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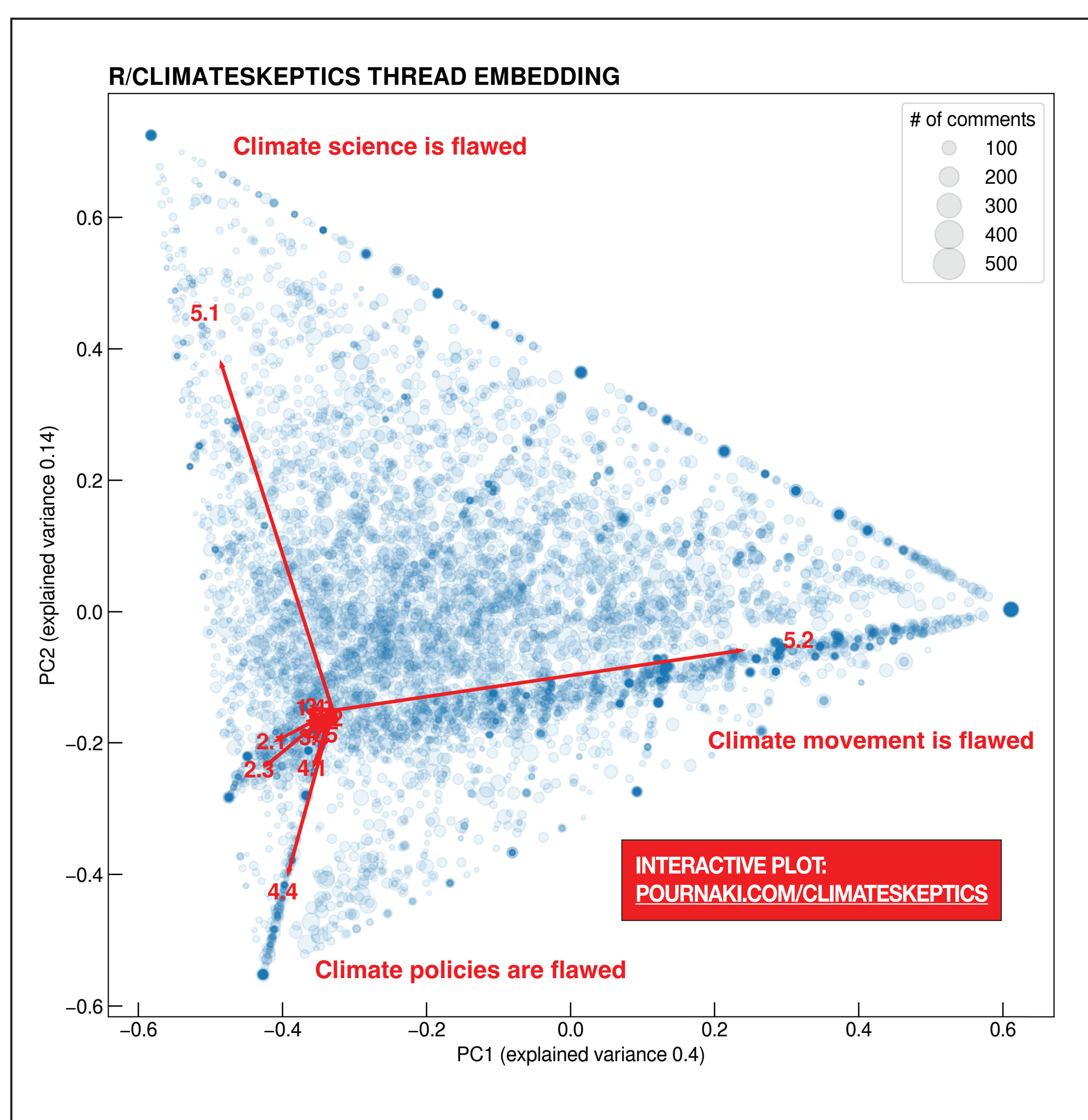
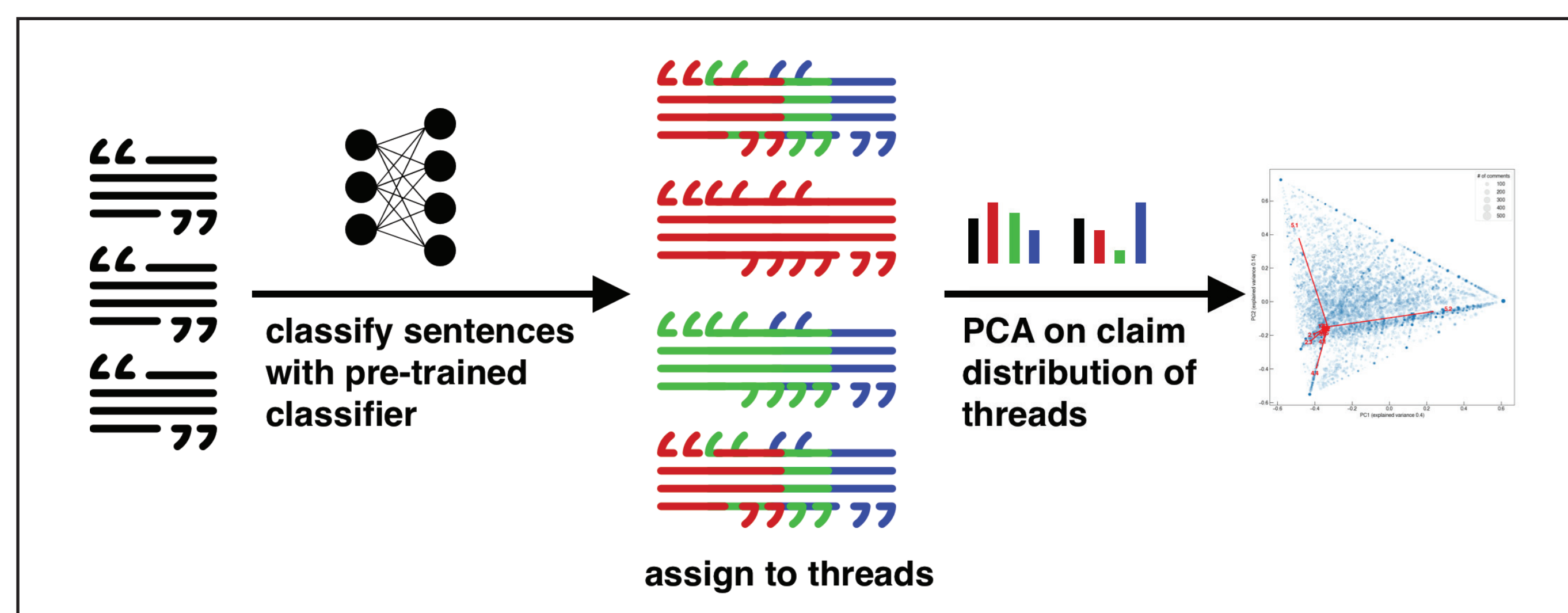
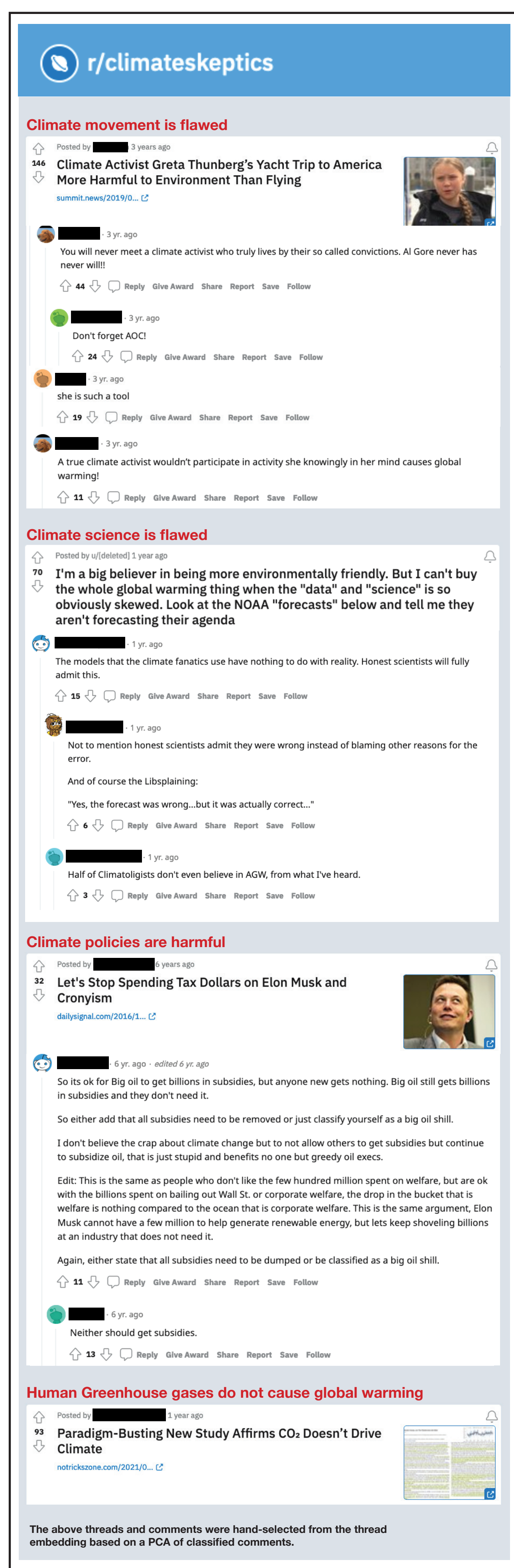


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# Analyzing climate change contrarian argumentation on Reddit

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Our contribution sheds light on the argumentation patterns observed in discussions of climate contrarians on social media, where the possible outcomes of coordinated contrarian strategies can become visible in everyday discussions. Applying a transformer-based text classifier, we show that the most frequently encountered claims against climate change are 1) attacks against the climate movement, 2) attacks against climate science and 3) questioning the effect of human activity on global warming. Furthermore, we show using a PCA that these claims constitute the main argumentative axes that divide threads in r/climateskeptics, next to discussions focusing on the harm caused by climate-change mitigating policies. Our method of thread embedding allows us to explore and close-read the relevant parts of our dataset to investigate fundamental questions of social influence and opinion exchange in controversial debates.

We base our analysis of the textual content of comments on previous work by Coan (2021). The authors have trained an openly accessible neural network that classifies texts by climate contrarian related thinktanks (CTTs) and blogs according to a taxonomy of contrarian claims. Examples of such claims are "There's no evidence for greenhouse effect" or "Climate-related science is unreliable". Building on their identification of claims on the level of institutions, we extend the analysis to actual discussions on social media in order to shed light on climate contrarianism and skepticism the level of everyday online discussions.

We apply the classifier to 448,408 comments from r/climateskeptics ranging from 2011 to 2022. From the 11% of all sentences that contained a classifiable contrarian claim, 31% claim that the climate movement is unreliable, 19% claim that climate science is unreliable and 12% question the effect of human greenhouse gases on global warming. These

claims play a significantly larger role than claims about the non-existence of climate change or doubts of climate-related policies. In order to look how these claims correlate in and cluster threads, we compute a PCA on the thread-claim matrix, normalized row-wise to remove the effect of number of comments per thread, keeping all threads containing at least 20 comments.

The resulting embedding shows that threads are distributed along four main claim axes. This representation, combined with an analysis of the subreddit's reply interactions, paves the way for a deeper analysis of the relations between interaction patterns and the alignment of argumentation in the discursive sphere of climate change deniers.

## Reference

Coan, Travis G et al. (2021). "Computer-assisted classification of contrarian claims about climate change". In: Scientific reports 11.1, pp. 1–12.