Is it ever reasonable to believe the truth of P on the basis of the fact that P is the best explanation of Q?

According to the idea of inference to the best explanation (IBE), if hypothesis P would be a 'better' explanation than all the other hypotheses were it true, then we should infer that P is true. Lipton defines 'goodness' of an explanation in terms of relative likeliness and loveliness. Likeliness refers to the probability of the explanation being true given the rest of our knowledge, while loveliness refers to 'explanatory considerations' involving 'theoretical virtues' like simplicity, scope and predictive power. While IBE seems to be a common practice both in everyday life and in sciences, this essay will argue that IBE the rationality behind IBE cannot be justified, because **the criteria for loveliness subjective**, and there is no evidence to show that **the 'goodness' of an explanation according to human preferences is correlated to truth**. Moreover, there is no way to confirm that **the best of all the explanations we can think of is the best of all possible explanations** – there is always possibility that the better explanation remains unconceived.

Firstly, the explanatory considerations – the so-called 'loveliness' – of explanations are too subjective to give a rational, decisive ordering of competing alternatives.

- For example, **Einstein** famously criticised the Copenhagen interpretation of quantum mechanics as incomplete based on his belief of determinism, while many **instrumentalist proponents** admired the theory for its predictive power.
- Another extreme example is the **ideological oppositions to the modern theory of genetics** in the Soviet Russia during 1940s and 1950s, due to its genetic determinism and capitalist implications. The Soviet scientific community thus promoted **Lysenko's** alternative (pseudoscientific) ideas of 'Lysenkoism'.

- Both examples demonstrate clearly how criteria of loveliness may vary depending on the preference of the evaluator

- Additionally, such subjectivity can be **fundamental differences** that never be resolved if we take into account **Kuhn's idea of incommensurability**
  - If we see the standard of loveliness shared by the scientific community **as products of Kuhnian paradigms**, common beliefs and conventions within a particular scientific community will then differ so fundamentally from those of the other that such differences can never be described as 'compatible'.

- **Here, Lipton tries to dissolve the problem by arguing that IBE is no more subjective than any other form of inference** because, he believes, reliable inference is itself audience relative, and therefore '*the simple claim that explanation is audience relative will not show that Inference to the Best Explanation could not describe a reliable form of inference, since reliable inference would be audience relative as well, in diverse ways*'.
  - However, this argument is **certainly too weak to be a valid justification** of IBE – isn't Lipton effectively saying that IBE is just as bad as other forms of inference?

Secondly, even if there is agreement on what is "lovely", it is hard to justify that being "lovely" is correlated to being true – how can we be sure that we live in the loveliest of all possible worlds? According to Van Fraassen, explanatory considerations are '**specifically human concerns, a function of our interests and pleasures'**, and values of this sort cannot rationally guide our epistemic decisions.

- Admirers of the elegance and intuitive nature of classical physics have all been disillusioned by the emergence of general relativity and quantum mechanics; theories as 'lovely' as Newtonian gravity in terms of simplicity and predictive power have been consistently proved insufficient and replaced by more complex ones.

    - Even daily life experiences provide an ample amount of counterexamples of people being deceived by the most straightforward explanation.
- **Lipton himself admits the problem and tries to dissolve it by saying that it effectively boils down to the problem of induction: '*we are talking about induction here and there is a sense in which the success of induction is miraculous or inexplicable on any account of how it is done.*'**

    - **Unfortunately, blaming the problem of induction will not work**. Induction itself is at least **pragmatically justified** – should there be any chances of discovering laws of nature, induction would be the only way that reliably brings us closer to truth. This argument does not hold for IBE, however, because it is hard to justify even pragmatically that by relying on **our human preferences of convenience or even epistemic laziness**, the 'loveliness' required by IBE could somehow bring us closer to truth in any sense, especially given its track record of consistent failures.

Even if the above problems with 'loveliness' have been resolved, it is likely that the best explanation we could think of is still 'not good enough' to be the true one.

- **Experiences have proven that we are bad at thinking up all of the possible alternatives to a favoured hypothesis.**
    - This general problem of unconceived alternatives can be illustrated by the case of Charles Darwin, as elaborated by Stanford.
    - When Charles Darwin published his own model of the mechanism of inheritance, pangenesis, which postulated that hereditary properties are stored in and passed down via "gemmules", he showed "***no evidence of having considered and rejected the idea of a common cause***" rather than his proposed idea of causal links.
    - **The debate between the wave and particle theories of light** is another typical case of an unconceived alternative.

- Therefore, history of science provides plenty of evidence to demonstrate our incapability of coming up with alternative explanations. The best explanation we have so far are likely to be the best of only a limited subset of an inexhaustive set of empirically adequate explanations, and there is no way to foresee whether this subset of explanations happens to contain the true one.

As a result, to believe in the truth of the best explanation is only **wishful thinking based on human bias that can never be rationally justified**. However, as long as science is concerned, it is arguable whether an explanation or theory **has to point to the 'truth' to qualify as good science**. If a well corroborated theory is capable of giving accurate empirical predictions, scientists have good reason to have faith in it based on its empirical virtues without probing further to question its literal 'truth'. In such cases, **conveniently picking the 'best explanation'** by appealing to the intuitive criteria of likeliness and loveliness among empirically equivalent theories might still be sufficient**. Such instrumentalist attitudes** may help explain why IBE has remained widely practiced in science without hindering its progress.