

# 1. Stoic Logic

## A. Elementary Forms

For each of the following forms, determine whether it is valid. If it is, give its name.

$$1. \frac{p \sqsupset q}{\frac{\overline{p}}{\sqsupset q}}$$

$$2. \frac{p \sqsupset q}{\frac{\overline{\sim p}}{\sqsupset \sim q}}$$

$$3. \frac{p \sqsupset q}{\frac{\overline{q}}{\sqsupset p}}$$

$$4. \frac{p \sqsupset q}{\frac{\overline{\sim q}}{\sqsupset \sim p}}$$

$$5. \frac{p \sqsubset q}{\frac{\overline{p}}{\sqsubset q}}$$

$$6. \frac{p \sqsubset q}{\frac{\overline{\sim q}}{\sqsubset \sim p}}$$

$$7. \frac{p \sqsubset q}{\frac{\overline{\sim p}}{\sqsubset q}}$$

$$8. \frac{p \sqsubset q}{\frac{\overline{p}}{\sqsubset \sim q}}$$

$$9. \frac{p \uparrow q}{\frac{\overline{p}}{\uparrow q}}$$

$$10. \frac{p \uparrow q}{\frac{\overline{p}}{\uparrow \sim q}}$$

$$11. \frac{p \uparrow q}{\frac{\overline{\sim p}}{\uparrow q}}$$

$$12. \frac{p \uparrow q}{\frac{\overline{q}}{\uparrow \sim p}}$$

## **B. Elementary Arguments**

**Identify the premises, conclusion, validity and form of the following arguments.**

1. Mary studied French or German in college. She did not study German. So, she studied French.
2. Mary studied French or German in college. She studied German. So, she did not study French.
3. Either St. Paul is the largest city in Minnesota or Bloomington is. St. Paul is not the largest city in Minnesota. So, Bloomington is.
4. If Crusoe's island had never been visited by anyone but him, then there would not have been any footprints but his on the sandy beach. But there was a footprint on the sandy beach and it was not his, so the island had been visited by people other than Crusoe.
5. If this man had expected to die, he would have left a will. And here is a will in his own hand. So, he must have expected to die.
6. If there is no freedom of the will, giving advice would be useless. But it is not useless. So, there must be freedom of the will.
7. If Socrates had really corrupted the youth of Athens, the relatives of the corrupted youth would have been in court to testify against Socrates, but they were not there. So, he must not really have corrupted the youth of the city.
8. If this syllogism is a case of denying the antecedent, then it's invalid. But it's not a case of denying the antecedent, so it's valid.
9. Either President Bush attended Yale or he attended Harvard. We know he attended Yale. So, he didn't attend Harvard.
10. Either we're out of gasoline or the fuel gauge is broken. We're not out of gasoline. So, the fuel gauge must be broken.
11. John cannot have both gone to the party and studied hard. He went to the party. So, he did not study hard.

12. If Iraq refused to live by the conditions of the cease-fire agreed to after the First Gulf War then President Bush was within his rights in using military force against Iraq. And, in fact, Iraq did refuse to live by the conditions of the cease-fire agreed to after the First Gulf War. So, President Bush was within his rights in using military force against Iraq.
13. If Euthyphro's second definition (that the pious is what is loved by the gods and the impious what is hated by the gods) is correct, then some actions are both pious and impious at the same time. But no action is both pious and impious at the same time, so Euthyphro's second definition is incorrect.

In the following arguments, the conclusion is not explicitly stated. What follows from the two statements made?

14. Had the early Muslims thought that *hadith* [traditions about what Muhammad said and did] was as important as the Quran they would have taken steps to record it; but in fact they did not do so.—Alfred Guillaume, *Islam*
15. If there had been evil in my heart the Lord would not have listened. But truly God has listened.—Psalm 66
16. If the multiregional- evolution hypothesis is correct, then we would expect to find early examples of modern humans appearing more or less simultaneously throughout the Old World. That is not what we see.—Richard Leakey, *The Origin of Humankind*, p. 89

### C. Complex Forms

For each of the following forms, determine whether it is valid. If it is, give its name.

$$1. \begin{array}{l} p \supset q \\ r \supset s \\ \hline p \supset r \\ \hline \supset q \supset s \end{array}$$

$$2. \begin{array}{l} p \supset q \\ r \supset s \\ \hline \sim q \supset \sim s \\ \hline \supset \supset p \supset r \end{array}$$

$$3. \begin{array}{l} p \supset q \\ r \supset q \\ \hline p \supset r \\ \hline \supset q \end{array}$$

$$4. \begin{array}{l} p \supset q \\ p \supset r \\ \hline \sim q \supset \sim r \\ \hline \supset \sim p \end{array}$$

$$5. \begin{array}{l} p \supset q \\ r \supset q \\ \hline \supset p \supset r \end{array}$$

$$6. \begin{array}{l} p \supset q \\ p \supset r \\ \hline \supset q \supset r \end{array}$$

$$7. \begin{array}{l} p \supset q \\ q \supset r \\ \hline \supset p \supset r \end{array}$$

## D. Complex Arguments

**Identify the premises, conclusion, validity and form of the following arguments.**

1. If guns are outlawed only outlaws will have guns. If only outlaws have guns, our country will be a more dangerous place to live. So, if guns are outlawed, our country will be a more dangerous place to live.
2. If there is no clear qualitative change in the characteristics of the fetus after conception, then it must be considered to have from conception all the rights of any other person. And if a fetus must be considered to have from conception all the rights of any other person, then to kill it would be wrong. So if there is no clear qualitative change in the characteristics of the fetus after conception, then to kill it would be wrong.
3. If I write my paper over Thanksgiving break, I'll spoil my holiday. And if I don't write it over Thanksgiving break, I'll fail the course. And either I'll write it or I won't. So, either I'll spoil my holiday or I'll fail the course.
4. [The argument Socrates will use if Euthyphro will take him as a pupil:] If Meletus thinks that Euthyphro is wise in matters of piety, then Meletus should consider Socrates to be the pupil of a wise teacher and not prosecute him. If Meletus thinks that Euthyphro is not wise in these matters, then he should prosecute the teacher (Euthyphro), but not prosecute him (Socrates). Meletus must either think that Euthyphro is wise in these matters or that he is not. So, he should not prosecute Socrates.