creation
- Humans are a small, naturally occurring part, of a much larger reality - just one species among many, on one world among many

Materialism

- Naturalist tends to be materialist: what exists are material objects and properties
- Alternatively, physicalism: what exists is what physics will say exists (allows for forces, energy or fields, if these are non-material)
- In philosophy of mind, rejection of dualism in favour of some sort of materialist view, the mind is made up of, reducible to, or supervenient, on material stuff
- Also, the human mind is not much different from the animal mind; continuity between human and non-human animal cognition

Naturalized Epistemology

- Methods of empirical inquiry (e.g. scientific methods) are good, perhaps the best, maybe the only guide to the nature of reality (some naturalists are more extreme than others)
- The naturalist urges epistemology to employ broadly scientific methods to investigate knowledge and rationality
- Tends to reject traditional *a priori* approaches based on pure reason, abstract reflection, conceptual analysis or analysis of intuitions about ordinary language use, which are considered to be the traditional methodology of philosophy
- Hence, the method of epistemology should be the same as that of the sciences (or modeled on the methods of the sciences)
- Scientific knowledge is based on empirical evidence acquired through the senses, rather than *a priori* reflection
- Similarly, philosophical theory of knowledge should be broadly empirical rather than *a priori*

The Critical Study of Kornblith

- At minimum: show understanding of the book: e.g. by summary and use of key ideas and concepts from the book
- We must, however, go beyond the book, and analyse its arguments
- Look for flaws, rebuttals, problems, fixes, etc
- Because there are a lot of ideas in the book, we will need to focus on one or two key issues that are particularly important or interesting to focus the essay on

Induction

- Logicians speak of arguments. An argument is a set of sentences related as one or more premises to a conclusion
- There are two broad kinds of inference that can be used in arguments: deductive & inductive
- With deduction, there is a very close relationship between premises and conclusion: the premise entail conclusion
- If premises are true, then conclusion must be true; impossible for conclusion to be false if premise(s) true
- Inductive inferences are weaker; they confer probability rather than certainty to the conclusion
- Typically one goes beyond the information found in the premises to make predictions or generalizations

The Role of Induction

- Not everyone accepts induction, e.g. Karl Popper denies induction; all you need is deduction
- For everyone else, induction plays absolutely central role in ordinary and scientific reasoning
- The main role for induction are usually held to be in prediction, generalization, confirmation
- Prediction: I predict it will rain tomorrow because it has rained for the past few days
- Generalization: The tides have been observed to rise and fall twice daily, so in general they always do so
- Confirmation: When observational evidence supports a theory, that's inductive support

Problems of Induction

- The philosopher David Hume raised the problem of inductive skepticism: to key question is how to justify inductive inference?
- Can logic justify induction?: Deductive logic only applies to inferences in which premises guarantee truth of conclusion, but inductive inferences aren't like that, so it will not be possible to justify induction through deduction
- Can experience justify induction?: Past success of induction does not justify induction, since it presupposes induction
- Does uniformity of nature justify induction?: Perhaps induction works because nature is uniform. But how do we know this? It is not a logical principle, and if we use experience to prove it, then we pre-suppose induction

Lecture 14: Problems of Induction

What is Induction?

- Induction is important because it is the main form of knowledge from inferential knowledge, as opposed to the direct knowledge that comes from the senses
- It is thought to be the major form of inference used in science
- It is the process by which general theories and laws are derived from particular observed facts
- In deduction, if the premises are true and the argument is valid, the conclusion must be true
- In contrast, induction is such that the premises provide support for the conclusion, but it is still possible for the conclusion to be false even if the premises are true

Types of Induction

- Enumerative induction: we make a number of separate observations, and make a generalized conclusion on the basis of those
- Eliminative induction: a causal relationship between two variables is inferred by a process of controlling for and hence progressively eliminating different variables

Hume's Problem of Induction

- Inductive arguments by their very nature are not possible to prove deductively
- However, we cannot justify inductive inferences on the basis of experience, as we would be using induction to justify induction
- We also cannot use the concept of the uniformity of nature to justify induction, as how do we know that nature is uniform without using induction?
- Hume's 'solution' is really just to restate the fact that inductive inferences are a deeply formed psychological habit that is imbued within humans, though this doesn't seem to provide justification for induction

Goodman on the Old Problem of Induction

- Goodman argues that the old Humean problem of induction is now where would should be directing our energies
- He basically argues that the old problem of induction demands that we find some way of distinguishing before the fact between true and false premises, as this would be tantamount to us knowing the accuracy of our predictions before we can observe the result
- Clearly this is a logical impossibility, and hence is not something we should be concerned about

How is Deduction Justified?

- Deductive inferences are justified if they conform to the rules of logic that we accept
- These rules of logic, in turn, are justified if they conform with accepted deductive practises
- That is, we accept a logical rule if it produces deductive inferences that cohere with our intuition
- Goodman argues that this is a circular argument, but thinks that this circularity is virtuous
- Basically, rules and inferences are mutually re-adjusted so that they fit with each other in an agreeable way

Can Induction be Justified this Way?

- Can induction be justified on the basis of mutual adjustment of inductive rules and inductive references
- In order to do this, we would need to analyse how induction is actually used
- As such, Goodman argues that Hume's emphasis on the actual use of induction was valid, as the only way to justify induction is in reference to how people actually use it

Confirmation of Induction

- Two rules of confirmation
- If evidence supports the consequence of a statement (e.g. a theory), then that evidence also provides confirmation for the statement
- If evidence supports a statement, then that evidence also supports all the consequences of that statement
- The trouble with these two statements is that they can be used to confirm everything
- P+Q entails P, so P confirms P+Q; P+Q entails Q, so P confirms Q – anything can confirm anything

The Ravens Paradox

- All ravens are black is logically equivalent to the statement 'all non-black things are non-ravens'
- Thus, any evidence that supports one of these statements must equally support the other
- Therefore, the observation of a white shoe should support the statement that all raven's are black

The Grue Problem

- If all emeralds that we have observed are green, then it is reasonable to suppose that all emeralds we subsequently examine are green
- However, this evidence would equally provide support for the hypothesis that all emeralds are 'grue', which refers to an emerald that is green before time t and blue after t
- Inductively it seems that both of these hypotheses are equally well supported
- One potential rebuttal is that the concept if grue is not a valid predicate, as it is time sensitive, whereas a genuine predicate should be purely qualitative
- However, it is argued that whether or not a predicate is time-sensitive depends purely upon how we define our basic concepts
- That is, we could take grue and bleen to be basic and define blue and green in terms of them
- This problem has still not been resolved to the satisfaction of most philosophers
- One possible answer is to introduce the concept of natural kinds, and argue that green is a natural kind but grue is not

Lecture 15: Kornblith's Project

Kornblith's Approach

- "The problem of induction is a problem about the world: a problem of how we, in a world we never made, should stand better than random or coin-tossing chances of coming out

right when we predict by inductions which are based on our innate, scientifically unjustified similarity standard" – Quine in 'Natural Kinds', quoted on the first page of Kornblith

- Note that here there is no mention of Hume's criticism of induction or any mention of skepticism, perhaps indicating that Kornblith is not so interested in these matters
- Instead, he seems to say that "… the problem of induction is a problem about the world…"

Two Questions for Epistemology

- What is the world that we may know it?
- What are we that we may know the world?
- The two questions provide basic structure of book
- Re question (1): world contains natural kinds; natural kinds underlie reliability of induction
- Re question (2): our cognitive capacities and inferential processes fit with natural kinds

The Appeal to Evolution

- Naturalism sees philosophy as continuous with science, and appeals to science to answer philosophical questions
- This leads to the following idea: humans are evolved creatures, so perhaps evolution may help to explain our epistemic capacities for successful induction
- For Kornblith, evolution plays a role in explaining knowledge, though not in exactly the same way as for Quine

Sketch of Quine's Argument

- Animals who make incorrect inductive inferences tend to die young, and so they fail to reproduce. Hence, their species dies out
- The human species has survived, and so our inductions have been reliable enough for us to survive through to the reproduction stage
- In short, our very existence is evidence that our inductive inferences are reliable, as our species would not have survived this long otherwise

Problems with Quine's use of Evolution

- In some cases, erroneous belief formation may promote survival
- For example, an animal with overly cautious poison detection mechanism may misidentify non-poisonous things as poisonous. But the animal may survive as result of avoiding poison.
- Pleiotropy: genes may be responsible for multiple traits. One trait might be non-beneficial but another linked to it may promote survival
- For example, the gene for albinism leads to poor eyesight and white coats, the latter promotes survival in arctic animals

Kornblith on Evolution

- Kornblith holds that the reliability of induction is independently established by the success of science
- The success of science shows that our cognitive processes fit ("dovetail") with world
- With this fit established, evolution can then be used to explain how this fit between mind and world came about
- In sum, evolution is not evidence for fit but a useful explanation of it

Epistemic Normativity

- Normative claims are expressed using 'should' or 'ought'
- To say that a belief is justified is to make a normative claim
- Normative claims contrast with factual or descriptive claims, expressed using 'is', state how things are
- The trouble with naturalized epistemology is that it is grounded in empirical study of facts about cognitive mechanisms and the world
- But if this is true, how can a naturalized epistemology be normative?
- Quine is often read as denying normativity of naturalized epistemology
- For instance, he said that 'epistemology, or something like it, simply falls into place as a chapter of psychology and hence of natural science'

Kornblith Favours Normative Approach

- Kornblith argues that we value truth, and it is an empirical matter how to get it
- As such, naturalized epistemology is fully consistent with a normative approach

Restricted Naturalism?

- The basic idea here is that there are two fundamental questions: what do we value, and how do we get it
- It seems that the former is a normative a priori matter, while the latter is an empirical matter
- Kornblith rejects restricted naturalism on the grounds of holism
- He argues that it is impossible to exclude normative questions from empirical scrutiny
- If empirical research shows that cognitive process does not satisfy the normative constraint, this does not show that the process is ill-founded
- Three separate assumptions are in question: (1) anti-scepticism, (2) empirical description of cognitive process, (3) the account of the normative constraint
- The empirical evidence does not show which of (1) to (3) is incorrect
- We might choose to revise (3) the normative constraint in light of the empirical evidence, but this means that the normative consideration is not *a priori*

The Source of Normativity

- Why is truth something on which we should place epistemic value?
- If this cannot be determined a priori, how can the naturalist explain the fact we value truth?
- The issue of the "source of normativity" is not dealt with in the book – rather the focus of the book is the reliability of induction
- Kornblith seems to assume value of truth for purposes of book
- On basis of this, investigates question of how cognition reliably leads to truth

The Role of Natural Kinds

- Kornblith uses a metaphysical account of the existence of 'natural kinds' in order to justify induction
- Specifically, he argues that the world is such that only certain entities are stable and can exist, and each of these entities possess certain essential properties

- As such, it is justified for us to infer the existence of some of these properties on the basis of others

Dovetail Fit of Mind and the World

- Empirical work on induction by psychologists such as Tversky & Kahneman has shown that "human beings have a strong natural tendency to reason very badly" (Kornblith p. 8)
- But Kornblith argues that appearances are misleading, as "our psychological mechanisms are well adapted to the causal structure of the world"
- For instance, "our native inferential tendencies … dovetail precisely with the causal structure of natural kinds"

Naturalism vs Scepticism

- Traditional epistemology seeks response to scepticism
- Naturalists tend to reject scepticism: sceptics set standards unrealistically high; naturalists reject sceptical standards as inappropriate
- Kornblith is a naturalist: does this have an implication for the problem he seeks to solve?
- For instance, does Kornblith seek to resolve Hume's problem of induction?, or does he reject legitimacy of Hume's demand for non-circular justification of induction?

Reliabilism and Normativity

- Kornblith argues that the existence of natural kinds explains the reliability of induction
- His account of induction seems reliabilist
- What is the connection between reliabilism and normativity?
- Goldman takes reliabilism to explain the justification leg of JTB – is this Kornblith's view?

Inference to the Best Explanation

- Scientific realists argue by IBE from success of science to (approximate) truth of theories
- Kornblith's account is based on the success of science, which he says indicates the reliability of induction
- The success of science, in turn, is best explained by the existence of natural kinds posited by scientific theories
- Given this, Kornblith's account seems to rest at base on an IBE; but induction depends on IBE
- Hence, what is the relation between IBE and induction? Is IBE a form of induction? If so, is the account circular? If not, what does IBE rest on?

Essential vs Accidental Properties

- Members of a natural kind share essential properties in common (e.g. having a certain atomic or chemical structure)
- They need not share accidental properties in common (e.g. being in a given place at a given time)
- Kornblith's account applies to inductions about essential properties and properties that depend on essential properties
- But what about accidental properties? Can there be no reliable induction about accidental properties (e.g. I have always worn a hat, so will wear one tomorrow)?

- What about artifacts? Can there be no reliable induction about artifacts? (Being hit by car, for example?)

Scientific realism

- For scientific realist, science aims at (and sometimes achieves) truth about the world
- Kornblith's account is based on scientific realism (e.g. success, existence of unobservables, natural kinds, etc)
- But does his account of induction require scientific realism? Or is it available to an anti-realist?

Lecture 16: Locke on Essences

Introducing John Locke

- John Locke lived from 1632-1704
- Along with Hume and Berkeley, he was one of the three great British empiricists
- He wrote on epistemology, metaphysics and political philosophy
- As opposed to continental rationalists (e.g. Descartes, Leibniz, Spinoza), empiricists held that was knowledge based on sensory experience

Locke on "Ideas"

- We are immediately aware only of "ideas" (roughly, the content of thought or experience)
- Ideas come from experience, such that at birth, the mind is a "blank slate"; contrary to the continental rationalists, there are no "innate ideas"
- Simple ideas come directly from experience (e.g. coldness, hardness)
- The mind then combines simple ideas to form complex ideas (e.g. piece of ice)
- We only directly know ideas, and hence have no direct knowledge of the world behind our "veil of perception"

Real vs Nominal Essences

- Locke distinguishes between real and nominal essences
- For example, gold has a set of observable properties, e.g. colour, weight, malleability
- In contrast, the real essence of Gold is the *unobservable* underlying structure that makes it uniquely gold
- Although real essence cannot be observed directly, the observable properties of *Gold* can be used to define nominal essence of *Gold*

Realism vs Conventionalism

- Kornblith distinguishes two views of kinds:
- Realism: there are real kinds in nature in addition to individual members; we discover kinds; our classificatory systems seek to reflect the real divisions in nature
- Conventionalism: kinds are conventional; they do not exist in nature independent of humans; they are the product of our classificatory activity; we don't discover them but only invest them; they cannot be judged as true or false, merely on how useful they are

- For realist, there are real kinds in nature, to which individual entities belong, and which our classifications may accurately reflect (or not)
- For conventionalist, there are no real kinds in nature, only individual things; classificatory schemes are convenient (or not); not accurate (or not)

Three Lockean Views

- Conventionalism: individuals are real, kinds are conventional, classification convenient
- Locke's "Official position": "there may well be real kinds in nature, but what they are is entirely unknowable by us"
- Internal structure (real essence) is responsible for observable features, as well as natural divisions between kinds of things; but they are unobservable, hence unknowable
- "Full fledged corpuscularianism": There are real kinds in nature, known to us "with difficulty"
- Locke influenced by chemists such as Boyle who were developing theory of matter as constituted of unobservable parts

Two Arguments for Conventionalism

- Kornblith takes Locke to present two conventionalist arguments against real essences
- An *a priori* argument: Only source for idea that individual item has essence is our ideas. Nothing about item suggests that it has an essence. The ideas associated with a name, used to classify items under the name, are the sole source of the idea that the item has an essence
- An empirical argument: Empirical evidence against existence of real kinds: (a) "Monstrous births" are instances that fall between kinds. (b) No "chasms or gaps" in nature: rather than sharp breaks, we only observe differences of degree between things

Locke's "Official View"

- For Locke, real essence is the "constitution of the insensible parts" of substances
- Nominal essence of *Gold* is complex idea associated with word 'gold', viz., a yellow body, which is malleable, fusible and fixed
- Superficial properties are thus the nominal essence
- Nominal essence depends on unobservable constitution of substance, i.e. on its real essence
- According to Locke's "Official view": We cannot know the real essences (by definition they are unobservable); we only know nominal essences (i.e. observable properties)

Wary Chymists

- Locke seems to flirt with the view that real essences are actually partly knowable; sometimes there may be observational evidence relevant to determining real essence
- For example, chemists sometimes have trouble showing that different samples of the same chemical kind have the same properties (Kornblith, p. 26)
- But this means that it's possible to have evidence about real essences based only on observable evidence relating to nominal essences
- That is, if we take things that we think might have the same real essence and then find that they have some other properties that differ, we can tell that in fact they are not of the same real essence
- This is not complete knowledge; but knowledge of the boundaries of the real essence

Kornblith's Critique of "Official View"

- Kornblith argues that Locke's "official view" ultimately proved unsustainable in the light of the development of science
- Specifically, science is not restricted to enumerative induction and direct observation with senses
- Rather, scientists discover and describe the underlying nature of things, e.g. "theoretical entities"
- In Lockean terms, science discovers real essences that lie behind merely nominal essence
- Scientific realism: it's possible to have knowledge at level of theoretical entities; we may only observe superficial properties of gold, but we are able to know about the unobservable properties which underlie them
- Inference to best explanation: scientific reasoning is not restricted to simple induction from observed fact to prediction/generalization about observables; instead, it is possible to use inference to best explanation to arrive at explanatory hypotheses which go beyond observables

Lecture 17: Natural Kind Terms

Use versus Mention

- The use of a word occurs when we use a particular word to make some kind of statement about the world
- The mention of the word occurs when we refer to the word itself
- This is denoted in these notes by single quotation marks: 'tiger' is the word, tiger is the thing

Meaning and Reference

- Putnam focuses on the meaning of a single term or word (not sentence)
- There is a traditional distinction in philosophy between intension vs extension, also called sense vs reference
- Sense or intension refers roughly to the concept associated with term, often given by description or list of properties
- E.g., the sense of 'tiger' is large, carnivorous orange feline w/ black stripes
- Reference or extension refers to the set of things to which term refers
- E.g., the extension of 'tiger' is set of tigers

Same Extension but Different Intension

- Terms may have same reference but different senses, meaning that the same things can often be described in a number of different ways
- For example, all creatures with a heart also have kidney, so here we clearly have the same reference, but a different sense
- Similarly, the 'Morning star' refers to Venus, the 'Evening star' refers to Venus; once again the same reference, different sense

Two Traditional Assumptions

- (1)That knowing the meaning of a term is just a matter of being in a certain psychological state (e.g. states of memory and belief)
- (2) That the meaning of a term determines its extension (in the sense that sameness of intension entails sameness of extension)
- The aim of Putnam's article is to "argue that these two assumptions are not jointly satisfied by *any* notion, let alone any notion of meaning"

Twin Earth

- Putnam uses a science fiction example to challenge these two assumptions:
- Twin Earth is like Earth except that XYZ is found in rivers, lakes, etc, rather than H_2O
- On Twin Earth, speakers of Twin Earth English use 'water' to refer to what flows in rivers, lakes, etc., namely XYZ
- Semantic difference: 'water' on Earth ('$water_E$') refers to H_2O; 'water' on Twin Earth ('$water_{TE}$') refers to XYZ

Meanings ain't in the Head

- Putnam claims on this basis that the extension of '$water_E$' is H_2O, while the extension of '$water_{TE}$' is XYZ
- $Oscar_1$ and $Oscar_2$ do not refer to same thing with their tokens of the term 'water'
- This is the case even though they are "in same psychological/mental state"
- If two Oscars in the same psychological state refer to different things with their tokens of 'water', it follows that knowing the meaning of a term not just a psychological state
- Knowing meaning involves extrinsic relation to environment as well as "what's in the head"
- Also, if 'water' refers to something different on Earth and Twin Earth, then sense does not determine reference
- So reference also depends on extrinsic relation to world, rather than solely on "what's in the head"

Possible Objection and Reply

- You might think that '$water_E$' and '$water_{TE}$' refer to the same stuff, namely, water; it's just that water is chemically different on the two planets
- 'Water' receives "ostensive definition"; that is, one explains the meaning of water by pointing to a glass of liquid and saying "the term 'water' refers to this stuff"
- This assumes a relation "same liquid as" ($same_L$) between liquid in glass and what other people call 'water'
- Water just is the liquid that bears the relation $same_L$ to paradigm cases of water
- This is a "theoretical relation", i.e. one that we have to discover by empirical investigation
- The terms were introduced in the presence of samples of stuff that occurred on Earth (or on Twin Earth)
- The intention of Earth speakers was to refer to stuff that is the same kind as the sample, i.e., the liquid that is found on Earth.
- The word 'water' as used on Earth refers to H_2O because that is the stuff that's the same kind as paradigm examples of the liquid found on Earth.

- Analogously, for speakers on Twin Earth: they refer to the stuff found on Twin Earth, i.e. XYZ
- There is no H_2O on Twin Earth. So '$water_{TE}$' does not refer to H_2O.

The Socio-linguistic Hypothesis

- Every linguistic community possesses at least some terms whose associated "criteria" are known only to a subset of the speakers who acquire the terms, and whose use by the other speakers depends upon a structured co-operation between them and the speakers in the relevant subsets
- For example, Putnam cannot distinguish an elm from a beech tree
- Yet when he uses the word 'elm' he is talking about elms, rather than beeches
- He can do this because there are those (certain experts) who can make this distinction, and so he relies on them

Indexicality

- Some expressions are indexicals, e.g. 'here', 'now', 'I', which have no fixed referent, but are context-dependent
- Like standard indexicals, Putnam thinks that natural kind terms have an indexical element; they depend on the environment in which they are employed
- For example, 'water' when used on our earth refers to the stuff that is water around here, not the stuff that is XYZ on twin earth

Rigidity

- Indexicality is related to another concept called rigidity
- The idea of rigidity is simple that words mean the same thing in all possible words
- For example, Twin Earth does not have any H20, so it does not have any water, as this is what 'water' as defined by us refers to
- This has some interesting metaphysical consequences

Metaphysical Consequences

- Because 'water' refers to same stuff in all possible worlds, water is necessarily H_2O
- Nothing can be water if it's not H_2O, and being H_2O is essential property of water
- This rigidity leads to natural kind essentialism

Lecture 18: Natural Kinds

Stuff or Individuals?

- Wilkerson distinguishes kinds of stuff from kinds of individual:
- Kinds of stuff, e.g. gold, water, cellulose
- Kinds of individual, e.g. tiger, oak, stickleback
- Stuff, e.g. water, can be poured from a jug into a glass, and still have some water in jug and some water in glass
- Individual, e.g. tiger, is not like that; you can't cut a tiger into pieces and have some tiger here and some tiger there

Two Constraints on Natural Kinds

- Members of a natural kind have a real essence, i.e. intrinsic properties that they must possess to belong to kind
- It is possible to scientifically investigate natural kinds and their real essences; generalizations can be based on these real essences
- The essential properties are the distinguishing and essential features of the natural kind class; if you don't have them, you don't fit into the class

Natural Kinds and Projectibility

- Law-governed behaviour of natural kinds supports projectibility of natural kind properties
- For example, if one knows something is gold, then one can make inductive predictions about what it will and won't do
- By contrast, non-natural kind predicates are not projectible; we can't make inductive inferences about what non-natural kinds will do
- We can only make inductive inferences about non-natural kinds on basis of the natural kinds which are contained in them
- To illustrate, Wilkerson uses the example of rubbish and tables
- This is an interesting statement because it seems to indicate that we cannot reason inductively about non-natural kinds, even though we seem to do this a lot

First Proposal of Natural Kinds: Conventions vs Artifacts

- Natural kinds are given by nature, while non-natural kinds involve human artifice or convention
- Natural kinds contrast with conventional kinds which depend on human convention (e.g. banknotes, nations)
- Wilkerson, however, argues that this account will not work, as there are some kinds that have real essences that are manmade, such a petrol, plastics, etc
- They may be investigated by science and serve as basis for nomological generalizations; but they contradict this proposal because they are manmade
- Kinds such as tree, shrub, mountain, valley, don't have a real essence; they do not serve as base for scientific generalization, so they are not natural kinds
- However, they are also not conventional kinds, since they don't depend on human convention – again, the proposal breaks down

Second Proposal of Natural Kinds: Natural vs Nominal Kinds

- This is based upon the Lockean distinction between real and nominal essence
- Real essence of a kind is intrinsic property (or properties) of a kind that makes it the kind of thing that it is
- By contrast, nominal essence of a kind is set of properties we use to identify things as members of a kind
- Nominal essence is the basis of everyday classification of things
- There is meant to be a connection between real and nominal essence, in that the real essence underlies (is responsible for) the nominal essence
- But there is a "looseness of fit": entities may fail to possess some properties of nominal essence

- For example the real essence of gold is its having atomic number 79, and its nominal essence is its being rather heavy, yellow, fusible, malleable, etc
- Wilkerson argues against this account on the basis of the fact that the nominal kind is obscure: how do we decide what is in nominal essence and what is part of real essence?
- Also, this classification scheme does not seem to account for the unique status of such things as cliffs, trees, etc, that are not natural kinds, but still are not purely matters of human convention

Third Proposal of Natural Kinds: Wilkerson's Idea

- Members of natural kinds do not depend on other things for identity because they possess essential intrinsic properties
- By contrast, non-natural kinds depend in various ways on something else for their nature
- For example, something is an oak or a tiger or a stickleback in virtue of its intrinsic properties; something is a table or a coin or a threshold in virtue of its relation to, or dependence upon, something else

Other Kinds of Kinds

- Wilkerson suggests there are also some other kinds of kinds
- Real, superficial kinds: these are such things as trees and shrubs, which are real kinds without a real essence, but they don't depend on something else – they have superficial essence (e.g. woody, low-branching)
- Hybrid kinds: these are things such as vegetables that also don't have a real essence, and the classification of which partly depends upon intrinsic properties, and partly upon dependent properties (e.g. vegetables must be a member of a small number of species of plant, but also must be something we are prepared to eat)

Lecture 19: Homeostatic Property Clusters

Introduction

- The basic idea is that many things in nature are so structured that clusters of properties tend to occur together in a self-sustaining or self-perpetuating manner
- This means that if one of these properties is observed, the presence of others can safely be inferred
- There is also an idea that only certain combinations of properties are possible; you cannot just slap together protons and neutrons in any configuration you like

Common Properties

- Locke argued that members of the same natural kind must have all their properties in common; any difference means they are not of the same kind
- Kornblith argues that this is simply wrong on an empirical basis
- For example, he puts forth the case of different samples of gold having different weights, or different members of the same species having many physical differences

Properties in Homeostatic Relationships

- Kornblith does argue, however, that the unobservable, micro properties that are crucially integrated with the homeostatic equilibrium are properties that kind-members must posses
- Many observable macro-level properties, however, are not crucial for the kind
- There are some macro properties, however, that are so intricantly linked to the essential micro-properties of the kind that they are essential; e.g. emission spectrum of a gas
- Other accidental properties include temperature and size

Justifying Micro-Properties

- One might object that Kornblith has simply assumed that micro properties are real rather than merely conventional
- Kornblith argues that the success of science in making predictions and technological applications on the basis of unobservables is strong evidence in favour of the true existence of micro properties, and hence natural kinds
- He argues that if these things were not the case, it would be a miracle that science worked
- Of course, this 'inference to the best explanation' approach seems to be a method of induction, so is Kornblith using induction to prove induction?

Chasms and Gaps in Nature

- Locke argued against the existence of natural kinds on the basis of the absence of any large chasms or gaps in nature
- However, it is clear that gaps and chasms are not a sufficient condition for real kinds, as the existence of things like time zones shows that artificial kinds can have chasms
- Also, Kornbith rejects the argument that chasms are necessary for natural kinds, though he does argue that chasms would be some evidence in favour of natural kinds

Kinds in the Special Sciences

- Kornblith argues for the existence in natural kinds in all branches of science, not just physic and chemistry
- In the case of biology, Kornblith argues that although there are multiple possible and overlapping classificatory systems, they are all equally correct

Anti-Reductionism

- Kornblith does not believe that all sciences and entities can be reduced to lower level ones
- He introduces the case of Fido the dog, from which we can remove individual atoms, and yet it still remains the same dog
- Thus, genuine microphysical changes do not necessarily lead to any real biological changes

Question for Natural Kind Realists

- If two entities do not share all their properties, how can you choose which properties are essential to the kind and which are not?
- My idea: the only natural kinds are those entities that are always identical in all properties except those properties that relate directly to position and velocity (e.g. including position in gravity or electrical field)

- The water molecule: not all water molecules are the same – different isotopes, different quantum states of nucleus and electrons of all the atoms
- Alternative periodic tables: see http://en.wikipedia.org/wiki/Alternative_periodic_tables
- How are natural kinds consistent with the progress of scientific knowledge – absolute time and space existed until Einstein (instrumentalist view)
- Discuss specific issue in Kornblith in relation to his overall case in the book
- Newtonianism must have been at least approximately true?

Lecture 20: Inference to the Best Explanation

The Success Argument

- Kornblith uses a success argument to argue for the existence of natural kinds
- He says that 'if the scientific categories did not correspond, at least approximately, to real kinds in nature, it would be utterly miraculous that inductions using these scientific categories tend to issue in accurate predictions'
- In essence, his argument is that inductive inference in science employs natural kinds in predicting the future and proposing laws of nature
- The use of inductive inference in science leads to a high degree of predictive, explanatory and technological success
- Given that science employs natural kinds in induction, the success of inductive inference in science would be a miracle if no natural kinds exist
- Hence, the best explanation of successful use of induction in science is that the natural kinds employed in scientific induction really do exist

Inference to Best Explanation

- It seems that Kornblith's success argument is dependent upon the use of IBE
- This raises the question of how IBE works
- A few see IBE as a deductive inference; e.g. Musgrave construes IBE as merely a form of deductive inference based on the premise that one should accept the best explanation for something
- Others take IBE to be a form of inference in its own right; e.g. as we're about to see, Gilbert Harman takes enumerative induction to be merely a form of IBE, so IBE is more basic than induction

Enumerative Induction

- Enumerative induction is the most basic form of induction
- It proceeds from a set of observed instances to a prediction or generalization
- "All observed A's are B's", therefore "All A's are B's" (or "Next A….")

Harman on IBE

- He argues that 'enumerative induction should not be considered a warranted form of non-deductive inference in its own right'
- Because IBE is inference to the *best* explanation, it proceeds by comparison of alternative hypotheses

- Competing hypotheses must be rejected as inferior explanations
- In order to do this, there must be criteria of good explanation on which the judgement that a hypothesis is the best explanation is based
- Criteria may include simplicity, breadth, plausibility, etc; however Harman sets aside the question of what the criteria are

IBE vs Enumerative Induction

- Harman argues that some cases of IBE cannot be construed as enumerative induction
- For example, when a detective analyzes all the evidence and concludes that the butler committed the crime, the inference is IBE rather than enumerative induction
- When scientists infer existence of theoretical entities, such as atoms, they infer by IBE, rather than enumerative induction
- By contrast, enumerative inductions can always be construed as IBE
- For example, when we determine that the best explanation of the evidence that "All observed A's have been B's" in light of background information is that 'all A's are B's'
- We draw this conclusion, however, in light of the total evidence available (e.g. background considerations) rather than simply the fact that all previous A's have been B's

What is Explanation?

- There are alternative accounts of explanation
- This leads to different ways of understanding explanation in context of IBE
- Day & Kincaid consider two leading accounts of explanation
- Unification account of explanation: explanation unifies by "exhibiting the phenomena as manifestations of common underlying structures and processes"
- Causal account of explanation: explanation is provided simply by citing a cause
- According to Day & Kincaid, both accounts undermine foundational role for IBE

Explanation as Unification

- An explanation of a phenomenon is one that presents it as coherent w/ set of beliefs
- We evaluate explanation by how well it coheres w/ set of beliefs
- On this approach, IBE is simply inference to belief that coheres best w/ set of beliefs
- One problem with this is: how do we understand coherence? Coherence is often understood in terms of explanation, but if this is so, how can we give an informative, non-circular account of coherence?
- If explanation is merely coherence, then IBE cannot be used to choose between theories that equally cohere with background beliefs
- The theories already cohere with background beliefs, so IBE adds nothing – it is not fundamental or particularly helpful
- "Rather than fleshing out the idea of 'total evidence', IBE turns out to be just another name for the common practice of evaluating any particular belief in terms of its fit with what else one believes. IBE adds nothing of its own to the epistemic situation"

Causal Explanation

- If explanation is a causal account of how a phenomenon occurs, IBE becomes inference to best causal explanation

- However, causal explanations such as this depend greatly upon what background assumptions that we make and accept
- These could vary with the situation, or even the audience one is speaking to
- For example, the sceptic will not allow assumptions about how world is constituted in context of argument that best explanation of phenomena is that the world is a given way

Lecture 21: Cognition and Natural Kinds

W.V.O. Quine

- We ran into Quine in week 2 (lecture on coherentism), with his idea of epistemic holism
- Other notable ideas from Quine:
    - Rejects the analytic/synthetic distinction
    - His idea concerning 'Gavagai' and the indeterminacy of radical translation
    - This leads to the inscrutability of reference – you cant really define what words mean
- Of more immediate relevance, in his paper, 'Epistemology Naturalized', Quine launched naturalistic program of epistemology as branch of psychology
- We'll look at 'Natural Kinds', which seems more important for Kornblith

Quine on the Grue Paradox

- Why is 'green' projectible, but 'grue' is not?
- According to Quine, similarity is the key
- Green things are similar to each other, whereas two grue things, one blue, one green, not similar to each other
- We project 'green' on basis of similarity between green things, whereas we don't project 'grue' because of lack of similarity
- As such, similarity is basis of projectibility, so is also basis of induction

Innate Sense of Similarity

- According to Quine, judgement of similarity requires an innate capacity
- Indeed, the ability to detect similarity is required for any learning
- To learn the term 'yellow', for instance, we must recognize similarity between different instances of yellow things

Quine on the Problem of Induction

- One part of the problem of induction, the part that asks why there should be regularities in nature at all, can, I think, be dismissed.
- Namely, t*hat* there are or have been regularities, for whatever reason, is an established fact of science; and we cannot ask better than that
- Why there have been regularities is an obscure question, for it is hard to see what would count as an answer
- What does make clear sense is this other part of the problem of induction: why does our innate subjective spacing of qualities accord so well with the functionally relevant groupings in nature as to make our inductions tend to come out right?

- Quine's answer makes an appeal to natural selection as a driver of effective induction

Naturalism and the Circularity Problem

- Quine dismisses this problem, on the basis of the following arguments
- Philosophy not *a priori* groundwork – no first philosophy which establishes the foundation external and prior to science
- Philosophy is continuous with science, part of the same approach, and not something different
- Holism: rejection of foundations; no "external vantage point" from which to view relation between knowledge and the world
- Given holism, we can help ourselves to other areas of knowledge, so we can appeal to science, e.g. Darwin to account for match between innate similarity spacings and world
- It seems therefore that he is combining naturalism with holism in order to avoid the circularity problem

Thinking Using Kinds

- Kornblith takes Quine to adopt a "minimalist framework", referring to Quine's idea of 'innate similarity spacing' which is used in ostensive language-learning and induction
- Kornblith interprets this as "a natural tendency to classify things by their superficial observable properties, such as color and shape"
- He then argues that there is evidence that children work with a deeper system of classification based on kinds rather than mere superficial similarity
- For example, in one study most four-year old children identified the Kaibab squirrel as having the diet of a squirrel rather than that of a rabbit, which it more closely resembles
- Kind membership depends on internal structure, and studies suggest that children understand this, and make a distinction between the inside and outside of objects
- They are able to understand relevance of internal content/structure to function and identity
- This tendency, which has also been observed in adults, is referred to as psychological essentialism

Is Psychological Essentialism Innate?

- Kornblith suggests psychological essentialism may be innate
- Objection: this has not been shown
- But, Kornblith objects, no evidence has ever been presented for minimalist view. Quine simply assumed it
- It may be worth further exploring idea of innate psychological essentialism

Kornblith's Chomskyian Argument

- Chomsky argued for innate mental structure as precondition of child language-acquisition
- The trouble with language learning is that there are many different syntactic rules that are consistent with the linguistic evidence with which they are presented
- How do children acquire the right syntax?
- Chomskyi argued that there must be innate constraints that restrict the possible syntactic rules children consider

- Kornblith adapts Chomsky's argument for innate constraints on concepts that we can developed for his purposes
- Specifically, he argues that because we have reliable inductive knowledge, it must be the case that our innate mental endowments for concept formation must be successful in identifying natural kinds

Lecture 22: The Law of Small Numbers

Perceptual and Inferential Errors

- Recently there has been increasing empirical evidence that humans make widespread inferential errors; E.g. Tversky & Kahnemann on belief in law of small numbers
- Kornblith, however, argues that we should use this work on inferential error to provide insight on how to understand the reliability of our inferences
- In this way, evidence about our belief in law of small numbers leads to an account of the reliability of inductive inference

The Phi Phenomenon

- When we seen an "Eat at Joes" sign, we see lights sequentially turn on and off, and have perceptual experience of motion
- Phenomena such as this indicate our object constancy bias
- Kornblith argues that the bias serves well most of the time, but may fail in non-standard environments

Kornblith's Approach to Inferential Error

- Does it matter if we infer based on law of small numbers? - Kornblith argues that in some cases it makes little difference
- For example, consider an urn with 90% white and 10% black balls, and how we could go about predicting the colour of the next ball that we draw
- We might count out all the balls, then predict based on knowledge of the percentage of balls that are a given colour
- Or one might draw single ball, then predict ball same colour as drawn ball
- In this case , the second approach will be wrong only a little less frequently than the first approach
- This example shows that in some cases, it makes little difference if one bases one's prediction on a small sample rather than a large sample.

Small Numbers and Natural Kinds

- Merely showing that we infer based on law of small numbers does not address question of whether we are well served by law of small numbers
- If we use law of small numbers where properties have no likelihood of being found in general population, then we are poorly served; e.g. if we infer from seeing platypus in zoo that all platypuses live in zoos
- However, if we use the law of small numbers where properties are widely found, then belief in law of small numbers may serve us well

- Kornblith thus proposes that the tendency to conceive world in terms of natural kinds works together with belief in small numbers to produce reliable inductive inference
- In a sense, the world in which we live just happens to be one in which large samples are often not necessary

Detecting Covariation

- There is empirical evidence that we aren't very good at detecting covariation – this hurts Kornblith's theory
- Data-driven cases: evidence suggests we're bad at analysis of data (for example the disease-symptom table)
- Theory-driven cases: due to influence of presuppositions, we project non-existent covariation into data (for example the Draw a Person test)
- But there's some good news: we may be quite good at detecting multiple co-variant properties using focused sampling

Focused Sampling

- Kornblith argues that these negative results are a bit artificial, as these examples involve detection of covariation between two properties, whereas natural kinds have many properties that cluster and covary; not just pairs of properties
- Focused sampling is a technique that detects covariation of properties in large populations
- Perhaps we reason this way: we hypothesize that some properties are related to each other, and then look for examples of objects that instantiate this
- When we find an object that satisfies the hypothesized covariation, it is investigated more closely, which then reveals further properties also associated with the original properties
- This technique would well work in a world like ours with natural kinds and HP clusters

Kornblith's Theory

- We identify clusters of properties by focused sampling
- These clusters are then plugged into the "placeholders" in our kind concepts (psychological essentialism)
- Kind concepts are what "drive inductive inference" – we project essential properties

Objection 1: Induction or Deduction?

- Kornblith's inferences are not in fact inductive, but are deductive
- They are deductive inference based on tacit assumption of background knowledge , which supplies a missing or unstated premise for the deductive inferences
- For example: "Upon observing a single platypus (I'll call her Paula) lay eggs, we infer that all (female) platypuses lay eggs."
- In this case, the background knowledge is that all members of a particular biological species reproduce in the same manner

Objection 2: Background Knowledge

- There is no need to appeal to metaphysical theory of kinds to explain reliability of induction based on belief in law of small numbers
- The "epistemic burden" is carried by the background knowledge

- That's what makes the (deductively construed) inferences reliable

Objection 3: Confusion about Detection

- For Kornblith, our inductions are reliable because we are able to detect covariation among properties of natural kinds
- Pust disagrees: We do not perceptually detect covariation
- Kornblith misled by ambiguity of the word 'detect', as we can perceptually detect and we can inductively detect
- Pust claims we inductively detect covariation of properties of natural kinds
- So Kornblith's discussion of focused sampling is actually relevant to how we build up background knowledge

Lecture 23: Epistemic Normativity

Quine on Normativity

- The place of normative concerns in naturalized epistemology has plagued it since the outset
- In 'Epistemology Naturalized', Quine says epistemology is to be part of psychology
- This has been taken to suggest that it is fully descriptive; it describes facts about how we arrive at beliefs based on input, but says nothing about epistemic value or justification
- Quine in particular is widely seen as rejecting normative epistemology
- For example Kim says "Quine is asking us to set aside the entire framework of justification-centered epistemology. He is asking us to put in its place a purely descriptive, causal-nomological science of human cognition"

Does Naturalism Eliminate Normativity?

- In later work, Quine distanced himself from the apparent rejection of normativity
- Quine likens normative epistemology to engineering – the "technology of truth-seeking"
- He sees naturalized epistemology simply as a method of arriving at true beliefs

Kornblith and the Normative

- Despite his naturalism, Kornblith thinks there is such a thing as epistemic justification
- He rejects the non-normative interpretation of Quine
- But epistemic normativity is not the topic of his book – that raises the question of what he is actually trying to do in the book?
- Kornblith claims that his book is not about the "source of normativity", just about the reliability of induction and the relation of inductive inference to causal structure of world
- However, if induction is reliable, shouldn't we therefore use it? Isn't the reliability of induction a good enough reason to use induction?

Hypothetical imperatives

- Kornblith takes epistemic norms to be expressed as hypothetical imperatives
- This is a very common strategy in naturalized epistemology
- It's a way to overcome the divide between descriptive and prescriptive claims

- It permits epistemic norms to be expressed in such a way that they may be confirmed empirically
- In this approach, epistemic norms are treated as means to an end
- We can investigate empirically about whether they will achieve their end, without having debate about the desirability of the ends
- Example: If you want to achieve aim A, then you should employ method M
- The question therefore naturally becomes; why pursue a given aim?

Four Options

- In 'Epistemic Normativity', Kornblith considers four attempts to ground normativity
- Goldman's semantic approach: an attempt to ground normativity in the meaning of epistemic terms (Kornblith rejects)
- Desire as ground: Kornblith thinks that normativity is grounded in desire, i.e., in our desire to obtain various ends (aims, goals)
- He considers three versions of this idea:
- Grounding norms in particular aims (rejects)
- Grounding norms in the totality of desire (rejects)
- Instrumental value of truth (he accepts)

Kornblith's Objection to Goldman

- Goldman is a naturalist about determining reliability of a given process, but he approaches normativity in non-naturalistic way
- Kornblith rejects this, as he asks how semantic considerations can have normative force?
- Even if it is true that 'justification' means 'result of reliable process', how does it follow that we should value reliability?
- For example, what if another culture uses different epistemic norms, and means different things by their epistemic terms?
- How would telling them that our terms have a particular meaning be any use in persuading them to adopt the norms we employ?

Stipulating Particular Epistemic Goals

- Perhaps we stipulate particular goals
- But if goals are stipulated, there is no need to justify them
- In particular this is relevant because there is disagreement about epistemic goals
- As an example, philosophers have substantive debates about whether science aims for truth or something else
- A rebuttal to this would be that goals could be considerable objective is they allow us to make sense" of a particular epistemic activity
- However, "making sense" of an activity doesn't explain why the goal ought to be pursued
- More is needed than merely pointing to goals that make sense of an activity

Totality of What we Value

- According to this view, "epistemic evaluation is just the determination of the extent to which our cognitive states or processes are conducive to the totality of things we value intrinsically"
- Kornblith has two objections to this: the 'world peace' objection and the 'happiness'

- First, if one could bring about world peace by committing an epistemic impropriety, surely one would have good reason to have this belief
- But if epistemic evaluation just is all things considered together, then in this case there is no such thing as "epistemic impropriety"
- Second, if we have a cognitive system that is oriented toward happiness, rather than truth, the system will not in fact promote happiness
- If we want to buy a toaster, we will buy the cheapest one because we'd like to believe that the cheapest one is the best
- But it won't be, and so we will be perpetually disappointed if we take this approach

Final Option: Practical Importance of Truth

- Need to distinguish things that are valuable in their own right from those which are valuable because they enable us to obtain something else
- For Kornblith, the source of epistemic normativity is ultimately practical; truth has instrumental rather than intrinsic value
- We should value truth because it enables us to obtain our practical aims
- It's the practical utility of truth that provides the normative force behind the claim that induction is reliable

Lecture 24: Assessing Kornblith and Circularity

Classic Problem of Induction

- Logic: the trouble is that induction is not deductively valid
- Experience: using experience is just the same is using induction, which is begging the question
- Uniformity of nature: Kornblith argues that induction works because of the way the world happens to be (uniform), but this principle can only be derived by using induction

Is Kornblith's Approach Circular

- Kornblith employs a success argument to argue that there are natural kinds which underlie induction and make it reliable
- The success argument uses inference to best explanation (IBE). If IBE is a form of inductive inference, this raises the following questions
- Does Kornblith argue by induction to the existence of natural kinds, and then use natural kinds in support of induction?
- Does Kornblith therefore employ induction to support induction, and so provide a circular defence of induction?

Papineau's Approach

- Kornblith does not explicitly address the question of circularity, but other naturalists have
- E.g. David Papineau, in 'Reliabilism, Induction and Scepticism'
- Papineau essentially argues that induction is reliable because it was reliable in the past; he does not seek to hide the fact that this is an inductive argument

Rule vs Premise Circularity

- Papineau defends himself, however, by introducing the dichotomy of rule vs premise circularity
- He argues that in general, rule circularity not a problem; indeed, deduction is proved using deductive proofs
- He also argues that the purpose of his argument is to show someone who accepts induction that it is reliable, and not to persuade someone who rejects induction to accept it
- He also asserts that knowledge does not require certainty, and a defence of induction need not persuade every possible conscious being in virtue of introspective capacities – this is simply too much to ask
- If Kornblith is committed to the use of induction to support induction, this would be one possible way to defend his approach