

Ideologies and their Points of View

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Abstract. It is well known that different arguments appeal to different people. We all process information in ways that are adapted to be consistent with our underlying ideologies. These ideologies can sometimes be framed in terms of particular axes or dimensions, which makes it possible to represent some aspects of an ideology as a region in the kind of vector space that is typical of many generalised quantum models. Such models can then be used to explain and predict, in broad strokes, whether a particular argument or proposal is likely to appeal to an individual with a particular ideology. The choice of suitable arguments to bring about desired actions is traditionally part of the art or science of rhetoric, and today's highly polarised society means that this skill is becoming more important than ever. This paper presents a basic model for understanding how different goals will appeal to people with different ideologies, and thus how different rhetorical positions can be adopted to promote the same desired outcome. As an example, we consider different narratives and hence actions with respect to the environment and climate change, an important but currently highly controversial topic.

1 A Clash of Ideologies

Climate change is a hotly debated and disputed topic in the United States, Australia, and several other countries. For example, at the beginning of April 2015, the President of the USA gave a speech connecting climate change to personal health [7], while on the other hand, the Treasurer of the state of Wisconsin [14] led an initiative to ban employees of the Board of Commissioners of Public Lands from discussing climate change. Taken out of context, such headlines might be quite surprising: for example, if the purpose of the Wisconsin ban is really (as claimed by its supporters) to prevent employees from wasting time on non-work-related activities, one would expect other topics to be explicitly banned in a similar manner, or at least, one would expect a quantitative demonstration that discussing climate change was an especially large drain on the resources of the Board in question.

In context, however, such speeches and decisions make much more sense. Politics generally tends to bundle issues together into platforms, and these are often associated with political parties: that is, issues become partisan. The US provides a particularly extreme example right now. There are a great range of divisive political issues currently under debate, including climate change, gun

control, abortion, foreign relations, even the legality or otherwise of refusing to sell a wedding cake, and whether the actions of an elected official are scandalous or business-as-usual. The surprising thing is that on most or all of these issues, it is expected that knowing whether someone is ‘liberal or conservative’, or ‘Democrat or Republican’ will predict their position with considerable accuracy. Not all issues are polarised in this fashion: for example, some anti-vaccination advocates take their stance because they believe the government should not be able to coerce parents (a belief associated more with some Republicans), whereas some anti-vaccination advocates take their stance because they believe that vaccines are chemicals and chemicals are typically harmful (a belief associated more with some Democrats). However, on many if not most issues, party-political polarisation has become normal.

Of course, two-party political systems are especially prone to such rivalry, so in this case they are particularly obvious. However, identity and ideology guide many other decisions and actions in our daily lives, often in a much more subtle fashion. The purpose of this paper is partly to analyze some of these phenomena, and partly to propose ways forward, or recognize the ways others have already proposed. In broad strokes, successfully persuading someone to believe something to which they are ideologically opposed is usually futile. If a theist or an atheist tries to persuade (respectively) an atheist or theist to believe something different, this usually results not in any change of mind, but in a reinforced belief that theists/atheists are typically intolerant and won’t leave others in peace.

Instead, a more useful alternative is often to propose actions that are entirely consistent with an individual’s current ideology, and also work towards a common objective. In many walks of life this is already obvious. Businesses want to increase revenue, but will not try to convince their customers that giving them money is a good thing: instead, they will try to assure customers that their products are desirable and money-well-spent. There is no ideological disagreement here, the participants simply have different roles and interests. However, as issues become more ideological, people often want to ‘win the argument’, even as (ironically) the chances of this become smaller and smaller. These are precisely the sort of situations where seeking common-ground which is *away from* the theatre of conflict can be most effective.

In the rest of this paper, we will describe some of the current scientific literature around the framing of ideologies and how these affect which new information is accepted and which decisions are taken. Some of this literature already uses spatial models with different conceptual axes. This lends itself naturally to a representation of the “common ground” idea, as new axes are introduced. This method follows the same pattern as the Purposeful Choice model of Widdows [19], but as well as adding objective axes to represent desired states or goals, we also add rhetorical positions to suggest arguments that may be persuasive to different individuals in reaching these goals.

2 Framings in Society

In society, ideologies often arise as a product of group-membership. The benefits of gathering together in groups are well-known, for example, in the *Descent of Man*, Darwin wrote:

All animals living in a body, which defend themselves or attack their enemies in concert, must indeed be in some degree faithful to one another; and those that follow a leader must be in some degree obedient. [4, Ch. 4]

Darwin goes on to describe many of the animal and human behaviors that arise from this principle, including various forms of empathy, conscience, remorse, avoiding shame and seeking praise. Most of Darwin's examples pertain to action rather than belief, but others have applied such rules of group membership to study beliefs as well, for example, Braman et al. state that:

Given how much the ordinary individual depends on peers for support — material and emotional — and how little impact his beliefs have on the physical environment, he would likely be best off if he formed risk perceptions that minimized any danger of estrangement from his community. [12].

This connection between belief and belonging is already ancient. A particularly strong example is found in some western monotheist religions, where belonging to a religious group is identified with 'sharing a faith'. Such shared understandings are particularly powerful, the group is a hard thing to leave.

Psychology has adopted these notions using two key concepts: framings and ideologies. A *frame* is a perspective or context within which a concept is understood. One of the best understood examples of framing stems from the work of Tversky and Kahneman [17], who showed that asking the same question can lead to significantly different responses when it is framed in a positive or negative light. Stronger still, an *ideology* could be thought of a frame that a person acquires as they grow up. Ideologies are generally thought of as fixed, meaning that they do not change very much once they are acquired, through inheritance, culture, and experience. In what follows we shall focus upon one conceptualisation of an ideology, the grid group framework that was proposed by Douglas [5] and Wildavsky [20].

3 A Case in Point: Skepticism about Climate Change

While much of the work in QDT considers idealised or simple cases, it could have very real relevance in our understanding of many modern global problems, a number of which have become highly polarising [12]. Scientific facts are being re-framed according to the preferences of individuals in specific ideological groups, and this can result in vastly different understandings about the risks associated with issues like climate change, vaccinations, drugs, and environmental

damage. These debates have led to a cynicism about whether it is possible to shift attitudes and opinions towards a public consensus about how we should act in the face of increasing societal challenges. Is a shared understanding of the risks associated with these problems even possible?

Some recent studies have started to create hope that a re-framing of these social debates could be achieved, and lead to outcomes that are more consistent with the findings of science about “what needs to be done”. For example, Bain et al. [3] provide an example where the long running debate surrounding climate change belief or disbelief is reframed. They show that when asking a person about their intention to act in a way that might mitigate the climate change problem, framing it in three different ways can have a significant effect. Thus, climate change deniers stated that they intended to act in a manner that was more environmentally friendly when they were asked about this intended action within the context of two alternative frames that centred around forming a society that was: (i) more considerate and caring; or (ii) more economically and technologically developed. These results were demonstrated over two different studies, with N=155 and N=347 climate change skeptics.

Another study by Kahan et al. [10] tested a two-channel communication strategy where scientific information (channel 1) was combined with cultural meanings (channel 2) in a two-nation (United States, n = 1,500; England, n = 1,500) study. While the scientific information was held constant, the cultural meaning of it was manipulated. This led to a finding that the standard cultural polarisation about climate change science could be decreased by exposing subjects to information about geoengineering. Interestingly, this study found that subjects exposed to information about geoengineering were more concerned about climate change risks than a control group.

Finally, Kitto et al. [13] have reported an order effect, where re-framing a question about climate change belief by asking questions about scientific and political belief first appears to decrease the likelihood of people denying that climate change is happening, and increase the likelihood of people claiming that it is happening (admittedly with a small sample of climate change skeptics).

These are highly interesting effects. Much of the literature to date has tended to demonstrate that climate change belief is driven by underlying cognitive ideologies, and is not amenable to change. Thus, Kahan et al. [12] demonstrates the manner in which increasing science literacy actually serves to polarise a nationally representative population from the United States, along what are basically progressive and conservative lines. Of particular note, this study demonstrates that those who deny that human-induced climate change is occurring become even stronger in their disbelief as they become more educated (similarly, believers become stronger in their belief as they become more educated). Such an observation contradicts the ongoing assumption that “if we only had more data people would believe us”. In fact, more data is likely to induce a greater level of disbelief for someone who has an ideology that is hostile to climate change science.

4 A Subspace Model of Ideologies and Points of View

The work discussed above [6, 15, 13] suggests that multiple factors lead to skepticism about climate change. However, when coupled with the work of Bain et al. [3] we see that the understanding an individual expresses about an issue can perhaps be shifted when the point of view from which they are considering the issue is shifted. Here, we attempt to understand these results using the Purposeful Point of View model proposed by Widdows [19].

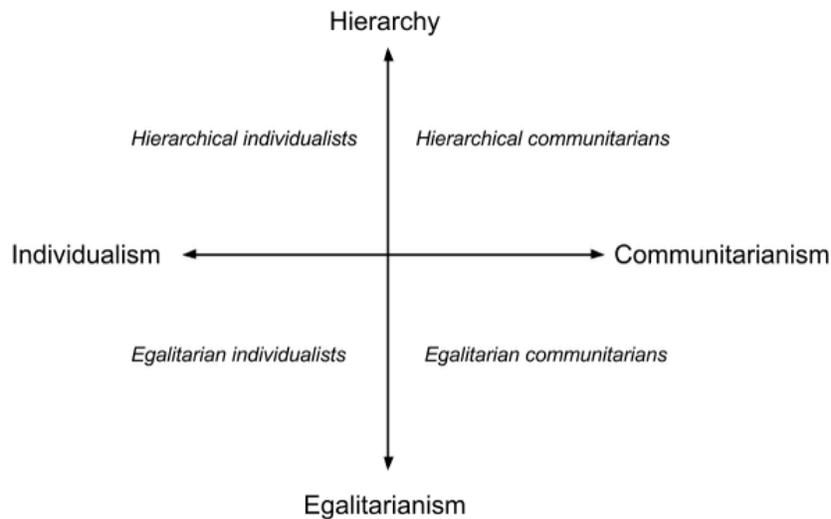


Fig. 1. The grid-group framework proposed by Douglas [5] and Wildavsky [20], and used to explain much ideologically driven behaviour. Hierarchical Individualists are strongly correlated with discounting the risks associated with climate change.

One of the underlying cognitive factors most predictive of climate change skepticism is that provided by the grid group framework [20]. In stark contrast to the common conservative-liberal spectrum, this schema makes use of two dimensions to represent the commitment of a person, broadly to (a) the strength of group boundaries (Individualism \rightarrow Communitarianism), and (b) the number and variety of prescriptions that a society should make (Egalitarianism \rightarrow Hierarchy). In Fig. 1. we see these relationships mapped out on a two dimensional grid. A person falls somewhere on each of the two scales to end up categorised into one of four cultural worldview quadrants, or ideologies: Hierarchy-individualism (HI); Hierarchy-communitarianism (HC); Egalitarian-individualism (EI); and Egalitarian-communitarianism (EC). Surveys are traditionally used to find out where people fit on this two dimensional spectrum. While the grid group framework is most often sketched out as an orthogonal

set of axes, there is no a priori reason why this would be the case in reality. Of particular interest to our current argument, people who are denoted as hierarchical individualists tend to be those most likely to express views corresponding to climate change skepticism [9].

While a large amount of work has been completed in the area of climate change denial, the grid group model is general, and it has been used to explain many different attitudes to risk and social norms (see e.g. [8, 11] for some examples). Climate change denialism is just one of the most intensely studied. What we are interested in for the purposes of our current argument is the idea that *cultural worldviews* (along with many other factors, some of which are probably yet to be discovered) are key drivers when it comes to the acceptance or rejection of a rhetorical position. We also note that all categories on the grid group framework show evidence of being affected by their underlying ideology. For example, one recent paper [11] shows that people from all ideologies are more likely to get basic mathematical problems wrong when they are framed in terms of a competing ideology. None of us are immune to the ideologies that we inherit, acquire, and grow as we develop. Once formed they can have a significant effect upon our capacity for logical reasoning.

5 Scaling Up: A general model of skepticism and rhetoric

For the sake of clarity, we shall consider two subsets of the population; hierarchical individualists and egalitarian communitarians. These two highly polarised ideologies, lie at opposite corners of Figure 1, and are responsible for some of the most interesting behaviours that have so far shown up in the literature in this field. In traditional understandings, these ideologies are considered very static, they do not change, and drive most of the behaviour that we see surrounding attitudes towards climate change, immunisation etc.

We can represent these ideologies using a standard basis in a 2-dimensional Hilbert space: $|HE\rangle, |CI\rangle$. For the sake of simplicity, these axes are considered to be perpendicular to each other. Semantically, this means they can vary independently: in terms of information retrieval, they may even be considered to be irrelevant to one another [18, Ch. 8]. By contrast, the positions HI and EC in this model are genuinely opposite or mutually exclusive. This is an important intuitive difference between quantum and Boolean logics: *north* and *south* are opposites, but the *north-south* and *east-west* directions are orthogonal complements, and so the operation that corresponds algebraically to ‘logical NOT’ is orthogonal projection, not scalar multiplication by -1 . This assumption of orthogonality simplifies the modelling that follows, but we note that it is possible to make use of the formalism of Positive Operator Valued Measures (POVM) to relax it [2], which would lead to a more realistic (if somewhat more complex) model.

In practice, people are highly unlikely to align completely with one or the other ideology, they will lie somewhere in between, and we represent the cognitive state $|\psi\rangle$ of this type of more complex individual using the standard superposi-

tion relationship:

$$|\psi\rangle = a|HI\rangle + b|EC\rangle. \quad (1)$$

How will this cognitive state affect the propensity of a person to act upon climate change? It depends upon the context that they find themselves in, and their resulting point of view.

5.1 Scenario 1: different results of an action

If the discussion is framed around the question “Do you believe in climate change?” then the states are already quite fixed. For adherents of HI, the notion of belief in climate change is already framed as belonging to a different group that is identified with opposition to their way of life and worldview. If they are approached from a belief/disbelief framing then they will almost certainly fall back into a situation where they state that anthropogenic climate change is not occurring. Similarly, the EC is highly likely to express belief in climate change as a way of identifying with their group. This situation is outlined in Figure 2.

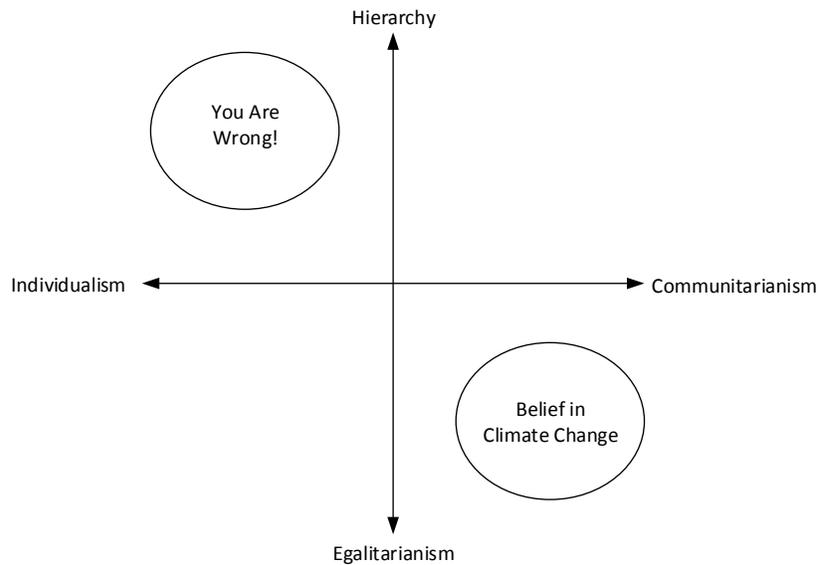


Fig. 2. How the idea of *belief in climate change* might appear to an observer who already identifies with groups that reject this belief.

5.2 Scenario 2: aligning incompatible ideologies using different points of view

Based upon the results discussed above [3, 8], we know that reframing the issue of climate belief (or more importantly here, disbelief), can lead to a higher probability that a person who is skeptical about climate change might nonetheless become more likely to act to mitigate its effects. In the case of Bain et al. the reframing was towards a nicer, more caring, or more technologically advanced society [3], a result which suggests a way forwards. Instead of insisting that skeptics *should* believe in climate change, an alternative is to propose actions that they can agree on, *whether or not* belief in climate change is accepted beforehand.

This scenario can be straightforwardly represented in the Point Of View (POV) model. All that we require is a POV state that is directed in such a manner that people closely aligned with the hierarchical individualist ideology will become more likely to consider climate change worth acting upon (than they did in the belief state). The crucial addition here is that we need *more dimensions* to describe the beliefs and objectives.

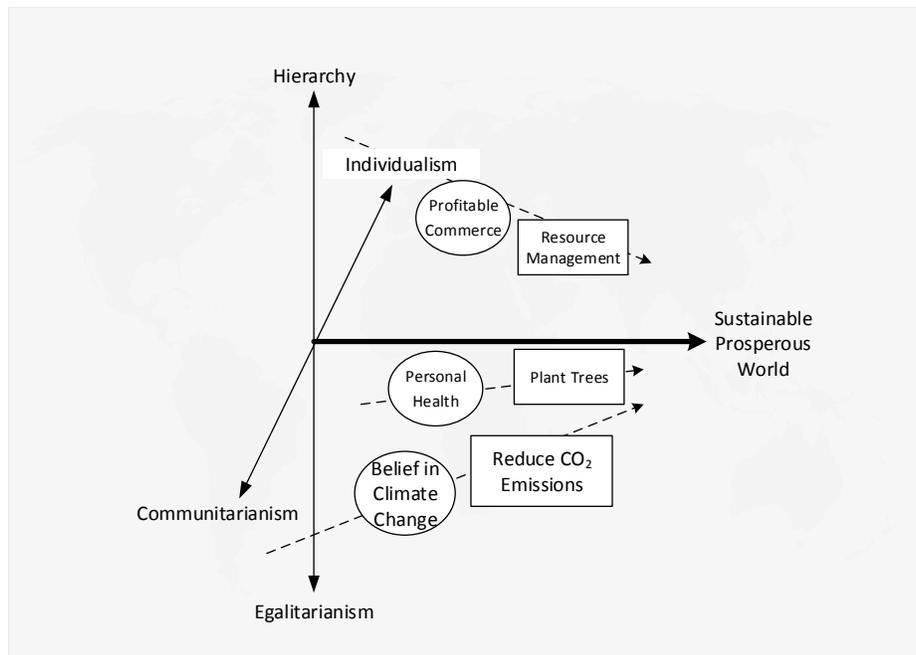


Fig. 3. Objectives and actions that may appeal to individuals with various ideologies

Such a model is depicted in Figure 3. In this model we have introduced a third dimension, which is an objective axis in the sense of [19], labelled Sustainable Prosperous World. Naturally this is an objective that all participants are likely

to consider reasonable, in spite of ideological differences about how it might be achieved. Three different POVs are represented in Figure 3, each projecting out from an initial underlying grid group worldview:

Hierarchical Individualist: This POV is a vector that sees a sustainable prosperous world as arising through appropriate resource management.

Egalitarian Communitarian: This POV moves towards the same outcome but from the perspective of climate change belief.

Egalitarian Individualist: This POV takes personal health and wellness as the driving reason for trying to achieve a sustainable prosperous world.

Note that despite these ideological differences, all parties are converging towards the same endpoint in Figure 3. This is a markedly different outcome to that which we currently witness in the world media as it covers contentious issues (where it is highly polarised). However, there is some fit in this scenario with our lived experience; when two people from opposing ideologies meet and connect before they start to discuss climate change, they often have a far more sensible (i.e. convergent) discussion. Such anecdotes pervade society, and are supported by the data from [3], but until now they have been difficult to consistently model. However, with our new POV based understanding of this situation, we can now talk about what might occur in a rhetorical situation that primed our subjects to consider a sustainable prosperous world (rather than their state of climate change belief). Statements can themselves be represented as a vector in our Hilbert space (perhaps with the addition of extra dimensions as necessary), and we can now start to explore the implications of this using a toy model.

5.3 A toy mathematical model

As suggested by [1, 19], this scenario may be modelled by assuming that people judge similarity from a specific point of view, making it very difficult to judge the similarity of two concepts, say *moon* and *ball* in an absolute sense. On the surface they are completely dissimilar, but if we are asked to judge them from the point of view of shape then they quickly become highly similar in our minds. Such a concept holds immediate relevance for the current discussion. When asked to consider the validity of a statement such as

A: We should reduce CO₂ emissions by burning less fossil fuels.

then we expect that people will judge this statement by considering its similarity to their current point of view. In particular, those with a Hierarchical Individualist (HI) point of view have been shown in studies to reject this statement [9]. This likely rejection is modelled by a large angle between *HI* and *Reduce CO₂ emissions* in Figure 3. We could however consider a different statement, such as

B: We should carefully manage natural resources and avoid excessive pollution.

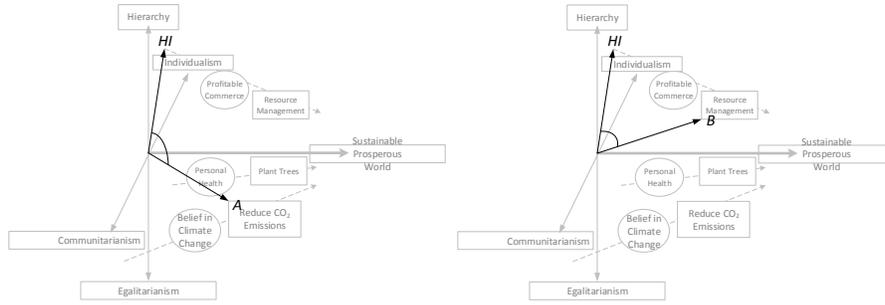


Fig. 4. Smaller angles indicate actions that may appeal more to a particular POV.

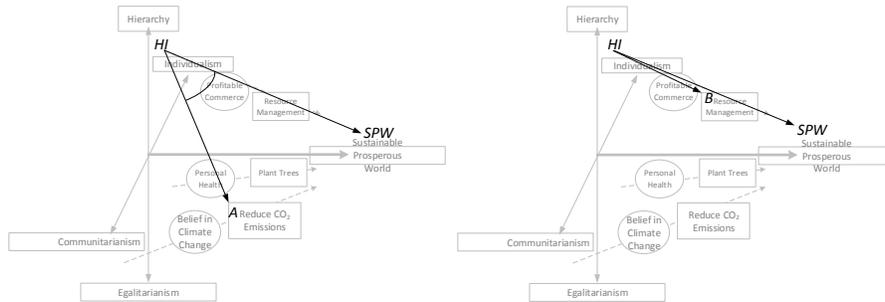


Fig. 5. Smaller angles indicate actions that may appeal more to a particular POV.

A person with a Hierarchical Individualist point of view might be more inclined to agree with this statement. This greater likelihood of agreement is modelled by a much smaller angle between HI and *Resource Management* in Figure 3. These angles are explicitly highlighted in Figure 4, where clearly $\cos(HI, B) > \cos(HI, A)$. (Here we assume the standard procedure in information retrieval of using the cosine of the angle between two vectors as a measure of similarity, which we interpret as making agreement more likely.) The greater appeal of statement B becomes even more apparent when viewed from the point of view of an HI observer whose goals are aligned with the Sustainable Prosperous World objective axis marked SPW in Figure 5. Here the comparison between similarities is given by the inequality $\cos(SPW - HI, SPW - B) > \cos(SPW - HI, SPW - A)$. From the perspective of HI , B and SPW are closely aligned, whereas A is much less relevant.

This toy model thus considers two rhetorical devices: one to introduce the SPW objective axis, and another to introduce the statement B as an alternative to A that is less jarring to the HI point of view. Between these, the angle between HI and the statement proposing a given action has been much reduced, and

thus the similarity or agreement between the purposes and actions has been significantly increased.

It is important to note that the *HI* point of view has *not* been changed in this discussion. Instead of trying to change someone's ideology or point of view, the discussion has introduced objectives and actions that make sense from their pre-existing point of view.

There are immediate mathematical problems for this model. For example, since the *H* and *E* axes are opposite, their cosine similarity would be -1 . This makes an immediate description in terms of (say) quantum probabilities challenging. Also, the angles themselves may be misleading, and only the relative comparisons between angles may make sense. (For example, both the angles in Figure 5 are smaller than the angles in Figure 4.) Recently, a more complete quantum model of similarity has been developed [16], and it will be interesting to see if that model provides any more insight into the way in which such a scenario might play out. We note also that while we have made heavy use of the grid-group framework in deriving this model, there is no *a priori* reason why this must be so. Other well-accepted descriptions of ideologies could well provide suitable ground-spaces for such a model. Nonetheless, the formalism presented here appears to capture some of the effects discussed above.

6 Conclusions

Ideologies and worldviews are a key factor that drive the acceptance or rejection of many issues that are well understood by science (e.g. the acceptance of human induced climate change). While ideologies appear to be immutable and unchanging, some recent results give us reason to believe that reframing highly polarized debates might be possible, but this is a different phenomenon to mathematically model. In this paper we have proposed a Point of View model, which allows us to show how a statement will be interpreted according to a person's underlying worldview, according to a grid group framework. The model shows that there is a natural way in which to model the difference that a subject perceives to lie between some statement and their underlying worldview, and we have linked this to the possible acceptance or rejection of that statement. If one can be generated that aligns key social questions with the ideology of the subject, then it may be possible to generate a consensual approach towards solving key socio-environmental and technological problems that society is currently facing.

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