

Is truth dead in the information age?

A president who entitles nuclear energy to be renewable and emission-free¹ and congratulates the army for taking over airports during the American revolutionary war²; an enormous search engine using big data to suggest the fastest route home from work or to apparently know your consumer habits better than yourself; a filter bubble of flat-earthers who conspire against the so-called lie-spreading government which sprays population-controlling chemtrails into the sky; welcome to the 21st century. Since these uncanny and twisted examples are abstracted from our everyday lives, it is possible to draw parallels between the fictional world of the dystopian novel "Nineteen Eighty-Four" (1949) by George Orwell and the distorted reality fabricated by political spokesmen and social media. For instance, the surveillance through technology in the form of television screens observing the viewer are replaced by mobile devices continuously tracking your digital footprint. Moreover, "Newspeak", a language invented by the totalitarian party meant to prevent free thinking, gives way to political correctness in our society forcing public figures as well as anyone setting foot on the territory of the world wide web to mind their words. Therefore, it is no coincidence that the aforesaid manipulation tools and the emergence of buzzwords like 'fake news' and 'alternative facts' lead to the deduction that we live in an Orwellian world. Although some of the stated theories are reasonable, is it this straightforward to announce a truth decay as the result of emotions replacing facts? Is truth dead in the information age? Does George Orwell himself refer to the current situation when making a statement such as "The very concept of objective truth is fading out of the world. Lies will pass into history.". Firstly, and most importantly, some preliminary work to get a better grasp of the entire topic is required namely, to answer the following questions: What in particular is defined by the ubiquitous but vague term 'truth'? Why is the pursuit of wisdom and truth so deeply rooted in the subconsciousness of our species and do we even truly want to know the truth? How did humanity handle the issue of knowledge sharing before the emergence of the data processing machine we call computers? Which circumstances and real-life examples lead to this bold and striking claim that truth is dead? Which arguments dispel it? Rather than a thorough and in-depth analysis, this essay is primarily meant to be food for thought covering different subject areas ranging from physics, through politics, to philosophy.

¹ The White House (2017)

² The Guardian (2019)



To begin with, a clarification and eventually a narrowed-down definition of the term "truth" serves as the logical foundation for the debate on truth's death. Naturally, truth is a multi-faceted topic due to the countless viewpoints but a common rationale most people would agree on is the following: A true statement corresponds to being correct or right and vice versa; a question answered with "yes". This, upon reversion, raises the question if every challenge, dispute or claim can be solved or verified indisputably. Because the overarching objective of mathematics is to scrutinize the "the truth or falsity of conjectures by mathematical proof"³, this subject area should be a proper starting point. The didactically best way for investigating a problem is starting simple thus an equation like $17+34=51$ only containing two constants is clearly solvable and may be considered true. However, increasing the number of variables and dependencies results in more demanding and complex mathematical systems and models. The field of classical mechanics, the study of macroscopic through to astronomical, moving as well as resting bodies, claims that the state of an object is determined by initial conditions and all involved variables. Subsequently, said state at any point in time is predictable using calculations, for instance, the trajectory of a projectile. This undeviating and encompassing predictability or reversely, predetermination of events, is the main axiom of deterministic beliefs. However, modern advances in science treating tremendously massive (general relativity), extremely small-scale (quantum mechanics) and exceedingly fast objects (special



relativity) cause the trend of overturning the determinism theory. Proving an equation from one of the aforesaid categories involves innumerable variables and stochastic processes hence certainties become probabilities. Especially in the quantum realm measurements become more complicated and until a property is measured all possible outcomes or states exist simultaneously, in so-called superposition which is commonly known because of the Schrödinger's Cat thought experiment. Does this lead to the conclusion that 2 truths exist concurrently? Or are those states half-truths or hypotheses? The current consensus among physicists is that there are no hidden variables involved causing the stochastic errors vitiating certainty, "as many determinists (including Albert Einstein) had hoped"⁴. So, in a broader sense, we cannot make unambiguous statements about the nature of our world, leaving us with a friable foundation for this essay.

³ Wikipedia, the free encyclopedia (last edited 2019)

⁴ Egnor, M. (2019)

If present research is not too insightful maybe ancient scholars who based their theories on a plethora of sciences can illustrate truth. In his findings on metaphysics, Plato defines truth as a conceptual ideal or a theoretical blueprint for the natural world. In his eyes, sensory perception merely displays a world akin to but not equivalent to this ideal. Logical thinking and mathematical proof rather than observation allow discovering this truth. Unlike Plato, his student Aristotle deemed analysis as well as



observation necessary for identifying truth in the natural world. With this approach, he did the groundwork for what is called the scientific method today and therefore the understanding of truth is related to the savant's ideas. Resulting from the observation idea, something true should be provable or verified to be contrary to false. In particular, the distinction between a logical and ethical truth should be highlighted. The first is measurable, observable or should be confirmed by outside parties whereas the latter would be an idea not as tangible or certain such as the right to live. Furthermore, a classification in terms of coherence is specified where the most comprehensive is the absolute truth, independent of location and time; for example, the gravitational acceleration being $9,81 \text{ m/s}^2$. Secondly, relative truth is confined to the present situation of the observer and is permitted to change or to coexist with contradicting relative truths. Lastly, an apparent truth only holds for a single observer at a specific point in time and place so dreams would fall into this category. To recapitulate, I perceive this extensive discussion on the definition and categorization as very important because in the following paragraphs some deductions will relate to the distinction between absolute and relative truth.

Now, after collating bygone and ongoing views on the concept of truth thus having a clearer understanding of the term, I choose to furthermore belabor the leading question: Why does humankind feel the unrelenting urge to check facts on Google, to have the datasheet, to simply know for sure? Without doubt, everyone has encountered the situation where not knowing something provokes the feeling of idiocy, worthlessness or incompetence and as humans, we do all that is humanly possible to prevent this internal unpleasantness. Just purely in avoidance of negative feelings, we take measures like educating ourselves as a proactive response. Likewise, an innate curiosity, which served as a tool back in the days of hunting and gathering, now basically forces you to push a button, because you simply NEED to know. This eagerness for solving mysteries betimes overrules sanity and reason, for example when an adopted child chooses to explore their family background notwithstanding the

risk of disappointment or insignificance. Another aspect where a gut feeling comes into play is fairness. Even children feel misunderstood and mistreated when information is withheld from them or they are lied to ("That's unfair!"). Due to instinct kids emphasize fairness but also adults do. Although being honest may damage a relationship, everyone would agree that unearthing the truth about dishonest or deceitful behavior is just the right thing to do. Not all reasons for seeking truth are as pure and altruistic as being truthful to your loved ones but rather self-serving. Undeniably, people enjoy taking part in a discussion but what especially triggers a sense of pleasure is being right. This special category of self-esteem is caused by the intellectual superiority someone experiences when arguing conclusively against someone else. To return to a more positive attitude again, self-improvement can also be a powerful motivator for ascertaining truths. There are certain eye-opening realizations in life which permanently change someone's behavior or world view. Discovering those truths addresses the wish to improve decision making based on former missteps to live a better life. Another analogy is the computer which invariably wishes to compile code without any error messages or exceptions. Similarly, the human brain needs a world of coherence and is reluctant to faulty logic. This explains why we are outraged when encountering a calculus problem one cannot compute or why falling asleep is impossible when attempting to solve a moral dilemma in bed. Finally, there is a reason why the phrase *knowledge is power* (lat.: "scientia potentia est") emerged as early as the 6th century BC and since then information was considered as a tool to rule over the less knowledgeable. This aspect is only remotely comparable to today's situation but still, applicants with the most experience get high-paid management positions, oversee other employees and have authority over influential decisions.



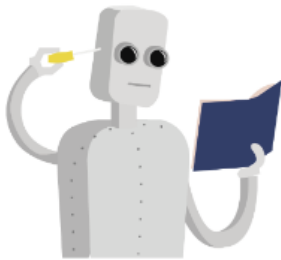
Speaking about the history of the human species, back in the days of hunters and gatherers knowledge or information was directly linked to survival such as recalling the location and appearance of edible and poisonous fungi. Fast forward a few thousand years to Ancient Greece; as already discussed previously scholars in the ancient age contributed immensely to the overall development of advanced civilizations. Not only did they play a pivotal role in defining truth as a concept but they also many quantum leaps in sciences like astronomy, trigonometry, rhetoric, biology or politics occurred in that era. Also, to reflect upon other cultures and their understanding of truth, I want to highlight beliefs of Hinduism where truth should be unchangeable within time, space

or a person. Ironically, the human body would not be true based on its decay over the years. This point of view is like the Christian belief of truth since it was conveyed through Jesus („I am the way, the truth, the life. " John 14:6) and the church. Recalling Plato's definition of truth, only a force as divine as God can be labeled as true thus the Bible, the word of God, was gold in book format. Covering almost all of Europe, Christian religion played a dominant role in a citizen's life in medieval Europe. Not only did the ordinary population devote their lives to the Bible and the existence of heaven and hell, but also a great percentage of income had to be paid as taxes to satisfy the yearning for everlasting life. Firstly, the church defined most norms and values of social life, the more abstract parts of truth, such as marriage, pilgrimage or monasticism. However, contrary to the widespread assumption that medieval church suppressed science, the greatest founder and supporter of universities was the Catholic Church and a third of the curriculum was dedicated to natural sciences. Additionally, many priests founded schools for learning to read and write Latin to counteract the high illiteracy rate whilst simultaneously training scholars. The church's monopoly on truth either in the form of facts and knowledge or beliefs and ideology becomes even more obvious considering the preservation and curation of texts which was exclusively performed by churchly scholars. Apart from the financial aspect of acquiring books the time needed for transportation also influenced the speed at which the most recent information was spread hence the emergence of letterpress and fastened roads fostered knowledge exchange. Eventually, the distinction between subjective faith and objective facts arose during the era of Enlightenment at the end of the 17th century. Developments like the separation of church and state and an increasingly literate population resulted in the ideal of independent reasonable thinking and educating oneself. Furthermore, the systematization of knowledge in dictionaries and encyclopedias was accompanied by a popularization of sciences. Nonetheless, there are periods in the course of human history where a legitimate question would have been *Is truth even alive?* referring to the darkest times in German history. During National Socialism, intellectual autonomy and diversity were reduced to a minimum leveraging mass psychology and totalitarian governing measures. The one-of-a-kind propaganda was based on ideas like antisemitism, Social Darwinism and a strong leader cult. Conspiracies and ideologies were conveyed through print media, film, TV and radio until propaganda occupied every aspect of daily life. Additional to the restriction of free thinking, the government



centralized virtually all institutions to exercise control and censorship over every piece of information thus achieving utmost alienation of truth. Looking at the exemplary list of analyzed eras, an unmistakable association between media and truth can be identified and which period is more congested with media than the Information Age we are currently living in?

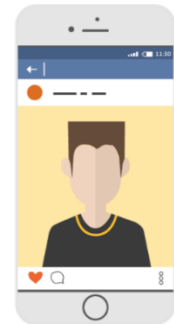
Characterized by the transition from conventional production-based industry to an information-based one this stage of the 21st century is replete with transient technological trends. The prerequisite for the acquisition, analysis, and management of information is computational power hence why the hero is a tiny electrical component which represents the ones and zeros the digital world is made of, the MOSFET. Nowadays, 60 years after the invention, those transistors are as minuscule as 30 Nanometers ($30 * 10^{-9}$) and an incredible multitude of one Billion ($1 * 10^9$) fits onto a single integrated circuit. Atop of this, other discoveries like fiber optics, mobile radio



standards like the upcoming 5G, Cyber Security measures and Machine Learning facilitated by Data Science are driving factors for the increasingly digital world we are establishing. The incomprehensible amount of computational power and speed will further on create yet unforeseen possibilities for human society reminiscent of the beginnings of the WWW. Since then an ongoing process, sometimes more perceptible, other times a little less, is happening and concurrently relocating nearly all aspects of someone's life to the realm of binary states. Communication with friends as well as business meetings, shopping for food as well as cars, finding a job as well as a new significant other, booking a medical appointment or a flight to Jakarta, navigating through Jakarta, learning Indonesian, entertainment, banking, ... the list goes on infinitely. In a non-judging manner, although we have physical representation walking around and doing things, a growing portion of our lives takes place online. The reason being that it is so easy to do anything, from anywhere at any time and I would consider this an informal definition of the Information Age. Besides, from the term itself, one can also derive the digitization every piece of information and man-made content since data is the new oil. But without digressing any longer, some facets and the questioned existence of truth in the Information Age are going to be discussed in the following section.

When I initially pondered on the question if truth is dead in the Information Age the rational-thinking know-it-all in me mockingly responded "Obviously not! Within a few

seconds you have access to the entire public internet, within a few minutes and maybe a proxy you have access to the Dark Web." This answer is quite biased and narrow-minded since it solely refers to truth in terms of information hence other perspectives must be considered as well. Admittedly, the googling-everything-attitude does indeed also hold for interaction between people. Imagine having a job interview and getting into the narrowed-down selection of applicants. A plausible measure the HR manager could take to facilitate the decision is a brief internet research revealing either youthful misdeeds or voluntary social engagement. Equally, the employee may discover their superior's unexpected fable for psytrance hippie music festivals. Not only the professional relationship can be distorted by using first and surname as search terms, but also the initial impression of a romantic encounter can be flawed. After having the ordinary chit-chat, nowadays not phone numbers but Instagram profiles are exchanged. Comparable to a fashion model's lookbook most Instagram profiles are a well-thought-through assortment of favorable images demonstrating how likable, individual and laid-back someone is, subliminally proving intellect by using an eloquent caption. To put it in an exaggerated nutshell: In case you are very determined you can present yourself as any character imaginable; a star photographer instead of a second-semester design student, the next Elon Musk instead of someone who read two blog posts about startups. However, in a time where virtually anyone can photoshop their waist smaller, their teeth whiter or their abdominals more defined there will always be a "Photos of others" folder on facebook revealing a more realistic image. Apart from appearance also the interaction between humans is altered by the usage of mobile devices and this change is no more advantageous for truth. The opportunity to converse without the oh-so-dreadful eye contact gives many people boldness, quick-wittedness or audacity. When you are not confronted with the sorrow or disgust of your vis-à-vis it can easily be neglected, and politeness or empathy play a minor role. Which type of communication would then be considered real or true? Either the sugarcoated personal contact with the counterpart or the rude but somewhat honest text message which would never be spoken out loud. In comparison to messengers, there are social media platforms and "platform" has a literal meaning in this case; a stage. Some members mistake anonymousness for the right to downgrade other opinions and declare their own as the non plus ultra and others misuse the reach to influence their disciples' thoughts. To give an example: politics. Anyone who has not been living under





a rock for the past three years has already recognized that the current American president does not necessarily attach great importance to the objective correctness of his statements. Lying about 50.000 attendees at one of his speeches can easily be uncovered but exactly the obviousness of fraud is so successful. Supposedly, this is a rhetoric technique used to polarize and provoke emotions like patriotism, anger or fear which gained importance in political debate over the years. Based on this change the term Truth Decay was introduced to call attention to the diminishing significance of facts in exchange for opinion and emotions. To give another example we only have to assess our home country, to be exact the eastern part of it. The election results of the right-wing populist party AfD is inversely proportional to the percentage of foreigners in the specific rural district⁵, in other words: the fear of immigrants is caused by the absence of contact and then worries are magnified by politicians. Every Saxon citizen with a connection to the internet could verify this causality within a few minutes of research but emotions take over. Continuing with current events, the next destination is the land of the Rising Sun although the Chinese population does not have the same level of autonomy as we have, to say the least. The focus will only lie on the situation regarding Hong Kong to not stray too far from the topic. Firstly, the 2019 Hong Kong protests have not been covered by the mainland media until April and afterwards, people who searched for information on the protest were redirected to censored official news sites. On Chinese social media, all posts covering the events got deleted or blocked and in addition to that, mainland news channels displayed the protests as radical and violent. This extreme example of total control over public opinion and information confirms the leading question but on the other hand, there are ways to utilize the internet to politically educate others and spread true facts. Before the 2019 European Parliament election the Youtuber Rezo published a 54-minute video (~16 million views) discussing the political views and actions of the two leading German parties and the aforesaid AfD thus sparking an intensive debate. He presented his points in a mostly objective manner and based his arguments on 252 publicly accessible sources, which counteracts the idea of post-truth politics and confirms that the internet enables critical thinking. Moreover, the accessibility of news articles, scientific papers, interviews or data sets is now better and easier than ever before because it is free of charge. A trend I noticed among academics who want to publish their Ph.D. thesis is to forgo applying for a patent and instead publish it on open

⁵ Benrath, B. (2018)

source platforms. The Information Age is characterized by the increasing demand for programmers and data specialists which goes hand in hand with the gaining popularity of corresponding study programs. The activity field of programming highly relies on communities like Stack Overflow and platforms like GitHub where knowledge and code are exchanged thus students, as well as professionals, can benefit from the same resources. Maybe the increasing portion of jobs in this field will further on transform the way information is retrieved and how it is priced, viz. not at all. As a student also the learning and studying process has changed over the past 20 years since, on the one hand, the professor's lectures can be downloaded and on the other hand expert knowledge can be found on the internet. Honestly, I barely know anyone who visits the library for studying anymore let alone buying literature. More and more analog media is replaced with a neater free of charge digital version where information is condensed into a page you only scroll through a couple of times. Similarly to textbooks, also newspapers are losing the fight against their online counterpart because there is no apparent reason to spend money on a crackling bulky hard copy when your smartphone contains the same news. Publishers try taking countermeasures selling in-depth information based on a subscription model to create value because properly researched information, after all, is a consumer good. However, this productification results in the usage of marketing and advertising strategies to take a stand against competitors and facts like "Some frequencies of electromagnetic waves cause cancer in male rats." are presented as "EM waves cause cancer.". Eye-catching, phenomenal or shocking headlines should convince the scandal-craving user to click the link and to meet the expectations of a groundbreaking story, content is sometimes tweaked to be more entertaining. But since current generations are reputedly more educated and better at critical thinking, they can help themselves with more extensive investigation. The commonly known Law of large numbers states that more frequent repetitions of an experiment result in the observed average result ascertaining the true expected result, so checking more websites should provide you with the correct answer. This sounds like a tremendously tedious task, but Data Science has created a handy tool



called knowledge graphs. Artificial Intelligence can create thematical topologies from all search results thus associating related topics and suggesting the best answer. Those algorithms assimilate to the human brain but are significantly faster and usually discover connections and causalities which appear random

to the human observer. In other words, the Information Age is accompanied by incredibly powerful tools like the internet in general or Machine Learning algorithms which can, if used correctly and objectively, help us find absolute truth. But on the flip side, the vast extent of the world wide web provides plenty of room for every argument, every conspiracy, every topic and every truth you can think of. A biased attitude and sparse variety of information sources will more and more shrink the so-called Filter-Bubble every individual is living in. When the internet provides a platform to shape collective opinions, true or not, those with like-minded beliefs will gather and spread similar world views in their reassuring echo-chamber. Today's recommendation algorithms only enhance this separation into camps of kindred spirits. The aforesaid representations of a person, real-life and virtual life, seem to live in different communities. The first one is forced to surround itself with neighbors, teachers, and parents who not necessarily share their opinion, but the latter can connect with their soulmates on the other side of the world and finally feel understood. Although globalization undoubtedly influences the geographical connections we can form, on an ideological level today's world is increasingly separated into little narrow-minded villages which are isolated from others.

To come back to the lead question: I would conclude that truth is more alive than ever but not the absolute, collective one. Every little Filter Bubble or little village has its relative truth which can be understood as a reflection or a snapshot of this collective world view. Just like every individual has several representations (the adventure seeker on Instagram, the Casanova on Tinder, the entrepreneur in LinkedIn) I would claim that truth has multiple personalities as well, each living to the fullest.



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