Natural-language discussion

P: Cars should be banned from city centers, because of environmental benefits. Cars emit significant amounts of greenhouse gases and air pollutants: According to the World Resources Institute (WRI), about 14% of annual greenhouse gas emissions globally come from the transportation sector, and 72% of those emissions come from road vehicles. By eliminating cars, cities could see an immediate improvement in air quality. A good air quality is important.

O: I do not think that cars should be banned from city centers, as that would be bad for the economy. Small businesses, particularly retail and food service, could experience reduced footfall as people cannot reach the shop by car, leading to a decline in sales and even closures. We do not want small businesses to close in city centers.

P: Interesting, I would actually expect that banning cars would be good for the economy. In a report written by Cambridge Econometrics, supported by Element Energy, on behalf of Greenpeace UK – a 2030 ban on polluting cars could create more than 30,000 new jobs and provide a £4.2bn boost to the economy.

O: Given that the report is written on behalf of Greenpeace UK, I do not believe that this expected economic boost is realistic.

P: Okay, then let me get back to your argument. You say that small businesses could experience reduced footfall caused by banning cars. However, a car takes way more space than a pedestrian. Therefore there will be more space for pedestrians if we ban cars. So I think that small business can expect more customers.

Discussion inspired by: https://discerningcyclist.com/banning-cars/

Modelling in ASPIC+ argumentation theory

Axioms
WRI_report
GP_report
people_less_space
ban_cars_no_reach_by_car

Ordinary premises
air=important
GP_not_objective
people_walk_to_shops

Strict rules
cars_emissions-> ban_cars_gives_better_air

Defeasible rules
d1: ban_cars_gives_better_air, air=important => should_ban_cars
d2: WRI_report => cars_emissions
d3: ban_bad_for_economy => -should_ban_cars
d4: ban_cars_no_visit_shops => ban_bad_for_economy
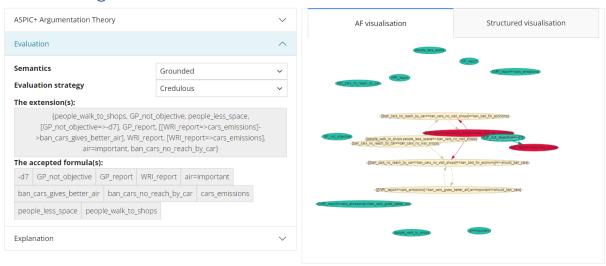d5: ban_cars_no_reach_by_car => ban_cars_no_visit_shops
d6: economy_boost => -ban_bad_for_economy

d7: GP_report => economy_boost
d8: GP_not_objective => -d7
d9: people_less_space, people_walk_to_shops => -ban_cars_no_visit_shops

Preferences (optional)

Either ignore this, or play around with, for example, d5 > d9 or d1 < d3. See how the grounded extension changes after you change the preferences.

Abstract argumentation framework

Structured dialogue

In this example, we assume that there are no preferences.

1. P: claim(should_ban_cars) -
2. O: why(should_ban_cars) 1
3. P: argue([[WRI_report => cars_emissions] -> ban_cars_gives_better_air], air=important => should_ban_cars) 2
4. O: argue([ban_cars_no_visit_shops => ban_bad_for_economy] => -should_ban_cars) 3
5. P: argue(people_less_space, people_walk_to_shops => -ban_cars_no_visit_shops) 4
6. O: argue(ban_cars_no_reach_by_car => ban_cars_no_visit_shops) 5
7. P: argue([GP_report => economy_boost] => -ban_bad_for_economy) 4
8. O: argue(GP_not_objective => -d7) 7

At this point, P cannot move anymore, so O wins. This implies that no argument for should_ban_cars is in the grounded extension.