# ABDA-NL: A Natural-Language Scenario Explorer for Argument-Based Reasoning

Shawn BOWERS [a], Martin CAMINADA [b], Haoyang LIU [c], Bertram LUDÄSCHER [c]
[a] *Gonzaga University, Washington, USA*
[b] *Cardiff University, Wales, UK*
[c] *University of Illinois Urbana-Champaign, USA*

Informal argumentation typically involves discussion in which parties exchange claims, raise objections, and defend their positions [2]. In contrast, formal argumentation often focuses on computing which claims are accepted from a graph of arguments and their attacks, treating acceptance as a static property rather than the outcome of dialog [3]. The ABDA (Argument-Based Discussion) system [4] allows users to play a grounded discussion game over ASPIC- knowledge bases [5], a formalism with strict and defeasible rules, strong negation, defeasible assumptions, and rule preferences. However, ABDA still operates at the formal level, where propositions appear as ASPIC- symbols, discussion games are played via formal move primitives, and explanations of moves and outcomes are not given. We present ABDA-NL (`github.com/idaks/ABDA-NL`), a web-based tool that extends ABDA with a natural-language user interface: users inspect, explore, and extend scenarios without needing to engage in ASPIC- notation, while ABDA's reasoning over the argumentation framework stays authoritative, so that conclusions are formally grounded, inspectable, and contestable. Fig. 1 illustrates the tool on a well-known legal case (*Popov v. Hayashi*) formally modeled using strict and defeasible rules in [1].

A *scenario* in ABDA-NL consists of an ASPIC- knowledge base, a glossary that maps propositions to plain text, and a corpus of supporting documents. Scenarios are stored

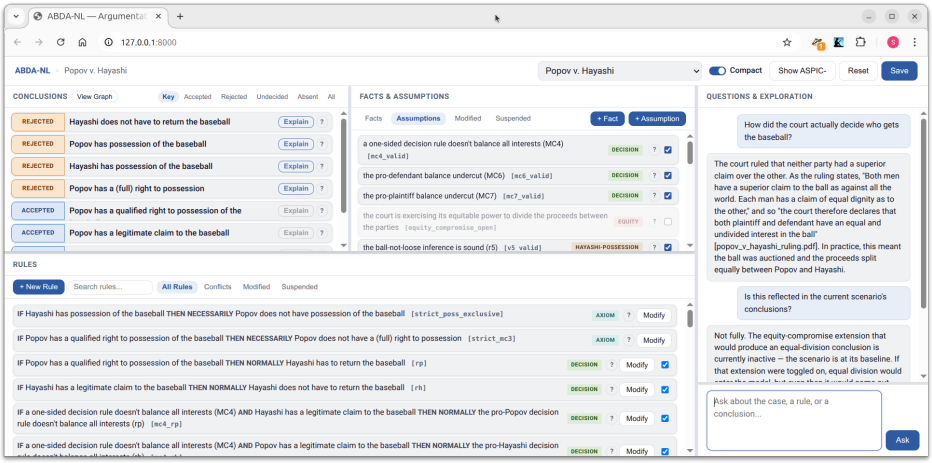


**Figure 1.** ABDA-NL on *Popov v. Hayashi* [1]: the ASPIC- scenario explorer with corpus-grounded chat.

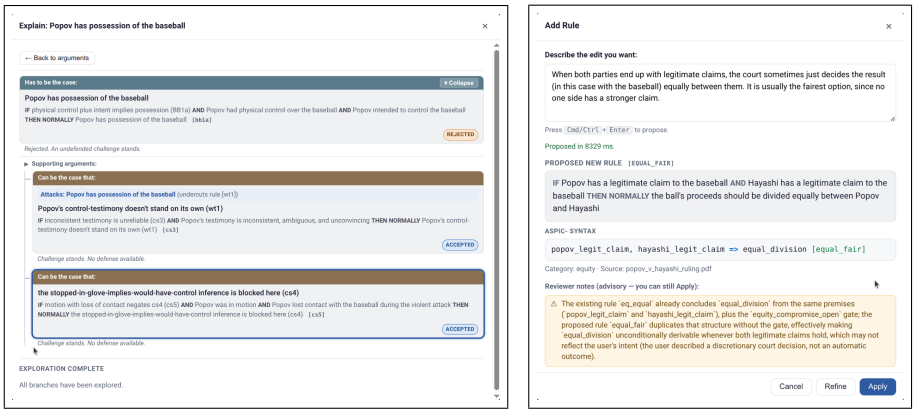


**Figure 2.** Interactive explanation via the discussion game (left) and natural-language rule authoring (right).

as YAML files together with their text-based corpus. ABDA constructs an argumentation framework from each scenario's ASPIC- rules, labeling each conclusion as *accepted*, *rejected*, or *undecided*. The interface (Fig. 1) has four panels, the first three rendered in natural language via the glossary: a conclusions dashboard (upper-left); facts and assumptions (upper-center); rules (bottom); and a chat panel (right). A typical session begins by loading a scenario. The user inspects the labels in the conclusions dashboard and asks questions about the case through the chat panel, which answers from verbatim corpus snippets via an LLM. Clicking the "?" icon next to any fact, rule, or assumption starts a focused chat about that item. The central interaction is *Explain*: clicking it on a conclusion opens a natural-language trace of the grounded discussion game (Fig. 2, left). The trace is interactive: the user can expand supporting facts, rules, and assumptions on demand, and the trace highlights where preferences resolve conflicts. To explore *what-if* alternatives, users can suspend rules or assumptions via a toggle and modify rule preferences through a *Conflicts* view. Users can also author new rules, facts, and assumptions in natural language. The LLM proposes candidate ASPIC- statements from the user's text. A deterministic check rejects malformed proposals, and a semantic check flags advisory concerns such as redundancy with existing rules (Fig. 2, right). After any change to a scenario, ABDA-NL uses ABDA to recompute the grounded labels of conclusions. The LLM acts solely as a translator: all argumentation-based reasoning is performed by ABDA. Additional ABDA-NL features include a graph view of the argumentation framework, the ability to inspect the raw ASPIC- rules, and support for saving scenarios. ABDA-NL contains multiple example scenarios including the *Popov v. Hayashi* legal case in Fig. 1.

**Acknowledgments.** Supported in part by a Cardiff–DPI seed grant (XAI-CA project).

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