Hypothesis Formation and Testing in Legal Argument

Kevin D. Ashley
Professor of Law and Intelligent Systems
Senior Scientist, Learning Research and Development Center
University of Pittsburgh

With thanks to:
Vincent Aleven, CMU, co-PI,
Niels Pinkwart, CMU, and
Collin Lynch, ISP

Research sponsored by NSF Award IIS-0412830
Outline

- What is a legal hypothesis? What are hypotheticals?
- Examples from US Supreme Court oral arguments
- Role of hypotheticals in legal reasoning
- Why is this kind of reasoning important? Why is it hard to teach?
- Sketch of three research goals and approaches.
Definitions

**Hypothesis** $\equiv$ tentative assumption made in order to draw out and test its normative, logical or empirical consequences.

**Hypothetical** $\equiv$ an imagined situation that involves a hypothesis; used to help draw out those consequences.

- In Supreme Court oral arguments, hypotheticals perform an important function.
- The *hypotheses* are an advocate’s proposed test or standard for deciding a case.
- Justices pose *hypotheticals* to probe advocates’ tests: their meaning, consistency, legal and policy implications.
Example

_California v. Carney, 105 S. Ct. 2066 (1985)_

**Issue:** Legality, under 4<sup>th</sup> Amendment, US Constitution, of warrantless search of a motor home.

**Facts:** Police suspected def. Carney of trading drugs for sex in motor home located in downtown San Diego parking lot. After questioning a boy leaving Carney’s motor home, agents entered without a warrant or consent, observed drugs, and arrested Carney.

**Conflicting principles:**

a. Prevent loss of evidence in emergency situation.

b. Constitutional right of autonomy and privacy in ones home.

c. Bright line rule that police can apply.

**Proposed tests:**

State of CA (Mr. Hanoian): Like automobile exception. If place-to-search has wheels and is self-propelling then no warrant is required.

Carney (Mr. Homann): If place to be searched has indicia of home then warrant is required.
<table>
<thead>
<tr>
<th>Argument excerpt – Carney -1-</th>
<th>Self-explanation prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>48. MR. HANOIAN:</strong> I think I would, Your Honor, yes. That would provide a bright line. But I am looking a little bit more beyond just wheels. We are looking for self-locomotion, self-propelling.</td>
<td>What is Mr. Hanoian's proposed test?</td>
</tr>
<tr>
<td><strong>61. QUESTION:</strong> Well, what if the vehicle is in one of these mobile home parks and hooked up to water and electricity but still has its wheels on?</td>
<td>How does this hypothetical relate to Mr. Hanoian's test?</td>
</tr>
<tr>
<td><strong>62. MR. HANOIAN:</strong> If it still has its wheels and it still has its engine, it is capable of movement and it is capable of movement very quickly.</td>
<td>Do you think Mr. Hanoian's response is effective?</td>
</tr>
<tr>
<td><strong>63. QUESTION:</strong> Even though the people are living in it as a home and are paying rent for the trailer space, and so forth?</td>
<td>Why are the Justices adding these features to the hypothetical?</td>
</tr>
<tr>
<td><strong>66a. MR. HANOIAN:</strong> Well, I am not suggesting that there is no expectation of privacy in those circumstances, Your Honor.</td>
<td>By conceding expectations of privacy in the hypotheticals, does Mr. Hanoian reduce his chances of winning the case at hand?</td>
</tr>
<tr>
<td><strong>66b. MR. HANOIAN:</strong> What I am suggesting is that society -- this Court has determined that society is not willing to recognize that expectation of privacy as justifying a different rule from another motor vehicle; and that, because of its mobility, the capacity for it to move --</td>
<td>Does Mr. Hanoian make an effective argument in 66a/66b?</td>
</tr>
</tbody>
</table>
Propose test $t$ such that applying $t$ to cfs yields outcome $x$; give reason(s).

$$t: \text{If place-to-search has wheels and is self-propelling } \rightarrow \text{ no warrant.}$$

Motorhome in cfs has wheels and is self-propelling.

Pa: Prevent loss of evidence.

2

Attack $t$: pose disanalogous hypo $h$ such that applying $t$ to $h$ yields $x$, and give reasons why that should not be so for a suitable test.

$$h: \text{Well, what if the vehicle is in one of these mobile home parks and hooked up to water and electricity but still has its wheels on?...But what about a self-propelled vehicle that's plugged into the plumbing and the electricity?}$$

Pb: Privacy; Pb $>$ Pa

3

Abandon test $t$

Modify test $t$ to $t'$ such that applying $t'$ to cfs yields $x$ and applying $t'$ to $h$ does not yield $x$.

Save $t$: attack “should not be so” by analogizing (cfs, $h$)

Analogize cfs, $h$: “MR. HANOIAN: What I am suggesting is that society -- this Court has determined that society is not willing to recognize that expectation of privacy as justifying a different rule from another motor vehicle; and that, because of its mobility, the capacity for it to move...”

And you would apply it, even if it had been parked there three months or so, because your officer wouldn't really know how long it had been parked? Yes.

Pc: Bright-line Rule; Pa, Pc $>$ Pb.
<table>
<thead>
<tr>
<th>Argument excerpt – Carney -2-</th>
<th>Model explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>182. MR. HOMANN: The motor home was parked; the drapes were closed. It contained upholstered furniture. It contained a table, kitchen features, a refrigerator. It contained all of the indicia of a home.</td>
<td>Proposed test 1: If place to be searched has the indicia of a home then a warrant is required.</td>
</tr>
<tr>
<td>231. QUESTION: We're getting closer to your case. Suppose somebody drives a great big stretch Cadillac down and puts it in a parking lot, and pulls all the curtains around it, including the one over the windshield and around all the rest of them. Would that be a home?</td>
<td>Hypo focuses on when a vehicle exhibits sufficient indicia of being a home.</td>
</tr>
<tr>
<td>236. MR. HOMANN: Does it have a bed? 237. Q: Yes, yes. 238. MR. HOMANN: If it is reasonably objectively observable that it has the attributes of a home in it, then I think we have to give it those -- I think we have to give it the same protections that we ordinarily give dwelling compartments.</td>
<td>Proposed test 2: If vehicle has the &quot;reasonably objectively observable attributes of a home&quot; then it requires a warrant to search.</td>
</tr>
<tr>
<td>275. QUESTION: Mr. Homann, what about a van? …In order to help you out, the van is running down the road at 55 miles per hour.</td>
<td>This flips to Mr. Hanoian’s test. Mr. Homann’s concession suggests a modification of his test:</td>
</tr>
<tr>
<td>276. MR. HOMANN: That helps me tremendously, because the rule that I've proposed at least is not going to preclude the police from entering the van or the motor home, for that matter, when it is speeding down the highway in most circumstances.</td>
<td>Proposed Test 3: If a vehicle has the &quot;reasonably objectively observable attributes of a home&quot; then it requires a warrant to search unless it is imminently capable of motion.</td>
</tr>
</tbody>
</table>
Series of attacks and modifying rule

1. Propose test \( t \) such that applying \( t \) to cfs yields outcome \( x \); give reason(s).
   - \( t1: \) If place to be searched has indicia of home then warrant is required. \( \text{Pb: privacy} \)

2. Attack \( t \): pose disanalogous hypo \( h \) such that applying \( t \) to \( h \) yields \( x \), and give reasons why that should not be so for a suitable test.
   - \( h1: \) Suppose somebody drives a great big stretch Cadillac down and puts it in a parking lot, and pulls all the curtains around it, including the one over the windshield and around all the rest of them. \( \text{Pc: bright-line rule; Pc} > \text{Pb} \)
   - \( \text{Modify test } t \text{ to } t' \text{ such that applying } t' \text{ to cfs yields } x \text{ and applying } t' \text{ to } h \text{ does not yield } x. \)

3. \( t2: \) If vehicle has the "reasonably objectively observable attributes of a home" then it requires a warrant to search.
   - \( h2: \) What about a van? …In order to help you out, the van is running down the road at 55 miles per hour. \( \text{Pa: Prevent evidence-loss; Pa} > \text{Pb} \)
   - \( \text{Modify test } t \text{ to } t' \text{ such that applying } t' \text{ to cfs yields } x \text{ and applying } t' \text{ to } h \text{ does not yield } x. \)
Role of hypotheticals in legal reasoning

1. “construction of clear cases to which a code section, statute or doctrine must apply if it is to have any rational application;”
2. “the construction of reductio ad absurdum arguments demonstrating the unsoundness of proposed applications of code sections, statutes or doctrinal formulations;”
3. “the elaboration of coherent patterns of applications of authoritative language and demonstrations of how proposed or possible applications would not be coherent,”
4. “the formulation of paradigm cases so as to display a policy rationale in its clearest application;”
5. “the articulation of distinctions between paradigm cases and borderline cases;”
6. “the creation of conceptual bridges between cases along a continuum;”
7. “use [of] a well-designed hypothetical case to help justify extending a rule;”
8. use of a “hypothetical case … to help justify rejecting the application of a rule in a precedent to the case … about to be decided.”

(MacCormick & Summers, 1997, pp. 528-9)
Model attacking proposed test with (dis-)analogous hypo

1. Propose test \( t \) such that applying \( t \) to \( cfs \) yields outcome \( x \); give reason(s).

2. Attack \( t \): pose \textit{disanalogous} hypo \( h \) such that applying \( t \) to \( h \) yields \( x \), and give reasons why that should \textit{not} be so for a suitable test.

3. Abandon test \( t \)
   - Modify test \( t \) to \( t' \) such that applying \( t' \) to \( cfs \) yields \( x \) and applying \( t' \) to \( h \) does not yield \( x \).
   - Save \( t \): Attack "should not be so" by analogizing \((cfs, h)\).

4. Attack \( t \): pose \textit{analogous} hypo \( h \) such that applying \( t \) to \( h \) does \textit{not} yield \( x \), and give reasons why a suitable test should.

5. Abandon test \( t \)
   - Modify test \( t \) to \( t' \) such that applying \( t' \) to \( cfs \) yields \( x \) and applying \( t' \) to \( h \) also yields \( x \).
   - Save \( t \): Attack "why a suitable test should" by distinguishing \((cfs, h)\).
Lakatos-style hypothetical reasoning

1. Propose conjecture $t$ s.t. $t$ is true of cfs’s; give reason(s)

$$t \equiv \text{for all polyhedra } V - E + F = 2$$

Number of (vertices – edges + faces)

Induction;
Exists proof: (1) remove one face of polyhedron and stretch flat on blackboard….

2. Attack $t$: pose hypo $h$ s.t. $t$ is not true of $h$ but should be for various reasons.

Cylinder:
$$V - E + F = 0 - 2 + 3 = 1$$

3. Limit $t$ to any polyhedra which, by removing one face, can be stretched flat on a blackboard and the resulting network be connected $V - E + F = 2$

4. Abandon conjecture $t$

Modify $t$ to $t'$ s.t. $t'$ is true of cfs’s and $t'$ is true of $h$.

5. Save $t$: attack “should be” by distinguishing (cfs, h)
Why is hypothetical reasoning important?

• Systematic methodology to explore:
  – Space of situations that may [not] be distinguished normatively from cfs.
  – Formulations of tests or rules for deciding cfs.
  – Links among facts, theory, social propositions, principles

• Makes assumptions explicit

• Flexible tools to explore concepts’ meanings
  – Incrementally make rules relevantly more and less general
  – Facilitate *ceteris paribus* comparisons
  – Orchestrate “slippery slope” from cfs to a *reductio ad absurdum*.

• Real world methodology, sometimes predictive of real outcomes
What’s hard in learning hypothetical reasoning skills?

• Getting good examples (e.g., Sup. Ct. oral arguments)
• Understanding the oral argument examples?
  – Elliptical dialogues assume familiarity with case background.
  – Hard to see/explain interpretive relations in the argument texts:
    1) Identify and formulate proposed tests
    2) Explain how a hypothetical relates to a test and why
    3) Explain how an advocate responds to a hypothetical and why
    4) Evaluate response to hypothetical vis a vis the test
• Making interpretive arguments?
  – Hard to invent factual hypo for purpose of testing proposed test.
  – Hard to integrate facts, reasons why test should reach certain outcomes, criteria for evaluating arguments and selecting appropriate responses.
• Would an explicit model help students understand and use hypotheticals?
  – Does identifying/explaining components and relations help or hinder?
  – Do visual (or other) representations help or hinder?
Three research goals

1. How well do law students understand the interpretive role of hypothetical reasoning in Sup. Ct. oral arguments?

2. Can tech-supported instruction help them learn to reason with hypotheticals?

3. Can the process of reasoning with hypotheticals be modeled computationally and facilitate instruction?
1. Experiment

**Task:** Study transcripts of Sup. Ct. oral arguments (two 3-hour sessions.)

**Participants:** 17 students in pre-law summer program

**Hypothesis:** Detailed self-explanation prompts can scaffold students’ understanding of oral argument transcripts.

**Experimental condition:** Specific prompts ask student to track if/how the attorneys change their proposed tests in response to Justices’ questioning.

**Control condition:** Generic prompts (“Explain”) in the same place as the specific prompts.

**Post-test argument skills assessment:** argumentation questions (e.g., generate hypotheticals) about similar problem (near transfer) and novel problem (far transfer) (3 hrs).
Assessment form excerpts

■ SONY, 4a: How well did the student pose and explain a hypothetical that would violate some version of a test for determining whether SONY was contributorily liable for copyright infringement customers committed with VCRs supplied by SONY?

1  2  3  4  5
1 = Not well at all
2 = Somewhat well
3 = Relatively well
4 = Very well
5 = Very well

■ SONY, 4a: Briefly state the test which, the student implies, the hypothetical would violate:

■ SONY, 4a: Check any that apply: The student’s hypothetical was:

- Abstract and conclusory
- Concise with no irrelevant details
- Factually specific
- Irrelevant to the argument
- Nonsensical
- Not mentioned in the transcript
- Not really there
- Not well focused
- Relevant to the argument
- Very creative
- Very similar to one in the transcript
- Well focused
Interaction effects

Domain Transfer Task

-0.3 -0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5
High LSAT  Low LSAT

Specific  Generic

Argumentation Transfer Task

-0.3 -0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5
High LSAT  Low LSAT

Specific  Generic
2. Argument Mark-up Tools
3. Can computational model help?

- Can it engage students in hypothetical reasoning?
- AI models of Lakatos-style reasoning in machine learning:
  - card game plans (Hearts) (Hayes-Roth, R. 1983)
  - number theory concepts: HR (Pease, Colton, et al. 2002)
  - engaged students in making case-based legal arguments analogizing and distinguishing cases, but not posing hypos to assess tests.
- HYPO: posed hypothetical variations of problem situation to strengthen/weaken argument (Ashley, 1988)
  - Used heuristics to pose hypos by modifying cases along dimensions.
  - Some response types modeled, but not in dialogical context in which hypos put pressure on proposed tests and their concepts.
HYPO heuristics for posing hypotheticals

Define dimensions: stereotypical fact patterns that tend to strengthen or weaken claim in a case.

**H1:** Make a near miss dimension apply

**H2:** Strengthen or weaken a case along applicable dimension

**H3:** Move a case along a related dimension

**H4:** Make a case extreme along a dimension

**H5:** Make a case into a near-win given a target

Define which hypothetical modifications are meaningful:

- Argument context (and Claim Lattice) helped choose hypothetical modifications.
- Goal to show how plaintiff’s position in current fact situation (cfs) can be strengthened/weakened in light of near-by cases.
HYPO model of Carney hypotheticals

Define dimensions:

- d1.0 Exigency/inherent-mobility:
  - d1.1 Similarity-to-car
  - d1.2 At-rest-or-moving
  - d1.3 Potential-speed-of-departure
- d2.0 Expectation-of-privacy/use-as-home:
  - d2.1 Attachment-to-location
  - d2.2 Residential-appearance

Hypo1: big stretch Cadillac in parking lot with curtains

- Heuristics:
  - H5: Make a case into a near-win given a target; Target case: moving auto
    - d1.2 at rest,
    - d2.2 residential appearance

Hypo2: van running down the road at 55 miles per hour

- Heuristics:
  - H2: weaken along applicable dimension;
    - d1.2 moving
  - H1: make near miss dimension apply;
    - d1.3 increase speed of departure

(Adapted from E. Rissland, ICAIL-89, p. 111)
Argument model with hypotheticals

• **Point:** For *proponent*, propose test and argument for deciding cfs.
  – See if past case decision rule applied to cfs arguably leads to favorable decision.
  – If so, propose that rule as test and give reasons.
  – If not, construct proposed test that leads to favorable decision of cfs and is consistent some important past cases, and give reasons.

• **Response:** For *respondent*, pose past-case or hypothetical counterexample and argument.
  – Inspect proponent’s test given past cases/rules that lead to opposite conclusion. Find past-case- or construct hypothetical counterexample to proposed test, such that counterexample is:
    – analogous to [disanalogous from] cfs (i.e., a suitable test when applied to counterexample should yield the same [a different] result) and yet proposed test applied to counterexample leads to a different [the same] result, and give reasons.

• **Recovery:** For *proponent*, rebut or otherwise reply to *respondent’s* counterexample:
  – Save proposed test by disputing that suitable rule applied to counterexample should yield the same [a different] result (i.e., show that supposedly analogous counterexample is really disanalogous [analogous]). Or
  – Modify proposed test to be suitable rule or not apply to counterexample (i.e., remove [add] a condition or expand [limit] a concept definition such that the modified rule applies to the counterexample and yields the same result, applies to the counterexample and yields a different result or no longer applies to the counterexample, as appropriate.) Or
  – Abandon the proposed test.
**Toward a computational model...**

**Domain Principles**

**P1:** LikeMakesRight: Similarity in cards should be rewarded with ♦ or ♥.

**P2:** EverythingInModeration: Moderation in cards should be rewarded with ♦ or ♥.

**P3:** DifferencesRespected: Differences in cards are worthy of respect with ♠ or ♣.

<table>
<thead>
<tr>
<th>Advocate:</th>
<th>Cases: &lt;5♠, 8♠, 4♦&gt;, &lt;3♣, 5♦, 10♦&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal: &lt;5♠, 8♠, 4♦&gt;</td>
<td>The goal case should be Diamond. A case is “Diamond” if it is a Midrange Case. A “Midrange Case” is if the sum of Card 1 and Card 2 is between 7 and 14. &lt;3♣, 5♦, 10♦&gt; is also a Midrange Case and Diamond. Being a Midrange Case is consistent with <strong>P2:</strong> EverythingInModeration. &lt;7♠, A♥, 6♠&gt; is not a Midrange Case and not Diamond.</td>
</tr>
<tr>
<td>Interrogator:</td>
<td>How would you handle the following case: &lt;9♥, J♥, 2♦&gt;? The case is not a Midrange Case but it is Diamond.</td>
</tr>
<tr>
<td>Hand: 9♥, 3♥, J♥, 6♠, 2♦</td>
<td>&lt;9♥, J♥, 2♦&gt; is Diamond because it is Similar. Two cards are “Similar” if they have the same suit or value. Under <strong>P1:</strong> LikeMakesRight, Similarity should be rewarded with ♦ or ♥. The goal case is Diamond because it is a Midrange Case. I will modify my rule to “A case is Diamond if it is a Midrange Case or Similar. &lt;7♠, A♥, 6♠&gt; is not a Midrange Case nor Similar and is not Diamond.</td>
</tr>
<tr>
<td>Hypo: 9♥, 3♥, 8♦</td>
<td><strong>Case:</strong></td>
</tr>
<tr>
<td>Goal: &lt;5♠, 8♠, 4♦&gt;</td>
<td><strong>Cases:</strong></td>
</tr>
<tr>
<td>Advocate:</td>
<td>&lt;7♠, A♥, 6♠&gt;, &lt;3♣, 5♦, 10♦&gt;</td>
</tr>
<tr>
<td>Interrogator:</td>
<td>&gt;</td>
</tr>
<tr>
<td>Hand: 9♥, 3♥, J♥, 6♠, 2♦</td>
<td>&gt;</td>
</tr>
<tr>
<td>Hypo: 9♥, 3♥, 8♦</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

---

**Cases:** <7♠, A♥, 6♠>, <3♣, 5♦, 10♦>
Conclusions

• Hypothetical reasoning is a systematic cognitive methodology for creative, exploratory legal reasoning.
  – It makes assumptions explicit, explores concepts’ meanings and the linkages among facts, theories, and evaluation criteria.

• Supreme Court oral arguments are unique examples of hypothetical reasoning at work. How can they best be used as pedagogical examples?

• Three on-going projects to assess:
  1. How well do law students understand the interpretive role of hypothetical reasoning in Sup. Ct. oral arguments? Can we objectively assess improvements?
  2. Whether tech-supported collaborative instruction can help them learn to reason with hypotheticals?
  3. Whether the process of reasoning with hypotheticals can be modeled computationally and facilitate instruction?
Example

*SONY Corp. v. Universal City Studios, 464 U.S. 417 (1984)*

**Facts:** Some members of the general public used Sony Betamax VTRs to record copyrighted broadcasts.

**Issues:**

1. Does SONY’s sale of video tape recorders contribute to infringement of plaintiff owners’ copyrights in television programs by enabling consumers to infringe those copyrights directly?
2. What is the appropriate standard for contributory liability for copyright infringement?

**Proposed test:**
Mr. Kroft (for Universal): if there were only one show on the air that was copyrighted and which could not be copied without objection, if SONY sold this device with knowledge that it would be used to copy that show, the Petitioners would be liable.
<table>
<thead>
<tr>
<th>Excerpt from SONY oral argument* (1)</th>
</tr>
</thead>
</table>
| 106. QUESTION: Suppose the evidence in the case put on by witnesses that your friend referred to indicated, just suppose it indicated, that about ten percent of all programming could be copied without any interference by the producer or whoever owned the program. Suppose that there was at least ten percent that a homeowner could copy without violating anybody's copyright.  
107. Would you think that would make any difference in this case?  
108. MR. KROFT: I don't think that would make any difference. I think ten percent is too small of an amount.  
109. QUESTION: Well, what about 50?  
110. MR. KROFT: I'll go you one better, Justice White. If there was only one show on the air that were copyrighted and which could not be copied without objection, if the Petitioners sold this device with knowledge that it would be used to copy that show, under the Inwood test laid down by this Court in the trademark area I believe the Petitioners would be liable.  
111. However, I would concede that I think it might be very difficult for us to prove if there was only one show.  
112. QUESTION: Well, let's take 50 percent. You certainly would argue that Sony would be liable if it sold this machine knowing that homeowners would copy a good many of the 50 percent that are copyrighted, in which there would be an infringement.  
113. MR. KROFT: Yes, I would, and the reason I would -- |
Excerpt from SONY oral argument (2)

125. QUESTION: Well, specifically for copying purposes. Under your test, supposing somebody tells the Xerox people that there are people who are making illegal copies with their machine and they know it. Must they -- what are they supposed to do?

126. MR. KROFT: I think that probably now puts the cart before the horse, Justice Stevens. That wasn't happening when Xerox began selling its machine. Xerox first started selling the machine for business applications. We can all remember what they looked like. You'd have to put one page in. You couldn't run through pages and pages and pages like you can today.

127. And over the years I suppose people have come to use Xerox for different reasons. Xerox has tried to protect itself -- and I don't know if it's doing it adequately or not -- by giving every Xerox renter -- and I believe most of these machines are rented -- a little list of do's and don'ts. And one of the don't's is don't copy copyrighted material.

128. QUESTION: But you just said that wouldn't protect Sony.

129. MR. KROFT: I don't believe it would, and that's why I say I'm not sure –

130. QUESTION: Does it protect Xerox?

131. MR. KROFT: That's why I just said I'm not sure if it does.

132. QUESTION: But your view of the law is that as long as Xerox knows that there's some illegal copying going on, Xerox is a contributory infringer?

133. MR. KROFT: To be consistent, Your Honor, I'd have to say yes.

134. QUESTION: A rather extreme position.
Attack proposed test with *reductio ad absurdum* hypo

1. Propose test t s.t. applying t to cfs yields outcome x; give reason(s)

MR. KROFT: If there was only one show on the air that were copyrighted and which could not be copied without objection, if the Petitioners sold this device with knowledge that it would be used to copy that show, ... the Petitioners would be liable.

2. Attack t: pose *r.a.a* hypo h s.t. applying t to h yields x, and give reasons why that should *not* be so for a suitable test.

QUESTION: Under your test, supposing somebody tells the Xerox people that there are people who are making illegal copies with their machine and they know it....what are they supposed to do?

3. Abandon test t

   Modify test t to t' s.t. applying t' to cfs yields x and applying t' to h does not yield x.

   Save t: attack “should *not* be so” by analogizing (cfs, h)

QUESTION: But your view of the law is that as long as Xerox knows that there's some illegal copying going on, Xerox is a contributory infringer?

MR. KROFT: To be consistent, Your Honor, I'd have to say yes.

QUESTION: A rather extreme position.
Define dimensions:

– **possible-noninfringing-use:**
  • percentage of copied programs not copyrighted

– **known-infringing-uses:**
  • percentage of copyrighted programs def. knew were copied

**Hypos 1-3:** 10% of programs copied are not copyrighted; 50%; 99.9%

– weaken seed case (cfs) for plaintiff along *possible-noninfringing-use* dimension:

– Heuristics:
  H2 (weaken along applicable dimension)
  H4 (make extreme along dimension)

**Hypo 4:** only .1% of copyrighted programs copied were infringing, but defendant *knew* they were being copied.

– strengthen Hypo 3 for plaintiff along *known-infringing-uses* dimension:

– Heuristics:
  H1 (make near miss dimension apply)
  H3 (move case along related (i.e., conflicting) dimension)