

[1/28, 13:54] Karthikey Awasthi Ms18: All incommensurable things are incomparable but not all incomparable things are incommensurable.

And... discuss.

[1/28, 13:58] Karthikey Awasthi Ms18: Pen and bottle are incomparable. But with a common measure of their market value, they are commensurable.

Paradigms of physics and biology are incommensurable. Hence, they are incomparable.

Comparison, at least the way I'm using it, implicates assigning superiority and inferiority.

[1/28, 13:59] Karthikey Awasthi Ms18: This came from a post class discussion with

@Aaradhana Ms18. Please do tell if it's incorrect or incomplete.

[1/28, 14:01] Aalhad Bhatt Ms18: You can't tell if a pen is better than a bottle for taking notes in class?

[1/28, 14:02] Karthikey Awasthi Ms18: The realm of questioning is subjective. Hence, over all, incomparable.

[1/28, 14:02] Mayukh Ms18: Can you tell the price of 5 kg of onion given the price of 2 kg of rice ?

[1/28, 14:03] Mayukh Ms18: At the same time, given their content, you can say which is more nutritious and what amount is needed in diet

[1/28, 14:03] Mayukh Ms18: Depends on how you quantify

[1/28, 14:03] Aalhad Bhatt Ms18: What does overall even mean?

[1/28, 14:03] Mayukh Ms18: That's my view regarding this

[1/28, 14:04] Karthikey Awasthi Ms18: Yes. But in that sense, every two things has a way to be quantifiable.

[1/28, 14:05] Mayukh Ms18: Every 'commodity' has

[1/28, 14:05] Aalhad Bhatt Ms18: Given 2 quantum particles, can you tell which one is further away?

[1/28, 14:05] Karthikey Awasthi Ms18: No but I can quantify with another scale then

[1/28, 14:06] Mayukh Ms18: In context of science, I guess incommensurability arises due to the difference in context of their development

[1/28, 14:06] Karthikey Awasthi Ms18: No then I can say Physics is better than Biology if the scale is "which can explain the motion of an electron more clearly"

[1/28, 14:07] Mayukh Ms18: C'mon ! Bio doesn't even aim at answering the question you are asking

[1/28, 14:07] Aalhad Bhatt Ms18: Which makes then comparable

[1/28, 14:07] Karthikey Awasthi Ms18: Exactly.

[1/28, 14:07] Aalhad Bhatt Ms18: Hence different paradigms are comparable but not incommensurable

[1/28, 14:08] Aalhad Bhatt Ms18: Ignore the not

[1/28, 14:08] Aalhad Bhatt Ms18: They are incommensurable

[1/28, 14:08] Karthikey Awasthi Ms18: My point exactly. No scale is fair then. Market value isn't fair if a ballpoint pen "isn't aimed" to be more expensive than a Tupperware bottle.

[1/28, 14:08] Mihir Ms18: Again, paradigm is a more general thing. When we discuss I believe we need to be more general.

[1/28, 14:08] Mayukh Ms18: Well....

[1/28, 14:09] Aalhad Bhatt Ms18: So you find the expectation value

[1/28, 14:09] Aalhad Bhatt Ms18: Which you can't do with a classical particle

[1/28, 14:09] Aalhad Bhatt Ms18: Which makes them incommensurable

[1/28, 14:09] Mihir Ms18: *Too specific*

[1/28, 14:10] Aalhad Bhatt Ms18: Okay, in general terms

[1/28, 14:10] Karthikey Awasthi Ms18: What delineates 'specificity'? When have I gone too specific?

[1/28, 14:10] Aalhad Bhatt Ms18: Two paradigms exist with different interpretations of reality

[1/28, 14:10] Aalhad Bhatt Ms18: Reality as described by one can be described in the same way by another

[1/28, 14:10] Aalhad Bhatt Ms18: Which makes them incommensurable

[1/28, 14:11] Mihir Ms18: Yes agreed.

[1/28, 14:11] Mihir Ms18: That's specially true for philosophy

[1/28, 14:11] Aalhad Bhatt Ms18: On the contrary, you can say which description of reality is better for a purpose

[1/28, 14:12] Mayukh Ms18: I don't see a problem with being specific. All you need is a counter example and we can move on to a different explanation

[1/28, 14:12] Aalhad Bhatt Ms18: Gopal gave the example of alchemy and chemistry

[1/28, 14:12] Karthikey Awasthi Ms18: But what if I make my judgement proportional? Say, making a laptop from scratch isn't a big achievement now but it was a huge deal with a previous paradigm (the paradigm when it was invented) in effect making progress in that paradigm "better" than this one?

[1/28, 14:13] Mihir Ms18: Yes. But this gives a human objective to the way we see reality. Talking in general terms if we alienate the objective of looking at things and the reality that that objective provides, we cannot say which one is better which isn't. Or which is 'more' true.

[1/28, 14:13] Aalhad Bhatt Ms18: So isn't that basically describing reality differently?

[1/28, 14:14] Aalhad Bhatt Ms18: But science does not exist without humans

[1/28, 14:14] Aalhad Bhatt Ms18: Nobody learns alchemy because chemistry is superior for us

[1/28, 14:18] Mayukh Ms18: Exactly. The labour put into it back then was more than put into it now.

[1/28, 14:19] Mihir Ms18: Yah Yah.

[1/28, 14:19] Mayukh Ms18: And that's reflected in how many people could afford it back then and now

[1/28, 14:29] Karthikey Awasthi Ms18: Say Darwin's idea of evolution during the paradigm he worked in was a big breakthrough. But before Darwin, the paradigm's normal science (natural history) wasn't 'wrong'. It's truth didn't seek the origin of species since their theory had the Bible for that. But within that assumption, their normal science worked.

How do you compare Pre-Darwinian and Post Darwinian eras?

If you engage with me a little bit-

Their Fs in $P(E|F)$ (E given F) were different, making their probabilities entirely very different.

[1/28, 14:31] Aalhad Bhatt Ms18: That's a very complicated way of saying that aren't commensurable

[1/28, 14:32] Aalhad Bhatt Ms18: But my point is, the moment you choose the F, the moment you say you're going to work under these assumptions, you're making a choice by comparing the two

[1/28, 14:32] Mayukh Ms18: This brings us to a question whether the premise is 'rational' and 'scientific'

[1/28, 14:33] Karthikey Awasthi Ms18: *comparable

[1/28, 14:33] Mayukh Ms18: If you have time have a reading of Zilsel - on how 'modern science' evolved in 17 century Europe

[1/28, 14:34] Karthikey Awasthi Ms18: No it's like you said Bio doesn't aim to answer the motion of an electron.

That paradigm of Bio did not aim to answer the cause of species diversity

[1/28, 14:34] Karthikey Awasthi Ms18: It's not like Pre Darwin was unscientific

[1/28, 14:35] Aalhad Bhatt Ms18: Nope, incommensurable

[1/28, 14:35] Aalhad Bhatt Ms18: They asked different questions and described reality in different ways

[1/28, 14:35] Karthikey Awasthi Ms18: Then try to compare them

[1/28, 14:36] Aalhad Bhatt Ms18: Natural selection explains the diversity of life better than any theory before it

[1/28, 14:36] Mayukh Ms18: Assuming Bible is true, i.e., God created life, stops all question there and then. Also this has no potential for any prediction or explanation because the assumption is a belief

[1/28, 14:36] Aalhad Bhatt Ms18: All assumptions are beliefs

[1/28, 14:37] Aalhad Bhatt Ms18: We assume that if A is equal to B and B is equal to C, A is equal to C

[1/28, 14:37] Karthikey Awasthi Ms18: It was fact in that paradigm.

[1/28, 14:37] Aalhad Bhatt Ms18: There could be a branch that deals with things when this happens, it's just not mathematics anymore

[1/28, 14:39] Mayukh Ms18: No, you can easily break this claim by instantiating an event where this does not happen

[1/28, 14:39] Aalhad Bhatt Ms18: Please instantiate

[1/28, 14:40] Mayukh Ms18: On the other hand how do you prove or disprove that God created life ?

[1/28, 14:40] Aalhad Bhatt Ms18: Prove is easy

[1/28, 14:40] Aalhad Bhatt Ms18: Find direct evidence

[1/28, 14:40] Mayukh Ms18: I don't know if there's any such instances

[1/28, 14:40] Aalhad Bhatt Ms18: Disprove is impossible

[1/28, 14:41] Aalhad Bhatt Ms18: Because there isn't in maths. It's a foundational assumption

[1/28, 14:41] Aalhad Bhatt Ms18: Hence, according to popper, it's not a scientific theory

[1/28, 14:41] Mayukh Ms18: In other disciplines or maybe society ?

[1/28, 14:42] Mayukh Ms18: I am just saying you can 'potentially falsify'

[1/28, 14:42] Aalhad Bhatt Ms18: I was specifically talking about maths here

[1/28, 14:42] Aalhad Bhatt Ms18: You can't

[1/28, 14:43] Aalhad Bhatt Ms18: You can only assume it's not true and work out a branch with that assumption

[1/28, 14:43] Aalhad Bhatt Ms18: Within maths, you can't do it

[1/28, 14:43] Karthikey Awasthi Ms18: "A belief that God didn't create life"

[1/28, 14:43] Aalhad Bhatt Ms18: No mathematical argument can ever disprove this

[1/28, 14:44] Karthikey Awasthi Ms18: Is there a mathematical argument that proves the impossibility of proving this?

[1/28, 14:47] Aalhad Bhatt Ms18: Yeah

[1/28, 14:48] Aalhad Bhatt Ms18: This is a foundational principle

[1/28, 14:48] Aalhad Bhatt Ms18: All others are drawn from this axiom (and other axioms)

[1/28, 14:48] Aalhad Bhatt Ms18: All other mathematical principles hold only if this one does

[1/28, 14:49] Aalhad Bhatt Ms18: So if another mathematical principle contradicts this, that principle itself does not hold

[1/28, 14:50] Aalhad Bhatt Ms18: Hence you're using a circular argument

[1/28, 15:11] Aalhad Bhatt Ms18: A small note here, you could hypothetically use the other other axioms only to make a principle that contradicts this axiom

[1/28, 15:12] Aalhad Bhatt Ms18: In which case you have a paradigm shift and the new set of axioms is the original set except the one that was contradicted

[1/28, 15:14] Aalhad Bhatt Ms18: Google euclid's 5th axiom for details

[1/28, 19:31] Ritajyoti Sir: Let us organize Kuhn's diverse thoughts on paradigm first. Prima facie, it appears Alhad is closer to Kuhn's understanding. But, let's go by the book first. Will get back soon.

[1/28, 19:36] Ritajyoti Sir: Regarding commensurability and comparability of two disparate commodities, I have the following to offer:

1. The concrete utility and concrete labor gone into the making of a commodity are unique and therefore incommensurable with other qualitatively different utilities and labor.
2. The incommensurability that exists between commodities is mediated by a general equivalent (money, gold) when they come into an exchange relation and hence they become comparable in quantitative terms (ratio).

[1/28, 19:42] Ritajyoti Sir: In (1), labor is concrete that produces utility. In (2), labor is abstract that manifests in the ratio of exchange. Two commodities become comparable for two reasons: a) both are products of human labor (this is in common) and b) both can be expressed in money terms.

[1/28, 19:43] Ritajyoti Sir: (1) can exist without (2). But, the reverse isn't possible.

[1/28, 19:44] Ritajyoti Sir: If a commodity isn't useful it cannot be exchanged.

[1/28, 19:44] Vishnu Ms18: Sorry to deviate from the topic..

Sir, in the book 'What is the thing called Science', AC proposes that scientific laws can't be derived from facts... But in the class, u had told that fundamental laws are deductive in nature... Aren't these contradictory?

[1/28, 19:45] Ritajyoti Sir: Did AC say so and did I say so?

[1/28, 19:45] Vishnu Ms18: Yeah

[1/28, 19:47] Ritajyoti Sir: In the case of commodities (economic science) incommensurability is in qualitative terms, which is overcome by mediated comparability. This is how I think things happen. However, in natural world, relationships aren't exactly socially mediated. Observations may be.

[1/28, 20:52] Karthikey Awasthi Ms18: I understand commensurability as having a scale to allow measurement. Incommensurable, simply would then imply that two things do not have a common scale to allow their comparison.

Incomparable means that you cannot assign a superiority to the two given things.

The notions seem quite similar but there is some difference.

Commensurability explicitly produces a notion of a 'scale', a 'unit of measurement'. Comparison may implicitly use similar ideas but it doesn't outright require a unit of measurement.

[1/28, 20:52] Karthikey Awasthi Ms18: Comparison has a more qualitative sense while commensurability has a more quantitative approach.

[1/28, 20:52] Karthikey Awasthi Ms18: "Ball pen is better than a gel pen because it doesn't wash away from water" is an allowed comparison as qualitatively, both pens have similar usage.

Their market prices allow them to become commensurable.

You don't say 'better' in commensuration but you can say 'higher' or 'bigger' and they definitely aren't synonymous.

[1/28, 22:38] Ashmeet Ms18: Also which chapters are to be studied from poppers book? (What is this thing called Science)

[1/28, 22:41] Ritajyoti Sir: 4, 5, 6, 7. Can follow 8 to revise Kuhn.

[1/28, 22:41] Ashmeet Ms18: Thank you sir

[1/28, 23:15] Ritajyoti Sir: Let me start with incommensurability thesis. I have re-read the relevant pages and gone into Kuhn's subsequent revisions of the thesis. I find three distinct stages in it. First let me deal with what's there in its original version (the book) that you read. Kindly add people so that nobody misses out.

[1/28, 23:29] Ritajyoti Sir: Stage 1: he talks about the absence of a neutral ground or a common standard between two paradigms (PR 1 and PR 2 to quote Tanvi) for adjudication. The thesis under attack was clearly the linear succession of theories in which it was proposed that the later (better) theory would deductively refute and replace the former one. Incommensurability enters in his discussion when he explicates revolutionary transitions. He writes, 'Just because it is a transition between incommensurables, the transition between competing paradigms cannot be made a step at a time, forced by logic and neutral experience'. The words 'logics' and 'neutral experience' refers to Popper's hypothetic-deductive understanding of scientific progress.

[1/28, 23:31] Ritajyoti Sir: He then says, 'the transition from paradigm to paradigm is a conversion experience'.

[1/28, 23:38] Ritajyoti Sir: 'The proponents of competing paradigms are always at least slightly (NOTE) at cross purposes' and therefore are unable to 'make complete contact with each other's viewpoints'. Remember, here Kuhn talks about scientists in their actually existing flesh and blood and not referring to their theories abstracted from them. To the scientists of a later generation, this loss of inter-paradigmatic dialogue may sound redundant and illogical. But, at the moment of revolutionary confusion, incommensurability may have a much better chance. In my view, it will be inappropriate to decontextualize incommensurability from the moment of paradigm shift. When shifts are complete, incommensurability may be reconciled in hindsight. This is my take.

[1/28, 23:39] Ritajyoti Sir: Here sequence is important. He doesn't bring incommensurability while talking about normal science.

[1/28, 23:43] Ritajyoti Sir: '...the proponents of competing paradigms practice their trades in different worlds . . . practicing in different worlds, the two groups of scientists see different

things when they look from the same point in the same direction'. He says this after giving an instance from Einstein's universe.

[1/28, 23:45] Ritajyoti Sir: As opposed to Popper, theory appraisals to Kuhn happen inside the framework of a paradigm. In other words, a paradigm appears to be evaluated within the framework of that paradigm only.

[1/28, 23:48] Ritajyoti Sir: In a later work, Kuhn adds, 'There is no neutral algorithm of theory-choice, no systematic decision procedure which, properly applied, must lead each individual in the group to the same decision'.

[1/28, 23:49] Ritajyoti Sir: I have already told you in class, in Kuhn's world, theory and paradigm don't hold the exact interchangeable meaning.

[1/28, 23:54] Ritajyoti Sir: Now read this illustration:

'The physical referents of these Einsteinian concepts are by no means identical with those of the Newtonian concepts that bear the same name (Newtonian mass is conserved; Einsteinian is convertible with energy. Only at low relative velocities may the two be measured in the same way, and even then they must not be conceived to be the same.) Unless we change the definitions of the variables in the [Einsteinian versions of the laws], the statements we have derived are not Newtonian . . . the argument has not done what it purported to do. It has not, that is, shown Newton's Laws to be a limiting case of Einstein's. For in the passage to the limit it is not only the forms of the laws that have changed. Simultaneously we have had to alter the fundamental structural elements of which the universe to which they apply is composed.'

[1/29, 00:01] Ritajyoti Sir: So, according to Kuhn the analogues that Einstein derives from Newton's laws as a 'special case' are definitely not indistinguishable from with the Newtonian paradigm as Einstein introduces relativistic concepts that upholds the space, time and mass of the Einstein's paradigm. I'm sure history of science will give instances of how staunch Newtonians of Einstein's time (1905-16) reacted to this shift.

[1/29, 00:03] Ritajyoti Sir: Incommensurability as a concept holds in that context and not so much now when we have a more coherent understanding of the transition. In short, incommensurability happens during the transition.

[1/29, 00:04] Ritajyoti Sir: This is surely a more complex view of theory replacement in Popper.

[1/29, 00:05] Ritajyoti Sir: Friends, am I making sense? I'm going by the book. Please treat it as the extension of the class. I cannot convey these in a lecture.

[1/29, 00:06] Ritajyoti Sir: I need a lot of thinking and consultation to do this. This mode suits me.

[1/29, 00:10] Ritajyoti Sir: Earlier in the book, Kuhn writes, 'the transition from Newtonian to Einsteinian mechanics illustrates with particular clarity the scientific revolution as a displacement of the conceptual network through which scientists view the world.'

[1/29, 00:14] Ritajyoti Sir: Therefore, when he says 'when paradigm changes, the world itself changes with them', he actually wishes to emphasize the impact of a master framework on scientist's collective common sense or perception.

[1/29, 00:15] Ritajyoti Sir: I would say, Newton's law of motion is a theory-law complex, but Newtonianism is a paradigm. This is how I will reason theory/paradigm interface.

[1/29, 00:16] Ritajyoti Sir: Kuhn calls a paradigm a political institution. I will extend it a little further and call it an ideology.

[1/29, 00:18] Ritajyoti Sir: '...it is crisis alone that attenuates the role of political institutions as we have already seen it attenuate the role of paradigms.'

[1/29, 00:25] Ritajyoti Sir: 'after discovering Oxygen, Lavoisier worked in a different world'. This doesn't mean the physical world changed. It means that the perception of the scientist changed definitively. The facts of phlogistic chemistry will be replaced by new facts. The new facts emerge with a paradigm and die with it.

[1/29, 00:27] Ritajyoti Sir: This much. Not going into Kuhn's revisions of incommensurability thesis. That will be too much.

[1/29, 00:28] Ritajyoti Sir: If we have time, we will come back to it after midsemester.

[1/29, 02:15] Ritajyoti Sir: Now, can two incommensurable paradigms be compared? I hope yes. Let's consider these two points:

1. It follows from Kuhn that Ptolemaic paradigm of astronomy is incommensurable with Copernican paradigm. They are incommensurable in worldview and in principle. Yet, their predictions of the position of Mars in the universe can however be compared. Here, their accuracy doesn't necessarily involve the basic principles and in such a comparison, their mutually incommensurable terms may not necessarily be involved.

2. A person from the old paradigm may be able to learn the vocabulary of the new. But, learning does not involve her ability to mechanically translate into the old vocabulary. This translation is impossible coz these two paradigms are incommensurable. This reinforces my earlier point about utility of a commodity and their exchange in market--a point where my views contradict Kartikaya's understanding.

[1/29, 14:27] Ritajyoti Sir: The paradigm/theory distinction:

Special and general theories of relativity are two distinct theory constellations. However, both share Einsteinian sensibilities. These sensibilities refer to a new paradigm. That way, a theory follows a set of paradigmatic sensibilities. This is what is in my mind.

[1/29, 15:45] Aalhad Bhatt Ms18: Could you elaborate this?

[1/29, 16:54] Ritajyoti Sir: Read Kuh's Objectivity, Value Judgment and Theory choice. Available online. Will tell you the basic argument when I find a writing slot.

[1/29, 16:57] Ritajyoti Sir: This itself can be a topic.