
Toward Modeling Analogical, Teleological, and Hypothetical Legal Reasoning in a Case Microworld

Kevin D. Ashley

Professor of Law and Intelligent Systems

Senior Scientist, Learning Research and Development Center

University of Pittsburgh

ashley@pitt.edu

The Goal

- Given a case microworld, model Socratic classroom legal arguments:
 - Students: argue how a problem should be decided by drawing analogies to cases in Casebook assignment
 - Instructors: probe students' arguments
- Arguments to include:
 - Propose test or rule for deciding a case
 - Draw analogies to past cases (i.e., precedents)
 - Justify analogies in terms of underlying legal domain's principles/policies
 - Challenge proposed tests by posing hypotheticals
 - Respond to hypotheticals by modifying the proposed test, etc.
- Case microworld of legal discourse ≡ ensemble of real legal cases, hypothetical examples, concepts, factors, principles and policies.
 - Most of the cases deal with the same or related legal issues but may have superficially different facts
 - Some red herring cases: superficially similar facts but different underlying issues
- Domain: Property Law course discussion of *Popov v. Hayashi*, *Pierson v. Post*, etc.
 - Deals with an issue of common (i.e., judge-made as opposed to statutory) law:
 - Under what circumstances may “hunters” have property rights in their quarry?
 - Focus of discussion in AI&Law (Berman & Hafner, 1993; Gordon & Walton, 2006; Atkinson & Bench-Capon, 2007).
- Proposed test ≡
 - rule that advocates propose for deciding a case and defend as consistent with past cases and underlying principles and policies.
 - ako hypothesis about how to decide the case.
- Hypothetical ≡
 - imagined situation that involves a hypothesis (i.e., a proposed test) and is designed to explore its meaning or challenge it as too broad or too narrow.

Introducing a short argument example

- Facts of problem:
 - S.F. Giants' Barry Bonds sets new record when he hit his 73rd home run.
 - In the stands, **Popov**, a fan, gloved the ball for an instant and then was tackled by others. Bystander **Hayashi** ended up with the ball.
 - Plaintiff (P) Popov sues Defendant (D) Hayashi

- What the argument is about:
 - What legal rule should govern if P has property rights in the baseball in light of facts, past cases and underlying principles?

- Point of example: How to model case-based legal arguments about:
 - What the rule for decision should be, where
 - Hypothetical cases used to test rules, and
 - Analogies drawn across superficially different cases that raise similar underlying issues?
 - Court cites two 19th Century property cases:
 - *Pierson* and *Young* involved foxhunting and fishing.
 - P pursued the quarry only to have D intercept it.

Example Argument

Argument moves	Transcript
	<p>Teacher: In the <i>Popov</i> case (Cases/Hypos), what is the appropriate legal test (if any) for deciding if the P has such a property right in the baseball?</p>
<ul style="list-style-type: none"> ■ Propose test for D ■ Justify test ito precedents & principles 	<p>Student: “If P did not gain possession of the baseball (e.g., by catching and securing it), then he cannot recover” (Proposed Tests, Possession). In <i>Pierson v. Post</i>, a hunter had no property claim to a fox he had not killed or mortally wounded before another hunter intercepted it.</p> <p>Applying this test would Promote Certainty by discouraging litigants who “almost caught” the ball or “should have had it”, and Avoid Property Rights in Public Property (Principles/Policies).</p>
<ul style="list-style-type: none"> ■ Pose hypo / challenge test as too broad ■ Justify challenge ito principles 	<p>Teacher: Suppose while a commercial fisherman closed his nets on a school of fish, another swooped in with a fast boat and scooped them up with a smaller net. Shouldn’t the commercial fisherman recover for the sake of Protecting his Livelihood (Principles/Policies)?</p>
<ul style="list-style-type: none"> ■ Cite counterexample to principle ■ Distinguish hypo ito factors 	<p>Student: The plaintiff commercial fisherman in the <i>Young</i> case didn’t recover. In any event, the baseball fan does not make his Livelihood from grabbing home run balls (Factors).</p>
<ul style="list-style-type: none"> ■ Distinguish counterexample ito factors 	<p>Teacher: But Barry Bonds’ last home run ball is worth fifty such Livelihoods (Factors)</p>

What example argument illustrates

Features of interpretive legal arguments not yet robustly modeled:

1. Arguers draw abstract cross-case analogies.
2. Propose rules for deciding cases at various levels of abstraction.
3. Evaluate those rules from a teleological viewpoint.

1. Drawing abstract cross-case analogies and

2. Proposing rules for deciding cases

- Manipulating abstract descriptions of case facts is key technique for:
 - analogizing and distinguishing cases and
 - reconciling decision of case with precedents in a rule for deciding the case.

- For judge in *Popov*, *Pierson* and *Young* cases as analogous because they
 - involved a similar issue of plaintiff's possession and
 - similar circumstances: defendant took "quarry" (a baseball) as plaintiff closed in.
 - The analogy is implicit in the rule that the student advocate proposed.

- To propose rules for deciding case in harmony with precedents,
 - system needs to "understand" analogies expressed more abstractly than fact descriptions or factors.
 - In this case microworld, system needs to relate:
 - intercepting a fox plaintiff chased with pocketing a baseball plaintiff partially caught.
 - catching fish in open water // chasing foxes on open land // catching home run balls in the stands of a private ball park into which one has been invited.

3. Evaluating rules teleologically

- Need to evaluate how well rule and its results square with underlying principles and policies.
 - Evaluation important for judges, advocates, instructor, students

- One evaluation method: pose hypothetical fact situations
 - designed to expose a rule's over- or under breadth.
 - E.g., commercial fishing hypo suggests defendant's rule is too broad
 - Applying such a rule could deprive a fisherman of his livelihood.

- Critiquing prior decisions one tool for reconciling proposed decision with past cases in light of underlying principles.
 - Precedents may be wrongly decided.
 - In *Young*, on which hypo based, court prepared to accept that cost.
 - Commercial fishing hypo suggests possibility that *Young* incorrect.

Reasoning *about* decision rules

- Rules subjected to interpretation, challenge, and change in process of case comparison.
 - Advocate proposes test that explains a past result, and leads to desired result in current facts, as a matter of deductive reasoning.
 - Proposed test is subjected, however, to process of interpretation.
 - Skeptics pose hypos to explore meaning of rule's terms and assess its fit with past decisions and principles.
 - Test is applied deductively to facts of hypotheticals and precedents, but
 - Results must be assessed in light of underlying domain principles and policies.
- What is a past case?
 - an authoritative source of a rule vs. a more-or-less authoritative result:
 - given set of facts from which advocates and judges may extract a range of rules in light of new problem's facts, other decisions, and underlying principles.
- Induced rules should embody legal theory of how to decide case that
 - fits precedents and values but also
 - reflects the meanings of legal predicates and principles.

Conclusion

- The proposal for case modeling:
 - Use case microworlds of legal discourse to design a model of legal cases that captures reasoning *about* decision rules and
 - accommodates teleological, analogical, and hypothetical reasoning.
- Introduce challenges incrementally
 - Start with proposed tests as givens versus generating tests on the fly
 - Make examples gradually more complex to simulate more advanced behavior
 - Add red herring cases: similar facts / different issues
 - Tackle small number of more or less tangentially related microworlds.
- Since microworld has a number of cases represented at multiple levels of generality...
 - it is likely to discover arguments that human reasoners miss.
- See Ashley, ICAIL-09 conference paper for discussion of how legal ontologies should support modeling this kind of reasoning.