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“The Bible is a flat-Earth book”: An Extended Pragma-Dialectical Analysis of Audience Adaptation in the Flat-Earth Conspiracy Theory

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Abstract

One of the conspiracy theories that has increased in popularity during the last couple of years is about the Earth being flat. YouTube and internet have played an important role in the wide spreading of the idea. Based on the apparent mistrust by flat Earthers of certain authorities, two types of fallacies seem predominant within the flat-Earth argumentative discourse: the *argumentum ad hominem* (argument against the person) and *argumentum ad verecundiam* (argument from authority). The aim of this thesis is to analyse the flat Earthers' argumentative discourse through the lens of pragma-dialectics, and observe which arguments tend to occur in light of the two authority-based fallacies.

Audience adaptation is an equally important aspect to consider when analysing the strategic maneuvering of arguers in discussions. Unlike presentational design and topical potential, audience adaptation remains more open for expansion. It is also the aim of this thesis to expand on audience demand by including interdisciplinary behavioural studies. This is to understand the general attitudes and characteristics of flat Earthers and their audiences. In sum, the analysis is about how flat Earthers take into account their different audiences to maneuver strategically in the discussion by means of the authority-based fallacies.

It could be observed that the fallacies of ad hominem, ad verecundiam (and its populistic variant ad populum) were advanced in strategically different ways. From appealing to God, the Bible, scientific referents, to even their own logical understanding of the world. Flat Earthers employed each of these strategies to both defend and attack standpoints while attempting to comply to their audiences. With these strategies, it could be identified that the main audiences flat Earthers wanted to adapt to were religious people. More specifically, Christian individuals with or without a conspiracy ideation who consider the government, NASA and anyone related to these as untrustworthy and dishonest. Other targeted audiences could include potential flat Earthers who may distrust established authorities and/or are Christian.

Keywords: Flat-Earth, pragma-dialectics, fallacies, ad hominem, ad verecundiam, audience adaptation, strategic maneuvering, expertise-based argumentation, critical questions.

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1. Introduction

During the last years and due to the rise of digital platforms such as YouTube, existing and new so-called conspiracy theories started to gain momentum and reach a larger audience (Dodgson, 2019). One of the conspiracy theories that has increased in popularity is about the Earth being flat (Picheta, 2019). Aside from videos on YouTube, the flat-Earth community has created forum groups for discussion, websites and even conventions. Their focus was to promote this belief and disprove that the Earth is a globe, while seeking the "real truth" (Flat Earth Society, 2020).

What makes the flat-Earth conspiracy theory case interesting is that despite all the amount of evidence there is about the Earth being spheric, it does not seem enough to convince flat-Earthers. Due to the apparent spreading of the idea on social media, responses from the scientific community soon became more present, starting a discussion (Brazil, 2020; Michalakis, 2018). One of the flat Earthers' arguments against the Earth being a globe is that the science behind it is wrong because the sources backing it are unreliable (Dyer, 2018). This argument is based on the conspiracy belief that people in general have been lied to. Flat Earthers point to the scientists, the governments, the education systems, the news media, agencies like NASA, and even airlines, as the ones hiding the truth about the shape of the Earth (Khan, 2018). These entities, according to flat Earthers, are lying from their positions of power (Khan, 2018). Scepticism and an anti-establishment attitude seem, in principle, to govern this phenomenon (Landrum et al., 2019).

The flat-Earth conspiracy discourse presents, moreover, an interesting case in terms of argumentation and discussion. The mistrust named above likely influences the way flat Earthers communicate to the detractors (often scientists). This factor could be creating disruptions in the discussion and hindering a reasonable resolution (van Eemeren, 2015). Based on this, the *pragma-dialectical theory* can be relevant to identify which argumentative strategies used by flat Earthers foment such disruptions. The *pragma-dialectical theory* proposes an ideal model of a *critical discussion*, which consists of a set of "ideal" rules for discussion to resolve a difference of opinion (van Eemeren, 2015). According to this model, any argumentative contribution that hinders or derails a discussion (violates a rule for critical discussion) constitutes a non-constructive move, namely a fallacy (van Eemeren, 2015). This normative design brings a stable starting point to analyse (fallacious) argumentative ways of discussion and provides a robust methodological approach.

Based on the apparent mistrust of certain authorities, two types of fallacies could occur often within the flat-Earth argumentative discourse: the *argumentum ad hominem* (argument against the person) and *argumentum ad verecundiam* (argument from authority) (van Eemeren, 2015). Both fallacies are forms of authority argumentation that address authority sources in different ways. Ad hominem fallacies aim to discredit the antagonist's authority on the subject based on disfavoured characteristics or circumstances. Ad verecundiam fallacies occur instead when there is an incorrect appeal to an authority. This seems to translate to the flat Earthers' tendency to dismiss the opponents and their sources as untrustworthy, while pro-

moting their own sources as a result (Khan, 2018). Yet, even though flat Earthers claim that most of their evidence has a scientific basis, none of this evidence is falsifiable. In other cases, flat Earthers even refer to religious books such as the Bible as their source to refute scientific evidence (Khan, 2018).

Nevertheless, when to consider a source reliable presents some challenges and it is not always clear-cut. Based on the argumentative discourse case in place, a set of criteria seems necessary to establish what constitutes a reliable authority source. Defining what a reliable source is for the flat-Earth movement case may help identify more clearly when ad verecundiam fallacies are being committed. In turn, this could help identify when a fallacious ad hominem attack to an authority source has occurred (Walton, 2014).

Within the pragma-dialectical framework, van Eemeren and Garssen (2015) propose another factor in argumentative discourse: *strategic maneuvering*. In a discussion, participants contribute with what they consider to be both reasonable and effective. This requires strategic maneuvering. In the attempt for participants to remain effective and reasonable, three main aspects will manifest and interact with each other: *topical potential, presentational design* and *audience adaptation.* The aspects of topical potential and presentational devices are relatively better observable and identifiable from a linguistic point of view. However, the aspect of audience demand remains a more complex one, as behavioural and psychological factors should be considered as well (van Eemeren, Garssen & Meuffels, 2015). It is therefore believed that including insights from studies in behavioural attitudes (refer to Landrum et al., 2019 and Olshansky, 2018) for audience adaptation could help characterize better who the flat Earthers and their audiences are. It could also contribute to embody a more overarching study of the flat Earthers' strategic maneuvering and discussion style.

The aim of this thesis is to analyse the flat Earthers' authority argumentation discourse. This will be done by reconstructing and analysing the authority arguments that occur via the fallacies of ad hominem and ad verecundiam. Furthermore, the fallacious authority arguments will be analysed on how these are used to hinder the conversation with the scientists as the detractors. At the same time, it will be observed how flat-Earthers' authority arguments are geared at persuading and fulfilling their audiences' preferences. Besides this, it will be elaborated on who the audiences are to explain why fallacious authority arguments can seem effective and reasonable to these. For this aim, three videos from YouTube were selected for the analysis. The videos were chosen based on the popularity of views and on the condition that they had to contain both sides (flat Earthers vs. Scientists) presenting their arguments. The specific research question that will be central to this research is:

- In what ways do flat Earthers take into account their different audiences when maneuvering strategically by means of the fallacies of ad hominem and ad verecundiam in YouTube videos?

In order to answer the research question, it will be first described what the flat-Earth movement is and how it was originated (section 2). Furthermore, a theoretical framework will be established based on the extended pragma-dialectical framework by van Eemeren and

Grootendorst (section 3). This same section will delve more into the authority-based fallacies in focus, i.e., ad verecundiam and ad hominem fallacies, and audience adaptation in light of the flat Earthers' behavioural characteristics. In section 4, it will be explained in more detail what methodology will be used in the analysis of the YouTube videos. Section 5 will analyse the different ad verecundiam and ad hominem fallacy cases. Finally, in section 6, a discussion of the findings will be presented, as well as a reflection on the limitations and considerations for future research.

2. The flat-Earth movement

2.1 The origins of the flat-Earth movement

Since ancient times, different cultures and thinkers have tried to determine the shape of the Earth. From the Egyptians believing the Earth was a square with corners, to the Babylonians believing in a hollow-shaped Earth. It is not a new phenomenon that people throughout history tried by their different means available to discover the true shape of the Earth (Simanek, 2006). Some of the first Greek historical figures that pointed at the possibility of the Earth being spherical were Aristotle, Eratosthenes, and Pythagoras (Mohammed, 2019). Eratosthenes, for instance, was one of the first thinkers to determine a close measurement of the size of the Earth combining geometrical calculations and physical observations (American Physical Society, 2006). His legacy, along with other great thinkers' contributions, gave way to advancements in physics and cosmology, which has led to an almost 2000-year scientific consensus on the spherical shape of the Earth (Hogenboom, 2016).

Parallel to this, there has been a significant number of people throughout history who advocated instead that the shape of the Earth is flat. Members of religious institutions like the Christian and Catholic church, societies like the Hebrew civilization, among others, were some of the first ones to detail ideas of a flat-Earth. Most of those members who defended such ideas would refer to several biblical passages and quotes to support their claim (Mohammed, 2019; Simanek, 2006). Since then, sceptics of the globe-Earth theory have appeared periodically bringing back the flat-Earth belief, maintaining sporadic small societies and reaching public debates with scientific figures as an independent form of movement (Mohammed, 2019).

Modern western flat-Earth ideas trace back to movements in the mid-1800s, when figures like Samuel Rowbotham started to discuss religious fundamentalist ideas to problematise the dichotomy between religion and science (Olshansky, 2018). From this baseline, the International Flat-Earth Research Society (IFERS) was formed in the 1950s. Their philosophy is that acquiring knowledge should rely on an individual empiric level, in which science and religion could complement each other (Olshansky, 2018). They also promote that one should rely on "one's own senses combined with a philosophical scepticism about the world" and that this would be "the best approach for discerning the true nature of reality" (Olshansky, 2018, p. 7).

With the arrival of internet, small flat-Earth groups started to relaunch the philosophy of the IFERS via discussion forums in 2009. It became their main way to form larger communities,

gain bigger platforms, and access other flat-Earth groups around the world. Suddenly, smaller groups from different places started merging and forming what is known today as the Flat Earth Society, with an official website[1] that is active to this day (Olshansky, 2018). Internet, YouTube and social media have undoubtedly played an important role for modern flat-Earth communities in the last years (Landrum et al., 2019; Mohammed, 2019). These platforms have allowed other flat Earthers to connect, but also to reach audiences on an international scope, increasing the chances to attract new believers. Today, spokespeople among the community have established popularity among the members who follow them and listen to them in conferences, podcasts, interviews in established media talk shows, etc. (Poole, 2016).

2.2 The ideas behind the flat-Earth movement

The science behind the flat-Earth ideology seems to be built on a series of beliefs presented as evidence, which tend to compete with the globe-Earth theory. The leading claim is that the Earth has a disc shape, and that Antarctica is somehow a form of a wall of ice surrounding the water and the land (Wolchover, 2017). It is also a tendency among flat Earthers to believe that these ice walls surrounding the Earth are being guarded by government agencies like NASA to prevent people from climbing them up and discover the edge (Wolchover, 2017). Other claims involve that the notion of gravity does not exist, since they deem it impossible or an illusive effect of the upward acceleration of the Earth (Brazil, 2020; Wolchover, 2017). According to flat Earthers, the Earth is always moving upwards driven by dark energy (Flat Earth Society, 2020; Wolchover, 2017).[2]

Nevertheless, differences in opinion among flat Earthers are, among others, also related to gravity, as some groups believe in a stationary state of the "disc", which is an interpretation that is drawn from the Bible (Olshansky, 2018). The Christian Bible is, in fact, a major source of information to a large group of flat Earthers, although some other flat-Earth members differ on this matter as well (Olshansky, 2018).

There is a somewhat consensus on the belief that almost all of the photos and videos there are of the globe are manipulated by photoshop or CGI effects. A majority also believes that the moon landing was faked (Flat Earth Society, 2020). Satellites, according to most flat-Earthers do not exist, since they believe it is impossible for devices to orbit around the Earth (Wolchover, 2017). GPS and radars, according to flat Earthers, do not truly work, as they are built to give the illusion to drivers, sailors or pilots that they are traveling around a globe instead of flying in circles over the disc-shaped world (Wolchover, 2017).

As for the reason of why the governments and governmental agencies like NASA have built this "globe-Earth-conspiracy", flat Earthers claim it is because of financial and power reasons (Wolchover, 2017). Admitting the "truth" about the flat shape of the Earth would, according to flat Earthers, impose a loss of power of these authorities and, in turn, a loss of money (Flat Earth Society, 2020).

[1] The Flat Earth Society website; https://www.tfes.org/

[2] The notion of dark energy or dark matter is, to this day, an unknown force in cosmology and discussions about the phenomenon are diverse in the scientific community (Mann, 2019).

3. Theoretical framework

Now that we have a general idea about the believes of flat Earthers, the main theoretical framework for this thesis, namely, extended pragma-dialectics, strategic maneuvering and fallacies as derailments of critical discussion will be explored. Moreover, an exploration of audience adaptation in connection with behavioural studies on flat Earthers' attitudes will be established.

3.1 The pragma-dialectical approach

For argumentation theory, van Eemeren and Grootendorst (1992) developed an approach that combines a pragmatic perspective with a dialectical one. This approach, known as pragma-dialectics, was built with the purpose of creating a methodological starting point for the analysis of verbal argumentative discourse (van Eemeren, 2015). Pragma-dialectics is then influenced by the speech act theory, discourse analysis, and it is inspired by critical rationalism (van Eemeren & Houtlosser, 2003). The result was an approach that combines perspectives on reasonableness and persuasiveness.

As part of the pragma-dialectical ideal model of a critical discussion, van Eemeren, Grootendorst and Kruiger (1984) present four stages distinguished analytically in the resolution process: *the confrontation stage, the opening stage, the argumentation stage* and *the concluding stage.* In the confrontation stage, a difference of opinion is presented, manifesting opposite standpoints and the acceptance or non-acceptance of these. In the opening stage, arguers establish a point of departure for the discussion based on agreed concessions, premises and an acknowledgement of the burden of proof. In the argumentation stage, arguers defend their standpoints and challenge the opposer's standpoints at issue. Finally, in the concluding stage, arguers establish the results of the discussion. These stages represent the different steps arguers should follow in order to resolve a difference of opinion on the merits (van Eemeren, 2015). Van Eemeren (2018) also reminds us that this is an ideal model, therefore, not all stages need to be implemented in this specific order or occur explicitly in actual argumentative discourse cases.

Following the dialectical standards of reasonableness, all four stages presented above should be realized in line with a series of rules for critical discussion. Van Eemeren and Grootendorst (1992) formulated in total ten rules, sometimes referred as the Ten Commandments (see table 1), which should be ideally followed. Any argumentative move performed in discussion should observe these rules. By default, if any of the moves do not comply with the rules for critical discussion, they hinder or even frustrate the critical aim of the discussion and can be considered fallacious (van Eemeren & Grootendorst, 2003).

Fallacies are therefore, according to the pragma-dialectical framework, presented as counterproductive moves of the rules for critical discussion (van Eemeren, 2015). This assumption allows for a consistent and structured point of departure for the analysis of fallacies in argumentation (cf. Hamblin, 1970). This way, fallacies become systematically linked with the rules for critical discussion and can be more clearly distinguishable from each other in analysis (van Eemeren, 2015).

Table 1 summarises the general characteristics of the rules presented by van Eemeren and Grootendorst (van Eemeren, 2018, p. 53-68). The table shows the different rules for a critical discussion, how these rules are used ideally, and when there is a violation of them. It also shows in which discussion stages these violations can occur, and which fallacies can result from such violations.

Rule	**Ideal use**	**Violation**	**Discussion stage**	**Examples of fallacies violating this rule**
1. Freedom rule	Parties can propose standpoints and cast doubt of such standpoints freely.	Certain standpoints are declared sacred and unable to criticise. A party restricts the other's freedom of action.	Confrontation stage	- Argument ad baculum - Argumentum ad misericordiam - Argumentum ad hominem - Tu quoque fallacy
2. Obligation to defend rule	Parties oblige to defend proposed standpoints when requested to.	The protagonist evades or shifts the burden of proof.	Opening stage	- Fallacy of evading the burden of proof. - Fallacy of shifting the burden of proof
3. Standpoint rule	Attacks or defences on standpoints relate to those standpoints proposed.	A party distorts or ascribes fictitious standpoints to the other.	All discussion stages	- Strawman Fallacy
4. Relevance rule	Defence of standpoints occur only by producing relevant argumentation.	The protagonist produces irrelevant arguments or other non-argumentative means that are unrelated to the advanced standpoint.	Argumentation stage	- Argumentum ad populum - Argumentum ad verecundiam - Pathetic fallacies - Ethical fallacies - Ignorantio elenchi
5. Unexpressed premise rule	Parties abstain from falsely attributing unexpressed premises to each other and assume responsibility for their own unexpressed premises.	The protagonist denies an unexpressed premise. The antagonist distorts an unexpressed premise.	Argumentation stage	- Fallacy of distorting an unexpressed premise. - Fallacy of denying an unexpressed premise.
6. Starting point rule	Parties attack and defend accepted standpoints. Parties avoid denying accepted standpoints or presenting falsely accepted standpoints.	The protagonist falsely presents something as the common starting point. The antagonist denies a premise that represents a common starting point.	Argumentation stage	- Fallacy of many questions - Petitio principii or circular reasoning

7. Validity rule	Parties present complete and logical arguments that are fully expressed.	The protagonist presents logically invalid or erroneous arguments.	Argumentation stage	- Fallacies of division and composition
8. Argument scheme rule	Standpoints are conclusively defended by admissible argument schemes and in agreement with both parties' initial premises.	The protagonist relies on inappropriate argument schemes or uses appropriate argument schemes incorrectly.	Argumentation stage	- Argumentum ad verecundiam - Argumentum ad populum - Argumentum ad consequentiam - Post hoc ergo propter hoc - Hasty generalization - False analogy - Slippery slope
9. Concluding rule	Parties correctly determine the result of the discussion. Parties can agree that the defence of the standpoints were successful or unsuccessful.	The protagonist makes an absolute of the success of the defence. The antagonist makes an absolute of the failure of the defence.	Concluding stage	- Argumentum ad ignorantiam
10. Language use rule	Parties avoid creating misunderstandings from vague and unclear formulations, and express intentions accurately.	Parties exploit unclearness and ambiguity.	All discussion stages	- Fallacy of unclearness - Fallacy of ambiguity

Table 1- Summary of characteristics of the rules for critical discussion (van Eemeren, 2018, p. 53-68)

3.1.1 Ad hominem and ad verecundiam fallacies

The *ad hominem* and *ad verecundiam fallacies* present source-related moves. As explained by van Eemeren and Grootendorst (1992), they appear in different discussion stages and violate different rules. The ad hominem fallacy, on the one hand, is attributed as a violation of the first rule of the critical discussion, i.e., *the freedom rule*, which takes place in *the confrontation stage*. The general intention behind ad hominem fallacies is that of damaging the opponents' credibility to invalidate them in the eyes of the audience (van Eemeren & Grootendorst, 1992). The freedom rule states that it is licit for parties to cast doubt on the other's standpoints or arguments. However, when parties attack the opponents rather than their arguments, opponents are being impeded from advancing or casting doubt on the protagonists' advances. In these kinds of scenarios, ad hominem fallacies can be produced by attacking the opponent. These attacks can be direct, by targeting the person's expertise, intelligence, character or intentions (abusive ad hominem). They can also be indirect, by claiming there are biased motives or interests in what the person argues or defends (circumstantial ad hominem).

A third form is to point at contradictions between the opponent's words and deeds (tu quoque fallacy, a variant of ad hominem) (van Eemeren & Grootendorst, 1992).

The ad verecundiam fallacy, on the other hand, is attributed to the fourth and eighth rules (*relevance rule* and *argument scheme rule* respectively), which occur in *the argumentation stage*. The intention of using ad verecundiam fallacies is that of appealing to a certain authority to defend a standpoint (van Eemeren & Grootendorst, 1992). In the fourth rule, ad verecundiam fallacies take place when the protagonists defend their standpoints by means of non-argumentative devices instead of argumentative ones. In other words, the protagonist replaces logos (argumentation) by pathos (appeals to emotion) or ethos (appeals to character) (van Eemeren & Grootendorst, 1987). For instance, by exploiting the audience's emotions or prejudices (ad populum fallacy) or by endorsing one's own qualities, presenting these as falsely relevant for the argument in discussion (ad verecundiam fallacy) (van Eemeren & Grootendorst, 1992). In the eighth rule[3], ad verecundiam fallacies take place as a result of incorrectly applied symptomatic argumentation, namely incorrect arguments from authority. This occurs for instance when the protagonists present a standpoint as correct or acceptable because an unreliable source says it is so (ad verecundiam fallacy). It can also be because a mass of people says it is the case (ad populum or populistic fallacy, as a variant of ad verecundiam) (van Eemeren & Grootendorst, 1992).

The fallacies of ad verecundiam and ad hominem are connected in an inversely proportional way. This is based on what is presented as the source of expertise (E) and when an attack to that source is legitimate or not. Accounts are sound appeals to E when E is credible, whereas accounts are sound attacks to E when E's credibility is questionable (Oswald & Hart, 2013). This entails that if a source advanced is correct and sound, any attack to it without sufficient evidence would per se become a fallacious ad hominem attempt. On the other hand, if a source is presented as scientific but it is proven to be incorrect, it becomes an ad verecundiam fallacy. In this case, an attack on the acclaimed authority can be regarded as a sound move (van Eemeren, 2015; Walton et al., 2008).

Moreover, the burden of proof to defend when a source is reliable shifts depending on what the arguers commit to (Walton et al, 2008). On the one hand, if there is an attack to a scientific E, the attacker becomes accountable for presenting reliable evidence to support that attack and to not be regarded as a fallacious ad hominem move. On the other hand, if there is an appeal to an E that is allegedly credible and scientific, the defender is accountable to give enough reasons for it to not be regarded as a fallacious ad verecundiam move (Walton et al, 2008).

Thus far, fallacies have been described rather in terms of reasonableness. However, van Eemeren et al. (2015) point to the fact that fallacies also hold a persuasive factor. The constant balance between the dialectical and rhetorical aims an arguer attempts to keep is observed further with the notion of *strategic maneuvering* (van Eemeren & Garssen, 2015).

[3] In other literature from van Eemeren and Grootendorst (1987; 1992) the argumentation scheme is referred as the seventh rule instead of the eighth (cf. van Eemeren, 2015; 2018). I will refer to the argument scheme rule as the "eigth rule", since van Eemeren and Grootendorst refer to this rule by this number in their more recent works.

3.1.2 Determining reliable sources in authority argumentation in science

Before delving into the notion of strategic maneuvering, it first needs to be discussed what makes a source reliable and when it is legitimate to attack it. As mentioned before, it can be challenging to assess when a source used for authority claims can be considered reliable and sound or unreliable and fallacious. This could be the case because fallacious appeals to expert opinion can be deceiving and posit as legitimate, since they might be quite persuasive (Walton, 2010; Walton et al., 2008).

A first step should be to determine what constitutes a reliable source and where does the source's expert status come from. In line with this, Walton (2014) argues that all arguments should be defeasible. By this, Walton meant that no argumentative move should be treated as absolute, but that they can all be subjected to critical reasoning (Walton et al. 2008). In the case of arguments from expert opinion, Walton et al. (2008, p. 310) proposes a set of critical questions to analyse arguments that appeal to expert opinion and assess if a source is reliable:

Q1. *Expertise Question:* How credible is E as an expert source?
Q2. *Field Question:* Is E an expert in the field that A is in?
Q3. *Opinion Question:* What did E assert that implies A?
Q4. *Trustworthiness Question:* Is E personally reliable as a source?
Q5. *Consistency Question:* Is A consistent with what other experts assert?
Q6. *Backup Evidence Question:* Is E's assertion based on evidence?

Taking these questions as a starting point, we can discuss what could make a source reliable and sound to present in light of the flat-Earth conspiracy theory. Science, whether it is used as a source of reliable authority or aimed for criticism and questioning, is a focus point in the flat-Earth case. It seems appropriate, then, that any reference to science should be evaluated based on the process of scientific enquiry. This is if one wants one's argument to be considered legitimate within the scientific realm.

For instance, E could be a credible source if it presents an unbiased position (Q1), i.e., if it is able to represent two sides of an issue in a balanced way (Walton et al., 2008). Generally, in science, it is expected that scientific publications occur after fulfilling a series of requirements, and this should lead to an unbiased result (Gauch Jr & Gauch, 2003). For instance, processes like the scientific method proposes different steps with which experiments should present objective answers. Any result from experiments based on the scientific method implies that any assertions based on it will have sufficient grounds to be true and admissible (Q3). Additionally, it is required within science that E presents a hypothesis that is falsifiable and replicable. This means that the hypothesis can be refuted with evidence and that it can be tested multiple times giving the same answer. This is proof in science that E is leading a study in an objective way and can be give reliable data (Q4 and Q6) (Francis, 2019; Gauch Jr & Gauch, 2003).

Moreover, someone can assess whether a theory or a hypothesis is reliable when there is scientific consensus (Q5). Scientific consensus is reached in science when there is significant reason to establish a general agreement, even when some disagreement remains (Gauch Jr & Gauch, 2003; Popper, 2005). This is achieved through constant debate with other scholars or

interested parties and peer review. The fact that there is a debate on a subject in the first place can indicate that E is considered to be in a field of expertise and is recognized as a legitimate peer (Q2). Furthermore, a constant public scrutiny in the scientific community and outside of it is expected. As a result, E, which claims or argues A in a field, needs to give substantial evidence that can undergo constant inquiry in order to become either bullet proof or discarded (Goodwin, 1998, Popper, 2005).

In terms of what is observed in science, data collection is often strictly viewed from a naturalistic perspective (Morris, 1997; Popper, 2005). This entails that scientific observations of beings and events on Earth and in the universe are measured as natural, which excludes any supernatural explanation of it (Stanford Encyclopedia of Philosophy, 2018). It also means that any evidence or sources that claim supernatural explanations to physical and cosmologic beings and events are treated as illegitimate. The reason for this is that supernatural or celestial accounts cannot be observed but are rather matters of belief (Pierre, 2017). If we are to talk of evidence to prove something within science, more particularly physics, then naturalistic observations are going to be the ones deemed as reliable evidence (Q6) (Popper, 2005).

The established principles of the scientific community and its conventions as an institutional body are cause for mistrust from the flat Earther's perspective. This is because flat Earthers believe that a hidden agenda rules institutions and agencies associated to governmental bodies (e.g., schools, universities, agencies like NASA, etc.). As a result, anything that originates from these will likely be discredited. Attacking or casting doubt on E who is associated with one of these institutions can remain reasonable if there are sufficient grounds for it. If there is enough evidence for a claim of suspicion, then the argument can be sound. However, an attack with no grounds may just become a fallacious one, since it does not stop being a mere belief or an opinion (Walton et al., 2008).

In the specific case of the flat-Earth movement, three critical questions from Walton et al. (2008, p. 310) on appeal to expert opinion are most relevant. These are Q1 (*expertise question*), Q3 (*opinion question*) and Q6 (*backup evidence question*). This is based on flat Earthers likely advancing alternative, self-proclaimed scientific sources as contenders to explain the shape of the Earth. Judging what qualifies flat Earthers' sources as a reliable scientific E, what this E asserts that can prove A, and what evidence they give to support E's claims becomes decisive to determine E's legitimacy in science. If not, prompting answers to Q1, Q3 and Q6 can help determine more evidently when a fallacious ad verecundiam attempt occurs. In turn, it can be determined when an attack to a conventional scientific E is sound or becomes a fallacious ad hominem move.

3.1.3 Strategic maneuvering

It has been stated before that fallacies can be persuasive. As an extended version of the pragma-dialectical framework to explore the persuasive side of argumentation, van Eemeren and Houtlosser (2002) present the notion of *strategic maneuvering*. In this extended pragma-dialectical model, strategic maneuvering concerns the arguer's continual attempt to present the most convincing argumentative moves in discussion, which can be both effective and reasonable (van Eemeren, 2015).

Ideally both aims, i.e., the dialectical and rhetorical aim, should be maintained equally in a discussion. From this perspective of strategic maneuvering, the different argumentative moves chosen by an arguer in discussion embody three aspects, which can be distinguished analytically. These are *topical choice, presentational design* and *audience adaptation*. Topical potential refers to the speaker's choice of available arguments that can have the best potential to be effective in discussion. Presentational design refers to the different speech devices or choices available for phrasing and stylistic framing to achieve discursive effectiveness. Lastly, audience adaptation refers to the need for speakers to frame their argumentative moves in agreement with the perspective and demands of their audiences (van Eemeren, 2015).

However, when there is an imbalance between rhetorical and dialectical aims, i.e., between persuasiveness and reasonableness, a derailment of strategic maneuvering takes place. This derailment means that a violation of a rule for critical discussion is involved. Combining these perspectives, fallacies become consequently derailments of strategic maneuvering. In other words, "fallacies are derailments of strategic maneuvering that involve violations of critical discussion rules" (van Eemeren, 2015, p. 779). The judgement of whether a fallacy is committed is also dependent on contextual circumstances affected by institutional conventions and the communicative activity type the argumentative discourse case is in (van Eemeren, 2015).

3.1.4 Activity types – Limitations and possibilities of YouTube discussion videos

According to van Eemeren and Houtlosser (2002), the notion of *activity types* is a relevant factor to consider in strategic maneuvering. Activity types refer to all conventionalized communicative clusters that are realized in everyday speech events. As a result of the regularity of different communicative activity types, certain rules and requirements are deemed more established and predictable in communicative interactions. For instance, in political communication, general debates as activity types in international organizations like the UN have to follow an agenda and speakers are allowed to speak when the Chairman indicates it so. Time for speaking or how many interventions can occur by each delegation is strictly rationed.

Activity types' rules or preconditions create a set of possibilities and limitations that affect the arguer's choice of argumentative strategies and delimit what becomes acceptable. In the UN example, the rules for the debate create a more organized setting where everyone must be heard, and prepared speeches are preferred over improvisation. Since interruptions are not allowed, opportunities to intervene in a speech and challenge directly what has been said do not occur. The person who wants to respond is allowed to make a statement of reply after the speech, which allows for preparing counter-argumentation before it is time to speak. In the end, strategic maneuvering and its success in discussion are determined by the environment construed for an activity type (van Eemeren, 2015).

In a sense, YouTube pre-recorded discussion videos can be regarded as an activity type with certain conventionalized rules and policies. These rules provide a set of possibilities and limitations to those who create the videos. It was established before that YouTube has played an important role in allowing the spreading of the flat-Earth conspiracy theory (Landrum et al, 2019; Mohammed, 2019). However, YouTube has updated their policies of use throughout the years, conditioning its users. As a medium, YouTube started as a platform where anyone with a camera and a microphone could upload a video expressing or doing, in principle, whatever they found of interest. Rules on what kind of content was acceptable or what rules should apply in different scenarios were not formalized until 2012 and did not truly create an impact until 2016 (Leskin, 2020).

From its origins to today, there has been a development on how content is managed, going through constant updates on what YouTube calls "Community guidelines" and "ad-unfriendly" content (YouTube help, 2020). The guidelines involve avoiding things such as:

- Inappropriate language
- Violence
- Adult content
- Shocking content
- Harmful or dangerous activities
- Hateful content
- Incendiary and degrading content
- Drugs and Drug-Related Content
- Tobacco-related content
- Firearms related content
- Controversial issues and sensitive events
- Themes for adults in family-friendly content

These changes in the user policies have made an impact on virality patterns and monetization for all videos uploaded (Wakabayashi, 2019). YouTube's system of recommendation has, moreover, become especially tougher for content that is related to misinformation and controversial issues, including conspiracy theories (Griffin, 2019). This more restricted and regulated environment YouTube has built, creates a set of constraints for cases like the flat-Earth conspiracy theory. A person who wants to upload a video on YouTube about the flat-Earth has to circumvent the established condition to not get demonetized and maintain a certain number of views. In spite of the constraints YouTube as an online platform imposes on its users, it still provides a space for flat Earthers to expose their opinions and arguments. It also allows them to search for discussion opportunities with the opposing sides and catch the attention of detractors, which give flat Earthers further exposition to other audiences.

For video as the communication medium, possibilities and constrains emerge as well. On the one hand, editing tools and the pre-recorded status of videos allow speakers to manage what is presented to the audience and how. On the other hand, since the interaction between speak-

ers and audiences of pre-recorded videos is not direct (live), feedback from the audiences is not as instantaneous. In comparison to other mediums like television, however, YouTube's comment section permits the audiences to respond almost immediately after the recorded video has been uploaded. Nevertheless, speakers still have to assume in advance what their intended audiences may like and agree with (van Eemeren, 2015). In the specific cases where videos are recorded and edited by third parties, roles like those of a mediator also take place (van Eemeren, 2015). It is expected, for instance, that a mediator will guide the discussion based on pre-established topics, in a specific order, and will intervene when the discussion becomes heated or loses focus (van Eemeren, 2015).

It is also expected that editing processes will affect the full nature of the discussion, by cutting certain parts, altering the order of the discussion or making use of extra-linguistic factors. For instance, inserting music, using more than one camera angle, etc. Such factors can, for instance, lead audiences to pay more attention to the person that is being focused by the camera and ignoring certain reactions from the other side. Moreover, editing cuts allows perhaps for important parts to be left out or hidden. For instance, if one side seemed to be succeeding or failing to advance in a moment of the discussion, editing or cutting parts of it can alter the reality of the event and show a different perspective. Adding music, moreover, can be a way of telling audiences how to feel; whether sad, excited or angry. Depending on the music that is placed in a specific moment, it can impact the perception of the discussion in the eyes of the audience.

Similar to public debates, pre-recorded discussion videos on YouTube hold a somewhat conventionalized format (van Eemeren, 2015). Still, much of the organizational part of the video and the discussion is left for the particular YouTube channel to decide. Similar to public debates, moreover, the viewers of the discussion at hand become the real "main" addressee as these are the ones the arguers want to persuade. This can be connected to the possible factor that some of the participants in the discussion videos may have other channels inside or outside YouTube. Gaining more followers is probably on demand for them as well. However, unlike in some public debates, the viewers in this case are not the ones to fully decide the outcome of the discussion (van Eemeren, 2015).

Furthermore, the role of the mediator in the YouTube videos can be present. However, their participation in the discussion can involve both the roles of a neutral facilitator and of an arbitrator. This is because most of these mediators are also the owners of the YouTube channels where the discussions are taking place. They have in this case more jurisdiction than a classical mediator to decide what is preferred. For instance, what suits better for their channel, what has to be left out in order to comply to YouTube's policies and their own audience, and when there can be a form of settlement of the discussion to finalize the video (van Eemeren, 2015). Table 2 summarises what could be the typical argumentative characteristics of the activity type of recorded discussion videos on YouTube. The characteristics are set in terms of the model of critical discussion and the argumentation stages.

Critical discussion	**Confrontation stage**	**Opening stage**	**Argumentation stage**	**Concluding stage**
Activity type	*Initial situation*	*Starting points (rules and concessions)*	*Argumentative means*	*Outcome*
YouTube recorded discussion video	Disagreement between flat Earthers and scientists, 3rd party that ultimately decides. Possibility of a mediator	Explicitly enforced rules by YouTube (controversial issues policy), implicitly enforced rules by channel owner (editing). Implicit and/or explicit concessions	Argumentation defending standpoints in critical exchanges	Settlement/resolution of dispute by 3rd party, but no resolution of the dispute between flat Earthers and scientists

Table 2 – The Activity type of YouTube recorded discussion videos characterised by the argumentation stages in the model of a critical discussion (van Eemeren, 2015, p. 387-389)

3.1.5 Audience adaptation – Characteristics of flat Earthers

After establishing an introduction of strategic maneuvering, the attention shifts now to the aspect of strategic maneuvering that is of particular interest to this thesis: *audience adaptation*. Van Eemeren and Houtlosser (2003) refer to audience adaptation as an equally important aspect to consider when analysing the strategic maneuvering of arguers in discussion. Unlike presentational design and topical potential, what should be considered to analyse audience adaptation remains still a more open question (cf. van Eemeren, 2015, 2018). Van Eemeren and Garssen (2015) establish that audiences are generally a frame of reference for speakers. However, who the audiences are is something that needs to be defined more specifically for every argumentative case. This could be determined by understanding the general behavior, attitudes and characteristics of a specific audience.

Cases like the flat-Earth conspiracy theory beg the questions of why certain people may subscribe to these beliefs, and what is in their discourse that seems convincing to a certain audience and problematic for the detractors to argue against. Some have already tried to respond the question of why. Studies in media psychology and mass communication from Landrum et al. (2019) and Olshansky (2018), for instance, explain what tends to be the behavioural attitudes of people who believe in the flat-Earth conspiracy. According to the results, there seems to be a higher correlation between factors of science denial and conspiracy ideation with conspiracy acceptance. The factor of science denial seems, however, to be a more complicated component. Although the flat-Earth idea in itself rejects scientific evidence, the majority of flat Earthers support science and advocate for scientific methods[4] on observable facts (Khan, 2018). What seems to be the underlying reason for this science rejection is not entirely the rejection of science per se but the disregard of conventional scientists and governmental agencies as reliable authorities (Khan, 2018).

This basis of mistrust to groups in power is explained in psychology to be a result of feelings like powerlessness and uncertainty (Douglas et al., 2019; Douglas et al., 2017). The need for

[4] It is worth mentioning that the flat Earthers' notion of the scientific method does not follow all steps that are generally defined for it. Predictability, verifiability and falsifiability tend to be ignored in their case (Francis, 2019).

cognitive closure[5], due to uncertainty or lack of knowledge of a subject prompts people to look for "clearer" answers (Douglas et al., 2017). In the search for these answers, motivated as well by an existential need of feeling in control, people may engage in a conspiracy mindset (Douglas et al., 2019). Acquiring a conspiracy mindset becomes then a double-edged sword in term of reasoning. Those with a higher conspiracy mindset will find conspiracy theories more believable and reject any contrary evidence that reduces this feeling of control or that creates cognitive dissonance (psychological discomfort) (Olshansky, 2018). This rejection of contrary evidence is powered further by a biased and paranoid position against groups or individuals in power (Bjerg & Presskorn-Thygesen, 2017; Douglas et al., 2019).

Additionally, some research has pointed out that insufficient scientific intelligence (i.e., analytic thinking, quantitative reasoning, knowledge of scientific facts) and close-mindedness have an influence on science rejection (Olshansky, 2018). In terms of heuristic processing, when individuals or lay audiences lack sufficient scientific knowledge, fact-based arguments become less accessible for critique (Olshansky, 2018). Rather than critiquing fact-based arguments, people might focus instead on critiquing a communicator's credibility or intention in order to oppose claims, as this remains an accessible way to evaluate contrary evidence (Landrum et al., 2019; Olshansky, 2018). Furthermore, research shows that individuals who perform less analytic thinking and less open-mindedness are more susceptible to believe in inaccurate or false information, such as fake news (Landrum et al. 2019).

People's orientations, such as beliefs, values, and ideologies, have also an impact on their attitude towards certain aspects (Olshansky, 2018). Based on this, when certain individuals are confronted with information that goes against their belief systems, these will try to maintain cognitive consistency by looking at information that adapts to their orientations (Festinger, 1975; Olshansky, 2018). In the flat Earthers' case, research in psychology shows that religious beliefs influence the acceptance of science (NASEM, 2016). That is, people with a religious worldview and/or with little scientific knowledge are more likely to find psychological discomfort in scientific evidence. This goes, in the first place, to the basic premise that mainstream science usually separates from any religious doctrine to draw conclusions. A religious person may then find dissonance in what mainstream science advocates. This same person may be more inclined to believe instead in "alternative" science or pseudoscience, such as the flat-Earth idea, if that means the person can be consistent with their beliefs and worldview (Olshansky, 2018).

It can be established so far that the flat Earthers' body of thought is influenced by factors like religiosity, rejection of conventional science as an established authority, and a conspiracy mindset influenced by certain emotions and heuristic processings (Landrum et al., 2015; Olshansky, 2018). In terms of who the flat Earthers' audiences are, these factors also present an overview on what could be convincing to some when looking for flat-Earth information.

As seen above, behavioural factors present relevant insights on what characterises a flat Earther, what their audiences may look for, and how arguers in support of the idea could ex-

[5] The need for cognitive closure (NFCC) in psychology is used to describe an individual's desire to obtain definite answers to questions without any room for ambiguity or confusion (APA Dictionary of Psychology).

ploit these factors to adapt to their audiences. In combination with these insights to consider audience adaptation, the question of what is in their narrative can be explored more thoroughly and from a broader perspective.

4. Methodology

As established before, the purpose of this thesis is to analyse the flat Earthers' argumentative discourse by observing how the fallacies of ad hominem and ad verecundiam tend to occur. Furthermore, these fallacies will be analysed through the lens of strategic maneuvering by considering what argumentative moves the protagonists (flat Earthers) choose for presentational design, topical potential, and audience adaptation.

4.1 Material

For the purpose of this study, three videos were collected from YouTube. The videos were selected based on the main criteria that each video should contain a form of discussion between two sides, namely a flat Earther and a scientist. It was also required that the average length the videos would be somewhat similar. The three videos comprise in total 65 minutes of material. The conversations were transcribed to identify arguers' turns and the full versions are available in the Appendices section as Appendix A (video 1), Appendix B (video 2) and Appendix C (video 3). The turns were numbered to refer more easily to the location of the excerpts in the different conversations.

Some additional criteria were set in order to encompass consistent data. One criterion was that the videos should have been published recently, are somewhat popular in terms of views, and have a publication time that differs no more than two years. Video 3 was published in 2020, and videos 1 and 2 were published in 2019 and 2018, respectively. A further criterion was that all YouTube channels that published the different videos shared some similarities with the format. These channel owners usually invite different people to participate in discussions based on different subjects, for instance, veganism, climate change, feminism, religion, science etc. In each discussion, different arguers in support or against a subject are brought together so that these can discuss it. As a result of these conditions, the three videos were the remaining ones for the analysis.

It should be noted that videos 1 and 3 are more similar in how they structure the discussion. This is because both YouTube channel owners, who also play the role of the mediator, divide the discussion in statements or questions and immediately ask their participants to state their standpoint on these. The discussion in video 2 happens in a more informal way. Here, the conversations arise by inviting one person, e.g., a scientist, and receiving a call from someone who stands as an opposer on the subject. The conversation, although with the help of a mediator as well, starts instead to slowly develop as it goes. Video 2 was nonetheless included, as there is still a discussion occurring between opposite parties, and the video follows the rest of the criteria established. It is also worth noting that unlike videos 2 and 3, video 1 has 6 participants in the discussion. In total, 3 participants are flat Earthers and the other 3 participants are scientists. As a result, the interaction between each other in video 1 varies in terms of who becomes the protagonist and the antagonist in the different cases analysed.

4.2 Method

In order to evaluate the flat Earthers' argumentative moves and identify authority-based fallacies, all possible ad hominem and ad verecundiam fallacies occurring in the different videos were selected. As a result, the final data comprises four cases of ad verecundiam fallacies, two cases of ad populum fallacies as variants of ad verecundiams, and three cases of ad hominem fallacies. The selected excerpts will be organized by outlining their argumentation structures and including their substandpoints and/or standpoints. These argumentation structures will be qualitatively analysed based on how flat Earthers maneuver strategically in discussion. The three aspects of argumentative discourse will be considered, but there will be a larger focus on audience demand. Moreover, the fallacies of ad hominem, ad verecundiam and ad populum will be evaluated based on the rules of the critical discussion that these violate. The fallacies will also be evaluated based on whether these can sufficiently respond to the critical questions of *expertise* (Q1), *opinion* (Q3) and *backup evidence* (Q6). The questions will be treated in relation to science and the soundness conditions science imposes for sources of expertise.

Furthermore, audience adaptation will be connected to the cognitive insights discussed earlier, on a word level and on a sentence level. This allow us to establish more specifically in what ways the flat Earthers strategically adapt to their audiences with the argumentative moves advanced. It was discussed in section 3.1.5 that there is a set of specific characteristics that constitute what audiences of the flat-Earth movement look for and are interested in. This is based on what often characterises a prototypical flat Earther to begin with (Landrum et al., 2019). Based on these characteristics, a set of linguistic assumptions can be outlined as an overview.

Flat Earther characteristics	**Word-level assumptions**	**Sentence-level assumptions**
1. *Religiosity*	• Celestial references (e.g., God, Jesus, the Bible etc.) • Figures of speech (e.g., metaphors, similes, etc.)	• Bible quotations
2. *Rejection of conventional science as an established authority*	• Evaluative words • References to scientific and non-scientific sources • Dissociation (us-vs-them attitude)	• Interrogative formulations
3. *Conspiracy mindset*	• Evaluative words • References to government • Dissociation (us-vs-them attitude)	• Interrogative formulations

Table 3. Overview of cognitive characteristics in connection with expected argumentative strategies.

Table 3 lists the three main cognitive characteristics drawn and what possible argumentative strategies on a word level and on a sentence level may occur. In terms of *religiosity*, it is expected for instance that celestial references, such as God or the Bible, can resonate on a reli-

gious audience. More particularly if these audiences follow a Christian or Catholic faith. Bible quotations in general are commonly known to occur in religious discourse. It is therefore expected that Bible quotations are typically used by flat Earthers to convey their faith and argue the Earth is flat by means of it. This will likely allow flat Earthers to connect with their religious audience through shared Bible knowledge. Given that references to the Bible may occur, it is also expected that figures of speech such as metaphors or similes take place in argumentation. This is because it is a characteristic language style of the Bible and could potentially resonate with religious audiences.

In terms of *rejection of conventional science as an established authority* and *conspiracy mindset*, it is expected that an accusative and inquisitive attitude drives flat Earthers and their audiences to seek for answers and continuously denounce the opposer. For instance, it can be the case that flat Earthers make often use of evaluative words to describe the opposers and their standpoints. They could also make use of interrogative formulations to request information, and actively demarcate an us-vs-them attitude as a form of dissociation (de Melo et al., 2020, Landrum et al., 2019). For instance, by addressing the audience as a collective "we", "you", "them" etc.

It can be also expected that flat Earthers attempt to make use of established scientific referents and references to level argumentatively with the opposers (scientists). It may also be a way to let the audiences know that they are knowledgeable of scientific sources. On the other hand, it could be the case that flat Earthers advance alternative references as scientific in response to the rejection of conventional scientific sources. Non-scientific references or more basic referents could also appear to comply with audiences that have little or no knowledge of science.

In terms of conspiracy mindset, it is presumable that references to the government as the standard target to cast doubt on are present in the flat-Earth discussion. This is because governments commonly carry negative connotations such as corruption, deception, and other forms of abuse of power in different areas of society (Bjerg & Presskorn-Thygesen, 2017). References to governments' malfeasant actions seem to be prototypical as justifications for certain conspiracy theories (Douglas et al., 2019, Olshansky, 2018). References to a specific government may then be used by flat Earthers to link a conspiracy argument with the negative attributes of governments to justify their conspiracy mindset.

In sum, based on what has been established so far, this thesis will follow a set of steps to carry out the analysis. Firstly, an argumentation structure will be reconstructed based on the interaction in the discussion between the protagonists (flat Earthers) and the antagonists (scientists). Secondly, the different authority-based arguments will be evaluated based the model of critical discussion by van Eemeren and Grootendorst (1992) and the critical questions of expertise, opinion, and back-up evidence by Walton et al. (2008). Thirdly, it will be determined whether any of the formulations from table 3 are used by way of a top-down analysis. Lastly, it will be determined whether there are any other appeals to the audiences in these arguments by way of a bottom-up analysis.

Establishing argumentation structures of the arguments advanced follows a specific order. This thesis will follow the argumentation structure rules proposed by van Eemeren and Henkemans (2016), who reconstruct propositions in a hierarchical position. Generally speaking, propositions assigned with the number 1 are usually the standpoints or substandpoints advanced by an arguer. Furthermore, according to van Eemeren and Henkemans (2016), argumentation can be single, multiple, coordinative, and subordinative.

Single arguments refer to a defence only consisting of one argument (1). Multiple argumentation refers to alternative defences of the same (sub)standpoint, which are presented consecutively. These defences are usually propositions that carry a similar argumentative weight but can stand alone. As such, these are assigned with numbers in sequence (2, 3 etc.). To indicate that a set propositions in single and multiple argumentation are independent but support the same standpoint, they are assigned with the number of the standpoint these are connected to and their own number (e.g., 1.1, 1.2, 2.1, 2.2 etc.) (van Eemeren & Henkemans, 2016).

Coordinative argumentation refers to the attempt to defend a (sub)standpoint by formulating a combination of arguments that go together. When the arguments have to be taken together to defend the standpoint, these are assigned with the same number and a letter (e.g., 1.1a, 1.1b etc.). Subordinative argumentation consists instead of a chain of arguments that depend on each other and cannot stand alone. Subordinate argumentation can have subarguments, subsubarguments and so on. Subarguments are assigned with two more additional points (1.1.1), subsubarguments with three etc. (1.1.1.1) (van Eemeren & Henkemans, 2016).

5. Analysis

In line with what has been established so far, the different discussion excerpts selected are analysed in this section to respond the research question formulated for this thesis. The argumentation structures outlined for the different discussion excerpts illustrate the different ways in which ad hominem and ad verecundiam fallacies (including the ad populum-variant) occur in flat-Earth YouTube videos.

5.1 Cases of ad verecundiam and ad populum fallacies

For this section, 4 cases of ad verecundiam fallacies and 2 cases of ad populum fallacies in the argumentation stage are analysed, which are the total cases that were found in the data collected.

Ad verecundiam 1

In this excerpt from video 1 (Appendix A), Shelley and Wendel, two of the three flat Earthers in the discussion, advance their arguments to defend the substandpoint that the Bible is a flat-Earth book in the argumentation stage. The conversation develops as followed:

> 14) ***Wendell:*** *Well, I've been a Christian for thirty years, so the Bible is a flat-Earth book. you have to take it literally. Like for example in Isaiah, when it talks about how the Earth is like a clay wet wax seal that's stamped with upturned edges. That's just not some fancy story. That's a simile: "it is like".*

15) ***Shelley****: Right, absolutely, and in Isaiah he talks about it too - and I'm a Christian – "He who sits upon the circle of the Earth." - There's a difference between a circle and a ball.*

16) ***Wendell:*** *Well, exactly. If you look at the original Hebrew it means "disk". There's over 200 scriptures in the Bible that point to a Flat-Earth.*

[...]

17) ***Shelley:*** *Well, what you'll find in a lot of these ancient religions is they're all flat-Earth religions. All their cosmology goes back to being a flat-Earth with an enclosed system. So, it's not just the Bible that teaches this. It's many different religious books.*

Drawing from this conversation, the argumentation structure was reconstructed (figure 1). Since both protagonists build on each other's arguments to defend a same standpoint, they are considered as one and the same discussion party in this argumentation structure.

1. Well, I've been a Christian for thirty years, so the Bible is a flat-Earth book.
   - 1.1 You have to take it literally
     - 1.1.1a Like for example in Isaiah when it talks about how the earth is like a clay wet wax seal that stamped with upturned edges
     - 1.1.1b That's just not some fancy story. That's a simile: "it is like".
   - 1.2 Isaiah talks about the Bible being a Flat-Earth book too
     - 1.2.1a I'm a Christian
     - 1.2.1b Isaiah states "He who sits upon the circle of the earth."
     - 1.2.1c There's a difference between a circle and a ball.
   - 1.3 If you look at the original Hebrew, Earth means "disk".
   - 1.4 There's over 200 scriptures in the Bible that point to a Flat-Earth.
   - 1.5 It's not just the Bible that teaches that the earth is flat.
     - 1.5.1 What you'll find in a lot of these ancient religions is they're all flat-Earth religions.
       - 1.5.1.1a All their cosmology goes back to being a flat-Earth with an enclosed system.
       - 1.5.1.1b It's in many different religious books.

Figure 1. Argumentation structure of ad verecundiam 1

The substandpoint 1 (figure 1) derives from the standpoint statement "the Earth was created by a higher power", which is given by the mediator in the YouTube channel for parties to discuss. Their advances here are solely based on appealing to religion and the Bible, which are directly associated to celestial beings such as God ("*I've been a Christian for thirty years, so the Bible is a flat-Earth book."*). This is a strategy to present evidence that, according to the protagonists, the Bible is a religious authority source that supports their standpoint and substandpoint.

As a choice for topical potential, both arguers state that they are Christians. Wendell, moreover, states that he has been a Christian for thirty years. By expressing their religious belief, they are indicating that they can correctly quote from the Bible, since they possess authority

of expertise on this matter (combined with experience, in the case of Wendell). By expressing their religious belief, Wendell and Shelley are also identifying a similar interest and attitude as members of the same community (Christianity) evoking their religious audience. This form of audience adaptation is further developed with the direct quotes from the Bible.

Quoting passages of the Bible can denote that the arguers are Bible-educated, which their religious audience may regard as valuable and find their arguments on the flat-Earth idea persuasive. Wendell and Shelley argue in 1.1 that what the Bible tells has to be taken literally and in 1.1.1b they justify it by saying that it is because the Bible stories are similes, i.e., direct comparisons. They present, moreover, examples of similes in 1.1.1a and 1.2.1b-1.2.1c. An interesting aspect about the protagonists expressing the Bible's message as something to take literally is that they present similes as a literal form of interpretation (1.1.1b). Given the fact that similes, like metaphors, are non-literal figures of speech, the claim in 1.1.1b can potentially undermine their argumentation, as it contradicts the advanced claim of taking the Bible literally. This could, in terms of the audience, also reduce persuasiveness, as it does not support the claim in 1.1.1b. People in the audience could also spot the mistake, which would cause Wendell and Shelley to lose some credibility in their arguments.

With these moves, Wendell and Shelley are nevertheless providing a source (the Bible) to find answers from. This source may be of interest for those people in the audience with a religious belief who could be in doubt about the shape of the Earth. Indicating the Bible as a source to find answers about cosmology is a possible persuasive move to adapt to their religious audiences. This is because it can be that this audience is seeking exactly that proof in their own religious beliefs to find consistency in their established worldview (Landrum et al., 2019). Despite the arguments' possible persuasiveness, in terms of science, the Bible as the advanced authority argument's source fails to sufficiently answer the expertise critical question, the back-up evidence question and the opinion question.

In terms of the expertise question and the back-up evidence question, any credibility ascribed to the Bible as a source is only as a result of believing in God or following a Christian or Catholic religious faith. However, from a non-religious, scientific perspective, God's existence is not a fact but a belief that cannot be scientifically confirmed. Therefore, if it were to be assumed that the Bible can be a sound scientific source, whatever is deduced from it will only be regarded as subjective and probably biased. This, in terms of science, provides no evidential worth to prove anything in a definite way, losing any credibility in the scientific realm.

In terms of the opinion question, since any interpretation drawn from the Bible is highly subjective and dependant on what each person understands by its passages, there can be no stable or definite assertions drawn from it. It can be the case that while Wendell and Shelley consider the words from the Bible as literal from a Christian point of view, there may be other religious people who see this differently. For instance, other individuals with a different Christian or Catholic take on the Bible could consider the passages to be construed in a more non-literal, poetic manner and draw different interpretations as a result. Since the Bible does not convey a stable interpretation of things and its content can be understood differently, it cannot be clearly assessed whether a passage of the Bible indeed asserted A in a specific case.

Because of what is discussed above, the adversaries, (i.e., scientists) presumably will not accept the Bible as an authoritative source. Even though part of the religious audience might find the Bible arguments convincing, the other non-religious audience is unlikely to be convinced by the arguments advanced in 1-4. This is because these arguments do not consider either all audiences' demands, which make them at most only partially persuasive.

As the Bible is therefore not recognized as a legitimate authority source in science by the opposers and part of the audience, the arguments advanced in 1-4 can be considered as cases of ad verecundiam fallacies. These arguments are derailments of the rule 8 of the critical discussion model, as in this case Wendell and Shelley are relying on an inappropriate argument scheme.

Ad verecundiam 2 and ad populum 1

Some more turns ahead in video 1 (Appendix A) Wendel (flat Earther), the protagonist in this case, retakes the appeal to God as an authority source to explain natural and supernatural events. In the following excerpt, it can be seen how his argument evolves in interaction with one of the three antagonists, Ali (scientist):

> 116) ***Wendell:*** *I used to believe that science was after the truth, right? We all just want to know what the truth is. Science has been trying so hard to divorce itself from the idea of a creator when God's intent was to create science to lead you to him. You know, sometimes things seem supernatural and we can explain later through, you know, science. Okay, understand. But there are other things as well that are supernatural, that go beyond the natural, that we can always explain Through believing in a creator, right?*
>
> *[...]*
>
> 122) ***Ali:*** *Well, you're referring to God and Jesus, who many billions of people do not believe, including myself.*
>
> 123) ***Wendell:*** *And many more billions do.*

Based on the interaction between the two discussants, Wendel's argumentation structure can be outlined as in figure 2, where one main substandpoint is realized (1.).

1. Some things can be explained through science but not always
   - 2.1a There are some things that are supernatural and go beyond the natural
   - 2.1b <u>These can only be explained by believing in a creator</u>
   - 2.2 <u>Billions of people believe in Jesus and God</u>

Figure 2. Argumentation structure of ad verecundiam 2 and ad populum 1

Wendell, in this case, is defending the substandpoint 1 that scientists are not after the truth because believing in a creator is discarded in science as a possible explanation to certain supernatural events (1.1-2.1b, figure 2). Due to this denounced rejection of religious beings as a scientific source by scientists, Wendell argues that science is therefore blindsided ("*Science has been trying so hard to divorce itself from the idea of a creator, when God's intent was to create science to lead you to him."*). As a strategic move, identifying a flaw in the research

process of science can be persuasive and is usually a move applied to create sound discussion.

How Wendell builds up to reach to the argumentative move in 1 presents, moreover, interesting aspects in terms of presentational design and audience adaptation. For example, He starts with explaining that he used to believe in the purpose of science (*"I used to believe that science was after the truth, right?").* In this utterance, Wendell is strategically establishing from his own perspective ("*I*") a loss of confidence in what science advocates. To resonate with his audience, he continues to express that everybody wants to know the truth (*"We all just want to know what the truth is").* The use of the collective noun "*we*" serves here for Wendell to strategically construct a shared reality with the audience, in particular those in the audience who are hesitant of conventional science. This is a way for Wendell to express that he is in the same position as those in the audience and, in that way, pose as the spokesperson of those doubters in the discussion.

As a concession, Wendell expresses that some events can indeed be explained by science ("*sometimes things seem supernatural and we can explain later through, you know, science. Okay, understand.*"). This utterance is interesting because it lets the different audiences know that Wendell is not denying science in general. To this point, Wendell is trying to comply as well with those in the audience who do believe and trust in science. This move is also strategic in that Wendell, by establishing a concession, is indicating that he is a reasonable discussant and is willing to agree with the antagonists and their standpoint on science. However, Wendell proceeds to establish that science cannot explain everything, especially supernatural events. In this sense, the concession advanced seems to also have the purpose of introducing argument 1 and the subsequent sub-arguments in a reasonable and strategic way. This way, Wendell advances 2.1a and 2.1b as the answer to the flaw established in 1. With 2.1a and 2.1b, Wendell is therefore positioning that the solution to that alleged "knowledge gap" of explaining supernatural events can be solved by including God ("*the creator*") in the equation.

This attempt by Wendell to establish the possibility that religion and science can complement each other traces back to what the Flat Earth Society defends, as discussed in section 2.2. It can be seen in this case that Wendell is strategically placing a relationship between God and science and by default positioning God as a sound authority source for science. However, this appeal to God in science fails to respond again the questions of expertise, back-up evidence and opinion. Firstly, God is a celestial being of whom people decide to believe in. God's existence in the eyes of non-believers and science is not a fact, sometimes not even a possibility. Therefore, claiming it exists remains subject to the beliefs a person has. Secondly, from a scientist's perspective, any evidence ascribed to prove the existence of God has to be measurable, meaning that it has to be observed with empirical or physical data. Believers of God may claim that the Bible, for instance, is the proof or evidence that God exists as it represents God's words and will. However, just like in the previous case, the Bible's interpretation and denotative relation to God is highly subjective and again subject to what one decides to believe. Thirdly, if it is to be considered that the Bible expresses God's words, whatever God is

claimed to express in the Bible can be interpreted in different ways by different readers and believers.

Therefore, the appeal to God by Wendell does not respond the critical questions (Q1, Q3 and Q6). Despite the fact that Wendell's argumentative construction is persuasive and well built, the antagonists will most likely not accept God as a sound authority source in science for the reasons presented above. 2.1b is therefore another case of an ad verecundiam fallacy where an inappropriate argument scheme is used violating the rule 8 of the critical discussion.

The argument presented in 2.2 has extra aspects that are worth looking into separately. This argument appears as a response by Wendell to the advanced argument by Ali where he expresses that believing in God or Jesus is not part of everyone's beliefs, including himself (*"Well, you're referring to God and Jesus, who many billions of people do not believe, including myself."*). To this, Wendell responds that other billions of people do believe in God (2.2). This advanced move can be strategic as it entails that because a vast number of the world population acknowledges God, he must exist. Yet even a vast number of people can hold mistaken beliefs, so the number itself does not provide sufficient evidence for the acceptability of God's existence. Nonetheless, the vast number of people believing in God can resonate with religious audiences, as it is a way for them to confirm that their beliefs are shared with a vast amount of the population in the world. However, in the scientists' eyes, it still remains a belief rather than a theorized fact. As a result, argument 2.2 is a case of an ad populum fallacy (van Eemeren & Grootendorst, 1992). As an inappropriate argumentation scheme, this fallacious move is also a derailment of the rule 8 of the critical discussion.

Ad verecundiam 3 and ad populum 2

In this excerpt from video 3 (Appendix C), The protagonist, Connor, advances his arguments to defend the standpoint that the Earth is flat:

> 17) ***Matt****: There's plenty of experiments that show the curvature of the Earth. I happen to live by the coast, and I've got a really expansive view out onto the Atlantic and I can see the ships, and I can see them dip down over the horizon. So, I've physically seen the curvature for myself, right? You could also get into a high-altitude jet and physically see the curvature of the Earth.*
>
> 18) ***Connor****: A lot of physicists will completely disagree with you. Do you remember when Felix Baumgartner did the jump? Yeah, the Red Bull jumper. He'll be the first to tell you that they were using a fish-eyed lens in the camera because from his altitude it would have been impossible to see a curvature. And I agree with you, if you're in a jet or a bomber, you may see a curve to the Earth when you're high. However, that's because you're in glass shaped like this [showing curve of glass with hands]. Plenty of pilots who fly passenger jets will tell you that it's flat the whole way around.*

Connor's advanced arguments can be seen more clearly in figure 3, where an argumentation structure has been outlined.

1. The Earth is flat
   1.1 A lot of physicists agree.
      1.1.1. For example, Red Bull jumper Felix Baumgartner will be the first to tell that they were using a fisheye lens in the camera, because from his altitude it would have been impossible to see curvature.
      1.2a And I agree with you, if you're in a jet or a bomber, you may see a curve to the earth when you're high.
      1.2b However, that's because you're in glass shaped like this (body language)
         1.2b.1 Plenty of pilots who fly passenger jets will tell you that it [Earth] is flat the whole way around

Figure 3. Argumentation structure of ad verecundiam 3 and ad populum 2.

Connor's main argument (1.1, figure 3) to defend the standpoint in this part is that according to him, some physicists agree that the Earth is flat. In 1.1.1 he utters that Felix Baumgartner, which is a professional skydiver, is one of those persons that allegedly supports the flat-Earth idea. In 1.1.1, Connor claims that Felix Baumgartner, who participated in the Red Bull Stratos project[6], tells that the camera lens used to record his freefall were a fish-eyed one, creating the illusion of a curvature. Here, there are some interesting points to highlight. From the persuasive side, the reference to the Red Bull Stratos project allows Connor to attract both scientific and non-scientific audiences. This is because the project was broadcasted on TV and online globally in 2012 (Zmuda, 2013). It is likely that a majority of the audience recognizes Felix Baumgartner and what he did in 2012. By referring that someone who is relatively known outside the scientific community makes it more distinguishable to non-scientific audiences. Additionally, by using that referent as a source of expertise to defend the flat-Earth idea, flat Earthers and potential flat Earthers can receive 1.1.1 as a legitimate move.

However, there are two problems with the argument. Firstly, Felix Baumgartner is not a physicist (or even a scientist) but a professional skydiver. Secondly, in 1.1.1 Connor is only using what Baumgartner said to defend his standpoint. In reality, Baumgartner may have only stated that for the Red Bull Stratos project, fish-eyed lenses were used for the footage of his journey to the stratosphere and his freefall (*"he [Baumgartner] will be the first to tell you that they [Red Bull] were using a fish eyed lens in the camera because from his altitude it would have been impossible to see a curvature"*). In the end, Baumgartner did not say explicitly that he believes the Earth is flat. Rather, Connor deduced that by Baumgartner stating that Red Bull used fish-eyed lenses, a) the curvature shown in the footage was a result of the lenses used, and b) Baumgartner was somehow claiming with it that the Earth is flat.

With b) it can be argued that it was merely a mistake in Connor's judgement of Baumgartner's statement. Connor could be misrepresenting what Baumgartner said, thus, it would in principle fail to respond the opinion question. With a) it can be seen, on the other hand, that the evidence presented by Connor does not suffice to respond the back-up evidence question to defend 1.1 and 1. Moreover, the appeal to Baumgartner as a source of scientific expertise

[6] The Red Bull Stratos project was carried out in 2012 for medical and scientific research to expand on aerospace safety. The mission was to send Felix Baumgartner to the Earth's stratosphere in a helium balloon and observe and record Baumgartner jump in freefall, giving the scientific community relevant data (Red Bull Stratos, 2020).

does not comply to the expertise question in the first place. This is because, as it was stated before, Baumgartner is not a scientist or a physicist, nor has studies related to science or physics as 1.1 implies. Even though referring to Baumgartner, who is linked to the Red Bull project, has some relevance for the antagonist (scientist) and parts of the audience due to its scientific purposes, the antagonist is more likely to not accept Baumgartner's statements as an authoritative source. 1.1.1 can be therefore considered an ad verecundiam fallacy, which is a derailment of the rule 8 of the critical discussion. This means that Connor in this case was relying on an inappropriate argument scheme.

Moreover, in 1.2b.1 Connor also refers to "*plenty*" unnamed commercial flight pilots who also claim the Earth is flat. This argument move is advanced by Connor to continue defending the standpoint in 1.1 and 1. By referring to commercial pilots, he is again appealing to a source of expertise, but also this source has some issues. In terms of persuasion, pilots are familiar referents to all different audiences. Almost anyone knows what pilots are and what they do. These carry indeed a professional status, which can sound convincing and may become a persuasive topical point for Connor to strategically comply to his audiences. If a flat Earther or a potential flat Earther hears that plenty professional pilots are claiming the Earth is flat, they may be more inclined to continue or start believing that too.

Advancing that a certain group of licenced commercial pilots claim the Earth is flat holds a strategic aim. It entails that since there is more than one person claiming the flat-Earth idea, who additionally are professional pilots, then the idea must be true and can potentially persuade the audience. Moreover, the fact that Connor attempts to present pilots as "*physicists*" may go unnoticed as a wrong move and may in fact be taken as true. This move holds a deceiving yet strategic attempt form Connor to defend his standpoint. However, similar to 1.1.1, even though pilots can be a legitimate source of expertise, these are experts in a different field, such as the (commercial) aviation industry. Pilots in general are not recognized as scientists nor as physicists since their knowledge is applicable to other tasks outside of science. For this reason, the antagonist most likely does not accept Connor's appeal to scientific expertise. This reference therefore fails to answer the expertise critical question.

Presenting what some pilots may claim about the flat-Earth idea is also not enough for the antagonist to accept this move as legitimate. From some audiences' perspective, pilots may appear as a trustworthy testimony due to their professional profile. Especially, to the part of the audience that does not have enough scientific knowledge or background. However, appealing to commercial pilots' claims is most likely not enough evidence to fully assert standpoint 1 and become persuasive to all potential audiences. In this regard, 1.2b.1also fails to answer the back-up evidence question.

Connor's argumentative move in 1.2b.1 can be regarded as an appeal to popular belief, as he bases his argument on what a group of people say or believe in. Therefore, not only is this move an illegitimate appeal to expertise but also an ad populum fallacy (van Eemeren & Grootendorst, 1992). As an inappropriate argumentation scheme, this fallacious move is also a derailment of the rule 8 of the critical discussion.

Ad verecundiam 4

In this excerpt from video 3 (Appendix C), the protagonist Connor (flat Earther) and the antagonist Matt (scientist) discuss about both following a scientific scepticism:

> 29) ***Matt****: We're both probably sceptics but my form of scepticism is a scientific scepticism*
>
> 30) ***Connor****: I would actually disagree and say that my form of scepticism is a scientific scepticism because it follows the scientific method, natural science. One of my favourite physicists ever was Richard Feynman and he describes science in a fantastic way. He said that the steps of science are we observe then we guess, that's it. It's a guess. We use nature and experimentation to either verify or nullify that guess. If it disagrees with the experiment it's wrong. That's what Richard Feynman said.*
>
> 31) ***Matt****: No- no Richard Feynman, if Richard Feynman is your hero, he's absolutely my hero. I've just finished the "Surely you're joking Mr. Feynman". He understands that science is this building up slowly of knowledge. To be honest, he would be horrified at your take on science. Particularly hate how you just put it there because it's not quite right. He is a fantastic advocate of science, and he would of course be horrified by flat-Earth, he genuinely would.*

Following Connor's line of thought and what he advances to defend the standpoint that his scepticism is also scientific, the argumentation structure is outlined in figure 4.

1. My form of scepticism is a scientific scepticism as well
   - 1.1 It follows the scientific method, natural science
     - 1.1.1 One of my favourite physicists ever was Richard Feynman and he describes science in a fantastic way.
       - 1.1.1a He said the steps of science is that we observe, then we guess, that's it. It's a guess.
       - 1.1.1b We use nature and experimentation to either verify or nullify that guess.
       - 1.1.1c If it disagrees with the experiment it's wrong. That's what Richard Feynman said.

Figure 4. Argumentation structure of ad verecundiam 4.

Connor advances 1 (figure 4) as a response to Matt, who advanced earlier that, unlike Connor, he follows a scientific scepticism (*"We're both probably sceptics but my form of scepticism is a scientific scepticism"*). With 1, Connor attempts to establish himself at the same level of Matt by stating that his scepticism is a scientific one as well. Connor continues arguing with 1.1 that he follows a scientific scepticism because he claims to follow the scientific method and in 1.1.1 he bases his arguments on the physicist Richard Feynman as evidence. Connor not only refers to a physicist, but he strategically establishes that it is his favourite one ("*One of my favourite physicists ever was Richard Feynman and he describes science in a fantastic way*"). In terms of presentational design and audience adaptation, Connor is letting his audiences know that he is knowledgeable enough of physics referents, such as Feynman, to be able to evaluate what the physicist proposes as important or "*fantastic*". This move can also be persuasive as it entails that Connor has a good insight on science and physics. As a

result, the different audiences may be more inclined to take more seriously what he is arguing.

To this point, Connor's appeal to Feynman as a scientific authority is sound since Feynman is indeed a recognized physicist within the scientific community. The argument move in 1.1.1 would then appropriately answer the expertise critical question. Connor's explanation of Feynman's take of science in 1.1.1a-1.1.1c is his attempt to respond the back-up evidence question and establish that he understands Feynman's scientific view (opinion question). In the eyes of the audiences, these moves could be interpreted as proof that Connor follows indeed a scientific scepticism. What is interesting, however, is that Matt does not agree with Connor's explanation of Feynman's words. In the excerpt, it can be seen that Matt's reaction is a rejection of Connor's interpretation of Feynman ("*To be honest, he [Feynman] would be horrified at your take on science, particularly hate how you just put it there because it is not quite right.*").

Since Matt does not accept Connor's interpretation of Feynman, the opinion question cannot be sufficiently answered. This is because it can be deduced by Matt's disapproval that Connor is misrepresenting Feynman's words. It is also a criterion that the antagonist recognizes as sound the argumentation scheme used in the defence of a standpoint in the critical discussion model (van Eemeren & Grootendorst, 1992). Therefore, in spite of the fact that the appeal to authority advanced by Connor is sound here, the interpretation of that authority's assertions is not recognized as sound by the antagonist. For this reason, argument moves 1.1.1a-1.1.1c remain as inappropriate argumentation schemes that derail from the rule 8 of the critical discussion, becoming a case of an ad verecundiam fallacy.

5.2 Cases of ad hominem fallacies

For this section, 3 cases of ad hominem fallacies in the opening stage are analysed, which are the total cases that were found in the data collected.

Ad hominem 1

In this excerpt from video 1 (Appendix A), Shelley and Dan, the protagonists, advance their arguments to defend the substandpoint that "we did not go to the moon". This substandpoint is given by the mediator in the YouTube channel. In this part of the conversation, Spencer, one of the antagonists, starts explaining what is the proof that we went to the moon:

> 158) ***Spencer:*** *What is the proof [that we went to the moon]? Hundreds and hundreds of pounds of moon rocks and dust, and we have distributed those freely to PhD scientists around the world and not one of those geologists have said: "What is this?"-*
>
> 159) ***Shelley:*** *-They're proven to be fake.*
>
> 160) ***Dan:*** *Collected on the ice in Antarctica and the Arctic as well. Those are collected there. You don't have to go to the moon to get moon rocks. As a matter of fact, all US Air Force photography prior to 1958 shows a flat-Earth. Only NASA shows us-*

161) ***Spencer:*** *-That is not true*

162) ***James:*** *That is absolutely not true*

163) ***Dan:*** *I wouldn't lie to you James; I wouldn't lie to you. NASA is lying to you my friend, not myself.*

Figure 5 shows more closely what Shelley and Dan advance to defend their standpoint, which is that we did not go to the moon.

1. We didn't go to the moon
   1.1a The evidence of moon rocks and dust is proven to be fake
      1.1a.1 The alleged moon rocks and dust were collected in Antarctica
         1a.1.1 You don't have to go to the moon to get moon rocks.
   1.1b I wouldn't lie to you. NASA is lying to you my friend, not myself.

Figure 5. Argumentation structure of ad hominem 1.

Shelley advances 1.1a (figure 5) and claims that the moon rocks that were collected from the moon in the Apollo 11 mission are allegedly fake. Dan takes on the following turns to build on Shelley's argument by advancing 1.1.1a and 1.1.1a1. Responses from the antagonists take place in order to deny the accusations just made by Dan and Shelley with the scientists Spencer (*"that is not true"*) and James (*"That is absolutely not true"*). As a response to the antagonists' negative, Dan advances with 1.1b that he is the one telling the truth whereas NASA has lied.

In terms of presentational design and audience adaptation, 1.1b presents interesting aspects. The way the move is formulated by Dan entails a "me-you" relation with the antagonist, James. This move can be perceived as an attempt by Dan to reach a more symmetrical relationship. This is complemented by Dan's use of the noun phrase "*my friend*" as a strategy to refer to James, which could be seen as a way to build rapport. By stating that it is NASA who has allegedly been lying, Dan is further demarcating an us-vs-them relationship while trying to involve the antagonist to be more in Dan's in-group.

The sentence "*I wouldn't lie to you*", despite addressing the antagonists, can also be considered to address Dan's audiences. In a sense, Dan is also attempting to build more ethos, i.e., character, to let his audiences know that he is not lying and to posit himself as a reliable source. 1.1b can be persuasive to audiences who may be more predisposed to distrust big organizations like NASA, especially audiences who may have a conspiracy mindset. By Dan stating that NASA lies, the potential audiences' mistrust to established authorities could get triggered, resulting in these being more inclined to believe Dan's proposition as an alternative "more independent" source (Landrum et al., 2019). However, the proposition is merely an assumption and other kinds of audiences may not perceive it as proof enough to suspect of NASA. Even though Dan is committing to the accusation in 1.1b, he does not provide further evidence to prove that NASA is lying.

Proposition 1.1b has persuasive potential, due to the way it conveys amicability to the antagonist. However, it is also an attack of a source without providing any sound arguments. Moreover, Dan's advance does not support the substandpoint he was defending with Shelley

in 1. Thus, in terms of reasonableness this argument strategy does not contribute to a sound discussion. Its aim is still to discredit the source and in connection to it, the antagonists who support this source. By Dan discrediting NASA, he is indirectly undermining the antagonists and their advances as well. This is because Dan is entailing that the antagonists defending NASA are also untrustworthy and unfit as a discussion party.

The discrediting function of 1.1b to the antagonists makes it an ad hominem fallacy, yet it is an indirect one. It is possible that Dan's indirect formulation of the attack allows the proposition to falsely pose as reasonable (Ilie, 2010). This is because Dan does not commit to attack Spencer and James directly, but he only commits to attack NASA, letting his audiences infer by themselves a connection between NASA's "lies" and the antagonists'. This fallacious move limits the antagonists to advance their standpoint and creates obstacles for a reasonable resolution. The move also hinders the discussion from getting further from the opening stage. As a result, 1.1b violates rule 1 of the critical discussion, which is the freedom rule.

Ad hominem 2

Some turns ahead in video 1 (Appendix A) show another form of attack to James (one of the antagonists) by Dan (the protagonist). Because the attacks are not built as full propositions, no argumentation structure could be built. This makes it an interesting case to analyse, because the discussion seems to be cut off by Dan's interruptions.

> 131) ***Shelley:*** *So, do you make assumptions or not? Does science make assumptions?*
>
> 132) ***James:*** *We do make assumptions but based on things that are well supported and proven-*
>
> 133) ***Dan:*** *1. -Biased*
>
> 134) ***James:*** *and re-proven-*
>
> 135) ***Dan:*** *2. -Biased*

In this conversation, Shelley asks if assumptions are made in science and if so, making these assumptions would show a biased side of science. Shelley's questions may resonate with certain individuals in the audience who also have a distrust or scrutinizing attitude towards science. To this point, Shelley's request for information to the antagonist is reasonable and legitimate. This is because certain audiences may also present doubts in terms of what science assumes and in what ways different ideas are assumed.

In reaction to Shelley's advanced question, James responds that in science assumptions are indeed made but these kind of assumptions are based and supported on proven evidence. With this, James is establishing his standpoint. Dan, however, interrupts James by using the evaluative word "*biased*" twice, overlapping James' turn. In terms of the audience, evaluative words such as "*biased*" may raise polarizing attitudes due to their incendiary function. Because of this, such advances are likely to efficiently catch the attention of both supporters and detractors of the flat-Earth idea. Yet, only those audiences who agree with this evaluation

would probably recognize this advance as true and legitimate. By Dan claiming this, he should be committing to prove in what way scientific assumptions are being biased.

It is worth noticing, however, that Dan's utterances do not have an object or a subject. This allows Dan to state an opinion in a broader sense, as he is not explicitly stating it is only his opinion, thereby making them less personal. Additionally, both utterances may not only mean that what James is saying is biased but also that science in general is biased. This strategy could comply more broadly to his audiences and target different points for critique without fully committing himself to it or targeting one opposer in particular.

In terms of reasonableness, however, Dan's utterances are not cooperative to the discussion. These are formulated mainly as interruptions of what the antagonist, James, is advancing. Additionally, Dan's moves in 1 and 2 are not arguments per se but merely evaluative utterances. With these, it seems that Dan is only aiming to judge what James is defending. Dan's evaluative advances and his act of interrupting are also a way to hinder the antagonist's participation in the discussion. These moves once again diminish James' position in the discussion. For this reason, this case can be considered an indirect ad hominem fallacy, which also violates the freedom rule of the critical discussion.

Ad hominem 3

In this excerpt from video 2 (Appendix B) Victor, the flat-Earth protagonist, advances to EJ, the scientist antagonist, the substandpoint that satellites do not exist:

> 45) ***Victor:*** *Well, satellites don't exist.*
>
> 46) ***EJ****: Then how are you calling us right now?*
>
> 47) ***Victor:*** *Nah- nah, there's no such thing as satellites. So, if a grain of sand hits a satellite, the satellite is completely destroyed.*
>
> *[...]*
>
> 49) ***Victor****: You don't need to study it, it's simple logic [...]*
>
> *[...]*
>
> 54) ***EJ****: Okay first of all, responding to your first point. Space debris is a real concern, you know. [...] we know the orbits where a lot of space debris is because it will actually damage satellites, like you said. Satellites do get damaged. I mean, there are satellites that get damaged and we have to send up other satellites to repair them-*
>
> 55) ***Victor:*** *-(laughs) That sounds ridiculous, how can you believe this?! It's science fiction.*

Based on Victor's advanced arguments to defend his standpoint, his argumentation structure can be organized as in figure 6.

1. Satellites don't exist
    2.1a If a grain of sand hits a satellite the satellite is completely destroyed.
    2.1b It's impossible that none of these satellites ever gets hit by something.
    2.1c You don't need to study it, it's just simple logic
  2.2 The statement that satellites that are damaged and get fixed by sending other satellites sounds ridiculous, It's science fiction.

Figure 6. Argumentation structure of ad hominem 3.

It can be seen in 2.1a-2.1c (figure 6) that Victor is defending his standpoint by declaring impossible for satellites to be orbiting around Earth since anything in space can damage them. It is interesting to note that before Victor advances 2.1a-2.1c, he ignores EJ's earlier request for evidence to prove that satellites do not exist (*"Then how are you calling us right now?"*). To this request, Victor decides not to answer, which does not help him respond the back-up evidence question. A response to EJ's question would have been more strategic for Victor. In the eyes of the audience, Victor dismisses the burden of proof to explain how else people call if not by means of a satellite. He also diminishes his role as discussant since he appears as if he does not have the answer to the question either.

2.1a-2.1c are advanced by Victor as explanations to why satellites cannot exist. In 2.1a, Victor advances that anything can damage or destroy a satellite, which, according to him, is the reason why they do not exist. He uses the phrase "*grain of sand*" as a more specific referent to exemplify what could damage a satellite, instead of the more technical term "*space debris*" used by EJ. The simpler referent used by Victor strategically lets his audiences understand more clearly how anything can affect a satellite in orbit for it to get damaged or broken. With this simple, non-scientific referent, Victor is then complying more broadly to his different audiences, including those less knowledge of science who may not know or understand what space debris is.

With 2.1b Victor is establishing that a scenario in which satellites exist is simply impossible because satellites could never function properly while being in such an unpredictable and unstable environment (outer space). Victor is strategically stating with 2.1c, moreover, that anyone can deduce the same conclusion by using "*simple logic*". With this, he is implying to his audiences that anyone has the knowledge to deduce something with one's own understanding and without the need to study physics or science. In the eyes of the audiences, especially sceptics towards science and with a conspiracy mindset, these argumentative moves can be persuasive. This is because Victor is conveying to them a certain sense of autonomy or independence from "corrupted" bodies of education, which is what these sorts of audiences often look for (Olshansky, 2018). In a sense, Victor is also conveying the philosophy behind the Flat Earth Society, which is to rely mainly on "one's own senses" to understand the world (Olshansky, 2018, p.7).

To these advanced moves, EJ counterargues that satellites can get damaged sometimes but that this does not stop satellites from existing in the orbit and function. EJ continues explaining that some satellites do need to get repaired, and for that, other satellites need to be sent to fix the damaged ones. However, victor advances 2.2 to reject EJ's arguments by stating that

what she said was ridiculous, evaluating it as "*science fiction*". In the same move, Victor asks EJ "*how can you believe this?*". In this context, this question entails that since EJ's arguments are "*ridiculous*" and out of "*science fiction*" the fact that she believes them turns her into a naive or even an ignorant person.

In terms of effectiveness, the argumentative move in 2.2 automatically reduces what EJ advanced before, because the way it is formulated conveys that EJ does not know what she is talking about and is even confusing reality with "fiction". In the eyes of the audience, this depiction of EJ by Victor diminishes her position as a credible discussant, which would by default position him and his arguments over EJ's.

It is additionally worth noting that Victor initially responds to EJ's arguments by laughing, which further conveys a form of ridicule, making the attack more salient. For these same reasons, however, in terms of reasonableness, Victor is merely depicting EJ as unreliable and ignorant. He is negatively evaluating EJ and what she advanced but without giving any sound arguments to justify the attack. Moreover, Victor's advance is not cooperative for EJ to defend her standpoint and achieve a sound discussion, but it is simply restricting her from that purpose. Because of this, argument 2.2 becomes a direct, abusive ad hominem fallacy, violating the freedom rule of the critical discussion.

5.3 An unclear attack case

This particular case from video 1 (Appendix A) presents a number of interesting aspects to discuss. However, it also presents issues with assessing whether it is a case of an ad hominem fallacy or an actual sound attack to an authority source. For this reason, this excerpt is analysed and discussed separately as an unclear case.

In this interaction, Shelley, the protagonist, establishes the substandpoint that the government generally lies. Shelley attempts to establish this substandpoint in relation to the standpoint "NASA is trustworthy", which is given earlier by the mediator in the YouTube channel. As a result, Ali and Spencer, the scientist antagonists, attempt to counter argue Shelley's arguments:

> 146) ***Shelley:*** *The private does not know what the general is doing. There's compartmentalization happening all the time-*
>
> 147) ***Spencer:*** *-Of course*
>
> 148) ***Shelley****: So, it wouldn't be that far-fetched. Has the government ever lied to us? is really the question at stake. Now we have nasa.gov, right? and we- oh absolutely they're not lying about anything. They're completely transparent, and everything is true. We'd be foolish to think that's true.*
>
> 149) ***Ali****: No- no- no, there is a difference here. I'm sorry, this is a fallacy here.*
>
> 150) ***Shelley****: It's not a fallacy*

151) ***Ali:*** *I'm sure it is. See, you were talking about the government. Now you're talking about an agency of the government-*

152) ***Shelley:*** *-NASA-dot-GOV*

1. The government has lied to us
   1.1 We have nasa.gov, as an agency of the government
      1.1.1 We are not foolish enough to think they're not lying about anything and that they're completely transparent and everything is true.

Figure 7. Argumentation structure of unclear case.

To connect to the standpoint, Shelley advances 1.1 (figure 7) to specify the connection between the (US) government with NASA, as an agency of the government. With this, Shelley attempts to show the relevance of referring the government in this context. With 1.1.1 Shelley is committing to establish the (US) government and NASA under the same category, which are established authorities that are constantly lying or hiding information.

In terms of persuasiveness and audience adaptation, referring to the government generally bears negative connotations, as it was discussed earlier. This can be effective, as it can resonate with conspiracy theorist audiences who probably doubt on NASA and trigger them to believe in Shelley's advances (Bjerg & Presskorn-Thygesen, 2017). Audiences with a conspiracy mindset, in particular, may find this connection relevant and compelling, as it would provide them with a form of prophesy-fulfilling explanation. From their rationale, conspiracy theorists probably agree with the deduction that since NASA falls under the umbrella of the government, it inherently carries the same stereotypical malfeasant actions of the government, and as a result NASA lies as well.

Moreover, the key in the proposition 1.1.1 is in its presentational design. The way 1.1.1 is formulated by Shelley is an attempt to persuade her audiences that: "*we*" (lay people, flat Earthers, conspiracy theorists, non-governmental people, non-NASA people) are "*not foolish*" (have the good judgement) to understand that NASA (the governmental agency) is hiding a "truth" (possibly that the Earth is flat). In terms of persuasiveness and audience adaptation, Shelley is strategically including her different audiences ("*we*") to establish an us-vs-them scenario. In this case, the "them" side is the government. Everything associated to it (NASA, and anyone defending these) is by default trying to lie to everyone ("we"). Yet, the audiences' ("our") reasoning capacity does not "let us" be deceived by the government, NASA and its defenders. With the statement in 1.1.1, Shelley is in the end attempting to induce her audiences to agree with what she is advancing, as she is implying that those who believe the government and NASA are in comparison "*fools*".

In a way, Shelley is including the (US) government as an opponent by casting doubt on its actions. This is done by making use of the association between the US government and NASA to cast doubt on NASA's trustworthiness. On the one hand, the government is not a party in the discussion. Due to this, it would become unfair to attack it as an opponent without it being present to defend or counterargue. What is interesting, moreover, is that Ali, one

of the opposers, rejects Shelley's attack to the point that he judges Shelley's arguments are fallacious ("*No- no- no, there is a difference here. I'm sorry, this is a fallacy here.*"). Ali proceeds to argue that the government and an agency of the government (NASA) are two separate entities ("*See, you were talking about the government. Now you're talking about an agency of the government"*). It could be argued that Ali's defence is justified, as Shelley is perhaps generalizing and portraying unfairly possible malfeasant actions of the government on NASA, without that being necessarily true. It could also be argued that by casting doubt, Shelley is strategically and indirectly establishing that defending NASA as trustworthy indicates that the defenders, i.e., the antagonists, are untrustworthy and possibly lying as well. This would, in turn, minimize the antagonists by claiming they are somehow "lying".

On the other hand, for this substandpoint, the government and the other opponents could freely react to it by stating for instance that the suspicion casted is not true. In this sense, this would make 1.1.1 a sound attack instead of an ad hominem fallacy. This is because casting doubt is admissible as long as the opponents can defend themselves (van Eemeren & Grootendorst, 1992). What makes this case a rather unclear one is that first, the attack advanced is highly generalized, and the attacker does not give more evidence to ground the attack. Second, the recognition of the argument as a fallacious move by one of the opposers would in principle indicate there is something wrong with the attack. It could be the case that it may be a sound attack, but it is perhaps creating a hasty generalization fallacy instead (van Eemeren & Grootendorst, 1992). Nevertheless, this case is likely to not be an ad hominem fallacy.

5.4 Overview of argumentative strategies

Combining the expected argumentative strategies listed on table 3 (section 4.1) and the results found in the analysis section, a more concrete review of strategies used by flat Earthers in discussion can be provided. From the top-down analysis based on table 3, it was observed that religious beliefs are important in some flat Earthers' way of thought and understanding of the world. It could be found that references to God and Jesus are advanced by flat Earthers as authority sources. It was also found that the Bible is used as a source to draw interpretations by means of quoting passages or interpreting figures of speech as "literal". We saw this in the first ad verecundiam case where Wendell explicitly expresses this (*"That's just not some fancy story. That's a simile: "it is like"*.).

Moreover, it could be also observed that dissociation by marking an "us-vs-them" scenario was present. This happened in the first ad hominem and in the attack case presented in 5.3, where each protagonist attempted to demarcate their ("we") side as the correct and honest one, and the opposers' side ("them") as the dishonest and incorrect ones. It could be also seen that the attacks by the flat Earthers to the opposers tended to be rather indirect. In addition to this, there was even an attempt to include the opposers in the flat Earthers' "in-group".

From the bottom-up analysis produced by the data, flat Earthers' relationship with science was shown to be convoluted, and this was conveyed in their strategies advanced. On the one hand, there were attempts to refer to scientific sources. However, whatever these sources ex-

pressed were misinterpreted or distorted (ad verecundiam 4). Moreover, there were attempts to present non-scientific sources as scientific. These non-scientific sources tended to be more recognisable for lay audiences like in the third ad verecundiam case, where the protagonist refers to a skydiver and commercial pilots as if these were "physicists".

On the other hand, a rejection to established scientific authorities was present. As seen in the data, this rejection was targeted towards NASA in a number of cases. This was probably due to that NASA is widely popularized and recognizable among scientific and non-scientific individuals, which makes it easier for anyone to access it for discussion. It could be seen for instance that NASA being an agency of the government was a general cause for distrust. In some of the cases, this resulted in the flat Earthers negatively evaluating the organisation and casting doubt to almost everything that was related to it.

What was also discovered in the data was that the philosophy promoted by the Flat Earth Society, discussed in 2.2, is emergent in some argumentative instances made by the flat Earthers. For instance, in the fourth ad verecundiam, the flat-Earth protagonist attempted to advance that science and religion can complement each other. In the third ad hominem, the protagonist appealed to his own perception of things, entailing that employing one's own "logic" is just enough to understand physics or engineering knowledge.

Overall, it seems that three elements constitute the main body of thought, which flat Earthers seem to primarily base their argumentative strategies on. These are religion, individual logical reasoning and a version of science which is mainly interpreted based on the former two. Wendell, one of the flat-Earth protagonists, clearly encapsules this in one of his interactions (Appendix A, turn 21): *"I am a logical, biblically based and scientific flat Earther [...]"*.

6. Conclusion and discussion

The purpose of this thesis was to analyse the flat Earthers' argumentative discourse by observing which authority-based argumentation tended to occur via the fallacies of ad hominem and ad verecundiam. For the analysis, it was also considered how flat Earthers took into account their different audiences to maneuver strategically in discussion with the two authority-based fallacies in focus. YouTube was chosen as the main medium to collect discussion videos where flat Earthers discussed with their main opposers, the scientists. This allowed to observe how both parties interacted with each other. The data also showed the scientists' reactions to the flat Earthers' attempts to advance what they considered were sources of expertise in science.

It was observed that the fallacies of ad hominem, ad verecundiam and its populistic variant ad populum occurred in flat Earthers' YouTube videos. From appealing to God, the Bible, scientific referents, to even their own logical understanding of the world. Flat Earthers employed each of these strategies to both defend and attack standpoints while attempting to comply to their audiences. With these strategies, it could be identified that the main audiences flat Earthers wanted to adapt to were religious people. More specifically, Christian individuals with or without a conspiracy ideation who consider the government, NASA and anyone relat-

ed to these as untrustworthy and dishonest. Other targeted audiences could include potential flat Earthers who may distrust established authorities and/or are Christian.

Furthermore, the insights provided by the behavioural studies on flat Earthers and conspiracy theorists allowed to establish a set of characteristics and potential strategies beforehand. Being able to outline these characteristics contributed to creating a better picture of the flat Earthers are and what their audiences look for. The outlined characteristics were also helpful in identifying starting points for the analysis of audience adaptation.

These insights, in combination with the extended pragma-dialectic approach constituted a robust theoretical framework that allowed to fulfil the purpose of this thesis. It could be the case that behavioural studies may not always be available to identify audiences for all the different discussion cases, like with the flat-Earth case. However, it has been proven useful to outline a basic set of characteristics to determine who the discussants and the audiences at hand are. In addition to this, if behavioural perspectives are available, it could be a recommended extra to include these when considering audience adaptation in future analyses. This can be obtained by including secondary sources in attitudes and behaviour, or even by carrying out interviews to audiences for the case study at hand.

As an unexpected finding, it was observed that attacks to the opposers occurred characteristically indirectly, as opposed to directly. This could be due to the format of the videos, as all the videos collected had a form of a mediator who would intervene when the discussions were becoming agitated. An additional factor could be the rules imposed by YouTube as a platform, whose policies against hate speech or somewhat violent speech are rather reprimanding. YouTube and the format of the video discussions chosen for this analysis presented good insights on how flat Earthers strategically argue in discussion. However, the format also presented limitations. Even though much of the discussions that took place in the videos sampled enough conversation data for the purpose of this thesis, there were still parts of interactions where the conversation was cut or edited. This edition process could have potentially hidden interesting parts of the conversation where a less unordered interaction was arising. The videos unedited could have indeed brought even more nuanced insights on the flat Earthers' discussion style. It could be interesting for future research, for instance, to ask the YouTube channels for the unedited videos to compare results and identify potential differences.

The organized style of the discussions in the videos did facilitate the analysis that was aimed for. However, in more general discussion cases, it seems more likely to encounter more turbulent interactions. In such interaction, standpoints are usually not so clearly identifiable, or discussants may become more aggressive and potentially advance more fallacious attacks without a mediator to regulate it. There could indeed be other potential aspects of flat Earthers' argumentative style that could not be observed with the format chosen for this thesis. For this reason, considering other formats could present further insights in future research. For instance, it would be interesting to see how discussion evolves when there is no mediator to keep control or discussions outside YouTube, such as in blog posts or other social media platforms.

It could also be a point for future research to include other forms of fallacious arguments in the analysis aside from authority-based ones for a more overarching study on fallacies. For instance, it could be the case that flat Earthers often advance fallacies of generalizations (hasty generalization fallacy) as it was seen in section 5.4. This can be the case since a good deal of what flat Earthers argue often comes from unproven allegations and generalized assumptions (e.g., NASA's corruption). Nonetheless, this thesis has shown relevant research and contributed to a good understanding of flat Earthers' authority argumentation style. With this thesis, the notion of audience adaptation in strategic maneuvering could also be explored and expanded further.

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Appendix

Appendix A - Transcription of Video 1

https://www.youtube.com/watch?v=Q7yvvq-9ytE&t=2s

Interviewer: What do you think the shape of the Earth is?

Spencer (Scientist)

1) 00:55 I don't think, I know for a fact it's a globe.

Shelley (Flat Earther)

2) 00:58 The Earth is flat.

Wendell (Flat Earther)

3) 01:00 It's like we have this picture of reality that's a big puzzle piece, and then one of those pieces just wasn't fitting.

James (Scientist)

4) 01:06 I'm always open to having a discussion with someone who is holding a wrong belief like this.

Interviewer: Are you willing to change your mind on this?

Ali (Scientist)

5) 01:16 I'm not. The evidence is so much.

Wendell (Flat Earther)

6) 01:19 Nobody wants to be a flat Earther, but if you showed me incontrovertible evidence, I would definitely go back. Who wants the ridicule?

Interviewer: What are you hoping to get from the discussion with the other side?

Dan (Flat Earther)

7) 01:31 I'd like to tear them to pieces.

James (Scientist)

8) 01:45 I'm James Underdown, executive director of the Center for Inquiry West in Los Angeles and the chair of the CFI investigations group.

Spencer (Scientist)

9) 01:55 I'm Spencer Marks, one of the senior members of the CFI investigations group, science advocate.

Ali (Scientist)

10) 02:01 I am Ali Nayeri, I'm a theoretical physicist and I'm with the University of Irvine.

Wendell (Flat Earther)

11) 02:08 I am Wendell Walton. I am a chief learning officer for a young start-up.

Shelley (Flat Earther)

12) 02:11 I'm Shelly Lewis. I'm a graduate of West Point, critical thinker and jumped out of airplanes.

Dan (Flat Earther)

13) 02:18 My name is Dan Glatman. I work as Dan the Water Man in the drinking water filtration industry, and I'm a truth seeker.

Interviewer: Only step forward if this is true for you: “I believe the Earth was created by a higher power”

14) 02:48 [Wendell]: Well, I've been a Christian for thirty years, so the Bible is a Flat-Earth book. you have to take it literally. Like for example in Isaiah when it talks about how the Earth is like a clay wet wax seal that stamped with upturned edges. That's just not some fancy story. That's a simile: "it is like".

15) [Shelley]: Right, absolutely, and in Isaiah talks about too - and I'm a Christian – “He who sits upon the circle of the Earth.” - There's a difference between a circle and a ball.

16) [Wendell]: Well, exactly, if you look at the original Hebrew it means "disk". There's over 200 scriptures in the Bible that point to a Flat-Earth.

17) 03:33 [James]: So, this notion that you need God or some higher power to create the Earth or the universe is very old and was initially posited by people of a pre-scientific age. Since then, we have learned quite a bit about the universe coming into existence when that happened. Modern humans don't get their cosmology, they don't get their physics, they don't get their knowledge of the universe from the Bible or any ancient text.

18) 04:05 [Spencer]: It's sort of like the God of the Gaps. Once you know people used to believe that lightning was God's wrath and throwing these lightning bolts, but once we understood it was a natural process, God shrank a little bit more because now we couldn't attribute those lightning bolts to God, we had to attribute that to the real science. And the other thing to the point about the Bible specifically for me is why is that one particular text the correct one. You choose to believe that, and that's fine, but there's so many other writings and so many other books. So why weren't they correct? Why is just the Bible, correct?

19) 04:37 [Shelley]: Well, what you'll find in a lot of these ancient religions is they're all flat-Earth religions. All their cosmology goes back to being a flat-Earth with an enclosed system. So, it's not just the Bible that teaches this. It's many different religious books.

20) 04:54 [Ali]: So, one problem I have is to uh- trying to explain phenomena happen in nature by holy books. Those are religious books. Those are not books of science, and it is wrong to infer or deduct scientific readings out of those books.

05:19 [Wendell]:

21) My name is Wendell, I am a logical, biblically based and scientific Flat Earther. I didn't start out and no one starts out as a Flat Earther, but I had a lot of questions. So, I actually got to the point where I had to go out and put my own eyeballs on it. So, we went out to an observation at Salton Sea and Things just didn't add up down there. So, we've gone back. Probably a dozen times and I can guarantee you that there is no curvature over distance.

Interviewer: **“The internet has played an important role in confirming my view on this topic.”**

22) 06:03 [Dan]: We have the advantage of information today that's outside of Channels 2, 4 and 7 and the few networks that are corporately owned. It's pretty easy to say YouTube isn't research but when you spend enough time, you're picking up quite a bit and with the discussion groups, panels we’ve gone against opposition, we've opposed ourselves - Surprisingly enough flat-Earth is its own worst enemy, so it's not that easy for us to come to consensus and we find that consensus is orchestrated and not actually scientific in any way.

23) 06:37 [Wendell]: You know, my grandfather used to tell me growing up: “never believe anything you read in the newspaper.” Right? He told that to me. Now what the age of the Internet it's like, you know How much of this misinformation are you getting there? And when you have like eye-

witnesses taking video of something, you do have to take everything with a grain of salt. That's why because of my um, my multimedia background, I knew that all that stuff could be faked, you know, take it into Photoshop. Take it into After Effects.

24) 07:07 [James]: Ok, this is at the core of the issue of why there are so many Flat-Earth believers out there right now. The problem is the information from someone who decides to start a website or produce a YouTube video is not reliable. When I have a toothache, I go to a dentist, my car breaks down, I go to a mechanic. When you have questions about cosmology you should go to an astrophysicist. You should go to a physicist. You should go to people who have spent years and years studying these ideas, not some 6-minute YouTube video. There is a percentage of people that if they saw a YouTube video that was not within their scientific chops to refute on the face of it would believe anything out there.

25) 07:57 [Shelley]: One of the things I will say is nasa.gov has their own documents out there that we get to vet, which is through the Freedom of Information Act and would you agree that NASA documents, if they're on display that we should be able to go and research inside there-

26) 08:12 [James]: --NASA is not proving that the Earth is flat.

27) 08:14 [Shelley]: Well, they say it in [inaudible"14 of the documents"] documents

28) 08:15 [Dan]: Well, you should read what NASA says and you should listen to what NASA says.

29) 08:19 [James]: I would love to see your NASA evidence that the Earth is flat.

30) 08:23 [Dan]: It's only their contradictory issues that bring us here

31) 08:27 [Wendell]: We're all familiar with the Earth rise photo, right? The Earth is rising over the moon.

32) We're all familiar with it. It's NASA. You can go out to the NASA site. You can download the original, right?

33) 08:35 [Spencer]: I already know what you're gonna ask.

34) 08:36 [Wendell]: So, you bring up the luminance on it and you can see where it's cut out and pasted there.

35) 08:41 [Dan]: They're showing us doctored images that are clearly doctored. The Blue Marble is a very famous image from 1972. When you talk to the artist from NASA, his name's Robert Simmon he talks about exactly how it was created from data, and it's not a photograph whatsoever –

36) [Spencer]: so, what? Let me explain—

37) [Dan]: He added clouds, he added highlights.

38) 09:01 [Spencer]: You take you know on your phone most phones have that panoramic image When you do that, you're taking a series of pictures and the phone cleverly stitches that together--

39) 09:10 [Dan]: I'm just saying how it's presented. It's presented as a real photograph--

40) 09:13 [Spencer]: -- hold on, hold on. So, when NASA takes real Photos and they either clean them up for colour or they stitch them together. So, it's one large image It doesn't mean they're CGI.

41) 09:21 [Dan]: You're talking about composites

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42) 09:26 [Dan]: I'm what you call a globe denier. You could even get me into a virtual construct if I can't find the w- the borders myself.

Interviewer: What shape would you say you think that the Earth is?

43) 09:38 [Dan]: It appears to me to be a stationary plane. As opposed to the vastness of infinity of space, I would find it to be an ice plane where we have a localized sun and our environment thrives there. You know these- these particular people have misled us on television. This is a brilliant opportunity to speak. We've been suppressed, censored by mainstream media. Alternative media is that's just a thing of beauty for me.

Interviewer: I view the other side as uneducated.

44) 10:16 [Wendell]: Well, they uh they certainly think they're educated.

45) 10:19 [Dan]: And they're following quite a bit of the university system what we call scientism

46) 10:25 [Wendell]: Right, scientism.

47) 10:26 [Dan]: obviously is the belief in what's written. Where we tend to be exploring in the field with physical properties. Not theories of any kind, we're using actual measurements that are calculated not by our guidelines, but the guidelines of science as we know it. I can only hope they're uneducated as opposed to disingenuous.

48) 10:46 [Wendell]: well, that's the other thing too because we know that it was on a large scale the government has been disingenuous and they're, they're pushing a narrative, right? So, it's, it's hard for us. I mean, I'm sure that you've met people too It's like look, are you just you haven't looked into it yet, or are you a shill? Are you - Are you part of a disinformation campaign?

49) 11:12 [James]: I don't think you guys are uneducated, I think you're wrongly educated.

50) 11:17 [Spencer]: I think the problem with what I've seen in the Flat-Earth crowd is that it's not that they're under-educated, but they Instead of looking at evidence and letting the evidence guide to where the ultimate conclusion is, they start with a conclusion and then they try to cherry-pick evidence to support their pre-drawn conclusion. They cast away all the bits of evidence that actually is contrary to their beliefs.

51) 11:40 [Wendell]: I think that you're very well educated as well as you are Jim

52) 11:44 [Spencer]: Certainly, Ali is, he's probably got the best education of all of us

53) 11:47 [Wendell]: Exactly, and he paid for it, too. But more and more professionals are coming on board. They're starting to question their reality. So, the thing of it is, is once you start to really look, take a hard look at the evidence and you are unafraid of just standing for the truth wherever that may lead you then people end up becoming flat Earthers.

Interviewer: What are you hoping to get from the discussion today?

54) 12:14 [Shelley]: I'm hoping to be able to tell our side of the story from the inside out. So many times, Flat Earthers are depicted from the outside in and I want to be able to share with others empirical data that proves the Earth is not what we've been told.

Interviewer: I have changed my mind, at some point, about this topic.

55) 12:41 [Shelley]: So, when I was 12 years old, I went to Space Camp and I met Alan B. Shepard,

56) (Wendell: ohh, nice)

57) 12:46 [Shelley]: Yep, yep, and I wanted to be an astronaut and I wanted to be the first woman to walk the moon. So, for me, I'm a glober. I went into this completely wanting it to be true and my husband told me he saw this thing about the fake moon landing. And I was like, you're absolutely crazy. There's no way that the moon landings are fake and then in 2010 My husband was killed and so I never really developed that until around 2014 when Flat-Earth kind of came back up and that...sorry... and that little voice inside my head said: remember the fake moon landings, remember when? That was brought to my attention and then I started really critically analysing that and I would say, you know just looking at that evidence if they can lie about the moon landings, they can certainly lie about pictures and satellites and other things than so. I started going down that rabbit hole of studying so that was my influence from my husband.

58) 13:46 [Wendell]: How many lies does it take to make a liar, right?

59) 13:49 [Dan]: And being ridiculed for being inquisitive Is pretty tough on us. I wouldn't say that I've changed my mind because my mind isn't set. NASA is, is solely designed to change my mind. It is from its inception from its discovery has been a television program It's been a space program to sell us on something that they've yet to actually show us. Show me a globe spinning with clouds and a moon. Show me home and I think I could shut up quite easily. I think I could shut up.

60) 14:26 [James]: The timing of your conversions is interesting to me. 20 years ago, the flat-Earth world was tiny and insignificant. Enter the advent of the internet - YouTube, online discussion groups, all these new available places where you could find information about everything.

61) 14:52 [Ali]: This is true that the evidence you looked were not robust evidence and the sources you used; they were not reliable sources again. But my problem is that, and I like you guys that you are very sceptical, but at the same time you're not sceptical about your belief system. That should come first.

62) 15:12 [Shelley]: You keep going back. You think that that's my foundation for why I believe the Earth is flat and I'm telling you you're wrong I have evidence that proves it's flat.

63) 15:19 [Ali]: What type of evidence?

64) 15:20 [Shelley]: That proves that's not a ball.

65) 15:22 [Dan]: We're being misled, we're being deliberately less- misled by mainstream media,

66) 15:26 [James]: No, what's your evidence?

67) 15:27 [Shelley]: We see too far. We see too far. We should not be able to see- I live in Dana Point

68) 15:33 [Ali]: Okay--

69) 15:34 [Shelley]: I can see San Clemente Island, which is 60 miles away

70) 15:36 [Ali]: So, what? (That is pretty high)

71) 15:38 [Dan]: What do you mean "so what"?

72) 15:39 [Shelley]: [Well, I'm on the beach]

73) 15:40 [Ali]: (It's 11 hundred feet tall!)

74) 15:41 [Shelley]: [I'm on the beach]

75) 15:43 [Ali]: Can you see a ship which is going?

76) 15:46 [Shelley]: Oh yeah let's talk about the ship that goes over the curvature of the Earth, I love that. Science has said that when I see a ship go out of my field of view It's going over the curvature of the Earth, correct?

77) 15:56 [Ali]: Yes.

78) 15:56 [Shelley]: But then I bring my p900 up and guess what, I can zoom it back in, so is it going over the curvature of the Earth or not?

79) 16:00 [Ali]: Not all of it.

80) 16:04 [Dan]: Absolutely.

81) 16:07 [Spencer]: You don't see all the ship. The bottom part of the ship is hidden by the curvature.

82) 16:11 [Dan]: At that distance you shouldn't see the top of it either.

83) 16:13 [spencer]: If the Earth were truly flat, there would be really hardly any limit, you would be able to stand at the top of the Empire State Building and look toward Chicago, a mere thousand miles away, and see the lights of Chicago at night

84) 16:25 [Shelley]: No.

85) 16:26 [Spencer]: Why wouldn't you?

86) 16:26 [Shelley]: No, because you have an atmospheric disturbance.

87) 16:27 [Dan]: It's very thick.

88) 16:29 [Spencer]: I, I've been to astronomy since I was 10.

89) 16:32 [Spencer]: It's faulty logic. It's completely faulty logic

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90) 16:40 [James]: One of the big things I do is investigate extraordinary claims like flat Eartherism or ESP or all sorts of different things. The Earth is undoubtedly a globe and not flat. This is well supported by gobs of science.

Interviewer: Scientific consensus is possible

91) 17:06 [Dan]: What is the question?
92) 17:08 [Shelley]: I don't understand the question.
93) 17:09: [Wendell]: "Scientific consensus is possible"
94) 17:11 [Dan] : Possible. anything is possible. I mean anything is possible

95) 17:15 [Dan]: I've got a, I've got a tremendous issue with consensus and peer review. I've been spending a lot of time. Arguing the other, with people that argue the other side, and I found that surprisingly consensus always wins. It was shocking to me that the group with the majority has an incredible advantage. As scientists, flat Earthers, truthers, punks. We're at incredible disadvantage.

96) 17:43 [Spencer]: Let's talk about scientific consensus for a second. You're never going to get a hundred percent of anyone. There is scientific consensus on a global Earth, there's scientific consensus on evolution. A lot of big issues.

97) 17:56 [Dan]: They use the word theory

98) 17:58 [James]: Do you know what a theory in science is, it’s an extremely

99) 18:02 [Dan]: And a fact is a fact

100) 18:03 [James]: Don't mistake this word theory. In science. It's not conjecture.

101) 18:05 [Dan]: It's an explanation. By definition it's an explanation so, show me a fact then

102) 18:15 [Ali]: so, this is something people make a mistake with, they think theory is-

103) 18:17 [Spencer]: -In science, the word theory is the highest level that you can give something because it's so well supported

104) 18:23 [Dan]: What about a fact?

105) 18:24 [Spencer]: That is a fact.

106) 18:26 [Dan]: It's not a fact you would call it a fact.

107) 18:29 [Spencer]: You know, why? Do you know why? Because in science, there's always room for improvement. There's always room to find better, to tweak, and find better infor mation.

108) 18:37 [Ali]: So that is how science really works.

109) 18:39 [Spencer]: It gets better refined over time, as opposed to Flat-Earth Theory which never gets refined it simply is what it is.

110) 18:45 [Dan]: New ideas have limited access to media and limited exposure until we're in US University curriculums. We will continue to appear uneducated

111) 18:56 [Ali]: Well, that's not true. In the history of science, we had many occasions that it, the ideas It was not welcomed by the society. Einstein was one of them.

112) 19:07 [James]: Galileo.

113) 19:08 [Ali]: Galileo was one of them, but if your theory is an authentic one and It can be, go through this hardship of scientific method eventually, will win.

114) 19:21 [Wendell]: I used to believe that science was after the truth, right? We all just want to know what the truth is. Science has been trying so hard to divorce itself from the idea of a creator. When God's intent was to create science to lead you to him, you know some times things seem supernatural that we are able to explain later through, you know science, okay, understand. But there are other things as well that are supernatural, that go beyond the natural, that we can always explain Through believing in a creator, right?

115) 19:55 [Ali]: This is my big issue with science, scientific approach and non-scientific approach. You are absolutely right, in science, we are after the truth and we are hoping by each day we're getting closer and closer to the truth. We never get there, never.

116) 20:11 [Wendell]: Well, I know that's true for you.

117) 20:14 [Ali]: No, no that's just science. That's-- that's you guys, you think you do have the truth. Now, let's look at the evidence as you were mentioning. You do have the conclusion Let's find the evidence. science doesn't work that way

118) 20:26 [Wendell]: That's not true.

119) 20:28 [Shelley]: That is not true-

120) 20:38 [Ali]: Well, you're saying, you're referring to Jesus and God, who many billions of people do not believe, including myself.

121) 20:35 [Wendell]: And many more billions do.

122) 20:36 [Ali]: So, what?

123) 20:38 [Wendell]: So, who's right?

124) 20:39 [Ali]: Of course, I cannot-

125) 20:39 [Shelley]: When you say that we start with a conclusion and then try to match every thing to make it work, like that to me is complete dishonesty. That is not true at all.

126) 20:49 [Ali]: That is what you are doing right now

127) 20:50 [Shelley]: No, you're not. you're making that assumption.

128) 20:53 [Ali]: No, it's not my assumption.

129) 20:53 [Shelley]: So, do you make assumptions or not? Does science make assumptions?

130) 20:57 [James]: We do make assumption but based on things that are well supported and proven-

131) [Dan]: -Biased

132) [James]: and reproven.-

133) [Dan]: -Biased

134) 21:07 [Shelley]: Show me how you isolate gravity if gravity is an assumption, show me the scientific method, how you isolate gravity?

Interviewer: I just wanna check in, how are you guys feeling? How is this discussion going?

135) 21:35 [Shelley]: I kind of feel like I want to develop some of this stuff a little bit more It feels high-level, but I feel like there's so much that I haven't really even touched base on.

136) 21:44 [Spencer]: Well, I mean I certainly didn't think that anybody was gonna the side was gonna flip.

137) 21:48 [Wendell]: Well, there's still time

138) 21:50 [Spencer]: There's still time, I have hope for you Wendell and Shelley. I don't know about Dan

139) (laughs)

140) 21:55 [Spencer]: But you know, it's certainly I'm glad it's a civil discussion certainly

141) [Wendell]: oh, yeah

Interviewer: “Nasa is trustworthy”

142) 22:28 [Spencer]: So, I mean, obviously any organization can be wrong with certain things and they may have individuals that lie or deceive or something. But as a general organization, they're looking for the truth.

143) 22:42 [James]: Yeah, the idea that NASA and the government is lying to us about the shape of the Earth is the height of conspiracy theories. In order for this to be true, the literally hun dreds of thousands of people who at some point over the last 50 or 60, 60 years would have to have to be somewhat complicit in this and nobody spills the beans at all is on the face of it completely unbelievable.

144) 23:21 [Shelley]: The private does not know what the general is doing. There's compartmental-ization happening all the time

145) 23:27 [Spencer]: Of course

146) 23:27 [Shelley]: So, it wouldn't be that far-fetched. Has the government ever lied to us? is re ally the question at stake. Now we have nasa.gov, right and we- oh absolutely they're not ly ing about anything they're completely transparent everything is true. We'd be foolish to think that's true

147) 23:47 [Ali]: No -no -no, there is a difference here. I'm sorry, this is a fallacy here.

148) 23:50 [Shelley]: It's not a fallacy

149) 23:51 [Ali]: I'm sure it is- see, you were talking about the government. Now you're talking about an agency of the government.

150) 23:57 [Shelley]: NASA-dot-GOV

151) 23:59 [Ali]: But this agency is scrutinized by thousands and thousands of scientists around the globe. You are dealing with smart people. Believe me you are--

152) 24:12 [Shelley]: I don't deny that.

153) 24:13 [Ali]: So, it is very hard to do that. once or twice, maybe, not for the whole time

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Interviewer: Raise your hand if you think we went to the moon

154) 24:21 [Spencer]: What is the proof. Hundreds and hundreds of pounds of moon rocks and dust, and we have distributed those freely to PhD scientists around the world and not one of those geologists have said: "What is this ??"-

155) 24:35 [Shelley]: They're proven to be fake

156) 24:38 [Dan]: Collected on the ice in Antarctica and the Arctic as well. Those are collected there. You don't have to go to the moon to get moon rocks. As a matter of fact, all US Air Force photography prior to 1958 shows a Flat-Earth only NASA shows us

157) 24:52 [Spencer]: That is not true

158) 24:52 [James]: That is absolutely not true

159) 24:57 [Dan]: I wouldn't lie to you James; I wouldn't lie to you. NASA is lying to you my friend, not myself.

160) 25:00 [Spencer]: We have a bit of proof 'cause we have a laser retroreflector on the moon. So,

161) 25:04 [James]: -That we're using now

162) 25:05 [Spencer]: We still use to this day you-

163) [James]: -it's sitting there-

164) [Spencer]: -you can find to the inch how far away the moon is

165) 25:10 [Dan]: No pictures of home.

166) 25:13 [James]: My question to you is why? Why would all these honest hard-working people
167) perpetuate this massive fraud? Why would they do this?

168) 25:27 [Ali]: What's the benefit of doing that?

169) 25:30 [James]: okay, the benefit of it? they make fifty-two million dollars a day. Follow the money.

170) 25:32 [James]: No, the little guy-- the little guy-

171) 25:33 [James]: That's one thing. When you say all--

172) 25:35 [Spencer]: But it didn't start out that way, and NASA I was not founded to proof the Earth was a globe. It had nothing to do with the way they were found.

173) 25:42 [Dan]: Are you sure?

174) 25:43 [Spencer]: Yeah positive.

175) 25:43 [Dan]: Really?

176) 25:44 [Spencer]: Yes.

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177) 25:47 (Spencer) Somebody has to be a voice for reason, and somebody has to be a voice for truth. It's it would be a fantasy to believe that I would change anybody's mind from the other three. However, if there's somebody sitting on the fence and this is the first introduction to this debate. Perhaps they'll hear the reasonable voice and say that makes more sense than hav ing this pizza shaped Earth.

Interviewer: “I can put myself in the mindset of the other.”

178) 26:22 [Shelly]: I used to be a ball Earther. Everything you say right now is completely what I used to agree to. So, I completely understand where you're coming from.

179) 26:33 [Spencer]: For me, I think the- the correct way to do any kind of investigation or to ex amine things is by literally putting yourself in that mindset of the other person. So, I do- do that. I disagree with your position, but I completely understand from your perspective what you're saying.

180) 26:56 [James]: The trouble I have understanding your perspective is in the modern world un less you live in a cave somewhere you have to believe in science implicitly. I met a flat Earther, a young woman who said: “I don't trust anything that science does”. And that's a problem because human beings can't replicate the whole body of science, every single gener ation. At some point you have to trust what’s already been discovered and proven and move on to the next thing. Otherwise, we're not going to advance at all. I mean when you turn that key ignition in your car you expect the car to start out and not blow up and not blow up be

cause science to put you in that position. So, it's really hard to understand how people would know in their hearts that science achieves wonderful things and then just jumping ship when it comes to this other issue.

181) 27:54 [Dan]: We're not drawing conclusions. We understand the mechanisms that made that car work. There is no theories and no- no disputed conclusions involved there. It's not a good analogy. Can I admit a great compromise that we have to experience being against the grain people? Is, we have to literally sit in a group and decide whether or not we can afford to have an opinion and that's-- that's tough.

182) 28:19 [James]: Actually, I- I agree with you there because we're the same thing I mean, I think sceptics go through this and atheists go through this. I don't believe in God. When I'm around religious people, I take a chance socially when I tell them I'm an atheist, so I know it takes some courage to follow your beliefs and I appreciate that. But I think I've done a lot of re search in that Venue too and it's not something I choose to believe in. It's something I have to believe in based on the evidence.

183) 28:50 [Ali]: See what I get from you guys is that seeing is believing. So, how come you be lieve in God or Jesus? You haven't seen neither of them, right?

184) 28:58 [Wendell]: I've seen evidence though.

185) 29:00 [Ali]: Well exactly. So, we are looking for evidence. There are many, many other evi dences for Earth not being flat. My point is that these, these experiments clearly show that the Earth is a globe, and you don't need to go outside the globe to see it's a globe

186) 29:17 [Dan]: It's a conclusion.

187) 29:17 [Ali]: You told me you want the evidence. If you're saying that you look only to see something then I dispute your belief system in God and Jesus or Jehovah or Buddha or Aze ris Torah, or anyone.

188) 29:31 [Shelley]: You keep going back to religion as being our conclusion

189) 29:33 [Ali]: Because it's coming from there-

190) [Shelley]: No, no, no-

191) [Ali]: --you-- you think you do have the truth. You quoted at the beginning of this- you quoted the Bible.

192) 29:42 [Shelley]: Of course, I did, but that is not the only reason I know what the shape of the Earth is. And you keep -- That's fallacy.

193) 29:48 [Ali]: That's not fallacy.

194) 29:49 [Shelley]: Actually, it is fallacy

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195) 29:56 [Ali]: I'm a Theoretical physicist. What I'm doing is the combination of string theory and cosmology. So, we try to understand what happened during the Big Bang, after the Big Bang or even before the Big Bang.

196) **Interviewer: What are you hoping to get from the discussion today?**

197) 30:14 [Ali]: Well, I hope I would be able particularly to the young generation, to convince them that first they should think critically and don't believe anything. They shouldn't take anything for granted. Look at the evidence and examine those evidence and throw away those claims that are not evidenced base.

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198) 30:39 [Shelley]: Science, not to put it down, but when you're talking about rocket science. This is very difficult for the majority of people to understand and it's designed that way and so in a lot of ways hiding behind rocket science is similar to religion if you look at the Catholic Church back in the days, “only we can interpret the Bible you have to listen to what we say”. So, in a lot of ways, we're getting that same notion from science that says only we can inter pret what these numbers are. You just need to trust us. But then, when we actually do go and test some of their equations and they don't work, does that beg the question for us to go and test it ourselves? Absolutely.

199) 31:21 [Ali]: I would say, you know one great thing about science is its predictability. Let's form some moment, for a short moment assume that, your model, this Flat-Earth model is correct. I don't know What does it buy for us? What does- what does it predict for us? So, my question for you guys would be next time, bring me something from your theory your model that you can predict something which the globe Earth model cannot predict then I would change my mind

200) 31:54 [Wendell]: I would just -just say that don't believe anything that I've said. You got to do your own research and I think what you'll find is that you'll see that a puzzle piece doesn't fit and the only way you're going to do that is if you put your own eyeballs on it.

201) 32:07 [James]: I don't blame people for being sceptical. I'm sceptical about a lot of different things. I applaud that instinct in you, but you have to go beyond just not believing in some thing, ask the hard questions. Ask: what qualifies a YouTuber or a book author? Anywhere else you're getting this information. What qualifies them to make wide-ranging? Comments about the shape of the Earth. Look anybody who can overturn Einstein, or some major theory is going to be eventually written in the halls of science for the rest of their lives, but they have to come up with the goods they have to show

202) Good science-based evidence that what they say is true and they have to withstand the test of time and peer review and the rigors of the scientific method.

Appendix B - Transcription of Video 2

https://www.youtube.com/watch?v=toQEov2nWas&t=185s

1) 00:00 [Victor]: Also, I see you have somebody that's uh into science now so now we could be-

2) 00:06 [EJ]: If you want to talk about flat-Earth, I'm an aerospace engineer so I can tell you

3) 00:10 [Victor]: Oh really? Yeah, I don't want to talk about that

4) 00:18 [Victor]: had the oscillator guy called advice' that was two proofs for intelligent design, and we talked about you know DNA and everything I want to get to that but ok the second proof which is the absolute from ca- the absolute number one proof and intelligently designed you need to get an ATS I've been seeking for the Panther for a long time know it out and evi-dence

5) 00:37 [Eric]: now the answer is that you are constantly looking for truth and things because if you settle on one thing and you're wrong you know you're less likely to dig in your heels, but you just want to like we said just a minute you okay

6) 00:52 [Victor]: Oh yeah I love being wrong, believe me

7) 00:58 [Eric]: So, you go right ahead. What is your ultimate thing, go ahead

8) 01:02 [Victor]: Okay, so that we are not on a ball that's spinning 1,000 miles an hour that's going around the Sun sixty-six thousand six hundred miles an hour going around the galaxy five hundred fifty thousand miles an hour and the galaxies going through the universe at 1.5 million miles an hour absolutely just a- I mean, serious. The Earth is operationally and functionally flat.

9) 01:22 [Eric]: I-I- I- highly suggest, there's an amazing Monty Python song that does that, but this is so in your ballpark EJ I don't even...

10) 01:36 [EJ]: Well, I'm waiting to hear what the proof is

11) 01:38 [Victor]: Okay, so the proof that we are not on a spinning ball of one is that water cannot conform to the exterior of a shape you cannot do an experiment to make water go around any shape and stay there like the way that the water of the Earth is, excuse me, going around the Earth right and then they say all gravity okay or you get into gravity. Absolutely absurd also how many things that gravity does magically it does like a million different things and it's all this one force that does all of these things and you disprove that one thing that means that everything that you believe about the entire universe is wrong

12) 02:19 [EJ]: Well, first of, all gravity is measurable. we have a lot of evidence that gravity exists there are a lot of different ways that we can prove that gravity exists. In regard to the whole water conforming to a ball thing, I think the big problem that you're having is that it's really difficult to think about things in 3D because the force of gravity is due to the massiveness of an object, so you know I have gravity Eric has gravity, you have gravity but because we're such small objects, our gravity is basically negligible. It doesn't really do anything. but when you get a lot of mashing on places..

13) 02:59 [Victor]: Well you should talk about cavendish because Cavendish actually when he did that test which is the only test in existence to prove quote-unquote proves that one object can attract another object by virtue of its mass alone it was so sure that the test was so sensitive the test was so sensitive that when he went to go take the measurement it took the measurements outside of the bond a hundred feet away with a telescope because he didn't want his own and he didn't want his own gravity to interfere with the test if you're saying that your gravity is so small that it'll never affect you should talk about Cavendish

14) 03:29 [EJ]: I mean I can't speak to I can't say I'm familiar with Cavendish but whatever-

15) 03:25 [Victor]: Well, you should who Cavendish is be-

16) 03:33 [Eric]: I -I -I can I mean- Victor. You do know that the Cavendish experiment has been replicated by students every year at major universities not for many years it has been replicated so many times that it's almost a rite of passage at some colleges to perform the Cavendish experiment you DO know that, right?

17) 04:00 [Victor]: Right okay so let's say let's say that this is true let's say that the Cavendish experiment is true, so gravity is-

18) 04:08 [Eric]: well, hold on hold on hold on hold on. so, if we're- are we sure about that? Are you good there?

19) 04:14 [Victor]: I'm just gonna play devil's advocate-

20) 04:19 [Eric]: okay so what I suggest is for you play devil's advocate is that you go to a university and talk to somebody because either one on

21) 04:25 [Victor]: No, I've seen experiments on YouTube I've seen them do it and

22) 04:29 [Eric]: Go to a university, talk to somebody and then you get to decide whether or not you're wrong or the entire world is against you in some major conspiracy but before we before we make the appeal to popular belief

23) 04:45 [EJ]: Well before we make the appeal to popular belief something that might help with visualizing how gravity works in a more 2d version is looking up experiments where they take like an elastic sheet and you put like a really heavy like a ball in the elastic sheet and then you can roll marbles and the marble will actually orbit the ball as it kind of like virals in and that's a really good

24) 05:04 [Victor]: No, it doesn't

25) 05:07 [EJ]: Yes, it does there are videos of this

26) 05:09 [Victor]: No, it doesn't it goes directly to the center

27) 05:12 [EJ]: No if you give it a little bit yeah

28) 05:14 [Victor]: No if it goes around a little big it spirals then it always goes to towards the center

29) 05:19 [EJ]: Well yeah that's what I was saying that's how gravity works it's an attractive force and if you don't give it a velocity it does go straight in and that's exactly how gravity works except in 3D so when you have a mass it essentially, space-time is a complicated thing and we could get into quantum mechanics and we could get into relativity and general relativity and special relativity but frankly I don't want to have that conversation because that's a that's one that requires one several degrees to talk about

30) 05:43 [Victor]: when is mercury gonna get sucked into the Sun and it's been orbiting around the Sun for like billions of years when is it ever going to go towards into the Sun if the Sun is so massive the Sun is a million times the volume well first I could put a million Earths inside the Sun so that should just mean that mercury is to make a straight beeline right into the Sun how come is just going around the circle I mean that makes absolutely no sense

31) 06:05 [EJ]: I can answer to that So I took a class last semester called spacecraft dynamics I'm currently in a class this semester called applied orbital mechanics and the way that it works is if you have something that is very gravitationally you know powerful because it's very massive you have an orbit the way that an orbit works is the object is moving and so you can almost think of it as it's falling towards the object but it's falling sideways so it's just constantly kind of falling in towards the object but it's going around because it has that velocity that's making it go that way and so it can be a little bit difficult to visualize but those forces and the energy required to maintain that orbit can be calculated really precisely like mercury is going with the velocity that it needs to go to not get sucked into the Sun but fun fact the moon actually is getting sucked in towards the Earth every year it moves a couple centimetres closer because it's so far away that it'll be a really long time before the moon gets close enough to actually be you know drawn into the Earth's gravity but it is moving closer and that's something that we can measure

32) 07:02 [Victor]: what in that yeah but okay so now the Earth is going around the Sun right so if the Earth is going around the Sun, so you do understand that somehow some way in the wintertime it's actually closer towards the Sun it's three million miles closer

33) 07:15 [EJ]: Yeah t's in an elliptical orbit, yeah

34) 07:16 [Victor]: So, when the Earth is going closer towards the Sun how come the moon doesn't get told more towards the Sun when it's three million miles closer towards it

35) 07:25 [EJ]: well it does I mean gravitational forces act on everything it's it does have an effect and in fact those are things that you can you can account for in measuring orbits and even in in the orbit of a spacecraft like the class that I'm taking right now part of what we have to do is we have to account for the perturbations in the orbit caused by the Sun's gravity versus the moon's gravity versus the Earth's gravity versus the shape of the Earth you know just even the fact that the Earth is not a perfect sphere affects the way that an orbit will move and the

orbit parameters will actually change over time because of the different gravitational effects of the different bodies in the solar system and I mean a lot of this is things that are measurable and things that we do account for in terms of measuring orbits and creating orbits and calculating the exact amount of fuel you would need to get to a certain orbit and the exact amount of velocity that you would need to leave one orbit and get to a different orbit and these are all things that are you know if you take a class on orbital mechanics you'll actually learn about it and it's it' really fascinating I mean I could talk about it all day I'm sure I'm boring you with talk about orbit mechanics

36) 08:30 [Victor]: Yeah I'd like it to have something if you have something that has such an enormous amount of gravitational force and then you have something as small as the moon and then you have the Earth's that goes three million miles closer toward the Sun it's gonna throw off the orbital mechanics of the moon and the Earth relationship and it's just gonna do there's no way there is absolutely no way the Earth has been doing this for certainly all day around

37) 08:52 [Eric]: Viktor- Viktor-

38) 08:59 [EJ]: Well, what's interesting what's interesting about that is that the gravitational force is actually not a particularly strong one you know the gravitational-

39) 09:09 [Victor]: Cavendish proved that it exists with just (unintelligible)

40) 09:11 [EJ]: gravity does exist it's just not a particularly strong force in terms of other forces that exist in the universe you know they're you know magnetism is also a fairly weak force it has an inverse-square relationship to the distance from the object and so because you have that inverse square relationship as you get further and further from an object the gravity force gets weaker and weaker and weaker and because we're so far away from the Sun yes its gravity is strong it's very massive but you know three million miles over you know however many dozens hundreds of millions of miles we are from the Sun three million miles is actually not a huge difference in terms of that inverse-square relationship from the strength to the gravitational force

41) 09:49 [Victor]: it's actually three or four percent closest to me that's a pretty large margin

42) 09:53 [EJ]: it's not a large margin when you have an inverse square relationship with the force

43) 09:55 [Victor]: you have all these like super complex, orbital mechanics inverse square law isn't it more accordance with Occam's razor to just be like you know the Sun is just orbiting over my head because that's how I observe it right then when you go outside right at night and I look straight up in the air-

44) 10:12 [EJ]: Occam's razor applies to situations where the other options aren't viable whereas you know these things are measurable you know I'm in a class right now my professor for this class he his whole life is he does this kind of orbital mechanics he works for you know a bunch of different organizations that he's done these calculations for and they launch satellites and you have to do all of these complex calculations in order to make sure the orbit is where you need it to be to accomplish what you need it to accomplish like satellites that provide your internet they have to be in a particular orbit otherwise it's not actually going to function and you need to know where that satellite is

45) 10:50 [Victor]: Well satellites don't exist satellites don't exist is absolutely ridiculous-

46) [EJ]: -Then how are you calling us right now? (chuckles)

47) 10:58 [Victor]: nah -nah there's no such thing as satellite so if a grain of sand hits a satellite the satellite is completely destroyed that's only got 17,500 miles an hour we have what is the 30,000 satellites in the sky how is it that not one of these satellites ever gets hit by something is

48) 11:12 [EJ]: They absolutely do get hit by things also when you say it you kind of need to back it up with evidence like do you have a study that shows well satellites don't actually exist because I have a lot of evidence in my classes that satellites do exist

49) 11:39 [Victor]: you don't need to study it it's simple logic, it's just simple like if you have 30,000 satellite know that there if one of these satellites gets hit by something the size of a grain of sand it only has 17,500 miles an hour that satellite will be absolutely be destroyed

50) 11:56 [EJ]: actually, satellites do, satellites do get destroyed-

51) -(unintelligible)- source that the orbital mechanics of it and it's there's no way to incorrect the orbit of the satellite because you're in a vacuum right and you can't steer it it's not like you have rotors

52) 12:11 [EJ]: those are all things you can account for-

53) 12:13 [Victor]: so, once you got hit well it's over

54) 12:17 [EJ]: Okay first of all first of all responding to your first point space debris is a real concern you know there's a whole lot of there are governmental organizations whose entire job is to track space debris you know they're there you know companies like SpaceX or whatever they have to track say it's space debris because you need to know where it is and we know the orbits that a lot of space debris exists in but you know you need to know where space debris is because it will actually damage satellites like you said satellites do get damaged I mean there are satellites that get damaged and we have to send up other satellites to repair them

55) 13:03 [Victor]: (laughs) That sounds ridiculous, how can you believe this? It's science fiction-

56) 13:02 [EJ]: I believe it because I'm studying it and I know the science behind it

57) 13:03 [Eric]: EJ is not appealing to personal incredulity but wants to actually learn the thing he's not saying hold on EJ is not saying I can't understand it therefore it's not true and up until this point-

58) 13.26 [Victor]: I don't think that either-

59) 13:17 [Eric]: that does sound pretty much like what you're saying so..

60) 13:21 [Victor]: no, I'm saying that there's it's impossible there's no way that these can- as you're saying the things that you believe see the things with the-

61) 13:29 [EJ]: -the difference the difference here is that it's not something that I believe it's something that I know to be true

62) 13:35 [Victor]: (inaudible)- things- when you're actually explaining these things to someone like me and then you start realizing how ridiculous it is you start laughing because you just said Oh what does-

63) 13:40 [EJ]: I'm actually laughing at what you're saying but-

64) 13:46 [Victor]: This mean, it's absolute science fiction this is not true hey how can you have a satellite up there and then it gets hit by something and then you send up another satellite going 17,500 miles an hour it'll fix it come on what, are you joking?-

65) 13:59 [EJ]: because we can calculate the necessary thrust that you need to get it into the atmosphere and you can calculate the amount of fuel that you need to produce the thrust to get into the orbit that you need like I know I could sit here and calculate okay this is the velocity that I need to be in this exact orbit and this is the velocity that I'll need to have in order to catch up to this particular satellite I mean there's entire fields dedicated to how do I go from

the orbit that I'm into the orbit that I want to be and how do I catch up to a spacecraft that I want to be you know next to I it's entire complex fields of orbital mechanics that you could take you know seven eight nine ten classes on it and still you know have more to learn and it's really fascinating because there's so much to learn

66) 14:48 [Victor]: ISS has been there for what , 20 years? And it never gets hit by anything

67) 14:50 [EJ]: It absolutely does get hit by things space debris is a big issue

68) 14:52 [Victor]: if the ISS gets hit by something then the orbit of that of the object is no way you can correct the orbit of the ISS so good that's right

69) 15:06 [EJ]: that's patently untrue

70) 15:08 [Eric]: Find evidence to back up your assertions, email it to us

71) 15:13 [Victor]: This is all evidence available (inaudible) to refute what you believe

72) 15:19 [Eric]: Wow well yeah there's evidence you're just not willing to look it up and we're not responsible for forcing you

73) 15:20 [EJ]: Yeah I mean we understand how forces function like I can calculate the torque that would be applied to the ISS by space debris impacting it if I know the mass and the velocity of the debris that hits it

74) 15.35 [Victor]: right but just because listen just because you can do a mathematical equation to prove something that doesn't mean that it's real I could do a mathematical equation right now I equation 2.0 I'd say that the dragons created the universe seven trillion years ago and I've like always said I created a mathematical equation you can't say that I'm wrong well I just made this equation it makes no sense in the world and I just proved that dragons created the universe

75) 15:58 [EJ]: you know you brought up Occam's razor earlier so let me let me bring up an Occam's razor to you what's more likely that we can calculate these things and then we can measure them to be true and we can we can check our calculations and that they're accurate and we can check that well we can observe this satellite through a telescope like wheat we can check that these things are true or there's a huge governmental conspiracy that says that these things are true even though there is not even though you did

76) 16:22 [Victor]: you just said that you can see a satellite in the Telescope?

77) 16:24 [EJ]: absolutely

78) 16:25 [Victor]: Oh really?

79) 16:26 [EJ]: you need the right telescope, and you need to know exactly its position in the sky that you were looking for you can look you can see the ISS

80) 16:28 [Victor]: you can give me a website or something like that and I'll check that

81) 16:33 [Eric]: wonderful idea for those of you who are watching hop on to the Facebook and please just demonstrate to him

82) 16:46 [EJ]: You can actually see the ISS

83) 16:47 [Victor]: listen listen I'll just (inaudible) right now if it's so easy to prove that satellite like this you just said right now that you could use a telescope a special telescope and you can see satellites so that must mean that there must be thousands or millions of images of satellite online right So let's go to Google right now-

84) 17:00 [Eric]: -Oh man the university of Google!-

85) [Victor]: let's go to Google right now let’s the-

86) 17:02 [EJ]: -Listen Victor listen Victor I have a fun experiment for you okay there's a website where you can look up exactly when the ISS will be passing overhead and be visible I can't remember the website off the top of my head but you can find it pretty easily and it's literally just it will tell you which you know which satellites would be passing overhead you can look up you know in this time period when will the ISS be visible and it's generally visible close to sunrise or close to sunset because you can see it kind of like in the it's hard to it's hard to describe exactly where it you can look up exactly where it will be located the latitude and longitude and you can see that with the naked eye you don't even need a telescope to see the ISS so

87) [Victor]: Exactly, let’s pause right there-

88) [EJ]: -yeah I have homework for you right there I have homework that's will be passing overhead-

89) [Eric]: Victor you're on hold

90) [EJ]: yeah look up when the ISS will be passing overhead and then get outside at that time and look for it because if you look hard enough you will see it the ISS is visible to the naked eye yeah

91) 18:13 [Eric]: Victor this is not your show so we tell you and you can be good with it or not that's fine but when we have something to say and you won't let them talk then you get put on hold so I'm gonna take you off of hold you still there you just

92) 18:28 [Victor]: made hello

93) 18:30 [Eric]: were you talking so much that you didn't know I put you on hold and talked to you?

94) 18:35 [Victor]: No, I didn't-

95) -[Eric]: okay call back when you can do that (Eric ends the phone call)

Appendix C - Transcription of Video 3

https://www.youtube.com/watch?v=4OjLpngQeJE&t=131s

1) 00:00 [Connor]: when you put the Earth in a globe right on a ball it has a beginning and an end point that's it. say that's not the end of it. say there were land masses found beyond what we're told is the end pull of the Earth

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The Moon landing was fake

2) 00:33 [Connor]: a man actually went- travelled to try and find the actual telemetry data of the moon landing happening right. Unfortunately, seven hundred boxes of magnetic tapes, telemetry data, is gone there's they have no idea where it is

3) 00:51 [Matt]: Actually, it's very hard to keep magnetic tape you're not trying to seriously say Led Zeppelin didn't record Led Zep one because that tape no longer exists anymore

4) 01:02 [Connor]: We're literally talking about supposedly one of the greatest ever feats of mankind

5) 01:04 [Matt]: Well, the Led Zeppelin album, I agree it is (Laughter)

6) (both laugh)

7) 01:07 [Connor]: (laughter) Yes but- literally the greatest feats of mankind man first walking on the moon though state that it's not that they're saying these tapes rotted away these tapes were damaged we couldn't they don't know where they all were never they did as if they never exists 700 boxes of tapes I mean you could call it an anomaly if you want to-

8) 01:30 [Matt]: Right but it's not evidence if someone comes in and says I've seen a fairy in my garden all right yeah I don't have to look under every single blade of grass to say that there wasn't a fairy in the gut right yeah because your claim is so outlandish

9) 01:45 [Connor]: But what I would argue is that what is outlandish is saying that in the 1960s you put men into a metal rocket, and you shot them through a near-perfect vacuum 250,000 miles away they landed safely on a rock 250,000 miles away and then came back and then we just didn't go back that claim is outlandish

10) 02:05 [Matt]: that was actually predicted so if you go back to the there was some papers by a by Arthur C. Clarke and he predicted that mankind would try it and that we would go there a couple of times we would not do it very often because it was just economically unviable

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NASA lies to us

11) 02:29 [Connor]: Yeah you would say there were anomalies right you would say it's a base of anomalies, but I would say that basically everything that the majority of what NASA produced are- it's fiction

12) 02:38 [Matt]: I- I- I- find it very difficult to understand what the motivation for NASA just to be just a complete be a sort of enormous lying machine

13) 02:47 [Connor]: When you put the Earth in a globe right on a ball it has a beginning and an end point that's it once you go past a certain point you just end up on the other side right but say that's not the end of it say there were land masses found beyond what we're told is the end pole of the Earth you don't want to keep those public notes because there's resources here that can be taken advantage of by people in high positions of power, what do you do?

14) 03:14 [Matt]: But who are these people in these high positions of power because we've had generations since then and what about what the Russians and the Chinese and I think this south and the North Koreans and the South Koreans the Australians, what are they doing?

15) 03:26 [Connor]: I would say what they do at any point I would say when it gets to a certain point, they're all involved. China, China's all these space sub agencies every single one of these space agencies are doing the same thing in fact if you look at China's work it is some of the worst faking of space that's ever happened you- you- you- look at what they're producing and saying is real space travel and it's people in pools that they're not in space you can see bubbles coming out of their helmets it's a joke

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The Earth is flat

16) 04:00 [Connor]: Flat is probably the most the most probable we can approve motion without motion none of it works and second obviously being a major one is that we can't detect curvature the globe models a little bit problematic

17) 04:16 [Matt]: There's plenty of experiments that show the curvature of the Earth I happen to live by the coast I've got a really expansive view out onto the Atlantic and I can see the ships and I can see them dip down over the horizon, so I've physically seen the curvature for myself right you could also get into a high-altitude jet and actually physically see the curvature of the Earth.

18) 04:42 [Connor]: A lot of physicists will completely disagree with you do you remember when Felix Baumgartner did the jump yeah the Red Bull jumper and he'll tell you he'll be the first to tell you that they were using a fisheye lens in the camera because from his altitude it would have been impossible to see curvature and I agree with you if you're in a jet or a bomber you may see a curve to the Earth when you're high however that's because you're in glass shaped like this plenty of pilots who fly passenger jets who will tell you that it's flat the whole way around

19) 05:15 [Matt]: 'Cause this is hard-won scientific knowledge that you just can't just put in the bin because you've read a couple of websites or you've seen a couple of experiments certainly and you've read things that aren't necessarily by the consensus of scientists scientific scepticism has to take an evidence-based approach and I think this is where you could bring in something like Occam's razor is say what of these two different things requires us to have the least amount of assumptions

20) 05:42 [Connor]: stationary and flat versus globular and moving yeah right I'm looking around I feel like I'm standing still I don't feel like anything is moving so the least amount of assumptions in my yeah based on Occam's razor is that I am still

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Gravity is only a theory

21) 06:08 [Matt]: Newton's laws they've been unbelievably successful in describing the world and predicting things and bringing us new technology it's not that they're wrong that just not fully described you think of knowledge as being this big building up of a pyramid of knowledge you never achieve the truth you're just adding layer upon layer as you get nearer and nearer and nearer the truth

22) 06:31 [Connor]: Right well- well Newton was categorically wrong I admire your optimism however I don't feel like those gaps will ever be filled I don't think the pyramid to the truth will ever be finished

23) 06:44 [Matt]: You don't trust the bottom layers and- and therefore anything that you see you're almost having to start from scratch know what you see

24) 06:54 [Connor]: No- no- no-

25) 06:55 [Matt]: -Which is essentially why you almost have a- a- you know a- a- B-C style knowledge of things like flat-Earth because you're going right back to the big beginning and ignore- well it is archaic

26) 07:09 [Connor]: Well, no it's certainly not archaic because up until NASA was founded and we were shown so those so-called proof this this argument is never died we the Flat-Earth has been a contender in this argument

27) 07:20 [Matt]: Nah it's been fringe for two and a half thousand years

28) 07:22 [Connor]: No, it's absolutely not true

29) 07:26 [Matt]: We've both probably sceptics but my form of scepticism is a scientific scepticism

30) 07:37 [Connor]: I would actually disagree and say that my form of scepticism is a scientific scepticism because it follows the scientific method, natural science one of my favourite physicists ever was Richard Fineman and he describes science in an in in a fantastic way he said the steps of Science is that we observe then we guess that's it is it it's a guess. We use nature and experimentation to either verify or nullify that guess. if it disagrees with experiment it's wrong that's it that's what Richard Fineman said—

31) 08:08 [Matt]: No- no Richard Fireman, If Richard Fireman is your hero, he's absolutely my hero I've just finished the "Surely you're joking Mr. Fine". He understands that science is this building up slowly of knowledge to be honest he would be horrified at your take on science particularly hate particularly how you just put it there because it's not quite right he is a fantastic advocate of science and he would I would of course be horrified by Flat-Earth he genuinely would.

YouTube is wrong to censor flat-Earth videos

32) 08:38 [Connor]: anytime I talk about something controversial they will make sure that they've put an article under my video to say what the opposite of what I'm saying is true why would you need to censor this kind of information if it's so clearly wrong

33) 08:58 [Matt]: let's face it if we were talking about a much more offensive idea if we if we look at an example would you be happy with a like not at YouTube downplaying Nazi video

34) 09:11 [Connor]: it's a different well I think we're talking about something completely different when we're talking about you know it's someone promoting Nazism someone promoting hate towards a group of people whereas when we're discussing things I flat it we're discussing ideas

35) 09:28 [Matt]: Actually, you know what I do agree with you. I am gonna shift it a little bit over here because- because- the freedom of speech I think is really important

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The person opposite me is brainwashed

36) 07:26 [Connor]: okay I would say this because I would actually say that everybody is brainwashed to a degree I would say that I am brainwashed to a degree most of the time we exist in some form of an echo chamber whether we want to or not

37) 09:54 [Matt]: What you should be trying to do is be very open minded but not so open minded that your brains fall out I mean that that's kind of it and as a scientist you want people to come along and disprove your theory I think I'm sure not even just challenge your theories but to disprove them I think that that's the most exciting thing in science you may have belonged to a tribe but I don't think you've been brainwashed by that tribe I just think that you've rejected what I would call normal science and you're going for something else that's not actually science

38) 10:26 [Matt]: To you to you yeah no I agree, no that's fine that's fair

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I would go for another drink with you

39) 10:40 [Matt]: Yeah

40) 10:41 [Connor]: Yeah for sure why not it's like a good conversation I think

41) 10:54 [Matt]: Absolutely oh yeah as you should always test your ideas about someone else it's like I see as you as a person and I'm sure we'd have some a great time out and like enjoy each other's company, sure. Cheers.