

1. PLAIN EPISTEMOLOGY

Types of Knowledge

- **Acquaintance Knowledge/ Knowledge-Of**
 - Knowledge of a subject obtained through an acquaintance of some sort, possibly through a particular medium
 - *E.G. John can be said to have knowledge of his hometown, having been born there.*
- **Procedural Knowledge/ Knowledge-How / Implicit Knowledge**
 - Knowledge exercised in the performance of some task
 - *E.G. Knowledge-how in riding a bicycle*
- **Propositional Knowledge/ Knowledge-That / Explicit Knowledge**
 - Knowledge that can be expressed in declarative statements, and which purports to describe a fact or state of affairs
 - *"That chair is green." Or "2 + 2 = 4"*
- In the tradition of Western epistemology, propositional knowledge is regarded to be of more importance than that of knowledge-of and knowledge-how, in terms of its nature and construction.
- An important question, however, lies in whether there can be grey areas between sources of knowledge, especially between knowledge-how and knowledge-that. A frequent response is that some cases of knowledge-how can be collapsed into knowledge-that, and thus there need not be any grey areas at all.
 - The question "*How do children learn grammar so easily?*" poses a challenge to this argument, by illustrating how knowledge-how may not always be collapsible into knowledge-that.
 - Innate grammatical knowledge (knowledge-that) is posited as one answer, while innate abilities to construct grammatically sound sentences (knowledge-how) is another answer.
 - In this case, one would be less sure in collapsing the innate abilities into innate grammatical knowledge, and this raises the question whether the importance of knowledge-how in our lives have been downplayed. Or is it just a problem of the inadequacy of our language to delineate between different knowledge types?
- **Explicit Knowledge vs Tacit Knowledge**
 - Explicit knowledge refers to knowledge with three key features:
 - Can be codified, and easily transferred without the knowing subject
 - Can be generated through logical deduction or acquired through practical experience in relevant contexts
 - Can be aggregated at a single location, stored in objective forms and appropriated without participation of the knowing subject
 - In contrast, tacit knowledge
 - Intuitive, unarticulated knowledge that cannot be communicated, understood or used without the knowing subject
 - Can only be acquired through practical experience in a relevant context
 - Personal contextual; distributive, cannot be easily aggregated and requires close involvement and co-operation of the knowing subject

- Tacit knowledge cannot be codified (i.e. cannot be transformed into explicit knowledge) but can only be transmitted through training or personal experience

Definitions of Knowledge

Traditionally, we've accepted Plato's Justified True Belief as what knowledge requires: to know proposition p is to have a belief in p that is true and justified / warranted. However, the emergence of Gettier Problems demonstrated that the traditional JTB account of knowledge was insufficient. It is possible to formulate numerous types of Gettier problems, so there is no need to really memorise any specific Gettier problems, but it is important to note what characteristics Gettier problems possess.

Generally speaking, Gettier problems generally involve an element of luck, such that one is justified in believing proposition p and that proposition p is true, but there is a disconnect between the justification and the truth of proposition p . While seemingly trivial, the existence of Gettier cases is important because it shows that we can't be sure that we have knowledge in any case, as we wouldn't know if we were in a Gettier situation.

Internalist Fixes to Gettier Problems

- **No False Premises:** We will not end up facing Gettier problems if we do not have any false premises to our knowledge claims
 - Not all premises are relevant to our claims to knowledge. How do we go about differentiating between relevant and irrelevant premises?
 - Even if we accept that we can know what false premises are relevant, we cannot know whether there are other truths that would nullify the falsity of these premises.
- **No Defeaters:** We will not end up facing Gettier problems, if, when we make a claim to knowledge, there are no facts or truths that would defeat this claim to knowledge.
 - This is a ridiculously high bar for knowledge!
 - Given that not all facts deal equal damage to our knowledge claims (some probably undermines, other definitely undermine), how do you go about evaluating the importance of these facts?

Externalist Fixes to Gettier Problems

- **Causally Linked to the truth:** We will not end up facing Gettier problems, if our claim to knowledge of proposition p , is caused by the truth of proposition p .
 - How do we determine what type of causal link is required for this link between our belief and truth?
- **Reliable Source of Justification:** We will not end up facing Gettier problems, if our claim to knowledge is arrived at through a reliable process.
 - Is reliability an additional condition or does it replace justification entirely?
 - Faces Generality Problem (See Reliabilism)

Sources of Knowledge

The key divide between rationalism and empiricism concerns the extent to which we are dependent upon sense experience in our effort to gain knowledge. It must be noted however, that rationalist and empiricist claims are relativized to a particular subject area, and therefore need not conflict. This concerns the

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question of whether truth of our beliefs is dependent on reason, or dependent on experience. It does not imply any mutual exclusiveness in the ability of an epistemic agent to employ reason to organize his beliefs.

- *For example, that experience is the source of all our beliefs does not mean that we don't employ the faculty of reason to construct knowledge out of these beliefs (this is the standard empiricist position). And as a corollary, when one talks about reason being the source of knowledge what one means is that the truth of our beliefs is not at all dependent on experience. It does not mean the application of deduction or induction to existing sense data.*

Rationalism

Rationalists put forth two main arguments about the value of rational knowledge:

1. that there are significant cases where the content of our knowledge outstrips the information that sense experience can provide;
2. that reason is able to provide additional information about the world;
3. rational knowledge is superior to empirical knowledge because rational knowledge is often indubitable, or because it is superior because its subject matter tends to be superior in a metaphysical way

To be a rationalist is to accept one of any of the following three theses (they vary with regard to how rational knowledge is achieved):

The Intuition / Deduction Thesis: Propositions are knowable by intuition alone, or by deductive processes from intuited propositions

- Intuition refers to a process of "seeing" a proposition to be true in such a way such that one forms a true, justified belief in it.
- Deduction refers to a truth-preserving process in which we derive conclusions from premises through valid arguments.
- Rational knowledge is therefore regarded to be *a priori knowledge*, where *a priori* refers to the situation where all reasons for believing that *p* is not dependent on any experience
 - "Experience" is not just referring to perceptual experience, but includes all perceptual, introspective and memorial experiences
- Paradigm examples of knowledge arrived at via *a priori* justification includes conceptual truths, truths in mathematics, geometry and logic

The Innate Knowledge Thesis: We have knowledge of some truths in a particular subject area as part of our rational nature

- We have innate *a priori* knowledge of certain truths, it is not learnt through sense experience or intuition or deduction. Experiences may trigger the process where we bring such knowledge to consciousness, but do not provide us with the knowledge itself.

The Innate Concept Thesis: We have some of the concepts we employ in a particular knowledge areas as part of our rational nature.

- Argues for the innativity of concepts such as causation, perfect triangles.
- Experience once again activates such concepts, rather than provide these concepts or determine the information contained within such concepts

Challenges to Rationalism

Multiple questions still remain, however, about the nature and construction of rational knowledge.

- Do *a priori* knowledge exist at all? Are claims such as $5 + 7 = 12$ really claims to knowledge? Empiricists argue that such claims to knowledge do not provide us with any substantive knowledge about the world. Hume distinguished empirical knowledge to be knowledge about matters of fact, while rational knowledge to provide only relations between ideas.
- How does *a priori* justification come about? It appears that very often *a priori* justification requires that we couch our knowledge on some self-evident truth or axiom, but why should we accept that them as firm foundations of our knowledge? Given that there is no explanation about the origins and nature of such axioms, aren't all knowledge claims based on *a priori justification* lacking in epistemic guarantee?
 - What is self-evidence? Is it self-evidence to reason? Self-evidence to mathematical intuition? Or Self-evidence to the human mind?
- What is the extent of *a priori knowledge*, and what fields can *a priori knowledge* surface in?
- Are truths arrived at via *a priori* justification all necessary truths? Can they be contingent truths? For instance, while we once held Euclid's axioms to be necessary truths, the discovery of non-Euclidean geometry debunked such claims. Euclidean geometry thus does not provide universally necessary truths, but simply necessary truths given the condition of a 3-Dimension Euclidean Space.

Empiricism

The Empiricism Thesis: Knowledge, whether in the form of a proposition or a concept, can only be known through sense experience

Hume challenged the Intuition-Deduction Thesis by distinguishing empirical knowledge to be knowledge about matters of fact, while rational knowledge to provide only relations between ideas. It challenges the Intuition-Deduction thesis about whether rational cognitive processes are able to provide substantive knowledge about the external world. Hume did not think so. Rather, he maintained, our beliefs are more a result of accumulated habits, developed in response to accumulated sense experiences

- Descartes' defense was that knowledge required certainty, and only intuition could provide certainty.
 - This defense encounters problem because 1) it is too high a bar for knowledge, and 2) intuition may not provide certainty because of the Deceiver problem (the proposed solution to which is however problematic – circularity of Cartesian circle)
- Leibniz's defense was based on an *appeal to the nature of what we know (necessary vs contingent), rather than to the nature of knowledge (relations vs substantive ideas)*. If our substantive knowledge about knowledge areas such as mathematics, are known to be necessarily true. It follows that experience cannot be the source of justification for these beliefs, because experience provides contingent knowledge.
- However, this begs the question about what necessity exactly is. Quine argued, "Necessity resides in the way we talk about things, not in the things we talk about".

It should also be noted that the clash between Intuition-Deduction Thesis and MF+RI Thesis about whether reason can provide substantive knowledge about the world also depends upon what knowledge claims one considers to be knowledge about the world.

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Empiricists also **challenge the Innate Knowledge Thesis**. John Locke argued that it is implausible to know something and not know something at the same time. He instead argued for a *tabula rasa* view of the human mind, that the human mind at birth was a blank slate and knowledge could only be arrived at *a posteriori*.

Locke argued that there are two sources of our ideas: **sensation and reflection (introspective and does not provide substantive ideas about the world)**. In both cases, a distinction is made between simple and complex ideas. Simple ideas are broken down into primary and secondary qualities. Primary qualities are essential for the object in question to be what it is. Without specific primary qualities (e.g. atomic structure), an object would not be what it is. Secondary qualities are the sensory information we can perceive from its primary qualities. For example, an apple can be perceived in various colours, sizes, and textures but it is still identified as an apple. Therefore its **primary qualities dictate what the object essentially is, while its secondary qualities define its attributes**. Complex ideas combine simple ones, and divide into substances, modes, and relations.

- Leibniz's reply was based on an appeal to an account of innateness in terms of natural potential: knowledge is innate in the sense of being innately determined to make its appearance at some stage of our lives as a result of evolution (nativism)

Another problem with the Innate Knowledge thesis was the **absence of a source of justification**. This absence of a source of justification begs a further question. If such innate knowledge were not to be justified because of empirical triggers, what is the **difference in relation** between experiences and belief in the case of innate knowledge and in the case of *a posteriori* knowledge? How would we be able to **differentiate** between instances of empirically triggered innate knowledge and *a posteriori* knowledge?

Empiricists also **challenge the Innate Concept Thesis**: One does not need to have innate concepts; we can simply use experience to derive all our ideas

- Locke suggested that one acquires concepts based on abstractions from multiple similar experiences
 - Problem with this empirical-based theory of concept acquisition was that it **presupposes one has the concept of the feature in question**. For example, if we get the concept of causation from our observation that some things receive their existence from another, it requires us to already have known the concept of causation to draw the links in the first place
- Hume then shifted the entire focus of the debate to the content of our ideas and argued that, if experience were to determine our ideas, then too is the content of our ideas determined by experience.
 - However, experiences are unable to support the content that many rationalists attribute to such ideas, which implies that if concepts are obtained from experience, we would have to adopt a much more limited view of concepts.

Challenges to Empiricism

- The main challenge to empiricism is that it is very difficult to show that our perceptual faculties are reliable. The only way one could acquire knowledge about the reliability of our perceptual faculties is through memory of their past successes.

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- But to rely on memory, to think that the perceptual successes in the past *were in fact* successes, it would mean that in the first place one would need to have reason to regard memory as reliable. It would then be a case of circular argument.

The challenges thrown at empiricism are manifold, but the main challenge is about the unreliability of our perceptual faculties. Empiricists have sought to circumvent this problem by adopting different strains of empiricism, but each has its own problems:

Sense data are the alleged mind-dependent objects that we are directly aware of in perception, and that have exactly the properties they appear to have. For instance, sense data theorists say that, upon viewing a tomato in normal conditions, one forms an image of the tomato in one's mind. This image is red and round. The mental image is an example of a "sense datum."

Strain	Commitments	Merits & Problems
Direct realism	A mind-independent external world does exist, and we are able to access it directly.	M1 - Common Sense M2 - Solves skeptical problem of subjective experiences and objective reality P1 – Common sense is not a high epistemic standard P2 – Our senses are unreliable, we can be misled about the world even P3 – We are actually accessing the external world directly, and not under the control of an evil demon or hallucinating
Representative realism	All perception is a result of awareness of inner representations of the sense data produced by the external world <i>We perceive the external world indirectly and imperfectly, via intermediary "sense data".</i>	M1 – Averts skeptical problems by conceding that we know very little about the external world P1 – Analogy of a little person within one's head, begs the question of who's behind this little person and so forth (infinite regress?) P2 – We are perpetually stuck in our mental cinemas with no access to the external world
Causal realism	Causal realism states that the causes of our sense experience are physical objects in the external world. Route by which perceptual beliefs are acquired is especially important: to actually see a guitar, it is essential for a direct causal link between the guitar in the external reality (as	M1 - It takes away excessive skepticism about the validity of the senses by arguing that our sense organs are generally quite reliable, given that they have allowed us to survive in our natural environment for so long. M2 – Explains that we actively select and ascribe meaning to the perceptions we receive, rather than passively accepting them. This is because our existing knowledge / systems of classification directly affect how we treat incoming information.

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	opposed to perhaps hallucinatory drugs) and the perception. It also states that the main biological function of our senses is to help us find our way around the environment.	P1 – Perception is reduced to information gathering, without adequate consideration of what it is like to perceive / what it is like to see P2 – Causal realism is dependent on the metaphysical assumption that there is a real world out there (but this may be treated as a point in favour rather than a criticism)
Idealism	The world exists only while it is being perceived, and that physical objects are merely repeated & predictable patterns of sensory information. They argue that our notion of a physical object is simply a shorthand for sense experiences	M1 – Avoids the epistemic problems of assuming that there is an external mind-independent reality. P1 – How does one differentiate between hallucinations / imagination w& reality? This is addressed by the claim that hallucinatory / imaginative experiences will behave in unpredictable ways P2 – Slippery slope to solipsism, the view that everything only exists within one's mind, which seems logically untenable as so many of our day to day activities are premised on the assumption that there are other minds which exist
Phenomenalism	We only ever have direct access to sense experience, never to the external world. Unlike idealists, they argue that physical objects can be described purely in terms of patterns of actual and possible sense experiences	P3 – How is it possible that our mind is able to create such vibrant and varied world entirely on its own accord? There must be some cause for us to experience sense experiences in such a regular fashion. P4 – Both positions posit that we can identify and name particular sensations solely on the basis of our own direct private experience, not of public physical objects. However, these two positions are debunked by the Private Language Argument, which argues that language is in itself a public construct influenced by social, historical, cultural and ideological notions. This means that it is impossible to think privately in a language, as thinking in a language already constitutes some sort of reference to the public domain. P5 – For the phenomenalist, expressing a physical object simply in terms of sense experience seems to be an extremely difficult task.

Pragmatism

Pragmatism is the philosophical position that holds that talking about Kantian things-in-themselves is a futile exercise. Pragmatists reject of the idea that the function of thought is to describe, represent, or mirror reality; instead, pragmatists propose that that the function of thought is as an instrument or tool for prediction, action, and problem solving. Instead of being bothered with the traditional rationalist-empiricist

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debate about what is the best source of our knowledge, pragmatists focus on the issue of how we should use our knowledge. Pragmatists generally agree with the following theses:

- **METHOD:** Instead of analyzing theories and models with reference to origins or relations to antecedent data, they should be analysed based on their **fruits and consequences**
- **ANTI-CARTESIANISM:**
 - Cartesian quest for certainty is quixotic. A fallibilist position is much more realistic. Hence all beliefs and theories are best treated as working hypotheses, which may need to be modified – refined, revised or rejected – in light of future inquiry and experience. All our claims to knowledge are thus **provisionary**.
 - Philosophy should not begin with bold global doubt as advocated by Descartes. We need not have a neutral / necessary / presupposition-less starting point for inquiry and we need not begin by doubting everything. Instead, we should begin in *media res*, and the philosophical enterprise can be characterized with Otto Neurath's metaphor of the raft – **inquirers are mariners who must repair their raft plank by plank, adrift all the while on the open sea; for they can never disembark and scrutinize their craft in dry-dock from an external standpoint**
 - Cartesian global skeptics are nothing to be feared of, their skeptical claims are but *reduction ad absurdum* of the futile quest for certainty
- **KANTIAN INHERITANCE:** Like Kant, pragmatists agree that world must be interpreted with the aid of a scheme of basic categories, but they argue that Kant is wrong to claim that the framework (his conceptual categories) is immutable. The frameworks through which we view the world can change, and they change depending on our purposes and interests in a given context. For pragmatists, all perception is theory-laden - to perceive is to interpret and hence to classify – hence early empiricists were wrong to claim that experience was a basic, belief-independent source of justification.
 - The mind is not a *tabula rasa*, so we do not accept every belief thrown at us. But more importantly this means that the traditional belief that facts have a powerful epistemic authority to an extent that they cannot be overridden is false. Instead, the range of facts we can countenance is dependent on our body of prior beliefs, and **we only accept facts if they cohere with these prior beliefs**.
- **COHERENTISM:** If all our beliefs and knowledge are created not on an unsullied basis and influenced by some sort of prior belief or auxiliary hypotheses, then how can there be any foundational belief that is certain and unquestionable? (Especially for empiricists advocating foundationalism as a model of knowledge) Instead, a web of belief as a structure of knowledge is more amenable to pragmatists.
- **AGAINST THE SPECTATOR THEORY OF KNOWLEDGE:** Pragmatists repudiate the spectator theory of knowledge, which posits that knowing is akin to seeing or beholding. They do not agree that knowledge is out there to be discovered, but instead argue that **knowers are epistemic agents who actively create knowledge**. Since to observe is to select, then perceivers are explorers of the world, not mirror superfluously reproducing and reflecting the world.
- **PRAGMATIC THEORY OF TRUTH:** The traditional correspondence theory of truth is too problematic to be utilized – our process of inquiry is problematized, as we cannot know whether our beliefs are ever correspondence-true. Pragmatists propose three conceptions of truth.

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- True hypotheses are what, at a particular point in time, best enable us to interact with the cosmos. (James & Dewey)
- Truth is arrived at when we cannot improve our beliefs no matter how far inquiry on that subject is pressed or pushed. (Peirce)
- A deflationary theory of truth – truth has no nature or essence, to call a belief true is to not ascribe any property to it, but to simply perform a speech act. (Rorty) [But this is honestly a very evasive definition so don't really bother with this]
- How fundamental is observation to our knowledge?
 - Observation, quite intuitively, seems to be the basis from
 - We infer the presence of unobservables from the observables
 - Non-Euclidean Geometry
 - Applied Mathematics as dependent on observation
 - Caveat: Observation as a source of knowledge means that we do not have certainty
 - Problem of Induction
 - Observation bias
 - When we say that observation provides us with knowledge that is justified true belief, the sense in which it is "true" is in a correspondent sense – corresponding to an external reality. On this view of knowledge, observation is foundational to knowledge by allowing us to access this correspondent truth.
 - However, there are fundamental problems attendant on observation providing us with access to these truths, such as observer bias, value-laden observation. These problems attendant on observation suggest that observation is not a foundational source of knowledge, but constrained by prior beliefs, prior assumptions and prior paradigms.
 - The corollary of this view on observation is that observation is not a SOURCE of justified true beliefs, but helps us ACQUIRE beliefs, which we subsequently check against our existing beliefs, before admitting them into our web of knowledge.. This undermines the role of observation as providing direct, unmitigated epistemic access to truths, and is arguably less fundamental – rather than being a SOURCE of truths, it is a mere means to ACQUIRE beliefs.
 - More to the point, hitherto we have assumed that knowledge must be a set of justified true beliefs, with observation providing us access to truths. However, knowledge may not necessarily require be correspondently true, since we have no way of accessing these truths, because of the various problems of. If this is so, observation does not provide us with truths, but the mere acquisition of beliefs.

Models of Justification

Foundationalism is the position that some beliefs are foundations for all the rest- that is, they justify other beliefs, but are not justified on their own. These foundational beliefs are described to be self-evident beliefs or categorically justified beliefs.

Merits and Problems:

Foundationalism is attractive because it avoids the problem of infinite epistemic regress. It provides us with a solid footing for the rest of our beliefs. However, it begs the further question of why we should accept some self-justifying beliefs as a footing for the rest of our beliefs. Advocates of foundationalism have tried to tackle this question with **modest foundationalism** and conceding the possibility of there being fallible basic beliefs.

The next criticism would then be, why are fallible basic beliefs acceptable? The response that is proffered is that, our basic empirical beliefs are the fallible foundations but they are not unsupported, and should form satisfactory foundations. The problem with this response has to do with another fundamental epistemological question – how can experience be support for a belief and why should we accept beliefs that are supported by experience? Also, this does not deal with our *a priori* basic beliefs (e.g. that everyone should be entitled to liberty)

Coherentism is the position that each belief justifies, and is justified, by other beliefs, in a web of beliefs. A holistic model of justification is proposed rather than a linear chain of justification. Every belief is subject to falsification if other beliefs turn up which are contrary to it, but there are certain beliefs, which are less susceptible to falsification (Using the web analogy, these beliefs are closer to the center of the web)

Rather than conceiving the structure of our knowledge on the model of Euclidean geometry, with its basic axioms and derived theorems, these epistemologists favor a holistic picture of justification which does not distinguish between basic or foundational and non-basic or derived beliefs, treating rather all our beliefs as equal members of a “web of belief”. Our purported knowledge, on this view, is more like a raft, which may have to be rebuilt on the open sea, to use Neurath's famous metaphor, than like a pyramid standing on its apex.

Merits and Problems:

Coherentism is attractive because it avoids the problem of explaining why we should accept the existence of basic beliefs. It also allows for a more plausible structure of knowledge, as opposed to one where all our knowledge rests upon purportedly infallible basic beliefs, which does not lead us to much substantive knowledge of the real world. However, the coherentist model of justification faces several challenges.

First, formulations such as the **Flat-Earth Theory** demonstrate that there can be an entire web of coherent beliefs, but might contain a preponderance of false statements. The problem with this criticism is that it applies a correspondence theory of truth, but this does not apply to coherentists because coherentists argue that **truth consists in coherence**.

Second, when any candidate for a new belief comes along, you see whether it coheres with the rest of your beliefs. Given the **overwhelming number of your beliefs**, it is impossible to check if one belief coheres with the **entire web of beliefs**. However, advocates of coherentism argue that new belief-candidates need

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not be checked against every other belief- just the relevant ones, and not even all of them; hence it is perfectly excusable not to check for problems everywhere in the web when acquiring beliefs.

Third, the coherentist faces problems in explaining how a particular experience can overrule a belief that supposedly coheres with existing beliefs. For instance, if you hear from all of John's friends and the canteen vendors that he is always vegetarian on Mondays, this belief is strongly justified. However, when you personally see John eat steak on Monday, you're inclined to believe otherwise, even though your web of beliefs tells you otherwise. However, this charge can be addressed by the argument that the said experience coheres more with beliefs such as my perception is reliable, then the debunked belief in question does with other beliefs.

Fourth, coherentism faces a problem with its claim of falsifiability; how can all beliefs be possibly falsifiable when there are beliefs like $1+2=3$ that are viewed as indubitable necessary truths? Quine, however, addressed this problem by **attacking the analytic-synthetic distinction and necessary-contingent distinction**. He argued that some truths that viewed to be *a priori* justified and necessary, are in fact, simply propositions that are most resistant to change.

- Such truths merely *appear* to be necessary because they are so essential to the daily experience, that we could not imagine life without it
- Some sentences have great systematic import for our knowledge as a whole. (In Quine's well-known metaphor, they stand near the centre of the 'web of belief'.)
- The truths of elementary arithmetic are an example: they play a role in almost every branch of systematic knowledge. For this reason, we cannot imagine abandoning elementary arithmetic. Doing so would mean abandoning our whole system of knowledge, and replacing it with an alternative which we have not even begun to envisage. Nothing in principle rules out the possibility that the course of experience will be such that our present system of knowledge becomes wholly useless, and that in constructing a new one we find that arithmetic is of no use.

Fifth, a belief can be consistent with all our beliefs and yet have no independent supporting evidence. For example, the belief that the universe came into existence five minutes ago complete with historical records and memories is consistent with all our beliefs, but instinctively we would dismiss it as unreasonable.

The Skeptical Challenge – Agrippa's Trilemma

- When we ask of any knowledge: "How do we know that it's true?" we may provide three forms of proof:
 - Circular Argument (Coherentism) – Mutually supporting theories and proof
 - Regressive Argument (Infinite Regress) – Each proof requires another, *ad infinitum*
 - Axiomatic Argument (Foundationalism) – Theories and their proofs ultimately relies on some accepted axioms, a bedrock assumption or certainty
- Each of these proofs, however, is destined to fail to provide any form of certain justification. Only when one has given up on the idea that knowledge has to be certain, then one can focus on other issues with knowledge that are more meaningful and possibly productive pursuits.

Reliabilism is the belief that someone knows that *p* if and only if he believes in *p*, *p* is true, and his belief in *p* is arrived at via a reliable process. This is considered an externalist form of justification, as it asserts that

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the reliability of processes by which we produce beliefs in the external world is the justifier for any belief, and one does not need to be able to *access* this process reliability to be justified in this belief.

Merits and Problems

Reliabilism is attractive because it averts the problems that frequently confront internalist models of justification. However, it faces several problems.

First, it seems unsatisfactory to argue that a belief can be justified, or can constitute knowledge, even if the believer does not know about or understand the process that makes the belief reliable.

Second, reliability is insufficient for justification. Laurence Bonjour's Clairvoyant Example goes like this: Suppose S is reliably clairvoyant but has reason to believe there is no such thing as clairvoyance. Still, on the basis of her clairvoyant powers, she believes truly proposition *p*, that the President is in New York City. Bonjour argues that S's belief is not justified because S is being irrational—believing the proposition *p* on the basis of a power she believes not to exist. In this case, even when her clairvoyance is reliable, she is still unjustified to believe the proposition *p*.

Third, it faces the Generality Problem: if every belief token is formed from a process that instantiates many types of process, and then how do we know, 1) which process we are talking about when we talk about a particular belief? 2) which process type is relevant to assessing reliability? *And to push this further*, 3) to what extent and how should we individuate these process types? For example, the process token leading to my current belief that it is sunny today is an instance of all the following types: the perceptual process, the visual process, processes that occur on Wednesday, processes that lead to true beliefs, etc. (So which process are we talking about?) Note that these process types are not equally reliable. Obviously, then, one of these types must be the one whose reliability is relevant to the assessment of my belief. (But how do we determine its relevance?)

Types of Justification

It is important to be aware of the difference between knowledge internalism and knowledge externalism. Knowledge internalism is the thesis that a person either is aware or can become aware of the knowledge basis for each item of knowledge that person may have, i.e. **one can know what one knows**. Justification internalism is the thesis that when one has a justified belief, one is also **aware of the justifier for that belief**.

Internalism posits that one either does or can know the justifiers that lead to you making your knowledge claims and is therefore able to justify these claims. This means that to have justified beliefs, one needs to have **access to the justifiers**. In contrast, externalism posits that one's belief is justified if either one's method of establishing knowledge claims is **reliable**, or that one's knowledge claims are **causally linked to their source[s]**. The externalist position holds that for a belief, as long as process reliability or a causal linkage to source is established, that **belief is justified regardless of whether one has access to these external justifiers**.

The following table is an overview of the three tiers of the internalism-externalism debate, but for the purposes of H2 KI, we are mainly concerned with the debate on access to justifiers.

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	Internalism	Externalism
On Access to Justifiers (Can we access them?)	A person either does or can have a form of <i>access</i> to the basis for knowledge or justified belief	Denies that one always can have this sort of access to the basis for one's knowledge and justified belief.
The Nature of Justifiers (What are our justifiers?)	What ultimately justifies any belief is some mental state of the epistemic agent holding that belief	Something other than mental states operate as justifiers
The Concept of Justification (How should we think about justification?) <i>*Less relevant</i>	Deontological concept of justification, whose main idea is that the concept of epistemic justification is to be analyzed in terms of fulfilling one's intellectual duties or responsibilities.	Justification should be analyzed in terms other than special duties or responsibilities.

Theories of Truth

Correspondence Theory of Truth

This is the common-sense theory of truth with widest acceptance, which states that a claim is true if it corresponds to what is so in the external world and consequently, a claim is false if it does not. Most fields adopt this theory in their knowledge pursuits, and although there is a problem with it, it is still generally the most acceptable one.

Problems:

The truth of the correspondence theory of truth is questionable, for this theory is premised upon the assumption that an objective mind-independent external reality exists, which is a claim idealists reject.

But more importantly, the possibility of accessing the truths of a mind-independent external reality is removed as we are unable to objectively exercise perception or linguistic description (unreliability of our senses, or the fact that the tools with which we make sense of the world are value-laden (eg: Kantian categories, Private Language Argument)).

Pragmatic Theory of Truth

This theory states that a statement is true if it allows one to interact effectively and efficiently with the cosmos. For example, a belief that inanimate objects do not spontaneously get up and move about is true because it makes the world more predictable and easier to live in: it works.

Problems:

First, some beliefs that we would instinctively deem as unreasonable work. For example, a tribe might believe that there are 4 season deities that appear at set times of the year, and plan accordingly. This belief helps them, but at a glance it is unreasonable.

Second, this theory invites relativism in the case of beliefs that are compatible with all states of affairs, e.g. religious beliefs.

Third, the notion of "more effective and efficient interaction with the cosmos" is objectionably vague.

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Fourth, this invites the notion that there are degrees of truth (because some beliefs may be more effective than others, and this compels us to reject the principle of non-contradiction).

Coherence Theory of Truth

This theory states that a statement is true if it is logically consistent with other beliefs that are held to be true.

Problems: A belief can be consistent with all our beliefs and yet have no independent supporting evidence. For example, the belief that the universe came into existence five minutes ago complete with historical records and memories is consistent with all our beliefs, but instinctively we would dismiss it as unreasonable.

*Kinds of Truth

- A priori vs a posteriori – an epistemological distinction dealing with the means of acquiring knowledge
- Synthetic vs analytic – a semantic distinction about whether a concept is contained in another or not
- Necessary vs contingent - a metaphysical distinction focusing on the truth-dependence on an external world
- Synthetic a priori truths → All triangles contain 180 degrees
 - Looks like a substantial fact about the world, but not guaranteed by definition
 - Whether this constitutes synthetic a priori knowledge is of dispute
 - Making a distinction Applied vs Euclidean Geometry
 - The axiom that Triangles will contain 180 degrees requires an **insistence** these triangles are made of Euclidean straight lines – which would render it an analytic matters
 - Applied geometry however, is necessarily a posteriori, since it requires some form of measurement
 - Alternatively, geometry can be viewed as a purely mathematical construct, with no implications about the structure of physical space
 - Geometry, so understood, is no longer giving us substantial information about the real world, since there is no assured correspondence between Euclidean straight lines and what exists in real space
 - Its claims are therefore only valid because of how the system has internally defined various concepts

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New Approaches to Epistemology

Naturalized Epistemology – Epistemology as continuous with science.

- Epistemology may have significant a posteriori elements instead of just the standard a priori philosophical methodology espoused by Descartes
- Externalist theories of justification – causal linkages and reliable process – can be thought of as naturalized. Through scientific inquiry, we are able to differentiate between reliable and unreliable processes, and are able to determine causal linkages between knowledge claims and their source.
- There are two variants of naturalized epistemology.
 - Naturalized epistemology where scientific information are recognized to be relevant, but still play a subsidiary role to a priori philosophical considerations, where philosophy remains concerned with questions such as “What counts as knowledge?” which are normative
 - Quine’s naturalized epistemology where epistemology is a branch of psychology – the study of the ways we get knowledge. Quine’s epistemology is not concerned with normative questions, but descriptive questions of how people come to their beliefs; hence, Quinean epistemology does not explicitly set standards for knowledge, but reveal them through differentiating between justified and unjustified beliefs.
 - For Quinean epistemology is subject to all the standards and methods of any other science. But as the science of knowledge, it also sets the standards for all science. This circularity, however, is not problematic because, yes it’s circular, but so what?

Epistemology as Sociology – Epistemology should be studied as the sociology of how knowers construct knowledge

- This view of epistemology was given its initial impetus by Kuhn’s *The Structure of Scientific Revolutions*, in which Kuhn espoused the relevance of social processes involved in scientific revolutions.
- Kuhn demonstrated how each scientific paradigm includes its own criteria for what counts as justified belief, and for how seriously, if at all, contrary evidence is to be considered. This implies how beliefs that are acceptable relative to one paradigm (world-view, conceptual categories, and methodology) may not be acceptable to another paradigm. Hence, this illustrates that objective truth is unfortunately elusive.

Social Constructionism

Social constructionists build on Kuhn’s work and go on to argue that our scientific realities are constructed based on socio-political or cultural factors.

- For instance, Goodman’s “world-making” casts doubt on why we make constellations by drawing certain boundaries rather than others, or why we subscribe to Linnaean taxonomy above any other form of classification.
- Feminist Epistemology:
 - Schiebinger points out that heart disease is one especially prominent example for which a well studied condition the understanding of which was based, until the late 1980s, almost entirely on samples of men, even when it concerned the effects of hormones like estrogen
- Schiller’s voluntaristic epistemology adds that knowledge cannot be divorced from the desires and will of the individuals’ as such, even scientific principles and knowledge are distinctly human products by scientists, imposed on reality to serve their practical ends
- Cultural forces:
 - To deal with the variation of the brightness of the planets under Aristotelian theory, Ptolemy devised epicycles, which kept the Earth firmly at the center of the universe –

objective by the community's standards at that time, when the Catholic Church was in full reign.

- **Political Forces:**
 - Battles about the putative link between crime and race stretch back more than a century in the sociological literature, to Ida B. Wells and Du Bois. The story is masterfully told in Khalil Gibran Muhammad's 2010 book, *The Condemnation of Blackness* (Harvard University Press), in which he shows how white social scientists used race to explain problems among blacks, while appealing to socioeconomic causes to explain the very same problems among whites.
 - In *Merchants of Doubt* (Bloomsbury Press, 2010), two historians, Naomi Oreskes and Erik M. Conway, have shown how the strategy of denying climate change and evolution can be traced all the way back to big tobacco companies, who recognized early on that even the most well-documented scientific claims (for instance, that smoking causes cancer) could be eroded by skillful government lobbying, bullying the news media, and pursuing a public-relations campaign.
 - Sadly, that strategy has largely worked, and we today find it employed by the Discovery Institute, the Seattle organization advocating that "intelligent-design theory" be taught in the public schools as balance for the "holes" in evolutionary theory, and the Heartland Institute, which bills itself as "the world's most prominent think tank promoting skepticism about man-made climate change."

Emotion and Knowledge:

- **Emotion as an Underminer of Knowledge**
 - Emotions can even affect and taint our justification process, altering the kind of knowledge we accept or do not accept. The fact that Thomas Kuhn saw a need to write a sociology of science is testament to this, for a sociology is only necessary when the scientists involved have affected our knowledge construction. Indeed, as he demonstrated, the scientific community's acceptance of new knowledge or even paradigms is often contingent on what they feel rather than on rationally-driven debate and argument, and this is very observable in the geological community's acceptance of Alfred Wegner's continental drift theory. His theory, as we now know, was the most accurate and convincing explanation for geological processes. However, for many years geologists refused to accept it, because Wegner was a meteorologist, and they were jealous and angry that someone from outside their field had made such an important discovery. Despite the protests of scientists, our knowledge is influenced by emotions, and seeing that even a discipline as methodical as science cannot avoid emotions affecting its knowledge, it is fair to say that other disciplines (bar maths) cannot deny the role of emotions in their construction of knowledge.
- **Emotion – Empathy – as a methodology**
 - Rawls' veil of ignorance utilise empathy to a large degree, for we ask ourselves how we would feel if we did not know our future. This provides distinctly different moral knowledge from that arising had we used purely rational processes, as Kant did in his categorical imperative, and the use of empathy through aligning our emotional state with others is therefore a vital tool in helping us construct our knowledge.
 - In trying to achieve Clifford Geertz's 'thick' description, anthropologists go native to try and immerse themselves in the culture they are studying to experience what they experience –

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emotions inclusive. Even in interviews too they utilise the skill of empathy to feel what their subjects feel as it forms an integral part of the eventual cultural understanding. For constructivists who perceive that social contexts are webs filled with meaning, empathy is an epistemological tool to construct meanings.

- In social science, the power of empathetic thought cannot be discounted, as evinced by Helge Ingrid in his discovery of the remains of Viking ships in North America. By placing himself in the shoes of the Vikings and asking himself how a Viking would feel in the 11th century, he was able to find numerous sites where they had settled, revealing the essential tool that is empathy.
- Emotion and Ethics
 - Emotion can even be part of our aesthetic and ethical knowledge, meaning that in these disciplines it is futile to separate emotion from our knowledge construction. In art, aesthetic knowledge is commonly seen to be non-propositional, since there are very few defining features of art that we can reliably use to distinguish art from non-art. Instead, aesthetic knowledge, both in terms of what art is and what kind of knowledge art provides, is largely based on our emotional response to artworks. Clive Bell's theory of significant form for instance defines art as objects which evoke an aesthetic emotion in a sensitive viewer, and aesthetic knowledge can also be obtained in terms of the knowledge we gain from the emotional states we feel and experience by viewing art. 'The Scream' by Edvard Munch can evoke in us feelings of despair and alienation we would never have otherwise experienced, as can Rembrandt's 'The Night Watch' in allowing us to sense the emotional impacts of chiaroscuro on us.
- Ethics
 - Emotional knowledge is also observed in ethics, particularly in the fields of emotivism, where all our moral knowledge is claimed to be merely gut feelings of approval or disapproval, or subjectivism, where David Hume famously posited that "reason is slave to the passions". These are not merely assertions that our moral knowledge is purely emotional but actually have some legitimacy, as moral psychology has revealed. Incest for example is widely condemned as being morally wrong, yet should the couple utilise protection, preventing adverse side effects, no rationally-compelled reason can be cited that incest is immoral. In this regard, our morality is driven by our gut feelings and emotions, and indeed when moral psychologist Jonathan Haidt posed this situation to people, many responded "I don't know why it's wrong, it just feels wrong". Emotion thus is a vital part of our knowledge.
- Motivating force of Emotion
 - There is an abundance of anecdotal evidence of researchers describing themselves as motivated by emotions when they tell their stories outside the academic journals (cf. the case-study in Thagard 2002). Examples of motivating emotions include surprise, interest, doubt and puzzlement sparking inquiry, pride in standards of research, frustration and disappointment with the results achieved.¹⁶ It has been argued that precisely emotions' disruptive character, so often treated as evidence for their supposed irrationality, makes them important, perhaps even indispensable for cognition. Emotions kick in when we are cognitively challenged, when our knowledge seems false, inadequate, irrelevant or not useful. Emotions are mechanisms that make us learn something
- Emotions as a source of knowledge

- The view that emotions are sources of beliefs is particularly attractive in the context of cognitive theories of emotions, which hold that emotions embed beliefs or other propositional contents. A paradigmatic example is Aristotle's analysis of anger as 'a desire accompanied by pain, for a conspicuous revenge for a conspicuous slight at the hands of men who have no call to slight oneself or one's friends' (. Although belief-centred cognitive theories have proved difficult to defend as general theories of emotions, it is still possible to defend the view that some emotions are essentially tied to types of propositional content. The question is whether such emotionally accessed beliefs are not of just the same epistemological interest that beliefs in general are. Emotionally 'embedded' propositions can be true or false, and believing them can be justified or unjustified, just like any other propositional content or belief.
- Emotion as methodological virtues
 - Emotions of the scientist may infiltrate his choices in the form of epistemic/contextual values and biases. Even epistemic values such as valuing 'simplicity' and 'beauty' in scientific theories may have no real epistemic justification, but are merely rooted in the human emotional appreciation of the aesthetic.

Knowledge & Society:

- We are faced with the prospect of a significant change in the temperature of our planet if we continue to harvest and use all of the fossil fuels at our disposal. Suddenly the stakes for a longtime problem of human irrationality seem enormous. But if the seeds of disrespecting truth were planted so long ago, why are they now growing with such force?
- One likely candidate is the Internet. It facilitates not only the spread of truth but also the proliferation of crackpots, ideologues, and those with an ax to grind. With the removal of editorial gatekeepers who can vet information, outright lies can survive on the Internet. Worse, those who embrace willful ignorance are now much more likely to find an electronic home where their marginal views are embraced.
- An obvious solution might be to turn to journalists, who are supposed to embrace a standard of objectivity and source-checking that would be more likely to support true beliefs. Yet, at least in part as a result of the competition that has been enabled by the Internet, we now find that even some mainstream journalists and news media are dangerously complicit in the follies of those who seek to disrespect truth. There have always been accusations of bias in the media, but today we have Fox News on the right and MSNBC on the left (along with a smattering of partisan radio talk-show hosts like Rush Limbaugh), who engage in overt advocacy for their ideological views. Yet those are not the kinds of journalists we should be so worried about, for they are known to be biased.
- Another tendency is perhaps even more damaging to the idea that journalism is meant to safeguard truth. Call it "objectivity bias." Sensitive to criticism that they, too, are partisan, many news sites try to demonstrate that they are fair and balanced by presenting "both" sides of any issue deemed "controversial" — even when there really aren't two credible sides. That isn't objectivity. And the consequence is public confusion over whether an issue — in the case of climate change or childhood vaccination, a scientific issue — has actually been settled.

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On Skepticism

Universal skepticism though logically irrefutable, is practically barren. IT can only give a certain flavour of hesitancy to our beliefs.

EPISTEMOLOGY OF SCIENCE

The Enlightenment in Europe challenged authority as the arbiter of truth, dethroned theocracy, overturned years of sterile metaphysics, challenged superstition, and put reason and science at the centre of the explanation of the world. Concomitantly, an enterprise to formulate a philosophy of science emerged.

The Scientific Method

Two preeminent figures of modern science, Galileo Galilei and Francis Bacon were the first few to describe what we consider today as the scientific method. Galileo argued that 1) any genuine knowledge claim is testable by experience; 2) hypotheses can be falsified through observation or experience; and 3) to explain a phenomenon scientifically is to show that it is an "instance" of a general law that can be expressed as a mathematical formulation. Francis Bacon argued that science must be built on fact-founded foundations and facts are established through observation and experimentation involving sensory perception.

Today, the scientific method is regarded as the characteristic method employed by scientists which differentiates scientific inquiry from other forms of inquiry. The scientific method may be employed in two contexts. 1) The context of discovery, wherein a new idea emerges. 2) The context of justification, wherein an idea receives scientific validation.

Naïve Inductivism: the scientific method consists simply of inductive inference on the basis of observation: Collection of empirical data → Formulation of scientific laws and theories through inductive generalization

This account of the scientific method accounts for both discovery of scientific theories as well as the validation of theories. Inductive generalization is employed to discover laws, and the inductive method also provides the warrant for the laws and theories proposed.

Problems:

First, data collection may not precede or be independent of theory. To determine the relevance of any empirical data, some prior judgment of the significance of various kinds of data must already have been made.

Second, naïve inductivism does not provide an adequate account of scientific theory formation. The inductive process does not provide adequate warrant for scientific theories postulating the existence of unobservable theoretical entities such as electrons and atoms. The inference from observation to theory is not sustained.

Third, with the **Problem of Induction**, Hume demonstrated that there is no rational justification for the use of inductive inference. An inductive inference from past experience to prediction concerning the future, or, from the particular to the general, to be reliable, must be underwritten by a principle of induction such as the uniformity of nature (which is *a priori*). However, it is difficult to see how an induction, as a non-deductive inference, can be justified based on deductive logic. To rely on the past successes of induction to justify induction, would seem viciously circular.

Therefore, while we cannot have a rationally justified belief, we can accept that inductive evidence provides us with a rationally warranted *degree of belief*. This means that we can have rationally warranted

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probabilistic beliefs or claims to knowledge. However, any probabilistic belief in universal laws relies on an unfounded belief or faith in the uniformity of nature. The problem is that this faith cannot be rationalized – we cannot rationally know the laws or necessary connections that underpin reality through reason, nor experience – and therefore Hume suggests that we should accept this faith as part of human nature.

Specifically, Hume argued that we hold such unjustifiable beliefs due to habits of mind (which are developed from experience) – it is human nature to employ inductive logic or probabilistic reasoning to derive beliefs. Hume further proposed that there are three principles of association – contiguity, resemblance and causation – which govern the thoughts or ideas of the mind

Fourth, it is also significant that the choice of techniques (that all fall under inductive reasoning) employed can affect scientific experiments. The bearing that empirical data bears on various positions depends on how entrenched a technique is in an individual scientist's field. One scientist may overlook data salient for another.

- For example, psychologists recorded monosyllabic, hesitant speech of Black inner-city children with pauses of up to twenty seconds to conclude that they were linguistically impaired. However, Labov, an American sociolinguist, recorded their speech in a notation that reflected intonation, thereby showing their speech indicated fear of a perceived threat.

Hypothetico-Deductive Method: theories are evaluated by testing the observational predictions that follow from them as deductive consequences. With this method, induction occurs in the context of justification rather than discovery. The order and rigour of the scientific method lies in the evaluation of the method, not in the interpretation of data.

The advantage of this method is that it is entirely possible for scientists to propose the existence of unobservable entities – the proposed existence of such entities acquires confirmation when the predictive consequences of the theory is subjected to an empirical test.

Problems:

First, with reference to theories formulated in universal generalisations, it is impossible to derive a testable prediction from a universal generalization without specifying a set of conditions about the domain to which the generalization applies.

Furthermore, in testing a hypothesis, a range of further auxiliary assumptions / hypotheses must be made about the conditions in which the test takes place. Since it might be auxiliary hypotheses that may be responsible for the success of the prediction, the verification of a prediction does not necessarily provide a theory with genuine support. This is known as the **Duhem-Quine problem**.

Second, it is possible that multiple differing theories entail the same predictive consequence, but it is difficult to provide support for the consequent argument that these differing theories can receive different degrees of confirmation. Therefore, predictive content is insufficient in providing support for any theory, and can be said to underdetermine theories.

- For example, evidence of fossil change in organic form was used to support both theological design and Darwinian natural selection; hence, interpretation of evidence is dependent on the scientist

Karl Popper's Theory of Falsification: the method of science is a method of "trial and error – of conjectures and refutations". Any proposed scientific theory must be falsifiable (possible observation that falsifies it), if not they would simply be theories of pseudo-science.

A example that Popper gives as a good example of scientific falsification is the famous Michelson-Morley experiment. The Michaelson-Morley experiment provided strong evidence that falsified the luminiferous aether theory that purportedly explained how light travelled.

For Popper, scientific theories are not inductively inferred from experience, and are neither verified nor have their truths established from scientific experimentation. He holds that all scientific knowledge is provisional, conjectural and hypothetical – we can never conclusively prove our theories, but instead only corroborate them (withstanding attempts at falsification) or conclusively refute them. An additional implication of this position is that the entire enterprise of scientific inquiry will be concerned with eliminating false theories and choosing between presently un-falsified theories.

**Popper proposing this concept of corroboration simply for the purpose appears to be an attempt to avoid inductivist undertones*

Problems:

First, Popper needs to provide an account of why one would choose theories which have withstood more tests than one that hasn't been subject to any tests at all, without appealing to induction. There is a whiff of induction if he claims that theories that have passed tests are better than those that haven't.

Second, it is hardly practical and rarely practiced in science that theories are to be rejected the moment they entail a false prediction, which seems to be what Popper is suggesting in his methodology.

Third, scientific theories cannot be conclusively falsified, just as it cannot be conclusively verified (problem of induction). Theories cannot be conclusively falsified because when an observation confirms a theory, it is always open to one to reject the observation rather than the theory.

Scientific Realism and Instrumentalism

To be a scientific realist is to make one or more of the following commitments – the existence a mind-independent world, literal semantics, and the possibility of epistemic access to unobservables.

In contrast, to be an instrumentalist is to make one or more of the following commitments – non-literal semantics, the impossibility of epistemic access to unobservables, or denying the existence of a mind-independent world.

Consequently, scientific realists argue that scientific theories should be evaluated based on how well it describes the external, mind-independent reality of the natural world, while scientific instrumentalists argue that a theory should be evaluated based on its practical utility in the real world and the effectiveness of its predictive content.

Arguments for Scientific Realism

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First, scientific realists put forth the **No-Miracles** argument. In Hilary Putnam's conception, scientific realism 'is the only philosophy that doesn't make the success of science a miracle'. Given that our best theories are extraordinarily successful, facilitating empirical predictions, retrodictions, and explanations of the subject matters of scientific investigation, with astounding accuracy and intricate causal manipulations of the relevant phenomena, it almost necessarily must be the case that such scientific theories are true, approximate towards truth, or correctly describe a mind-independent reality, unless one were to believe in the possibility of miracles.

In response to the No-Miracles argument, instrumentalists make the following arguments. First, successful theories are argued to be analogous to well-adapted organisms—since only successful theories (organisms) survive, it is hardly surprising that our theories are successful, and therefore, there is no demand here for an explanation of success. Second, anti-realists point out that since the success of a theory does not by itself suggest that it is likely approximately true, and since there is no independent way of knowing the base rate of approximately true theories, the chances of it being approximately true cannot be assessed.

Second, the scientific realists formulate another argument – the theories argued to be true, or approximating towards truth, are theories with the **best explanatory value**. To justify the presence of unobservables in our “best theories”, scientific realists can appeal to the indispensability or some form of substantive importance in explaining why these theories are successful. If our best theories are those with the best explanatory value, then even if one were to grant the idea that all theories have empirically equivalent rivals, this would not entail underdetermination, for the explanatory superiority of one in particular may determine a choice.

However, while such a twist to scientific realism can allow us to adjudicate between even empirically equivalent theories, it has two key problems. First, what are the criteria (e.g. simplicity, consistency, coherence, scope and unity) for us to adjudicate the “explanatory power”? Second, the pools of theories regarding which judgments about relative explanatory efficacy may very well preclude the theories closest to the truth, considering that our best theories (best as determined with reference to their fulfillment of our various scientific theory choice criteria) for are often false.

Arguments for Instrumentalism:

Instrumentalism is a tantalizing position because it avoids any truth claims of our scientific theories, which is something realists can't quite resolve. Furthermore, it also resolves the problems concerning theories based on unobservable entities has also been resolved, since what matters isn't whether these entities exist, but the degree to which the theories that refer to such entities help us solve practical problems.

In response to the scientific realist arguments, instrumentalists offer the following refutations:

First, there is the pessimistic meta-inductivist argument from past failures. If one considers the history of scientific theories in any given discipline, what one typically finds is a regular turnover of older theories in favour of newer ones, as scientific knowledge develops. From the point of view of the present, most past theories must be considered false; indeed, this will be true from the point of view of most times. Therefore, by enumerative induction (that is, generalizing from these cases), surely theories at any given time will ultimately be replaced and regarded as false from some future perspective. Thus, current theories are also false. It is then problematic how scientific realists make any claims to correspondence.

Second, if the implication of the Duhem-Quine thesis is that in any experiment, the choice of which theory to believe is underdetermined by the data, when realists choose between empirically equivalent theories (rivals that agree with respect to the observable, but differ with respect to the unobservable), it is hard to see how realists can convincingly explain why the chosen theory is closer to the truth than its unpicked rivals. In other words, realists will be unable to explain one theory corresponds better to external reality than another empirically equivalent theory.

Third, Kuhn's incommensurability thesis illustrates that scientific realists cannot fairly evaluate competing theories when they are emergent from different paradigms. If theories are from under fundamentally different paradigms, they are not comparable in a way that would permit the judgment that one is epistemically superior to the other. Any epistemic statement about a new theory being closer to the truth will appear to be substantially flawed. Furthermore, if we accept the Kuhnian implication that our scientific knowledge is ineluctably structured by scientific paradigms, this precludes the realist belief in the possibility of epistemic access to a mind-independent world.

Scientific Laws and Scientific Explanations

Scientific explanations have always differentiated itself from other forms of explanation in that they provide higher epistemic standards of explanation, but we have not been able to come up with a satisfactory explanation for what accords scientific explanation this higher epistemic standard.

Therefore, the key concern in this area of the philosophy of science is to **create rules / criteria about how explanations ought to proceed if they are going to be considered scientific.**

Before examining some influential criteria set for scientific explanations, it is important to consider the difference between scientific laws and explanations. For Newton, **scientific laws** (Newton's laws of motion) describe what nature does under certain conditions and will predict what will happen under those constrained conditions and can be mathematically defined, while **scientific theories** (Darwin's theory of evolution) seeks to explain why nature works the way it does and are non-mathematical.

In establishing standards for scientific explanations, the key enterprise has been to offer a **rational reconstruction / explicit definition** of the concept of scientific explanation that is **precise and philosophically well founded**. While this could serve as a litmus test and thereby provide clarity about what is or isn't a scientific explanation, it is often impossible to give a complete rational reconstruction – scientists could always devise counter-examples to the criteria: demonstrating that bona fide scientific explanations that do satisfy the definition, and non-explanations that do satisfy the definition.

Criteria 1: Unifying Capacity

One view is that scientific and scientifically warranted explanation unifies disparate phenomena under a small number of principles.

First, this is attractive because successful unification of phenomena is reflective of human ingenuity to organize knowledge about the world. Second, it is attractive because any unifying theory with an element of causality allows us to access the causal structure of the world. Third, to the extent that such unifying

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theories do not make claims of natural necessity, we avoid problems of explaining the nature of natural necessity (i.e. what makes such unifying theories necessary in nature)

However, this criterion is insufficient in two ways. First, if we were to consider Popper's criticism of unfalsifiable theories as pseudo-sciences, it seems that many unifying theories, for all their ability to unify disparate phenomena, are not of an epistemic standard that we would consider scientific. Second, any unifying theories with an element of causality will have to explain Hume's problem of causation.

Criteria 2: Deductive-Nomological Structure

The Deductive-Nomological Model emerged as part of the logical positivist movement – it was developed by Carl Hempel in an attempt to develop a model of scientific explanation that could explain why things occur by translating empirical statements into the form of deductive arguments.

The logical positivist movement sought to determine the descriptive nature of science (the degree to which scientific statements corresponded with the world) and believed that the relations between factual statements about the world and the reality of the world could be understood in terms of formal logic. In other words, logical positivists argued that we can understand why the natural world works the way it does if we can understand the logical relation between descriptive scientific statements.

Logical positivists advocated the Deductive-Nomological Model of scientific explanation because they felt that **what made scientific explanations scientific was that the deductive structure of scientific explanations mirrors the structure of reality.**

The Deductive-Nomological Model is set out as follows:

- **True Explanans / Premises**
 - [Universal Law] All copper conducts electricity
 - [Empirical Content] This is a piece of copper
- **Explanandum / Conclusion**
 - [Logically Predicted by Premises] This piece of copper conducts electricity

While scientific explanations adhering to this structure would appear deductively valid and of a high epistemic standard, there are several problems.

First, it is difficult to guarantee natural necessity in the world and hence it is possible that the supposedly "universal" law as part of the premise may not be necessary.

Second, the DN model cannot apply to situations where scientific explanations are directional and causal. Consider the following example, in DN1 the conclusion is scientific since it is both explained and predicted by the premises, but we cannot claim that the premises in DN2 explains the conclusion. This highlights that DN model in some cases require causal considerations for prediction to be equal to explanation.

DN1	DN2
• P1 Rules of Maths and Physics (Trigo) • P2 Height of Chimney (30m) • P3 Angle of Sun • Conclusion: Length of Shadows is 40m long In this case, the three premises both explain and predict the conclusion.	• P1 Rules of Maths and Physics (Trigo) • P2 Length of Shadow (40m) • P3 Angle of Sun • Conclusion: Height of chimney is 30m In this case, the three premises while able to predict the height of chimney, cannot explain why the chimney is 30m long

Hume's Problem of Causation

Hume's formulation of the Problem of Causation has two related sub-problems – 1) the difference between natural laws and accidental generalisation, 2) the nature of nomological necessity.

Differentiating Natural Laws and Accidental Generalisation

- Statement 1: "All spherical masses of pure plutonium weigh less than 100,000 kilograms."
- Statement 2: "All spherical masses of pure gold weigh less than 100,000 kilograms."

Statement 1 can be considered to be a natural law because quantities of plutonium will necessarily explode before reaching this mass. However, Statement 2 is just a matter of cosmic coincidence: it is contingent and could have been otherwise. This demonstrates that universality of the statement forms (If X, then Y) is insufficient in differentiate between genuine natural laws and accidental generalisations.

This introduces the second problem of what the nature of nomological necessity is.

It is unclear what it is about laws that makes them laws, other than the fact that they express some real connection between their antecedents (X) and consequents (Y). There is something about being a sphere of pure plutonium, for instance, that necessitates the fact that it cannot be 100,000 kilograms.

Philosophers have established the tool of counterfactuals to differentiate between real laws and accidental generalisations – counterfactuals of laws are true, while that of accidental generalisations are false.

However, this is a **symptom** of the difference between the two types of statements. We still do not know what is it about universal laws that leads to this difference in counterfactuals.

Unless we are able to explain the nature of the nomological necessity of universal laws, we might be forced to accept that such laws of nature are statements of the uniformities or regularities in the world; they are mere descriptions of the way the world is, not underlying principles that govern our universe.

Simplicity Scientific Theory Choice

Advocates of the simplicity theory choice, most notably Einstein, have argued that a theory should be chosen if it can express physical laws concisely in mathematics, giving rise to beautiful, simple and elegant theories. This is different from establishing epistemic standards for what constitutes scientific explanations, as it focuses on what drives people to select a theory over another.

This criterion of scientific theory choice is attractive for two reasons.

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- First, beautiful theories have historically been more successful than theories which were not as beautiful (the inverse square law and law of gravitational acceleration).
- Second, in scientific fields that heavily feature mathematics, like theoretical physics, simplicity and beauty in theories have been heavily sought after (eg. the simplification and refinement of Maxwell's equations using rotational symmetry).

One key problem is that there seems to be a lack of epistemic warrant for such a criterion of scientific theory choice. The meta-induction argument put forth by Einstein about the successes of past simple theories can easily be derided by skeptics, but Einstein adds, "it is a miracle creed which has been borne out to an amazing extent by the development of science" (The No-Miracles Argument!)

Two other problems include the relative inapplicability of this criterion to scientific fields that do less with mathematical equations (e.g. biology) as well as the underlying assumption of the uniformity of nature when we choose any mathematical theory that purports to be universally applicable and valid.

The Newtonian Worldview

The Newtonian worldview is grounded in the underlying belief that the universe is governed by immutable, natural laws. While he did not believe that science was infallible, he felt that scientific propositions are propositions with substantive content about matters of fact rather than logical truths. Newton was very much a realist – he justified his metaphysical belief in an immutable, ordered and mind-independent universe based on his discovery on the laws of gravity and motion

It is important to recognize that there are some theological undertones in Newton's work – while he felt that how things work can be explained by science, why things work have to involve some sort of metaphysical claim, which for Newton involved God – "*God governs all things and knows all that is or can be done*"

Newton conceived of the universe as a gigantic clock, set in motion by God at the beginning of time:

- The universe's future development is in principle entirely predictable
- The universe operates according to the deterministic laws of cause and effect and one can predict the future with certainty - that is to say, if one had perfect information of the initial position and velocities of all the particles in the world, one would be able to predict, through classical mechanics equations, the future behavior of these particles.
 - This is in practice beyond our reach because we have imperfect knowledge, inaccurate measuring instruments and the sheer complexity of such calculations.
 - From an epistemological viewpoint, this means that there is a quantitative limit to science, but not a qualitative limit because in principle we could predict the behavior of universe in science.

Newton conceives of a materialist reality – where all phenomena in the universe can be reduced to the particles of matter and the laws that govern them. Apart from matter, absolute space and absolute time, no other fundamental categories of existence, such as mind, life force, organization or purpose are

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acknowledged by Newton. Forces and motion of all particles are also thought to take place in Euclidean three-dimensional space.

From an epistemological viewpoint, the Newtonian conception of the world seems to necessitate the position of **scientism** – the only knowledge claims we can make are scientific knowledge of matter and the natural laws that govern them - since all there is, is matter and we can only measure matter through science.

What's arguably more pressing however is that as a logical consequence of this materialist conception of reality and deterministic view of the universe, it seems that we may not actually possess free will. This inexistence of free will argument, can be visualized as follows: "it is possible to say that a criminal has been driven to kill because of the ways in which Newton's laws have acted on the molecules of his body"

Kant & The Synthetic A Priori

David Hume's skepticism confounded Kant as it seemed to persuasively demonstrate that our belief in mathematical propositions such as $7 + 5 = 12$ cannot justified by either experience (problem of induction) or rational deduction (there is no subject-predicate containment). Kant refused to accept that such apparently universal and necessary propositions could not be justified.

In response, Kant argued that such instances of knowledge of mathematics and the principles of science are in fact various forms of synthetic a priori knowledge. What Kant effectively achieves in his proposal of the a priori intuitions categories is to achieve a synthesis between rationalism and empiricism – Kant argues that reason cannot tell us about things-in-themselves, and also denies the possibility of the mind as a blank slate that is written upon by the empirical world.

- For Kant, synthetic a priori knowledge can only provide us with insight to the *a priori categories and intuitions* of the perceiving mind, not about external reality. He therefore turns the focus of philosophy from metaphysical speculation about the nature of reality to a critical examination of the nature of the thinking and perceiving mind.
- For Kant, our experience of reality has an intellectual structure – Linear time and Euclidean space are *a priori intuitions* supplied by our faculty of **sensibility** through which we perceive the world. Space and time are NECESSARY for any perception of experience of the natural world.
- Yet for us to have knowledge about the natural world, the natural world must be thinkable as well. This leads Kant to propose Kantian categories (substance, causality, logical relations) are *a priori concepts* that are applied to experience through our faculty of **understanding**.

Since our experience and understanding are conditioned by these spatio-temporal imprints and Kantian categories, **we cannot therefore know "things-in-themselves"** in the noumenal world. In effect, Kant tells us that reality as we experience it is a joint creation of external reality and the human mind and that it is only regarding the latter that we can acquire knowledge.

It is also notable that the objectivity of mathematics and the physical sciences is, according to Kant, what proves the objective existence of the categories that our minds use to organize our spatio-temporal experience. This seems like a somewhat circular argument, but it appears that Kant has little other ways of demonstrating the existence of these Kantian categories.

Kant's transcendental argument began from the premise that we DO indeed have knowledge of the natural world, which includes synthetic a priori propositions such as $5 + 7 = 12$. Such propositions are necessarily true because they are propositions about the a priori categories and intuitions of the perceiving mind. Synthetic a priori judgments are therefore in effect, knowledge about what we *could* conceivably experience.

Einstein's General Theory of Relativity

With the emergence of Einstein's revolutionary general theory of relativity, it seemed as though the Kantian a priori intuitions of linear time and space were undermined. The theory of general relativity describes space-time in non-Euclidean spacetime (mathematical representation through Riemannian geometry which maps out 4 dimensional space) and non-linear spacetime (time is represented as simultaneous dimensions of past, present and future through abstract algebra)

While some thought that Einstein's theories of general relativity and the unity of spacetime were incompatible with the Newtonian assumptions of linear time and Euclidean space, it may not have to be the case if we consider the possibility of having a Euclidean intuition of space and linear sense of time, while having an Einsteinian theoretical understanding of spacetime. These differences in understanding are not mutually exclusive.

From the standpoint of cognitive science, we indeed perceive the world in Euclidean terms – Euclidean space and linear time are indeed preconscious organizing features of the human mind. However, this does not preclude the possibility of us having a scientific understanding of space in Non-Euclidean space. While Non-Euclidean geometries violate our spatial intuitions, we can still understand non-Euclidean space on a conceptual level through mathematical reasoning!

Quantum Physics

Quantum physics refer to the studies of physical phenomena at subatomic levels and has two key implications from the perspective of epistemology of science.

Key Ideas

- The Universe is quantized. Familiar quantities such as energy, momentum, electric charge, mass – possibly even time and space – are not continuous. They occur in discrete quantum units. This fact is not directly observable in day-to-day life because the intervals between the units are incredibly small.
- At the atomic level, the behavior of particles is not classical and cannot be described by Newtonian physics. The “position” of the entities to which we have given names such as “electron”, “proton”, or “neutrino” can only be described in a statistical sense. All that quantum mechanics can tell us about the position of anything is that it has such-and-such relative probability of being here or there, as opposed to someplace else.
- **Heisenberg's Uncertainty Principle** states that it is not possible to simultaneously determine the position and momentum of anything with infinite precision.
 - As a logical consequence, this means that one cannot calculate the precise future motion of a particle, but only a range of possibilities for the future motion of the particle. This is contrary to the determinism of Newtonian physics.

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- Niels Bohr, in alignment with Heisenberg, postulated the possibility of **wave function collapse** to cut the quantum world from the classical. The concept of wave function collapse is briefly explained as follows:
 - Quantum systems exist in superpositions of those basis states that most closely correspond to classical descriptions, and, in the absence of measurement, evolve according to the Schrödinger equation.
 - However, when a measurement is made, the wave function collapses—from an observer's perspective—to just one of the basis states, and the property being measured uniquely acquires the *eigenvalue* of that particular state. After the collapse, the system again evolves according to the Schrödinger equation.
- The **Schrödinger's Cat** thought experiment, however, demonstrated the **counter-intuitiveness** of the Bohr-Heisenberg interpretation of quantum mechanics, which states that a particle exists in all states at once until observed. It does not seem to accord with common sense to believe that a cat could be alive and dead at the same time.
- Despite Schrodinger's intended purpose of restoring the continuous and deterministic nature of classical mechanics and dynamics, Max Born later proved that the "wave function" of **Schrödinger's equation** describes only the probability of finding the electron at a certain point. The wave function itself evolves deterministically, but its significance is that it predicts only the probability of finding an atomic particle somewhere. **In other words, quantum mechanics cannot give exact results, but only the probabilities for the occurrence of a variety of possible results.**

The Bohr-Heisenberg Division

While Bohr proposed that, like temporal relations in special relativity, properties in quantum mechanics exhibit a hidden relationalism — “hidden”, that is, from a classical, Newtonian point of view. Heisenberg favoured the positivistic, anti-metaphysical approach: “It seems necessary to demand that no concept enter a theory which has not been experimentally verified at least to the same degree of accuracy as the experiments to be explained by the theory”. However, the two men agreed in broad terms that ways of describing quantum systems depended upon experimental conditions.

Epistemological Implications

First, the key concept of **quantum indeterminacy** in quantum physics has radically upended the prevailing Newtonian worldview about the deterministic nature of the universe. If quantum indeterminacy is a principle of our universe, it means that there is a fundamental limitation to the extent of knowledge we can claim to have about subatomic occurrences – as evinced through Schrodinger's equation, we can only derive probabilistic knowledge about the positions of electrons, not certain knowledge as previously purported by classical mechanics. **This also means that contrary to what Newtonian science conceived, there is a qualitative limit to our knowledge due to the inherency of indeterminism in the universe.**

Second, it also has important implications about our **observation and measurement** at microscopic levels. If the Bohr-Heisenberg interpretation of quantum mechanics is right, it means that **acts of observation and measurement can be taken as constitutive of phenomena**. This is contrary to the scientific realist position that there is an mind-independent world that exists and is accessible, since when a direct measurement of physical reality occurs, we are not just achieving a passive reflection of the reality but instead actively constituting that which we are measuring.

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Kuhn: The Nature of Scientific Progress

Kuhn was a revolutionary thinker in the philosophy of science in that he focused on an explanatory theory of the nature of scientific progress, rather than on establishing epistemic standards for scientific knowledge.

Kuhn proposed a **non-teleological** (no end & non linear) view of science

- Scientific inquiry cannot be taught of as addition of new to old truths, nor increasing approximations towards truth
- It should instead be viewed as **alternating** between periods of **Normal Science** and **Revolutionary Science**

For Kuhn, scientific inquiry takes place in a common intellectual framework known as a **paradigm**

- Paradigms are likely to exist, because in its absence, *"all the facts that could possibly pertain to the development of a given science are likely to seem equally relevant"*
- *"No natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation, and criticism"*
- His view **directly clashes with the notion of the objectivity of the scientific method** since there can be no value-free observation of data and the innovation of theories are constrained by paradigms
- A paradigm mainly consists of the following elements:
 - Theoretical Assumptions (e.g. under the Newtonian paradigm, scientists worked under the assumptions of linear time and 3D space)
 - Focus on particular scientific problems to be solved
 - Methodologies (e.g. under the Newtonian paradigm, scientists mainly employed the naïve inductivist scientific method)

Kuhn characterized scientific inquiry in periods of **normal science** as follows;

- *"Normal-scientific research is directed to the articulation of those phenomena and theories that the paradigm already supplies"*
 - Extending the knowledge of those facts that the paradigm displays as particularly revealing
 - Increasing the extent of the match between those facts and the paradigm's predictions
 - Further articulation of the paradigm itself
- It must be noted that **paradigm-based normal science can be considered cumulative in terms of the problems (articulated under the paradigm) solved**
- For Kuhn, scientific research in this period is analogous to **"Puzzle-Solving"** – governed by rules and predetermined solutions
 - Research is that the aim is to discover what is known in advance
 - While studies that fail to find the expected are usually not published, the proliferation of studies that find the expected helps ensure that the paradigm/theory will flourish.
 - This research is governed by rules: 1) the **nature of acceptable solutions** must be consistent with paradigmatic assumptions; 2) **methodology** – preferred instruments and way of employing instruments

To bring about paradigm change, Kuhn proposed that it required the introduction of fundamental **anomalies**, which include **novelties of fact and theory**:

- **Discovery – “Novelties of Fact”:**
 - Recognition that nature has violated the paradigm-induced expectations that govern normal science
- **Inventions – “Novelties of Theories”:**
 - Emergence of a new theory is generated by the persistent failure of the existing theories of normal science to explain or solve anomalies
- Such novelty emerges only with difficulty, manifested by resistance, against a background provided by expectation
- Although normal science is a pursuit not directed to novelties and tending at first to suppress them, it is nonetheless very effective in causing them to arise. This is because, with greater articulation and confirmation of the paradigm, the paradigm becomes more precise and far-reaching, producing a greater degree of sensitivity towards detecting an anomaly and inducing change.

When anomalies accumulate (numerous new, unresolved scientific discoveries and new theories inconsistent with paradigmatic assumptions are proposed), the scientific community is said to be in a period of **crisis**, which can be resolved in three ways:

- 1) Normal science proves able to handle the crisis-provoking problem and all return to "normal."
- 2) The crisis is perceived as resulting from the field's failure to possess the necessary tools with which to solve it. Scientists set it aside for a future generation with more developed tools.
- 3) A paradigm shift takes place

When a paradigm shift takes place, the scientific community is said to experience a scientific revolution - **“noncumulative developmental episode in which an older paradigm is replaced in whole or in part by an incompatible new one”**

- **Paradigmatic differences cannot be reconciled** - when paradigms enter into a debate about fundamental questions and paradigm choice, each group uses its own paradigm to argue in that paradigm's defense—the result is a circularity and inability to share a universe of discourse.
- Paradigm shifts can be thought of as a **normative shift** in the consensus of the scientific community. During periods of paradigm shifts, the various elements of the paradigm – theoretical assumptions, relevant scientific puzzles / problems and methods, become “open to competition among differing ideas and rational disagreement”.
- However, what determines the outcome of these periods of scientific dispute is not the rational agreement of all scientists but whether the majority of scientists agree with one set of ideas over another set of ideas. **(In other words, the choice of the new paradigm is *not rationally compelled*)**
 - This majority agreement on which set of ideas is “superior” , for Kuhn, is driven by the **social processes through which scientists build consensus for their ideas**, as much as it is by the rational nature of the ideas itself.
 - These social processes that Kuhn is talking about are not socio-political factors external to science. Instead, Kuhn is talking about the socio-political dynamics internal to science, such as the career ambitions of scientists, inter-generational conflicts between scientists.
- For Kuhn, the *assimilation of either a new sort of phenomenon or a new scientific theory must demand the rejection of an older*
 - Kuhn refutes the prevalent view that the new paradigm derives from, or is a cumulative addition to, the supplanted paradigm

- **Revolution is not cumulation; revolution is transformation**
- Paradigm shifts often result in “Kuhn-loss” – phenomenon previously explicable under one paradigm might not be in a later period of science after some scientific revolution.
- However, Kuhn states that even with Kuhn-loss, scientific progress still takes place through scientific revolutions. Since the revolutionary search for a replacement paradigm is driven by the failure of the existing paradigm to solve certain important anomalies, any replacement paradigm had better solve the majority of those puzzles, or it will not be worth adopting in place of the existing paradigm.
- Therefore, revolutions do bring with them an overall increase in puzzle-solving power, with the number and significance of the puzzles and anomalies solved by the revised paradigm exceeding the number and significance of the puzzles-solutions that are no longer available as a result of Kuhn-loss. **This increase in ability to solve puzzles however, does not equate to any nearness to the truth.**

Kuhn also advanced his Incommensurability Thesis, which states that normal scientific tradition that emerges from one scientific revolution is **incommensurable** with that which has gone before

- **Perceptual Incommensurability:** observational evidence cannot provide a common basis for theory comparison, since perceptual experience is theory-dependent
- **Semantic Incommensurability:** languages of theories from different periods of normal science may not be inter-translatable presents an obstacle to the comparison of those theories
- **Methodological Incommensurability:** there is no common measure because the methods of comparison and evaluation change
- **Incommensurability does not mean non-comparability, but it does mean theory comparison rather more difficult than had commonly been supposed**
- This thesis clashes directly with the prevailing positivist view was that observation provides the **neutral arbiter** between competing theories
 - While the realist will say that Galileo and an Aristotelian when both looking at a pendulum will see the same thing, Kuhn asserts that they will see different things

It is often pointed out that Kuhn’s incommensurability thesis seems to open him to **charges of relativism**, since it seems to imply that the truth of any scientific claim, or the existence of a posited entity is evaluated relative to the paradigm employed. However, defenders of Kuhn points out that Kuhn deals less with the notion of truth and will avoid claims such as “each viewpoint creates its own reality”, but instead understands science as a problem solving activity. Therefore, the key point to understand is that with each scientific paradigm, there is a different focus as to what particular problems should be solved, and there should be a net increase in the problem solving ability with each scientific revolution.

Key Examples of Kuhnian Paradigm Shift

- The transition in cosmology from a Ptolemaic cosmology to a Copernican one (Paradigm from geocentric paradigm to a Heliocentric Paradigm)
- The transition between the worldview of Newtonian physics and the Einsteinian Relativistic worldview (Paradigm shift from absolute time and Euclidean space to space-time unity)
- The development of Quantum mechanics, which redefined Classical mechanics. (Paradigm shift from deterministic view to indeterminacy)

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Michael Friedman's Post-Kuhn Philosophy of Science:

Michael Friedman's main argument against Kuhn is that scientific revolutions (e.g. Einstein's theory of relativity) emerge through the exercise of reason (rational, objective deliberation) in the context of debate about the philosophy of science. He argues that Einstein's theory of relativity emerged as a synthesis of Poincaré's Conventionalism (apparently real scientific differences, such as that between describing space in terms of a Euclidean and a non-Euclidean geometry, in fact register the acceptance of a different system of conventions for describing space) and Hermann's Geometric Empiricism (he argued that only Euclidean geometry can account for our actual physical measurements).

He concedes that socio-cultural forces are relevant to science, but he argues that such socio-cultural forces are what motivates scientific inquiry, not what determines the process of any scientific revolution. His critics though, have said that he has downplayed the internal socio-political dynamic of the scientific community.

EPISTEMOLOGY OF ART

1. What is Art?

- Any definition of art has to square with the following uncontroversial facts:
 - (i) entities (artifacts or performances) intentionally endowed by their makers with a significant degree of aesthetic interest, often surpassing that of most everyday objects, exist in virtually every known human culture;
 - (ii) such entities, and traditions devoted to them, might be produced by non-human species, and might exist in other possible worlds;
 - (iii) such entities sometimes have non-aesthetic — ceremonial or religious or propagandistic — functions, and sometimes do not;
 - (iv) traditionally, artworks are intentionally endowed by their makers with properties, usually perceptual, having a significant degree of aesthetic interest, often surpassing that of most everyday objects;
 - (v) art, so understood, has a complicated history: new genres and art-forms develop, standards of taste evolve, understandings of aesthetic properties and aesthetic experience change;
 - (vi) there are institutions in some but not all cultures which involve a focus on artifacts and performances having a high degree of aesthetic interest and lacking any practical, ceremonial, or religious use;
 - (vii) such institutions sometimes classify entities apparently lacking aesthetic interest with entities having a high degree of aesthetic interest;
 - (viii) many things other than artworks — for example, natural entities (sunsets, landscapes, flowers, shadows), human beings, and abstract entities (theories, proofs) are routinely described as having aesthetic properties.

Family Resemblance Theory of art suggests that all art forms may be traced to a common denominator (or origin), even though they do not resemble each other, akin to tracing out a family tree. Weitz appropriates Wittgenstein's family resemblance theory in referring to games to art, arguing for art as an open concept, instead of prescribing some necessary and sufficient properties. For Weitz, to suggest a closed concept of art is to promote a stabilizing definition of art that may hinder creativity.

Previous attempts in defining necessary and sufficient conditions for what art is such as formalism and emotionism not only exclude substantial instances of what we consider as art, but also tend to be mutually conflicting at certain points in time.

Criticisms:

- False Analogy: in the family tree, all members are genetically related and linked; there is no such physical or tangible link in art works
- Vagueness:
 - Such a definition doesn't allow us to distinguish art from non-art; it is too broad and ambiguous.
 - There can be extensive degrees of "resemblances" between various piece of artworks
- Not necessarily restrictive of creativity

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- Specific definitions can be revised, and definitions can be created prior to emergence of new artforms

Significant Form Theory suggests that all genuine works of art produce an aesthetic emotion in the audience because they all share a quality known as "significant form", such as colour, combination, texture, brush stroke, etc. More importantly, significant form is an ineffable quality that only sensitive critics can recognise and appreciate; insensitive critics cannot.

Criticisms

- **Circularity:** significant form = formal properties of an artwork that give rise to an aesthetic emotion; aesthetic emotion = what is felt in the presence of significant form
- **Irrefutable**, therefore meaningless: if someone claims not to experience any aesthetic emotion, thinkers may respond that it isn't that the artwork has no significant form; that person just isn't a sensitive critic
 - More importantly it leads to the somewhat uncomfortable / elitist implication that art is only accessible to individuals that are sensitive
- **Significant Form** is a fundamentally subjective concept – goes back to Hume about the possibility of emerging a general intersubjective standard of taste
- Diminishes the value of idea-based art, with little attention to subject matter and content

The **Idealist Theory of Art** suggests that art is non-physical; it is an idea in the mind of the artist. Genuine art has no purpose; it is an end in itself (distinguished from craft).

Criticisms:

- **Strangeness:** if so, then, artifacts in a museum are worthless because the real art is just the idea, so an image on Google is as effective?
- **Too narrow:** some works of art were created with purposes of replica, accuracy etc, but should still be considered art (portraits, architecture, etc.)
- Better to strive for a balance view of the artistic process as involving both the initial creative idea and the process of creative realization (in terms of expressing the creative idea in physical forms)

The **Institutional Theory of Art** suggests that art is given its status by member(s) of the art world, i.e. a bunch of curators recognising an artefact as art and exhibiting it in a gallery makes it art E.g.: Van Gogh's paintings were only considered to be great art after his death; they achieved a sort of art status only because the art community agreed to recognise his paintings while the community of his time did not

- This social definition of a work of art has certain advantages over a purely conceptual or a priori definition.
- A definition arrived at independently of the real artworld, based perhaps like Kant's on a general philosophical system, can in principle be wholly at odds with what is commonly thought of as art.

Criticisms:

- Wittgenstein argued that phenomena of art are, by their nature, **too diverse to admit of the unification that a satisfactory definition strives for**, or that a definition of art, were there to be such a thing, would exert a stifling influence on artistic creativity
- Kristeller's work may be taken to suggest that our concept of art differs from that of the eighteenth century. As a matter of historical fact, there simply is **no stable definendum for a definition of art** to capture.
- Another argument against defining art, with a normative tinge that is psychologistic rather than sociopolitical, takes the fact that there is no philosophical consensus about the definition of art as reason to hold that no unitary concept of art exists. Concepts of art, like all concepts, after all, should be used for the purpose(s) they best serve. But not all concepts of art serve all purposes equally well. So not all art concepts should be used for the same purposes. Art should be defined only if there is a unitary concept of art that serves all of art's various purposes – historical, conventional, aesthetic, appreciative, communicative, and so on. So, since there is no purpose- independent use of the concept of art, art should not be defined

2. Why is art valuable?

- **Value of Art Consists in Its Pleasure (Hedonist View of Art)**
 - The value of art consists in the satisfactions of sense which the media of aesthetic expression afford—the delight in color and sound and rhythmical movement of line and form.
 - Hume primarily suggests that art is chiefly valued due to *pleasure or enjoyment it gives*. from Hume argues that the important thing about art is its 'agreeableness', the pleasure we derive from it, and that this is a matter of our sentiments, not its intrinsic nature. This suggests that aesthetic judgments are essentially subjective.
 - However, Hume recognized that even though taste is a matter of feeling things to be agreeable or disagreeable, there is still a standard of taste, and the question is how these two ideas can be made consistent. Yet this suggests some *commonality* in taste, but does not validate any *standard* in taste. The fact that a feeling is shared by many people does not make it rationally obligatory for everyone to feel the same.
 - **Criticism**
 - The commonplace view that the value of art lies in the pleasure we get from it has been found to be deficient on a number of grounds.
 - First, it is not clear that what is commonly regarded as the finest in art is, except for those 'laboriously trained to enjoy it', a real source of amusement.
 - Second, if art's value is pleasure, this makes it nearly impossible to explain the various discriminations that are made within and between forms and works of art.
 - We make judgments that artworks differ in quality, but this is rarely justified by a similar difference in pleasure accrued
 - Light & Serious Art
 - Pleasure is difficult to measure in any quantifiable sense, too.
 - Third, it is hard to see how the pleasure theory could sustain the sorts of evaluative distinctions that are made between art and non-art in the cultural and educational institutions of our society. We might try to amend

the pleasure theory by formulating a distinction between pleasures, and classifying art as 'higher', but as the examination of Mill showed, no such distinction seems to be sustainable.

- **Value of Art Consists in its appeal to emotion**

- Collingwood suggests that there is a sharp distinction between art proper, and the use of art to arouse feelings and emotions. Using art to arouse emotions is not art proper – e.g. using Benson's Land of Hope & Glory to rouse people at political rallies – because the media of art is employed as a *means* and is thus nothing more than a technology or craft
- Art proper as he describes it has two equally important elements, expression and imagination. **It is by imaginative construction that the artist transforms vague and uncertain emotion into an articulate expression.** This process of artistic creation is a process of imaginative self-discovery, where through creation the artist achieves self-knowledge.
 - Collingwood is aware that such a theory of art may be construed as solely of value to the artists alone, but he argues that it is not particular or limited to the artists, but instead representative of a community.
 - Collingwood can be thought of sharing Kant's supposition of a *sensus communis*, where art serves an important social function in bringing the community to self-knowledge
- **Problems**
 - First, it is difficult to locate the expression of emotion in a relevant and plausible account of the relation between artist, work and audience.
 - Second, an emphasis on the artist's emotion robs artistic activity of what would seem to make it special, namely imagination.
 - Third, there is nothing valuable in the expression or arousal of emotion for its own sake.
 - Fourth, in identifying the artwork with what we would normally think of as the inner experience of the artwork, he makes nonsense of the idea that the spectator interprets the artwork, and can do so more or less accurately.

- **Value of Art consists in its moralistic functions**

- Art is an image of the good, and has value in so far as through expression it enables us to experience edifying emotions or to contemplate noble objects
- The prime difficulty of this theory is its inadequacy as an interpretation of the whole of actual art; for, in order to find support among existing examples, it is compelled to make an arbitrary selection of such as can be made to fit it.
- Velasquez's pictures of dwarfs and degenerate princes are as artistic as Raphael's Madonnas; Goethe's Mephistopheles is one of his supreme artistic achievements; Shakespeare is as successful artistically in his delineation of Lady Macbeth as of Desdemona.
- In this light, aesthetic value cannot be determined in terms of whether it represents particular values. It excludes substantial amounts of works that were created with the intention of serving some purpose other than arts

- **Value of Art Consists in its appeal to cognitive ideals**

- Hegel held the value of art to be cognitive (conveying knowledge) rather than hedonic (giving pleasure), or aesthetic (being beautiful) or expressive (communicating feeling)

- Similarly, Goodman argues that arts must be taken no less seriously than the sciences as modes of discovery, creation, and enlargement of knowledge in the broad sense of advancement of the understanding, and thus that the philosophy of art should be conceived as an integral part of metaphysics and epistemology
- Knowledge through abstract representations rather than scientific knowledge which seeks objective representations of

2.1 Aesthetic Cognitivism

Aesthetic cognitivism explains more successfully than other theories why we do and should attribute to great works of art the value we do. Although there is pleasure to be gained from the arts and beauty to be found in them, and though they are often moving, these features alone cannot explain the value of art at its finest.

- **Can we gain any knowledge from Art?**
 - No we cannot!
 - The problem with Art is that it has no propositional content, and therefore does not generate any sort of facts, truths, or arguments. Taken in the traditional sense of JTB, it cannot be a source of knowledge
 - Also, as Plato objects, Art is not true or part of reality; it is an illusion
 - Our direct experience of the world is mere representation of the actual reality (Theory of Forms); since art is a representation of the representation, it is even less accurate, therefore it cannot provide knowledge (which is in contact with reality)
 - Yes we can!
 - It is widely accepted that we can gain real, important knowledge and insight about the world from art. However, this knowledge rarely comes in propositional form, and is seldom concerned with natural or physical facts. Instead, art provides insights about the world that transcends the natural domain (so for instance, in the moral or emotional domain), and it is difficult to fully convey the full extent of the knowledge that one gains from art- hence, non-propositional.
 - Moral
 - It is argued that art can provide moral knowledge in a few ways. Firstly, art places us in moral situations that we do not normally come across in real life. As it stimulates our own reactions to the situations presented, we then have an idea of how to respond morally to such situations in real life, hence giving us moral knowledge on how to act. For instance, the moral ambiguity that we feel at **Shylock from The Merchant of Venice** presents us with a moral situation that we do not normally face in real life.
 - Secondly, art possesses the ability to give us imaginative and epistemic access to experiences relevant to moral knowledge and judgment, as it stimulates our emotional reaction to certain situations or characters (for instance, feeling morally saddened by the fatalistic conditions of the California farmers in *Grapes Of Wrath*), thereby equipping us with greater moral knowledge
 - Emotional
 - Art provides us emotional knowledge as it provokes emotional responses from us. Emotional knowledge can be taken to either be knowledge of our own spectrum of emotions, or knowledge about our emotional responses to situations (may be similar to moral knowledge). In both situations, the

emotional stimulation by art provides us with such knowledge. For example, Pollock's No. 5 1948 may inspire in us emotions of surreal frustration and shock that we never thought ourselves, or humans as a whole, to possess. Another example may be Rembrandt's The Night Watch, whereby we feel the effect of chiaroscuro on ourselves, and analyse our emotional response to stark colour and visual contrasts.

- Psychological
 - Art can also give us an insight into psychological states. For example, psychological realism is a genre of art and paintings that develop in viewers/readers greater awareness of psychological states, and this can be argued to constitute psychological knowledge, as we are thus more aware of a greater range of psychological states.
- Real-world knowledge
 - Apart from introspective knowledge, it can be argued that art provides real-world knowledge outside of the physical and natural world as well. For instance, we learn about the dangers of totalitarianism from 1984, and from Guernica the sheer chaos and bloodshed during the Spanish Revolution that cannot be fully captured in statistics and words.
- Transcendence
 - While science describes the physical world, this is done from a single, empirical point of view; art describes the world in a myriad of ways, transcending experience of the physical world into the moral, emotional and psychological (relate this back to objection c). In other words, art is a source of insight and awareness, which cannot be put into propositional language, but which can help us to see the world in a new or different way.

- **Does JTB apply to Art?**

- Let us utilise the traditional tripartite definition of knowledge, JTB, and see how it may be compatible with Art (if, at all)
- Problems with JTB
 - Since Art has no propositional knowledge, we need an alternative justification for it rather than direct experience, therefore we need to know:
 - What the new knowledge we obtained is $\frac{3}{4}$ What the justification of our engagement with the artwork is
 - We need to distinguish between learning from Art from merely being influenced, affected or challenged by it

- **Maybe we don't need JTB**

- Art provides us with moral knowledge, which also does not fall in the sphere of JTB since moral knowledge is not propositional
- Art gives us the examples of morally pertinent activities for us to exercise our judgment in, can face simulations of moral situations we might not otherwise experience in real life $\frac{3}{4}$

Arguments Against Aesthetic Cognitivism

Criticism has been levied against art's cognitive value, as critics argue that even if art does produce warranted meaningful truths, art does not have a unique set of objects of study or a distinct methodology, as compared to areas like science. This leads to the conclusion that art should not be seen as a distinct field of knowledge, as it is subsumed under other areas of knowledge.

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However, it can be argued that there is a method of inquiry that is unique to art- art itself. Many works employ distinctively artistic methods to allow us to see a range of truths and crystallise our understanding of certain ideas. Which other area of study uses canvas and paint to convey ideas, for instance?

Another related concern pertains to whether the cognitive value of an artwork is relevant to its aesthetic value. While the cognitive takeaways from an artwork, say, *Grapes of Wrath* may be external to its aesthetic merit, one might argue that the cognitive value comes along only with the aesthetic merit or ingenuity of presenting content in a particularly refreshing manner.

3. What is Good / Bad Art?

What are Judgments of Taste?

The most common contemporary notion of an aesthetic judgment would take judgments of beauty and ugliness as paradigms — what we called “judgments of taste”.

- **Conditions of Judgment of Taste**

- The first necessary condition of a judgment of taste is that it is essentially *subjective*. What this means is that the judgment of taste is based on a feeling of pleasure or displeasure. It is this that distinguishes a judgment of taste from an empirical judgment. Central examples of judgments of taste are judgments of beauty and ugliness.
- Secondly, for Kant, the judgment of taste aspires towards “universal validity”
 - Kant's idea is that in a judgment of taste, we demand or require agreement from others in a way we do not in our judgments about the niceness of Canary-wine, which is just a question of individual preference. In matters of taste and beauty, we think that others ought to share our judgment.
- As Kant recognized (more or less following Hume), all this is a point from which to theorize. The hard question is whether, and if so how, such a subjectively universal judgment is possible.

- **Aesthetic Truths**

- The normativity of aesthetic judgments can be recast in terms of a particular conception of aesthetic truth. For some purposes, it is useful to do this. It might be thought that deploying the idea of aesthetic truth commits one to the existence of an aesthetic reality. But this worry springs from the assumption that a strong correspondence conception of truth is all there ever is to truth in any area where we might employ the notion.
- The conception of truth applicable in aesthetics might be one according to which truth only implies the sort of normativity described above, according to which there are correct and incorrect judgments of taste, or at least that some judgments are better than others.

- **Mind Independence**

- Mind-independence is best expressed as a negative thesis: whether something is beautiful does not depend on my judgment. Thinking it so doesn't make it so. This can be re- expressed in conditional terms: it is not the case that if I think something is beautiful then it is beautiful.

- **Non-Aesthetic Dependence**

- Dependence contrasts with mind-independence in that it says what aesthetic properties do depend on, as opposed to what they don't depend on; the aesthetic properties of a thing depend on its nonaesthetic properties

3.1 Theories of Beauty

- Perhaps the most familiar basic issue in the theory of beauty is whether beauty is subjective—located ‘in the eye of the beholder’—or whether it is an objective feature of beautiful things.
- If beauty is entirely subjective—that is, if anything that anyone holds to be or experiences as beautiful is beautiful (as James Kirwan, for example, asserts)—then it seems that the word has no meaning, or that we are not communicating anything when we call something beautiful except perhaps an approving personal attitude.
- At the same time, it seems senseless to say that beauty has no connection to subjective response or that it is entirely objective. That would seem to entail, for example, that a world with no perceivers could be beautiful or ugly, or perhaps that beauty could be detected by scientific instruments.
- **Differing Conceptions of Beauty**
 - **Classical Conceptions of Beauty**
 - The classical conception is that beauty consists of an arrangement of integral parts into a coherent whole, according to proportion, harmony, symmetry, and similar notions. This is a primordial Western conception of beauty, and is embodied in classical and neo-classical architecture, sculpture, literature, and music wherever they appear.
 - **Beauty as Love**
 - As we have seen, in almost all treatments of beauty, even the most apparently object or objectively-oriented, there is a moment in which the subjective qualities of the experience of beauty are emphasized: rhapsodically, perhaps, or in terms of pleasure or ataraxia, as in Schopenhauer.
 - **Hedonistic Beauty**
 - The Italian historian Ludovico Antonio Muratori, for example, in quite a typical formulation, says that “By beautiful we generally understand whatever, when seen, heard, or understood, delights, pleases, and ravishes us by causing within us agreeable sensations”
 - One result of this approach to beauty—or perhaps an extreme expression of this orientation—is the assertion of the positivists that words such as ‘beauty’ are meaningless or without cognitive content, or are mere expressions of subjective approval.
 - Ayer held that “*such aesthetic words as ‘beautiful’ and ‘hideous’ are employed ... not to make statements of fact, but simply to express certain feelings and evoke a certain response.*”

4. What is the Nature of our Judgments of Taste?

- **Taste must be Objective**
 - **Debate Argument**
 - We debate about Art; this means that there must be an objective standard we can assert as fact that is independent of our taste
 - Problem: This assumes that arguments in debates are purely logical; however, they could be mere emotional swaying and have no rational basis
 - **Expertise Argument**

- We are inclined to believe that some people have better taste than others
- If we believe that experts exist and that errors in taste are possible, then there must be an objective standard for "good Art" and "bad Art"
- Problem: This is circular as experts are defined as people who speak the truth about Art, while objectivity is argued to exist because experts say so
- Kant's Position
 - Since Kant draws a distinction between rational and aesthetic judgments, he argues that aesthetic judgments are not based on concepts, or things that can be known, but on intuitions or sensations. Therefore, a true judgment of beauty is disinterested; it is not based on any known concept, it is independent of social, cultural & political forces, simply a sensation of unconstrained, completely detached pleasure.
 - Along these same lines, a beautiful object is purposive, containing the property or quality of purposefulness, without actually having a concrete purpose.
 - Problems
 - Standards are too high, impossible - how do we free ourselves of bias? ▯ A position free from bias would deprive taste of its foothold; perhaps taste is derived from our biases
- Taste must be Subjective
 - Moral Argument
 - Appreciation and depreciation are essential to Art; Art, then, could be like the moral domain, where Hume argues such properties are merely defined by human feelings of yay or nay
 - Psychological Argument
 - Aesthetic appreciation is psychological, and does not supervene on properties that are physical / non-psychological
 - Aesthetic properties cannot all be intrinsic to artworks, e.g. forgeries which we treat to have less value as an identical original artwork (psychological diminishing of value)
 - Ineffability Argument
 - We cannot explain why we appreciate the Art that we do
 - It is virtually impossible to give reasons for aesthetic appreciation; for example, if we ask a Bruegel enthusiast for the reasons behind his admiration of Bruegel's art, he would probably cite the realism in the landscapes, or in the delicate composition of colours. However, there are no rational reasons why these exact properties make him admire Bruegel's art; they just do, because they elicit a positive aesthetic emotion. This illustrates the subjectivity of artistic judgments.
 - Although you can offer reasons for your appreciation e.g. the luminosity of the painting, you still cannot explain why luminosity is beautiful to you other than "it just is!"
 - Hume's "unbiased critics"
 - Hume argues that our aesthetic judgments are subjective for they are verdicts of sentiments, but amidst all these subjective judgments we are able to arrive at some "joint verdict" on the "standard of taste", and we

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- Hume's subjectivism must explain why the sentiments of some critics are better and worse, not which are true and false in any absolute sense.
- Hume thinks a good critic is unbiased, so her subjective reactions / assessments of a work of art are better than a biased critic
 - Criteria for identifying good critics: "Strong sense, united to delicate sentiment, improved by practice, perfected by comparison, and cleared of all prejudice, can alone entitle critics to this valuable character"
- Standards of taste - There are standards of taste which represent a consensus, derived from experience. They are the "common sentiments" of humanity-for we are of the same constitution.

5. What makes certain artworks, great?

Dennis Dutton's Framework of Aesthetic Universals is very instructive:

- Expertise or virtuosity. Humans cultivate, recognize, and admire technical artistic skills.
- Nonutilitarian pleasure. People enjoy art for art's sake, and don't demand that it keep them warm or put food on the table. Style.
- Artistic objects and performances satisfy rules of composition that place them in a recognizable style.
- Criticism. People make a point of judging, appreciating, and interpreting works of art.
- Imitation. With a few important exceptions like abstract painting, works of art simulate experiences of the world.
- Special focus. Art is set aside from ordinary life and made a dramatic focus of experience.

Dutton's categories seek to universalise traditional European notions of aesthetics and art forgetting that, as André Malraux and others have pointed out, there have been large numbers of cultures in which such ideas (including the idea "art" itself) were non-existent

Societal Institutions

Our idea of what art is great is heavily influenced by reputed artistic institutions, such as art galleries and auction houses. Due to the supposed credibility of these artistic institutions, when art is deemed to be great by them, the general public, despite any personal misgivings, will be unlikely to question the judgment of these authorities on art. For example, the financial value of art affects our valuation of it in non-financial terms: despite the nondescript subject matter and unspectacular form of *The Card Players* by Paul Cezanne, due to it being the most expensive painting ever sold, we are conditioned to think of it as great art. Hence, social conditioning plays a significant role in our non-artistic valuation of art. Of course, the financial side is only one aspect of social conditioning involved. Although 'great' movies and literature are largely affordable to the general public, once again testimony by movie and literary critics condition us to think of them as great art.

Psychological response

A key reason for our preference for originals over any perfect forgeries is due to their appeal as relics, meaning that it is not just the artwork which is valued, but the historical significance behind the artwork as well. This gives us a special fascination with the artwork as a historically and culturally rich relic, and explains why we view the original *Mona Lisa* (for example) so differently from replicas, no matter the close aesthetic similarity.

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Is all beautiful art great?

No. An incredibly realistic painting of the Alps might be beautiful on a surface, aesthetic level, but for non-aesthetic reasons, it is not considered a great piece of art, in the sense that it possesses little non-artistic significance.

Is all great art beautiful?

No. As mentioned previously, art is often considered great for largely non-artistic reasons. For instance, Edvard Munch's *Scream* and Pollock's *No. 5 1948* are not paintings most people would call beautiful. As our definitions of art have expanded greatly to include unorthodox works like conceptual art, what we would call great is more likely to deviate from traditional conceptions of beauty.

However, it is worth remembering that as most great artworks need time to cement their status as great, and as traditional conceptions of beauty were upheld more strictly in the past, most great artworks today can generally be argued to be beautiful.

6. Perfect Forgery

One of the most famous episodes of misidentification and fraudulence in the last century involves the van Meegeren Vermeer forgeries. The Dutch artist Han van Meegeren (1889–1947) was born in Deventer and studied in Delft, which was the home of the great seventeenth-century Dutch artist Johannes Vermeer.

The importance of authenticity:

- Mark Sagoff claims that the aesthetic value of a given artwork depends in part upon its authenticity, such that forgeries or otherwise inauthentic artworks cannot be valued as authentic works can. It allows us to connect the value of an artwork to the social and historical contexts within which an artwork is created
- While Heidegger establishes the importance of an artwork's creation, he differs from Sagoff in claiming that the ongoing, dynamic life of the artwork is of importance to its authenticity.
 - For instance, a statue which had been stolen in ancient pillaging and recognizably damaged several years after its creation, and that still bears the mark of this history in its present location will likely grow to be recognized as the 'authentic work' partly due to such a change in appearance. Historical changes to the artwork alter what will be recognized as the authentic work.

Oxford study recently found that

- With mechanical reproduction, which appears in its most radical forms in film and photography, millions of images of an original are circulated, **all of which lack the "authentic" aura of their source.** This process both affects and is the effect of changing social conditions in which all previously unique and sacred institutions have become equal (223). The general willingness to accept a reproduction in place of the original also signifies an unwillingness to participate in the ritualistic aesthetics and politics of earlier times. For example, a photograph or film of a Catholic cathedral denudes its unique aura, transforming the role of participant into that of a spectator or possibly a detached commentator.
- For Goodman, the very fact of knowing that a work is a forgery, along with the possibility that one might someday be able to see a difference, makes a justified difference to how the forgery is seen today.

- Although they looked to many like perfectly acceptable Vermeers in 1930s, such paintings Christ and the Disciples at Emmaeus were by the 1950s far less plausible. Today it seems surprising that many of the van Meegeren forgeries were once thought of as Vermeers.
- For Arthur Danto, forgery is a matter of a **falsified history of an object**, and works of art do not always “wear their histories on their surfaces.” Danto regards art works as **constituted by the ideas they embody and express**; they are surrounded by an “atmosphere is theory” which makes them what they are. It is therefore impossible that an original work and its perceptually indistinguishable forgery could ever have the same value, even if they were to remain forever indistinguishable: art is less what you see and more what you know. **The historical context in which a text — or by extension any work of art — is created therefore determines meaning and value.**
- It is also not clear what exactly constitute forgery.
- Finally, a word must be said about the **cultural dimensions of forgery and plagiarism**. The Western European demand for originality in thought and expression is not universally shared, nor was it even found in its modern degree all through Western history. In the Middle Ages, the copying and memorization of traditional texts was a stronger element in education than it is today, and such purely reproductive thought is still an important element in many non-European cultures. For example, plans have been announced in Osaka, Japan, for a museum of painted reproductions of European masterpiece paintings. Europeans would doubtless consider this a travesty of an art museum, and the very idea does indeed suggest serious cross-cultural divergences in the attitude toward copying.

7. Conceptual Art

- First and foremost, conceptual art challenges our intuitions concerning the limits of what may count as art and what it is an artist does. It does so, on the one hand, by postulating ever more **complex objects as candidates** for the status of ‘artwork’, and, on the other hand, by distancing the task of the artist from the actual making and manipulating of the artistic material.
- Continuing the tradition of Marcel Duchamp's readymades such as *Fountain*, or *Bottlerack*, it sets out to overthrow our traditional conceptions of what an art object should be made of and what it should look like.
 - Through *Fountain*, Duchamp sought to express the idea that art should be an intellectual process rather than an object.
 - Through *The Physical Impossibility of Death in the Mind of Someone Living*, Hirst sought to talk about death in a provocative way. By isolating the shark from its natural habitat, with the formaldehyde providing an illusion of life, the work explores our greatest fears, and the difficulty involved in adequately trying to express them.
- The artwork is a **process** rather than a material thing, and as such it is no longer something that can be grasped merely by seeing, hearing or touching the end product of that process.
- The most fundamentally revisionary feature of conceptual art is the way in which it proclaims itself to be an art of the *mind* rather than the *senses*: it rejects traditional artistic media because it locates the artwork at the level of ideas rather than that of objects. Because creative process tends to be given more weight than physical material, and because art should be about intellectual inquiry and reflection rather than beauty and aesthetic pleasure (as traditionally conceived), the identity of the work of art is said to lie in the idea at the heart of the piece in question. In the words of Kosuth, ‘[t]he actual works of art are ideas’; Art is ‘**de-materialised**’, and in this sense held to be

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prior to its materialisation in any given object, and thus is ultimately rooted in the artist's actual agency.

- As a direct result of its examination of what may properly qualify as art, and of the markedly broad conception of what may constitute an art object, which results from this examination, conceptual art tends to reject traditional artistic media such as conventional painting or sculpture.
 - Piero Manzoni's act of signing a woman's arm

Picasso's Guernica - embodiment of the tragedy and profound dislocation wrought by the Spanish Civil War

Showing the tragedies of war and the suffering it inflicts upon individuals, particularly innocent civilians.

Van Gogh's starry night - Impressionist work

Art as social commentary

- Banksy's floating balloon girl - social political commentary on Israeli borders on the west bank
- Samantha Lo's "not your grandfather's road" as social critique
- Ai Weiwei's River Crab - cultural resistance to the Chinese government's censorship, unique pun on the word "hexie" // Snake project made up of bags of Sichuan earthquake victim
- 1984 & Animal Farm - perils of totalitarianism
- Liberty leading the people - embodiment of the spirit of the French Revolution
- Duchamp's Fountain - to upend the idea that art consists in the object
- Hirst's The Physical Impossibility of Death in the Mind of Someone Living - unique presentation of the relationship of the conception of death and
- Tracey Emin's Unmade Bed
- Piero Manzoni's Arists' Shit
- Edvard Munch's work - "infinite scream passing through nature" expressionism tradition of emotions manifest in artwork
- Barnett Newman's abstract expressionism - large swaths of colour – acrimony
- Saatchi's intervention in Damien Hirst's fame
- Arthur Danto's forgery is falsified history
- Kant judgments of tastes are subjective but aspire towards universal validity. Objectivity in judgments of taste is possible when such judgments are disinterested - independent of any concept or personal interest.
- Van Meeregen's forgeries of Vermeer food

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- **Circularity:** work of art = something recognised by a member of the art world; a member of the art world = someone who can recognise works of art (BUT institutionalists argue these people can earn their status through expertise on art history, the way the art world works, etc.)
 - While this problem of circularity also applies to institutions such as the legal system, the problem with the artworld is that it neither sufficiently corporate nor does it have recognized procedures for bestowing status.
 - *Duchamp's Urinal example* - First, established critics rejected it as a work of art; later, for whatever reason, equally established critics came to regard it as such. Since the same object must either be or not be a work of art, this implies that one of the groups of critics was mistaken.
 - Although judges and legislators can make mistakes, their doing so does not eliminate the authority of their decisions. Until the law is changed or the judicial decision reversed, the status of crime and criminal remain, even though a mistake has been made. What this shows is that social authority derives not from opinion, however well informed, but from recognized social function. What Dickie's 'artworld' lacks is not so much the function he attributes to it, as the social recognition of some 'invested' authority it would need to have for his theory to work.
- **Vagueness:** we do not know what criteria the art world uses to decide what is art, so we don't actually know what art is; if we did know, then we wouldn't need the institutional theory to tell us what art is anyway
- **Insufficiency:** Theory does not distinguish good art from bad art, less evaluative than significant form theory and idealist theory
 - May be taken to imply that anything produced by someone recognised as an artist to be art - this idea is mocked by **Piero Manzoni** with his **"Artist's Shit"** and **"Artist's Breath"**
- **Ted Cohen (1973)** points out that something can be appreciated only if it is appreciable; and that some things—he offers as examples “ordinary thumbtacks, cheap white envelopes, the plastic forks given at some drive-in restaurants,” and possibly even Marcel Duchamp's infamous urinal-sculpture *Fountain*—are unappreciable, hence cannot be candidates for appreciation, hence cannot be art.
- **Monroe Beardsley (1976)** claims that it is incoherent to say that an artwork is made by a certain practice (conferring the status of candidate for appreciation) on behalf of a certain institution (the artworld) when neither the rules of the practice nor the limits of the institution can be further specified

Normative Theories of Art

- Instead of seeking a definition of art in terms of necessary and sufficient properties, or trying to isolate its distinctive social function, such a theory is intended to help us grasp the values music, or painting, or poetry can embody, and how valuable this form of embodiment is.
- For **Hegel**, art stands somewhere between intellectual understanding and experience of the senses, and its distinguishing character is thus what Hegel calls 'sensual presentation of the Idea', or the presentation of the idea of a thing by means of the senses. 'Sensual presentation of the Idea' is something art makes possible through its ability to identify the form of a thing (Idea), which we grasp intellectually, and its content (appearance), which we encounter through the senses.

Should there be a theory of art in the first place?