Semantic Graphs Reveal the Narrative Framing in News

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News should convey objective information on current events. However, the perception of news not only depends on their neutrality, but also on their framing. According to Entman (1993), the framing of a communicating text depends on the selection and saliency of certain aspects. One such aspect is the narrative information embedded within texts. Such narrative framing can exemplarily be observed in the climate change debate, where the framing of news, although neutral in tone, is noticeably distinct between sources, and specific narratives (e.g., naturally-caused vs. human-made) are propagated. Therefore, our research investigates how and which narratives can be extracted from news articles. We leverage a semantic representation for text called abstract meaning representation (AMR) to encode textual content as graphs and mine those graphs for their narrative information (refer to Figure 1 for an example). By identifying common elements and sub-graphs, we can reveal the narrative framing of a collection of articles. For instance, in previous research, we successfully identified noteworthy distinctions in the reporting between mainstream and conspiracy media on health-related news (e.g., COVID-19). In sum, the mainstream narratives are more science-oriented (e.g., have scientists as actors), while conspiracy narratives are belief-oriented (e.g., are embedded in a religious context). Currently, we broaden our application domain to climate change and strive for a longitudinal study of frame adoption.

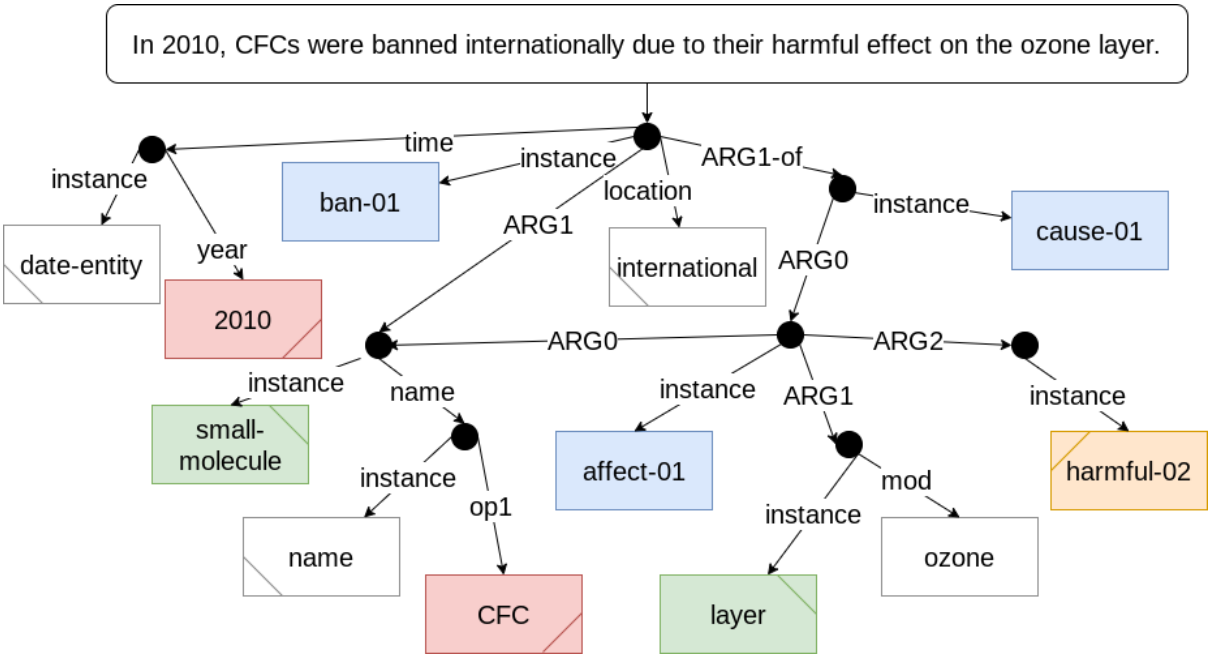

Figure 1: An example sentence regarding climate change encoded as a semantic graph, i.e., AMR, reveals the complex narrative information embedded within. The narrative is about a *small molecule* that is both the target (i.e., *ARG1* relation) of the *ban* frame and the actor (i.e., *ARG0* relation) the *affect* frame, which is the *cause* of the former. Hence, implicit semantic information is explicitly represented, which is important for nuanced text analyses, such as framing. A collection of such representations is then mined to reveal selected elements and the salient narratives, i.e., substructures.

Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. Journal of communication, 43(4), 51-58.