Logic

4. The Logic of if, or & not-both (cont’d.)

Chain Arguments

<table>
<thead>
<tr>
<th>Example</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>If guns are outlawed only outlaws will have guns.</td>
<td>$G \rightarrow O$</td>
</tr>
<tr>
<td>If only outlaws have guns, our country will be a more dangerous place to live.</td>
<td>$O \rightarrow D$</td>
</tr>
<tr>
<td>So, if guns are outlawed, our country will be a more dangerous place to live.</td>
<td>$\therefore G \rightarrow D$</td>
</tr>
</tbody>
</table>

Limitation — This form of argument only gets us from one conditional to another.

Being in a Dilemma

- St. Thomas More on being required to take an oath accepting the Act of Succession (declaring the King to be head of the Church in England).
  - His description:
    - If my conscience tells me that the statute is invalid, then it is a hard demand to compel me to uphold it in violation of my conscience and to the loss of my soul or to denounce it to the destruction of my body.
  - A step towards logical analysis
    - Given that he thought the statute was illegal
      1. If he says the law is legal, he (speaks against his conscience & loses his soul).
      2. If he says the law is illegal, he (says what the law forbids him to say & loses his life [his head, anyway]).
  - Either option has bad consequences.

The Logic of Dilemmas

- In the colloquial sense, “being in a dilemma” means being in a situation each one of which is bad (i.e., each one of which has bad consequences).
- In the logical sense, a dilemma is an argument with three premises:
  - two conditionals, &
  - a disjunction asserting that
    - one of the antecedents is true, or
    - one of the consequents is false
  & a conclusion asserting that
    - the corresponding consequent is true, or
    - the corresponding antecedent is false

The Logic of Dilemmas (cont’d.)

<table>
<thead>
<tr>
<th>Example</th>
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<tbody>
<tr>
<td>If he says the law is legal, he (speaks against his conscience &amp; loses his soul).</td>
</tr>
<tr>
<td>($L \rightarrow S$)</td>
</tr>
<tr>
<td>He believes that the statute is illegal. To swear falsely would be perjury. Perjury is a mortal sin.</td>
</tr>
<tr>
<td>If he says the law is illegal, he (says what the law forbids him to say &amp; loses his life [his head, anyway, as it turned out]).</td>
</tr>
<tr>
<td>($\neg L \rightarrow H$)</td>
</tr>
<tr>
<td>Refusal to swear the oath would be treason, the penalty for which is death.</td>
</tr>
<tr>
<td>He has only two choices: saying the law is legal or saying that it is illegal.</td>
</tr>
<tr>
<td>($L \lor \neg L$)</td>
</tr>
<tr>
<td>What other choices are there?</td>
</tr>
<tr>
<td>So, either he will lose his soul or he will lose his life.</td>
</tr>
<tr>
<td>($S \lor H$)</td>
</tr>
<tr>
<td>So, one of two things will happen. The fact that both of them are bad is incidental to the logic of a dilemma.</td>
</tr>
</tbody>
</table>
Three Ways of Responding to a Dilemma

1. Passing through the horns of the dilemma
   - Example:
     - More’s attempt to avoid his dilemma by refusal to say anything (i.e., neither speaking the truth nor telling a lie)
     - The soundness of a dilemma depends on the disjunction being exhaustive.
     - “Passing through ...” is a challenge to the truth (exhaustiveness) of the disjunction; i.e., \((P \lor Q)\) rather than \((P \lor Q)\).
   - Taking the dilemma by the horns:
     - Example:
       - John Stuart Mill’s response to arguments like Omar’s: “however true [a given opinion] may be, if it is not fully, frequently, & fearlessly discussed, it will be held as a dead dogma, not as a living truth.” &c. (On Liberty)

2. The soundness of a dilemma depends on the hypotheticals being true.
   - “Taking by the horns” is a challenge to the truth of one of the hypotheticals.
   - Rebutting the dilemma (see next slide)

Example of a Complex Constructive Dilemma

Example
George Will on Evel Knievel’s attempt to make a 1500-foot jump across Snake River Canyon (from the Washington Post):

“If the jump is not as risky as it is advertised to be it is a fraud. It, as seems probable, it does involve a serious risk of Knievel’s life, it is obscene.”

Form:
\[-R \rightarrow F\]
\[-O \rightarrow R\]
\[F \lor O\]

Symbolization:
\[\neg R \rightarrow F\]
\[R \rightarrow O\]
\[(F \lor O)\]

Example of a Simple Destructive Dilemma

Example:
Plato on poets
(Republic iii, 391c–e)

Form:
If Homer speaks the truth then the heroes are the sons of the gods and if he speaks the truth then they did many wicked things. But either they are not the sons of gods or they did not to many wicked things.

Symbolization:
\[(T \rightarrow S)\]
\[(T \rightarrow W)\]
\[S \lor \neg W\]

Three Ways of Responding to a Dilemma (cont’d.):

Rebutting the dilemma

- Background
  - Protagoras taught Euathlus rhetoric for a fee, half to be paid on completion of the course, half on Euathlus’ winning his first court case. Euathlus, not wanting to pay the remaining half of the tuition, refused to take any cases. Protagoras, impatient to be paid, sued for immediate payment.
  - Protagoras’ argument (a dilemma)
    1. If I win my suit, Euathlus must pay me by court order. \((W \rightarrow P)\)
    2. If I lose my suit, Euathlus will have won his and must pay me by the conditions of the tuition agreement. \((L \rightarrow P)\)
       - Either I win or I will lose. \((W \lor L)\)
       - So, Euathlus must pay me. \((P)\)
    1. Euathlus’ argument (a counter-dilemma)
       - If I win my suit, I don’t have to pay, since that is what the suit was about. \((W \rightarrow \neg P)\)
       - If I lose my suit, I won’t yet have won my first suit, and I don’t have to pay yet, by the conditions of the tuition agreement. \((L \rightarrow \neg P)\)
       1. Either I will win or I will lose. \((W \lor L)\)
       2. So, I don’t have to pay. \((\neg P)\)