Reflections on a Vaccine Against the Epistemic Epidemic

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Abstract

The truth-value of scientific knowledge is being increasingly challenged by a rise of concepts like fake news, conspiracy theories, echo chambers, truth decay, pseudoscience, politisised science, religious fundamentalism and state-run propaganda. Can their proponents all be right when their statements seem irreconcilable? Whatever happened to the renaissance ideal of an objective truth gradually laid bare by the process of science? Can subscribers to vastly different epistemologies co-exist in a society, respectfully in peace?

This essay will not focus on the problem of demarcation nor how science should be defined or organised, although these are relevant topics. Rather, we will dive into the rich field of epistemology focusing on the epistemic problem. We will reflect on what methodology would be an optimal strategy for determining true aspects of the external world, given some assumptions about its nature. In light of these suggested epistemic rules, we reflect on the shortcomings of our native epistemology in the context of the current news picture and whether these shortcomings are explainable in a scientific world view.

1   Introduction

The events of the year of 2020 still echoes in our news picture as we turn towards 2021. We started off watching warmongering between USA and Iran, before the covid-19 pandemic stole our attention, springing from a chinese autocracy that failed to warn the international community quickly possibly because of how it would reflect on them. Meanwhile we became aware of an almost holocaust-scale assimilation and internation of the Uighur people of China. We witnessed trade wars among the super powers, Russian attempts at interfering with the US democratic process using an information based warfare [1]. The threat posed by our insistent carbon-footprint on the greenhouse effect, and other interference with nature, remains resilient and is causing a new great extinction event regarding the biodiversity on the planet. As we approach the end of 2020 over a million deaths have been attributed to the raging covid-19 pandemic, and much more are expected, not in the least because of the economical ramifications

of its impact on industry and business. The newly Noble price awarded World Food Programme is warning that 30 million more people might die because of it [2].

There are clearly great tensions between the different political centres of the world, and for surely how we act forward will carry great significance for how the events of 2021 and the subsequent years will play out. Or, that is, if you accept the narrative above. Many people do not. According to China, the Uighurs are being treated fairly and their internment camps are voluntary schools for anti-extremism training. According to 'climate-skepticists´ whatever trends there are in the world mean temperature have natural causes and nothing to do with the coinciding trend in carbon emission. According to Russia, they had no involvement in the American election. According to American conspiracy theories that apparently millions subscribe to, the covid-19 pandemic was engineered by China, or maybe the democrats, or maybe it is not even real, and there is a secret conspiracy of socialist democrats who are trying to establish a communist regime and president Trump is the one fighting them, and in fact they are the ones who interfered with the election and succeeded. Oh, and by the way, they are running a human children trafficking ring from the basement of pizza restaurants.

This is a lot to take in. Clearly all of the statements above cannot be correct if we want the world to be self-consistent. However, the choice of which is correct and which is wrong is a more subtle issue than one would immediately think. This is the aim of my essay: to shine some light on why it is that some of these statements somehow more credibly captures the happenings in the external world, while some others are likely to be fictitious, and why, contrary to this, many people seem to be convinced of the opposite. Towards this aim, we will require a formalism for talking about epistemology and some useful concepts that we will develop in these next 2 sections.

2   Useful Concepts

First of all we define *epistemology* as the teachings related to questions of knowledge acquisition, inferred from or apart from one's sensory experiences [3]. An example of knowledge acquisition outside of sensory experiences would be achievements made in the abstract, take maths, for example. We use *the epistemic problem* to refer to the problem of how to best ascertain true properties of the external world. *Truth* is a key word here, and requires a definition. Different branches of epistemological theories may assign different meanings to what exactly truth is. While *realists* would claim that an external, objective reality exists and that *propositions* are beliefs about said reality that carry unambiguous truth values, *anti-realists* would typically reject the *bivalence* of truth, meaning that propositions no longer can be said to be exactly true or false, but instead possibly both or neither [4]. These are just 2 out of a plethora of different categories of epistemology, but they will suffice for our considerations.

We will ourselves assign *objective truth* to the meaning used by realists, and

effective truth for the meaning used by anti-realists, by which we mean whatever is most likely to be the objective truth of the matter for an observer who is sitting on incomplete information. The word effective is drawing on terminology used in the effective field theories of particle physics. To further this analogy we could name objective truth *UV-complete* truth, but this seems contrived. Here, the role of energy would be replaced with that of data, and so maybe a more appropriate term could be *data-complete*, meaning that however much data you gather, your truth will remain manifest. There is the statistical[1] possibility that some initial or intermediate amount of data would prefer an effective truth that is objectively false, but this would assumedly become increasingly improbable as the size of the data increases, granted that there is not some systematic you are not taking into account.

Knowledge is a final key word that receives some attention. A standard formulation of requirements for something to be called knowledge is the *justified true belief* formalism. According to it, for a person, S, to know a proposition, p, the following criteria have to be met:

(a) p is objectively true;

(b) S believes that p;

(c) S is justified in believing that p.

The *justification* criterion is of special importance and have been argued about relentlessly and formulated in several different shapes [6]. A recognised problem of this program of identifying knowledge is what is known as Gettier's problem [6]. You could always construct a situation where all the criteria are met, but that still does not satisfy our intuitive notion of knowledge, by having a person be led to believe an objectively true proposition by consistent logic, based on biased/misleading (but not known to be so) sensory input. An example is if you are seeing what looks like a sheep in a field a great distance from you, and conclude that there is a sheep over there. What you do not know is that the sheep is a robot, but that there is a real sheep right next to it, hidden in the tall grass.

I see the above program as attempting to formulate what I will name *objective knowledge*[2]. This is not of direct interest to us, however. Instead we are here interested in what we will name *effective knowledge*, for which we can attempt a similar classification scheme as above, but we modify the first criterion to be *effectively true*, and by that we mean that it is supported by available evidence and is not outmatched by another competing proposition in being so. We comment that although the second criterion in necessary for S to know p, we

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[1]Statistics is a natural way to deal with an uncertainty owing to lacking information/data. In addition to having made its way into most parts of society [5], it also has a natural place in epistemology.

[2]Or if you want *data-complete* knowledge. Note that this is different from what one might name *ontological knowledge* of which we can only hope to know. There is the possibility that whatever underlying ontology is not unique in producing recorded empirical data at any point in time, making it impossible to discriminate against alternatives.

don't find it necessary for p to be classified as knowledge. The third criterion, we will simply take to mean that S has made a logically consistent inference based on the available information. It is important to note that there might be a competing proposition outmatching p of which S does not know, but we will find it pragmatic to still classify p as effective knowledge from the point of view of S, although p will loose that status at the point where the information of this competing proposition is made available to S.

3 Effective Epistemology

We want to put forward a specific strategy that will be sucessful in optimising our ability to predict and explain the physical, political, sociological, etc, events of the external world that we observe individually through our sensory apparatuses. In terms of the formalism developed above: We want to further a strategy for reliably inferring an effective truth, which will be the best contender for being the data-complete truth. Without making some assumptions about the nature of the world, this quickly becomes a futile endeavour, as we are always at the risk of running into a conspiracy – the perceived empirical data might have been fed to us by a malign god, for example, intentionally misdirecting us. To save us from ontological relativism, solipsism and epistemological apathy, we make the following assumptions:

1. There exists an external observer-independent world.

2. All people have a similar inner life to yourself.

3. A sensible epistemological strategy should contain the Occam's razor principle.

This is a good start. Most people would agree with the 2 first statements, while the 3rd requires some convincing. My argument in favour for this assumption is that its negation allows arbitrariness; One could always add extra features for one's proposition that have no effect on its predictions for the data – all these extra features are simply irrelevant and a waste of time. At least until a future time where they may no longer be irrelevant.

   With only these 3 assumptions, we would still run into problems, which is why I feel the need to posit 2 extra statements:

4. The empirical data collected is not the result of some grand conspiracy or intricate systematic.

5. The external world behaves consistently to itself, according to some physical theory that we do not necessarily know.

The former[3] is to guard us from problems where our available information somehow is selected to bias an objectively false view, which is still a possibility in

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[3]Curiously, this criterion seems to disqualify many religions. The next criterion does so trivially.

any question, but we are not interested in what is possible; we are interested in what is likely. One could argue that this statement does not deserve status as an independent assumption and that it is a consequence of including Occam's razor into our epistemology, but we keep it here for clarity.

The latter statement is an important requirement for our epistemology to work. If the dynamics of the world do not follow some underlying order, there is no hope for predictability. It is the identification of or approximation to these patterns that allows us to extrapolate the now and here into the then and there. Without this property, we would have to allow for all sorts of arbitrariness.

Criterion 4 has an interesting implication on a personal level; If you are living in an actual conspiracy, where information is being purposely fed to you with some agenda, as would be the case in, let's say, an autocracy using propaganda as a means for social control, this is an assumption you cannot make. It is thus the responsibility of the individual to pursue unbiased data, which itself might be an ideal that can only be approximated, but it is our responsibility, for this program to work, to pursue it as best we can. At once there is reason to believe you are being fed propositions not extracted through a pursuit of unbiasedness and objective truth, and that the proposition that this is your situation is justified in the sense stated above, one should attempt to immediately dismiss as much of the tainted data and propositions as possible in one's future analyses. Ideally.

Though there is not the space to carry the rest of my argument out in detail, it continues the following way. We make an additional assumption that would require further analysis at a science philosophical and sociological level to ascertain:

6. The scientific method is an *ideal method*, and the researchers furthering it are *ideal researchers*, in an exact or approximate sense,

by which we mean that they are pursuing unbiasedness and objective truth in a logically and statistically consistent way. Whether they are optimal or not in doing so, it means that they make a reliable source of second-hand knowledge for the rest of us. Conversely, it is very important that we organise science in such a way for this criterion to be satisfied for science to function as a reliable source. To what degree it currently is organised this way is up for discussion, but we leave this as a statement here. Any other method can be substituted in here as well as long as it fulfills this criterion.

4 A Multi-Epistemic Society

4.1 An Evolutionary Perspective

Making all of the 6 previous statements, we are finally at a point where we are living in a well-defined world with an ability to discriminate and select propositions and develop an effective truth. The last statement gives the state of the art of science status as effective truth, evolution theory included. This allows us to make an interesting turn.

What is presented above is a somewhat formal epistemic strategy intended to optimise predictability of the world and optimistically approach objective truth (and even more optimistically ontological truth). Yet, such a rigid and explicit formalism is not how we would strategise *natively*. Evolution provides a mechanism for the development of an epistemology genetically, culturally, intuitively and/or instinctively. A feature of humans that is somewhat distinctive and where we excel is in our ability to world-model, predict, anticipate and stimulate/counter-act consequences whose prediction requires an abstract line of thought. There seems to be a clear incentive for the evolutionary development of incrementally more abstract world-modelling to enhance our competitiveness as a species both individually and collectively. Indeed, in the scientific world-view, it is difficult to imagine another mechanism through which such features would arise. For the sake of being explicit:

7. We posses a native epistemology that manifests in our cognition, intuition, insticts and/or culture that has been selected for through natural evolution.

This proposition will serve as a window through which to glean additional insights about the workings of our native epistemology.

4.2 Modern Society and Conclusion

As a final point we want to revisit our initial motivation for this whole consideration – the current apparent world situation of epistemological relativism and truth ambiguity. The 2 first statements made seem necessary in order to form mutually respecting social relations, and by extension a functioning democracy. Number 3 to 5 seem necessary for there to exist such a thing as a preferable strategy for optimising predictability and hopefully uncovering objective truths. Number 6 or some variation of it seems necessary for developing knowledge on a scale larger than the individual, and for there to be an arguably preferable world-view that individuals in a society ought to adopt (to internalise its propositions). Only when the constituents of a democracy can embrace a similar[4] world-view and epistemology can there be grounds to reach agreement and deflate social tensions and inner conflict. Outside of it, I see no option but to embrace relativism, as any proposition not being preferred by personal experience, intuition and world model would hold no justification. The final statement follows from the previous as an effective truth, possibly objective, and brings an understanding of how we got into this situation in the first place and potentially how to resolve it, which is what we will explore now.

Recently, in a BBC interview [7], former American president Barack Obama pondered the current situation of the US democracy. He paints a picture of increasing polarisation, division and truth relativism due to among other misinformation spread on social media and echo chamber news sources. One might add to this a blatantly and shamelessly lying current president [8, 9], though in

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[4]But how similar do they have to be? I leave this as an open question.

an information relativist view a word such as lying makes no sense. The article labels the trend Obama is seeing 'truth decay', making the epistemological nature of this problem evident. Adding to this notion, the big study [10] reveals a trend of increasing skepticism and disinterest towards science in the younger generations of developed countries.

From a point of view where the previous 7 statements listed here hold true, the resulting world model might provide an explanation for the American, and truly international, phenomenon. Of course, I am not an expert on evolutionary biology nor anthropology, so this might be a naive attempt at piecing together that which I have been taught. If you would humour me though, imagine the primal human living in small hunter-gatherer tribes, which is the state in which most of the evolution into the modern man and assumedly the critical development of our cognitive abilities and native epistemology took place. The conditions of such an environment are vastly different from our modern ones. Each individual would be able to explore their surroundings, and they could then pool their experience together to form a model of the local flora and fauna. If someone else did something clever, or realised an extension to their world model that would help their group navigate through their chaotic environment more safely, this result and its justification could be communicated and individually appreciated by the rest. It is understandable, that in such an environment, we would evolve to not only feel reinforcement when we were successful in predicting something, but also when being able to justify the relevant propositions for said prediction in terms of our current world model, as this would make us able to pioneer new predictions reeking yet more benefits. If those predictions failed to account for observed phenomena, we would have benefited from attempting other justifications, building on slightly modified world-views that might just allow us to harvest a jackpot, survival-wise. In time, this working understanding of the world, building on an evolutionary incentive towards an *epistemic consequentialism* working towards optimising both predictability of the external world, but also justification for said predictions in terms of a working world model, would yield a body of effective knowledge increasing in size, requiring us to specialise to continue building on it and to appreciate any part of it from a point of view of being able to justify its modification to the collective world model.

As is the case currently, the resultant body of effective knowledge is so vast that it requires an extreme dedication and pursuit of knowledge to merely acquire the understanding necessary to justify a small and specialised part of it. The institutions managing and extending said world model, which is our aggregate, effective and collective knowledge, are also extremely selective in only including the few who they believe demonstrate most clearly their ability to make an addition to it. This means that the large majority of people are left to their own in satisfying their evolutionary drive to justify the collective world-model, and this could be the mechanism through which alternative world models, that are blatantly inconsistent with the prevailing one and the empirical data justifying it, are constructed. Once their would-be subscribers feel the satisfaction of being able to account for personally observed data by personally

justified belief, they feel the need to also justify the implication that society at large has held their effective truth from them, the justification of which requires a conspiracy theory.

Again, I am not an expert in the relevant scientific fields and might myself be guilty in building a narrative at odds with relevant empirical data in the field, led astray by the discontentedness at not understanding the phenomenon that I am trying to explain. It might indeed be a very human thing to do.

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