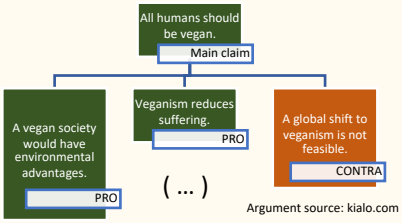
AI for Opening Up Minds

Image source: GRA D115, William Augustus Brewer Bookplate Collection, Special Collections, University of Delaware Library, Museums and Press, Newark, Delaware.

EP/T0224666/1, EP/T023414/1, and EP/T023554/1 funded by UKRI Engineering and Physical Sciences Research Council

Project aim: Develop the theory and technology for an Argumentation Chatbot, henceforth **ArguBot**, that can (1) engage people in ***coherent and engaging dialogue*** on polarizing topics such as veganism and (2) increase their ***open-mindedness*** about the topic they discussed with the ArguBot.

Approach: The development of an ArguBot that makes use of machine learning from natural and artificially-generated dialogues in combination with publicly available argument databases.



Argument source: kialo.com

Dialogue data, collected via:
- Wizard of Oz (WoZ) studies
- analysis and enrichment of the AIFdb BBC Radio 4 Moral Maze corpus.

AIFdb.org

ArguBot: Today let's discuss whether all humans should be vegan.
User: I disagree – it's just not practical on a global level.
ArguBot: Veganism is necessarily flexible and, therefore, feasible for most people and circumstances. The Vegan Society's definition of veganism is less rigid than people often assume, requiring only that Vegans remove animal products as far as …

Selected findings so far

1) We semi-automatically extracted >100 dialogue argumentation templates from natural dialogue (Moral Maze) and can generate new dialogues with different content/topics from an argument database. **Coherence of topic-swapped dialogues is higher than the original natural dialogue** (as judged by human evaluators).
2) In order to develop an ArguBot, we collected data from conversations with humans playing its role (*the Wizard-of-Oz methodology*). We then trained an ArguBot using this data combined with a knowledge base of arguments. We evaluated the Argubot by recruiting human participants to chat with it. The **participants rated the Argubot as more coherent, engaging and knowledgeable** than a chatbot trained on dialogues that use Wikipedia as a knowledge source for the topic. Furthermore, the evaluation demonstrated **promising ability of Argubots to positively change participants' opinions about the reasons their opponents have** (*a measure of open-mindedness*).
3) Replicating findings from a chatbot used by a French lab (Altay et al., 2021), we have found that **dialogues can be used to increase positive attitudes towards Covid-19 vaccines** in a vaccine-hesitant UK population (Brand & Stafford, 2022). This effect occurred regardless of whether the participants chose the questions or not, suggesting that it could be something about chatbots specifically (other than the ability to choose your own questions) that is effective in opening up minds.

Measuring open-mindedness

We are developing a behavioural measure of open-mindedness, a person's ability to literally take the perspective of those with opposing views to theirs, by providing reasons for their side of the argument, that their opponents agree with. This will be an operationalisation of the '**ideological Turing test**' idea, to see if people can 'pass' as being on the opposite side of the debate to the one which they currently believe.

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