



# **TOK May 2025 Essay Guide**

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### General Advice for TOK:

- DO NOT READ THIS GUIDE OR ANY OTHER. Yes, you heard me. Take a piece of paper, write out the prompt, and sketch out your ideas WITHOUT REFERING TO ANYTHING ELSE. Only after you run dry do you read guides.
- In coming up with points, there are two schools of thought. Mine is to think of examples, then derive points from there. Some people are maybe to think of points on the spot, like Kant's *a priori* knowledge. This guide is written in the first style. If you can use the second, you don't really need this guide.
- Your English needs to be intelligible. Minimise the use of subject-specific vocabulary where the only goal is to prove you are smart. Use only where appropriate, and then sparingly. This applies ESPECIALLY to philosophy terms. No one is impressed by your use of "general will" or "categorical imperative".
- Definitions are very important. Even if you do not define them in your essay, have a consistent definition you are willing to commit to. Do not let the definition of a term suddenly change in the middle of an essay. You aren't Rousseau and this isn't the *Social Contract*.
- Have a single point per paragraph, and do not let points spill over into the next paragraph. Conclude every paragraph by reiterating your point. (PEEL structure).
- Have 4 points, no more, no less. Any less and its difficult to keep the essay balanced (so you want an even number). Have 6 and you don't have the word count to elaborate sufficiently.
- Do not use the same old examples. If everyone uses the same examples, the examiner will get bored when they get to your essay. I find that the internet tends to regurgitate the same examples over and over, so consult encyclopaedias, or specific books. I cannot recommend Durant's 11 part series "The Story of Civilisation" enough. For easier reads, any survey of history will do. Better still if it is a subject specific survey, like "The Emperor of All Maladies" for cancer.
- Don't plagiarise, especially not from this guide which is on the internet and will definitely show up on Turnitin.
- Do not narrate. Some writing styles are more prone to this. I personally prefer 1 sentence of example, 1 sentence of elaboration, 1 sentence of example, 1 sentence of elaboration, etc etc. This has the advantage of sounding more natural, and being easier to follow. However, this can easily be construed as narration, and marks deducted. It is safer to use all example followed by all elaboration, with both parts being of equal length.
- Start early, and revise your work over and over. Give it to your friends (you trust) to read. It needs to be intelligible without rereading. TOK teachers are too overworked to put too much effort into parsing your work.

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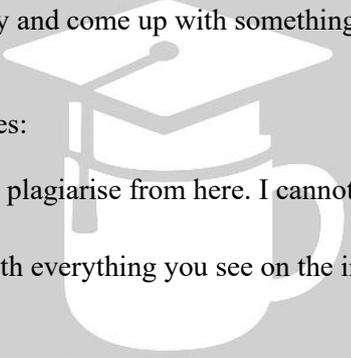
- Read through every sentence of your essay. Does this sentence have a purpose? Is it only setting context? Context sentences should be cut to a bare minimum.

Aspirational Advice for when you have mastered the basics:

- Your essay should tell a story. Point 1 should lead nicely to Point 2, then on to Point 3. By the end, your “synthesis”, or revelation in the conclusion, should feel natural and self-evident. A great test of this is whether your points can be swapped around without breaking the flow of the essay. If they can, consider reworking your essay. (This is good advice for essays in general)
- As implied above, your conclusion shouldn't be a simple summation, but it should provide some new idea, or new take on the question. This doesn't mean that you treat the conclusion as a body paragraph to develop the new idea. The “new idea” should be evident from your 4 points, and the way you construct them.
- Be interesting. No one likes to read the same points over and over in different essays. Ponder deeply and come up with something.

Final Notes:

- Don't plagiarise from here. I cannot emphasise this enough.
- As with everything you see on the internet, *caveat emptor*.



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**Question 1: Do historians and human scientists have an ethical obligation to follow the directive: “do not ignore contradictory evidence”? Discuss with reference to history and the human sciences.**

First thoughts:

This is, for me, a more difficult question because it requires you to talk about “ethics”. Effectively you are asked to make a value judgment about the work of others, which can be a difficult thing to do. There are some very deep pit holes here.

Definitions:

Ethical obligations: This requires us to settle upon a particular school of ethical thought. To my mind of the 3 great Western Schools of ethics, the easiest is probably consequentialism (or utilitarianism, its more specific form). Of course you could use Confucius’s Analects as an ethical basis, but I haven’t read enough of it to help you there.

So let’s say we use utilitarianism. The easiest train of argument to make is “Ignoring this contradictory evidence has a net positive effect”.

But let’s say we use deontology instead (Check out Jeffrey Kaplan on youtube for a crash course on this). It is famously inflexible, so can be difficult to argue around. But the categorical imperative could be interpreted as telling us NEVER to ignore contradictory evidence.

Contradictory evidence: Make sure there’s a clear contradiction. No idea why I have to write this, but people insist on writing nonsense apparently.

Approaches to the Question:

- Why is there such an ethical obligation? The immediate answer “seeking truth” is unsatisfactory. Why is truth important?
- Deontologists would argue that truth is important for its own sake (It’s one of Kant’s 4 laws). It can also be derived from the categorical imperative. You could go on to say that if all such knowledge seekers are not obligated to find the truth, we can never find it, there would then be debilitating effects, and in extreme cases, there would be a collapse of society etc etc. Dr Li Wenliang is an excellent example, though sadly not relevant to this question.
- Utilitarians have a more interesting point to make. Truth is not inherently important, it is what truth brings that is important. If the harmful outcomes outweigh the good, then there is a case to be made for ignoring contradictory evidence. Why did the Popes keep the Vatican Archives closed to researchers for millenia? Why is the CCP fighting against the release of Mao’s Secretary’s diaries?
- Aristotle’s virtue ethics flatly states that the seeking of truth is a virtue in and of itself. Bit hard to write a convincing essay based on that.

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- Since we like consequentialism so much, what are the consequences of the knowledge a historian or human scientist can produce? Can they topple states? Build them up? How did medieval thinkers prop up the state? Why did Erasmus, that highly influential windbag, prop up the Catholic Church during the Reformation? Could this be contrasted against Martin Luther? What about Voltaire?<sup>1</sup>
- Is the contradictory evidence authentic? Is the historian expected to entertain every conspiracy theory that crosses his desk? Is the economist? Premier Li Keqiang of Mainland China did not trust his own economic data, preferring to use other consumption metrics, such as railway freight traffic volume, which is harder to fake.

### AOKs:

You have no choice. For what it's worth, these two AOKs complement each other rather well; the same points can be made for both.

In History, consider the works of Erasmus vs Martin Luther/Voltaire. As previously mentioned, talk about the CCP's reluctance to discuss Mao's Secretary's Diaries.

In the Human Sciences, read up on Li Keqiang's economic work as Premier of the PRC. Consider also the modern replication crisis in the human Sciences. To what extent has data been so severely massaged to prove a point that it can no longer be considered authentic?

Contradictory evidence is easily findable online, I merely state some which illustrate some principle which I have previously elaborated on.

### Structure:

The basic structure of Yes/Yes/No/No or Yes/No/Yes/No is perfectly serviceable for this topic. The emphasis in this question is to dissect the ethical judgement that a historian/human scientist has to make.

Therefore, your topic sentence should always be "X has no obligation to follow contradictory evidence because....", or "Y has an obligation to follow contradictory evidence because....".

In discussing the ethical judgements made, it is important to rely on established frameworks, and state clearly which framework you are using (Deontological, Utilitarian, Virtues, Confucian). DO NOT rely upon your personal value judgements.

As to your synthesis, there are few good things to say. The most insightful I could come up with involves people in places of power. Consider the cases of Erasmus and Li Keqiang. Both are powerful, influential men. Would the judgement they make as leaders be different from the common university professor?

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<sup>1</sup> To be clear I do not think it would be a good idea to have these as two separate paragraphs

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What about other ethical systems? If your entire essay is based on utilitarianism, would there be a significant difference if the essay were written by Kant instead? Other than being completely unreadable nonsense of course.

Of course, the synthesis is bonus points for if the rest of your essay is in good condition. Prioritise your body paragraphs before tackling the synthesis.



**Question 2: Is our most revered knowledge more fragile than we assume it to be? Discuss with reference to the arts and one other area of knowledge.**

First thoughts:

We encounter the quagmire of the Arts, and are faced with the difficult problem of defining “knowledge in the Arts”. To write a good essay, we also want an AOK that contrasts nicely with the Arts. There should be talk of what happens when we assume knowledge to be stronger than it actually is.

Definitions:

- “knowledge in the Arts”: What is it?
  - a) Techniques?<sup>2</sup> You could talk about some techniques being lost, like Damascus Steel or certain Greek pottery glazing techniques
  - b) Paradigms? Consider Orthodox Christian icon painting. It is a very distinctive, unrealistic style. There is a story that Renaissance era Russian painters visited Italy and were unimpressed, refusing to learn from the more realist style there. Why? Could the symbolism behind paradigms be important?
- “fragile”: What causes fragility?
  - a) If knowledge is kept in an oral traditional, or closely guarded, or deemed too obvious to write down, then civilisation collapses can wipe out the knowledge.
  - b) Or maybe the zeitgeist shifts, paradigms are no longer in fashion, and knowledge breaks.
- “assume it to be” What does this mean? What happens when we try to build a house on quicksand? Does that make all subsequent knowledge problematic/wrong?

As you can see, defining “knowledge” differently will lead to very different essays. I will mainly be elaborating on the second way of writing this essay.

Approaches to the Question:

- a) What are paradigms? Formal art styles? Schools of thought?
  - Some churches love their icon painting, but some have shifted away. Why?
  - Consider the rebuilding of St Paul’s. Why did Christopher Wren move away from a traditional British steeple to a more continental dome?
- b) Why do paradigms shift?
  - Hegel would tell us that it is due to the zeitgeist, the “spirit of the times”. Do a little research on this term, maybe read/ get AI to read “Phenomenology of Spirit” for you.
- c) How often do paradigms shift?

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<sup>2</sup> I would not advise using this point, because it kind of subverts the spirit of the question. Have a discussion with your teacher if you insist on using it. As always, *caveat emptor*.

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- They didn't move at all during the Middle Ages, but have been moving explosively recently. Why? Does that mean our conventions now are less stable than they were before? Are knowledge producers cognizant of this fact?
- d) What happens if we assume knowledge to be strong?
  - Medieval doctors thought Galen's ideas on medicine, and his four humour theory, to be a firm foundation. What effect did this have on medicine?

### AOKs:

As previously mentioned, we want some nice contrast, so our essay can have a storyline. All of the other AOKs are possible.

- Natural Sciences lends itself best to the "technique" definition, but will definitely work for "paradigm" as well. Galen's humours, Halsted's radical mastectomy<sup>3</sup>, treatments for polio, are all excellent examples to consider.
- Human Sciences. This is excellent for talking about "zeitgeist", if you want that to be your synthesis. We used to lobotomise women for being talking too much as it was "a mental illness". Slaves running away from masters were also allegedly mentally ill. What does that tell us about psychology?
- Historical analysis follows the zeitgeist too! In fact, that is where the term originated. It was used as contrast against the "great man theory". I personally prefer the latter, but that's neither here nor there.
- Mathematics. Why did the Greeks insist on only using geometry? How did this hinder them? Why were complex numbers resisted for so long? Why did so many cultures develop the concept of a 0 so late?

### Outline:

This is nice and standard. Yes/No/Yes/No will work. So will Yes/Yes/No/No. What about more interesting ways? Organising it by perspectives across time/ages for example<sup>4</sup>.

What is difficult is:

- a) Talking about the effect of assuming it's too fragile/too strong.
- b) Having a good synthesis in your conclusion. I've set up the conclusion nicely to use the zeitgeist, but you are free to use anything else.

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<sup>3</sup> Emperor of All Maladies contains an excellent account of the rise and downfall of this barbaric technique.

<sup>4</sup> This will be difficult.

**Question 3: How can we reconcile the relentless drive to pursue knowledge with the finite resources we have available? Discuss with reference to the natural sciences and one other area of knowledge.**

First thoughts:

This is a how question, so ideally every body paragraph would discuss the issue, as well as propose a solution. I would not spend more than one paragraph on a “no, it is not reconcilable”. Making a story here is perhaps easier if we do not have a no answer.

Definitions:

Everything is nice and straight forward. No further definitions required. Something interesting to consider is what “resources” are. Money? Food? Equipment? Medicine? Test subjects? Corpses? Could Plato ever test out his ideas in “Republic”? Why not?

Approaches to the question<sup>5</sup>:

- How does your family deal with budgeting constraints? Take on an extra job? Find efficiencies? Reduce spending on ancillaries/discretionary expenditure? Make the 10 year old car run for another 5? Delayed spending? Can all these measures be extrapolated?
- A scientific institution that has had to make a lot of budget cuts is NASA. How does it deal with budgetary constraints? What programs have been cancelled? Which delayed? Which modified to extend their service life?
- Columbus famously shopped around the different monarchs until someone was willing to fund his work. Is this true of any artist? Any historian? Look back at the Renaissance/ Enlightenment.
- Perhaps a struggling artist/scientist might join a Royal Institution/Academy of the Arts. Does this put constraints on what views they express?
- How does the source of funds influence knowledge produced? The BBC relies on government funding, whilst the Guardian is funded by a private trust, and CNN/Fox/US in general is funded by wealthy individuals. Needless to say, The Global Times/ Russia Today are both funded by their respective states. Does this affect what a journalist can report on?
- Has the source of money changed with time? There are precious few royal patrons left, or noble ones? How does patreon as a funding model contrast? What about the case of the athlete who used a hawker stall/Onlyfans to fund their dreams?
- On a more extreme scale, did any scientist/historian/artist compromise their integrity to work with “the bad guys” because they could provide resources? Who was involved in Unit 731? Which doctor was at Auschwitz?

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<sup>5</sup> This section is deliberately more oblique than the equivalent section in other questions. I would be effectively handing you the answers the answers if I were any more direct.

## AOKs:

It is a sad reality of life that there is no system under which a scientist/artist/historian may work without constraints. All AOKs are possible.

- Natural Sciences: NASA, ESA, Roscosmos are worth investigating. The Hadron collider replacement debacle is worth reading on as well. The black men – syphilis experiment could be worthwhile as well.
- Mathematics: I believe in treating Mathematics as “pure”, instead of “applied”, as that can stray too far into the Sciences. Nevertheless, Newton was also a struggling mathematician<sup>6</sup>.
- Human Sciences: Boisguilbert could never try out his reforms on a vast scale because of royal opposition. Who else encountered similar problems?
- History: What did historians have to do to get access to royal/national/papal archives?
- Arts: Struggling artists are a dozen for a penny. I still would not recommend this landmine of an AOK, but it is possible to do.

## Structure:

I don't have anything too profound to say.

One particularly interesting way would be to have your storyline be one of “desperation”. Start by talking about someone who abandoned their work rather than sacrifice their principles, and have examples become increasingly macabre. For example, experimenting in Auschwitz to get access to life test subjects without ethical restraint could be your final point.

Another way to organise your essay would be how people throughout history have funded their works. It could be a point about the evolution of societal structures, where does the majority of wealth reside. From feudal patrons, to sinecures from a centralised monarchy, to patronage from robber barons, to more democratic funding (patreon).

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<sup>6</sup> How did he get his job at the Royal Mint?

**Question 4: Do the ever-improving tools of an area of knowledge always result in improved knowledge? Discuss with reference to two areas of knowledge.**

First thoughts:

I have an instinctual mistrust of this question. It is, on its surface, a simple one. The difficulty, in my view, is in being profound. Tools are generally designed to be useful. Therefore, it follows that it was somehow misleading/ unexpected results. But even this is problematic. Unexpected results could result in a new paradigm.

Definitions:

“ever- improving” tools: It does not refer to new tools, in so much as improved tools. Some examples would be replacement of film cameras with digital camera, replacing light microscope with infrared microscopes, etc.

“improved knowledge”: It does not even have to be new knowledge. It could be like measuring a value to greater precision. One example is detecting the observed nonexistence of WIMPs to a greater and greater degree.

Approaches to the Question:

- How often do ever improving tools result in improved knowledge? Surely it is often, or else the tools would never have been developed in the first place. The Hadron Collider was conceptualised and built as a large particle smasher for a very specific purpose, which it very quickly achieved.
- To my mind, new, ground-breaking knowledge is often found by new, ground breaking tools. It is possible to use existing tools to do so, like using X-ray crystallography to measure the structure of DNA (which is not a protein and thus should never have worked), but that is a difficult process requiring a brilliant mind.<sup>7</sup> Ever improving tools are more useful for filling in small gaps in our knowledge, once their novelty has worn off. New tools being branches, ever improving tools being twigs is an analogy I have seen before on this topic.
- How often do tools fail to produce new knowledge? Perhaps very little of the time. Tools are often invented with an end goal in mind, so we are specifically examining failures of achieving this goal. I will consider some cases below.
- In what cases are tools not useful? Could the path they are on be completely wrong? The largest telescopes of the 19<sup>th</sup> century measured an eccentricity in Mercury’s orbit that could not be accounted for. This led to the “knowledge” that a smaller planet Vulcan existed.<sup>8</sup>

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<sup>7</sup> There is currently a minor revolt against the idea of dark matter, as ever improving tools show the ever decreasing likelihood of it existing. Sabine Hossenfelder covers this topic extensively on her Youtube channel. This could be construed as ever improving tools producing “ground breaking” knowledge.

<sup>8</sup> Even this example is suspect, because it indirectly led to the development of quantum mechanics

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- Could it be an issue of creativity? Did the creation of piano from the pianoforte significantly improve knowledge? Or was it merely a better medium for the production of knowledge?
- Could the new tools be faulty? The Hubble telescope did not work at all for several years after launch. It was an improved telescope, but at least initially, did not produce any improved knowledge.
- Could we be using the tool wrongly? A trivial example would be that A. Bell couldn't find the bullet in President Garfield because of the springs in his bed interfering with the metal detector. A more serious example would be Marx's *Das Kapital* leading to the development of the planned economy, and indirectly to the Great Leap Forward.

### AOKs:

Most should be fair game. Mathematics will be difficult insofar as there are few "tools" in mathematics. Computer-assisted proofs are all the rage now, but I do not understand them enough to comment on their effect on our knowledge production.

Natural Science: Very rich ground. Various kinds of telescopes, colliders have run into problems. Consider also the effect of better surgical techniques leading to "radical therapies", such as the radical mastectomy. Is it necessarily better than a normal mastectomy?

Human Sciences: Investigate failed economic theories, like mercantilism/physiocrats/communists etc. Psychology is interesting as well, with how many failed IQ-esque tests there.

Art: Do improved tools lead to better knowledge production? Or merely better transmission of the same knowledge?

History: I freely admit that I'm not super aware of methods of historical analysis, so cannot comment on how their tools have improved with time.

### Structure:

A standard structure will suffice. As mentioned previously, the difficulty of this question is in being profound.

- Could something be said for the tool working correctly, but our interpretation of the data being subjective, and ultimately wrong? To use this, consider History and the Human Sciences as your AOKs.

**Question 5: To what extent do you agree with the claim “all models are wrong, but some are useful” (attributed to George Box)? Discuss with reference to mathematics and one other area of knowledge.**

Intro:

This question is a TWE question, so it is a very very bad idea to answer either “yes” or “no” definitively. The “but” in your answer is of huge import.

Unfortunately this question has an empirical answer. It is completely true that “all models are wrong”. This is reached from Gödel’s incompleteness theorem, from which we can deduce that there exists no self-consistent set of axioms<sup>9</sup>.

Without the gobbledegook, Gödel showed that no theorem is universally applicable in all circumstances. For example, Pythagoras’s right angled triangle does not apply for spheres. In effect, no set of assumptions can fit all circumstances without contradicting itself.

Therefore, in an essay, I would not quibble on whether a “model is wrong”, I would quibble on how many of them are useful.

Keywords:

Nothing too difficult to define here, in fact definitions can be dispensed with. Consider what useful means.

Approaches to the Question:

- As discussed above, in Mathematics, ALL models are wrong because there are no assumptions that fit every case.
- What makes a model more useful than another?
  - a) More accurate? Einstein’s equations over Newton for example?
  - b) More usable? It has been quipped that even if the Navier – Stokes equation could be solved analytically, it wouldn’t impact climate modelling because of how much computational power that would require. Better to use the current numerical approach.
  - c) More usable in what sense? Computational power? Political Space to apply said solution?
- How often have experts gotten it right?
- Could a model be true and not useful? Such as the aforementioned Navier – Stokes example.
  
- Can be a model be absolutely correct? This links to objective truth – can we actually discover the truth?

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<sup>9</sup> See also Church’s proof that Hilbert’s program is unsolvable; being in the final nail in the coffin for a complete and consistent set of axioms for all math.

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AOKs:

Mathematics is a given.

Natural Science: I would generally agree that most models are wrong, merely useful. It is great for talking about climate models – Dr Sabine Hossenfelder has great video essays on climate sensitivity for example. One could also discuss the central dogma of biology. Lots of options.

Human Science. Economics is very obvious, but please do not talk about Keynes and Smith. Find someone interesting – Boisgullibert<sup>10</sup> being unable to implement his reforms because of political constraints, Malthus being wrong about the population problem, so on and so forth. Psychology would be interesting as well – how has our understanding of mental illnesses evolved with time?

History is great too. What different theories are there about the fall of the roman empire? Is Gibbon<sup>11</sup> correct, or were earlier church writers? What effect did these have on people who say that the Western world is failing?

I would avoid Art, as usual. It is difficult to discuss well.

Structure & Sample Examples:

1. In Mathematics, all models are wrong. At the same time, most models are useful within their given axioms.
  - Any basic example derived from Euclid's theorems will do. Pythagoras's right angles/ basic trigonometry/ Heron's formula etc.
2. However, some Mathematical models are straight up wrong, and are thus not useful.
  - Tait's conjecture as a solution to the 4-colour theorem<sup>12</sup>. Thus would have been huge if true, as the only current proof we have is computer generated. It has been said we don't fully understand the solution.
3. In the Natural Sciences some models can be absolutely correct, and greatly useful.
  - DNA theory of inheritance – for tracing criminals, making GMO crops etc.
  - Special Relativity – for astronomy especially, we no longer need to postulate “Vulcan” to explain Mercury's orbit.
4. In the Natural Sciences, most models are wrong, and all in a particular field might not be useful.
  - Most famously, string theory has the problem of being unverifiable (as of right now), so its not useful. The competitor model, quantum loop theory, has the unfortunate problem of being wrong<sup>13</sup>. This means we don't fully understand how gravity fits in with the other fundamental forces, and as a consequence, can't (for example) find a way to travel faster than light.

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<sup>10</sup>Durant, Will. The Age of Louis XIV. It contains the single best explanation of Boisgullibert's work I have seen, who the internet seems to have forgotten. I appreciate that this book can be difficult to get ahold of, seeing it was last printed 50 years ago. That does not mean you should visit libgen to find it. That would be piracy. Piracy is wrong.

<sup>11</sup> Gibbon in his “Decline and Fall of the Roman Empire” laid a heavy blame upon the Church, as was fashionable at the time (The Enlightenment). Modern historians do not agree.

<sup>12</sup> A map can be coloured in with only 4 colours, such that no two adjacent regions have the same colour.

<sup>13</sup> Or at least to a high confidence interval. I would again recommend Dr. Sabine.

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- How the brain works is another great one. We know how neurons work individually, but have no idea how they work together. I've seen some exotic theories involving quantum physics, but all have the problem of not being useful, as they can't predict anything as of right now. Due to this problem, our current psychiatric drugs are like using a hammer to repair fine china, instead of a more precise tools.
- 5. BONUS! In the Natural Sciences, most models are wrong, but can be useful.
  - Arrhenius vs. Lewis vs Bronsted-Lowry Acids and Bases.
  - Climate sensitivity models – we need something to work from anyways.
  - Central dogma of Biology – Still useful for dealing with normal diseases, but we must be mindful of exceptions, such as the HIV virus.
  - Different theories of atomic structure, and bonding theories.

### Synthesis:

Often times, problems in the real world are reduced to make them easier to solve. Models derived from these necessary reductions may then have difficulty coping with the intricacies of the real world. Sometimes however, models may fail for different reasons, such as the lack of political capital, or computational power to support them.



**Question 6: Does acquiring knowledge destroy our sense of wonder?  
Discuss with reference to two areas of knowledge.**

First thoughts:

Probably the most fun question, but there is a lot of legwork involved to get the question going. You will see this section of the guide is a full 4 pages long, because there is so much content to cover.

Keywords:

- Wonder: This is a very nebulous word. I like to think of it as something akin to magic/myths. It has often been said that a magic system, like spells or mana, once overanalysed loses its magic. As we grow older, as we know more, we wonder less, ascribe less to magic. **It would be excellent if you have a concrete definition.**
- Destroy. This lends a very negative connotation to the idea of “destroying wonder”. Is this necessarily true? Is destroying wonder necessarily a bad thing?

Approaches to the Question:

- What causes the sense of wonder? For me, “wonder” arises when a phenomena is not understood, so we start wondering, and come up with explanations like demons, spirits, God etc. This is also known as magic.
- What is the effect of wonder?
  - a) One answer is that it inspires people to look for answers. Hippocrates might have wondered at the function of the heart and investigated;
  - b) Or perhaps it makes people insular. To the same problem of the heart, Pope Innocent III waved his hand, ascribed it to the ineffability of God, and forbade further research.
  - c) Another perspective altogether is that wonderment is an excellent foundation to build religions, states and other social constructs on, as one can purport to have answers to answer the wondering.
- Does acquiring knowledge destroy a sense of wonder? I see 3 approaches:
  - a) It does, and we are worse off for it.
  - b) It does, and we are better off for it.
  - c) It does not, merely opening up new fields for us to wonder about.
  - d) It does not, for some knowledge is unreachable.
- What is the effect of destruction? **A discussion of this is critical to a high scoring essay.**
  - a) The death of wonder makes the world mundane and boring. As an example, Neil DeGrasse Tyson proudly declaring that we are “orbiting a mediocre star in the far suburbs of a common sort of galaxy “could disincentivise children from looking up at the night sky and wondering, and thus discourage them from pursuing astronomy.
  - b) The death of wonder is destabilising. Societies are founded upon myths, or consensus. To destroy these myths is to kill the wonder a citizen has for his king. The king/pope/leader

is reduced to a mere man, and easily deposed. An example is the debunking of historical “miracles” that the Catholic Church used as facts to build its legitimacy. This led to the reduction of influence of the Catholic Church. Another is to show historical documents to be forgeries, and the power derived thereof to be baseless, such as the Donation of Constantine<sup>14</sup>.

- c) We are better off because we can now approach a problem concretely. Ascribing diseases to demons, as was done by St Augustine “All diseases of Christians are to be ascribed to these demons; chiefly do they torment fresh-baptized Christians, yea, even the guiltless, newborn infants.”<sup>15</sup>, is distinctly unhelpful in treating those diseases. We are much better off explaining the diseases empirically and treating them from there.
- d) There is always more to discover. By understanding that the stars are not merely beacons far away, we open up our imagination to aliens. This wondering is what has funded the SETI project for so long.
- e) Some knowledge is forever out of our grasp. For example: We will never know whether Alexander the Great was gay. (I would like to believe he was, and this is a great thing to wonder about).

AOKs:

The most obvious option here is the Natural Sciences/ Human Sciences.

History is doable especially if you want to consider the destruction of mythoi. These could be cults of personality/foundational myths of a culture etc.

Mathematics is difficult because so much of it is regarded as empirical and eminently solvable. There is little space for wonder to build up. For example, when we do not understand natural phenomena, we build myths like “a demon caused it”, “it is the will of god”. None of these have/would appear around the Navier-Stokes equation for example.

Arts is doable but I advise avoiding it like the plague. Difficult to do well in.

Structure & Sample Examples:

1. Acquiring knowledge does not destroy our sense of wonder, as we have more things to wonder about.
  - Studying the universe made us think it was like “clockwork”<sup>16</sup>. But delving deeper, we still do not understand how gravity works, and how it fits in with the strong/weak nuclear forces, the bosons and the quarks. There is still much room for wonder, manifesting in theories such as the quantum loop theory, and string theory.

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<sup>14</sup> Allegedly, Pope Sylvester slayed a dragon, saving the populace of Rome. He further allegedly cured Constantine of leprosy with his touch. As a sign of gratitude, Constantine “donated” Rome and her Western Provinces to the Papacy, granting that institution powers temporal as well as spiritual.

<sup>15</sup> I cannot for the life of me find where Augustine wrote this. It is not *Confessions*, the *City of God* or *Christian Doctrine*. Consider Aquinas’s quote “the Divine power, which can repair all diseases, whether of the body or of the soul” in *Summa Theologica* instead.

<sup>16</sup> [https://en.wikipedia.org/wiki/Clockwork\\_universe](https://en.wikipedia.org/wiki/Clockwork_universe)

## MugNoMore

2. Acquiring knowledge destroys our sense of wonder in the natural sciences, and that is great.
  - A simple example would be the destruction of the humour theory – especially with regards to black bile causing cancer. The works of Osler and Farber in overturning Galen’s theory gives a definitive root to cancer (mutant cells instead of black bile), reducing uncertainty, and making it more treatable.
  - The previously mentioned idea of stars as lamps being debunked.
3. Acquiring knowledge does not destroy our sense of wonder in History, as some things will remain speculative.
  - The foundational myth of the Chinese dynasties relates to “Yu the Engineer” in the Xia Dynasty, where he successfully controlled the floods. It is a founding myth of the Chinese people, and thus has some intrinsic value for nation building. The effect of lingering wonder is that it inspires a pride in one’s history (not that I’m Chinese).
  - A similar thing can be said for Romulus and Remus.
4. Acquiring knowledge destroys our sense of wonder in History, and that is problematic, from a nation building standpoint.
  - During the Reformation/Enlightenment, many tracts were published debunking the sanctity of Church history, such as Voltaire’s “*Considérations sur les miracles*”. Wonder declined in favour of deism/atheism. Belief in the church was eroded, which had a domino effect on belief in the (French) state. The Revolution of 1789 followed, and Voltaire was ascribed by Louis XVI as having “destroyed the French State”.<sup>17</sup>
  - Socrates spread doubt about the Gods<sup>18</sup> having the role they did in traditional Greek history. Irreligiosity spread amongst the youth, who became more materialistic, as a direct consequence of losing their fear (and wonderment) of the Gods.

### Synthesis:

If you are of the view that we will one day acquire all the knowledge there ever was and ever will be, then the death of wonder is a natural consequence and you won’t worry too much about it<sup>19</sup>. But the world will be duller for it. There will be no phoenixes, no dragons, and no more fantasy.<sup>20</sup>

And yet, I choose to believe that there will be things we can never know. Was Alexander gay? What were the Hanging Gardens like? It is these little pockets of fantasy that adds so much joy to a daydream or an idle mind. Maybe it could even inspire you to a career in archaeology, to finally answer these questions.

To put it more formally:

As we acquire knowledge, we wonder less and less. Some new pastures open up, but in general, there is less wonder in the world, just as many authors lament the fading of magic in their stories. Yet there will always remain pockets of mystery, which serve to inspire the child to explore them. Just as “hic

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<sup>17</sup> Durant, Will “The Age of Rousseau”.

<sup>18</sup> He was accused and condemned to death by Hemlock for it.

<sup>19</sup> A proud view of the Enlightenment/deists. If you can’t tell by now that’s my favourite historical period.

<sup>20</sup> I put these sentences here for you to reflect **why** fantasy is so essential, and why its loss is impactful. It will make for a great conclusion.

## MugNoMore

“MugNoMore” on maps inspired generations of explorers from Drake to Cook to sail the high seas, what wonder remains in Science and History inspire the scientist and historian to delve ever deeper. The day wonder dies is the day we will know that all things are known, that there is nothing left.



## Conclusion:

In this guide, I have tried my best to correct some of the failings of the online guides I have seen. There is as concrete advice as I can possibly give without encouraging plagiarism.

If my examples prove unsatisfactory, please consider using Will Durant's 11-part series *The Story of Civilisation*. Obtain an e-copy legally (do not, for example, download them off Libgen), and search up your keywords, such as "wonder" for question 6. He has more examples than the internet can readily give you. (Although I do realise that this guide has been very Euro-centric).

If the ideas I provide are unpalatable, consider the TOK 12 core concepts as a starting point: Certainty, Truth, Interpretation, Power, Justification, Explanation, Objectivity, Perspective, Culture, Values and Responsibility. You will see that a lot of my suggested syntheses all fall neatly into one of these categories.

I hope that this guide has been sufficient to get you started. If you need more help, please consider getting the consultation or draft marking services on our website <@joshua chen insert here>. I would be more than happy to help you look it over.

In parting: *Caveat Emptor*.

While I have no malicious intent, do be careful in applying what I say.

