



A Note to the Teacher V

Further Study of Simple Syllogisms

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“Logic is the anatomy of thought.”
—John Locke

Figure in Syllogisms

_____ **Introduction.** Now that we have mastered the rules of validity for categorical syllogisms, we turn to figures and moods. Categorizing syllogisms according to figure and mood will deepen our understanding of the syllogism and give us a shortcut in determining validity.

The *figure* of the syllogism can be defined as follows:

The figure of a syllogism is the disposition (or location) of terms in the premises.

The figure of a syllogism is determined by the position of the middle term. There are four figures in all.

_____ **Review of Terms.** In order to properly understand syllogistic figures, we must remember the terms in a syllogism and the letters that designate them. We must remember that the letter *P* designates the major term (which is the predicate of the conclusion). The letter *S* designates the minor term (which is the subject of the conclusion); and the letter *M* designates the middle term (which is the term that appears in both premises, but not in the conclusion).

We must also remember that the premise that contains the major term (which we call the major premise) always comes first. Thus, a typical syllogism might look like this:

All M is P
All S is M
Therefore, all S is P

The location of *M* (the middle term) in each premise will tell us what figure the syllogism is in.

The figure of a syllogism is the disposition (or location) of terms in the premises.



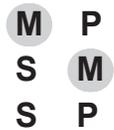
We must also remember that the major premise is always put first in a syllogism.

_____ **The First Figure.** In a syllogism of the *First Figure*, the middle term is the subject in the major premise and the predicate in the minor premise. We call this figure *sub-prae*, which is short for *subjectum-praedicatum*, which is Latin for *subject-predicate*, the subject being the place of the middle term in the major premise and predicate being the place of the middle term in the minor premise.

An example of a *sub-prae* or *First Figure* syllogism would be:

All human beings^M are mortal^P
 All boys^S are human beings^M
 Therefore, all boys^S are mortal^P

Sub-prae_____ You can see that the middle term is the subject in the major premise and the predicate in the minor premise. Therefore, this syllogism is *sub-prae*.



_____ **The Second Figure.** In a syllogism of the *Second Figure*, the middle term is the predicate in the major premise and the predicate in the minor premise.

We term this figure *prae-prae*, which is short for *praedicatum-praedicatum*, which is Latin for *predicate-predicate*, the predicate being the place of the middle term in both premises.

An example of a *prae-prae* or *Second Figure syllogism* would be:

All men^P are mortal^M
 No angels^S are mortal^M
 Therefore, no angels^S are men^P

Prae-prae_____ You can see that the middle term is the predicate in both the major and minor premises of this argument. Therefore, this syllogism is *prae-prae*.



_____ **The Third Figure.** In a syllogism of the *Third Figure*, the middle term is the subject in the major premise and also the subject in the minor premise.



We term this figure *sub-sub*, which is short for *subjectum-subjectum*, the subject being the place of the middle term in both premises.

An example of a *sub-sub* or *Third Figure* syllogism would be:

All human beings^M are mortal^P
Some human beings^M are boys^S
Therefore, some boys^S are mortal^P

Sub-sub _____ Here, the middle term is the subject in both the major and minor premises of the argument. Therefore, this syllogism is *sub-sub*.

M	P
M	S
S	P

_____ **The Fourth Figure (Indirect First).** There is also what some have called a *Fourth Figure*. However, Fourth Figure syllogisms are actually just another form of the First. They are what we will call the *Indirect First*.

In a *Fourth Figure* syllogism, the middle term is the predicate in the major premise and the subject in the minor premise. In other words, a *prae-sub*. We say it is not a figure in and of itself but only a form of the First because the only difference between it and the First is in the grammar of the syllogism; the arrangement of the words only makes it look different, but logically it is the same.

An example of the *Fourth Figure* would be:

All Romans^P are men^M
All men^M are mortal^S
Therefore, some mortals^S are Romans^P

Prae-sub _____ As you can see, the middle term (*men*) is the predicate in the major premise and the subject in the minor premise.

P	M
M	S
S	P

This Fourth Figure is sometimes called the *Galenic* figure because it was Claudius Galen, who lived from A.D. 131 to about A.D. 200, who first considered that it was a separate figure. Galen was considered the chief authority on medicine for over a thousand years. But while Galen and many modern logicians think the Fourth Figure is distinct from the First,

While Galen and many modern logicians think the Fourth Figure is distinct from the First, Aristotle and all the rest of the ancient logicians thought it was only another form of the First.



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We will side with the ancients and concentrate primarily on the first three figures. However, we do encounter syllogisms in this form, so we need to be prepared to handle them.

_____ **How to Remember the Figures.** There are many Latin sayings that logicians in the Middle Ages invented to help us remember certain things in logic. The Latin saying that helps us remember figures goes like this:

Sub-prae prima, bis prae secunda, tertia sub bis.

It means, *sub-prae first, prae twice second, sub twice third*. In other words, *sub-prae* is the First Figure, *prae-prae (prae twice)* is the Second, and *sub-sub (sub twice)* is the Third. By memorizing this saying, you will be able to remember where the middle term is in each of the three figures.

_____ **Summary.** This chapter concerns the *figure* of syllogisms. The figure of a syllogism is defined as the ***disposition of terms in the premises***. The terms in a syllogism can be arranged in one of three (some would say four) different ways. We identify the figures according to the location of the middle term.

A syllogism in which the middle term is the subject in the major premise and the predicate in the minor premise is called a ***sub-prae*** or ***First Figure*** syllogism. A syllogism in which the middle term is the predicate in the major premise and the predicate in the minor premise is called a ***prae-prae*** or ***Second Figure*** syllogism. A syllogism in which the middle term is the subject in the major premise and the subject in the minor premise is called a ***sub-sub*** or ***Third Figure*** syllogism.

There is also an ***Indirect First Figure***, which some logicians have considered to be another figure altogether—a ***Fourth Figure*** syllogism. Its middle term appears in the predicate of the major premise and in the subject of the minor premise, making it a ***prae-sub***. But it only looks like a different figure and is really just a form of the First.

We identify the figures according to the location of the middle term.



“Logic takes care of itself; all we have to do
is to look and see how it does it.”

—Ludwig Wittgenstein

Mood in Syllogisms

_____ **Introduction.** In the last chapter, we discussed the four ways a syllogism can be formed according to the disposition of terms. These four ways we called a syllogism’s *figure*. In this chapter, we will talk about *mood*.

We defined *figure* as the *disposition* (or *location*) of terms in a syllogism—In other words, how the *terms* are arrayed in the syllogism. *Mood* is defined as follows:

Mood is the disposition of the premises according to quantity and quality.

For example, we say that a syllogism has the mood **AA** when the first (or *major*) premise is an A statement and the second (or *minor*) premise is also an A statement. Again we say that a syllogism has the mood **EA** when the first premise is an E statement and the second premise is an A statement.

Look at the following syllogism:

All mortals must die
All men are mortal
Therefore, all men must die

In what mood is this syllogism? We see that the first premise is an A statement, and the second is an A statement. Therefore, the mood of the syllogism is **AA**.

Let’s take another example:

No men are immortal
All angels are immortal
Therefore, no angels are men

The mood of a syllogism is the disposition of the premises according to quantity and quality.



Chapter 2

What mood is this syllogism in? We see that the first premise is an E statement. The second is an A statement. Therefore, the mood of the syllogism is **EA**.

Since there are four different kinds of statements (A, E, I, and O), they can be combined into 16 different moods (4 x 4) as follows:

		MAJOR			
		A	E	I	O
MINOR	A	AA	EA	IA	OA
	E	AE	EE	IE	OE
	I	AI	EI	II	OI
	O	AO	EO	IO	OO

Be careful that your premises are in the proper place—major premise first and minor premise second. If they are not in the proper order, you can easily misidentify the mood of a syllogism.

Be careful that your premises are in the proper place—major premise first and minor premise second. If they are not in the proper order, you can easily misidentify the mood of a syllogism.

_____ **Figure and Mood.** Furthermore, each of these sixteen moods can be found in each of the four figures. In other words, a syllogism in the First Figure can be in the mood AA, AE, AI, AO, EA, EO, etc. This means that there are a total of 64 different kinds of syllogisms according to mood and figure (16 moods x 4 figures).

But although there are 64 different kinds of syllogisms, not all of them are valid. In some cases, whole moods are invalid. For example, **EE** syllogisms, whether they are in the First, Second, Third, or Fourth Figure are invalid. Why? Remember Rule V in Chapter 13 of *Book I*? It said that no conclusion can follow from two negative premises. E is a negative statement; therefore, a syllogism in which both premises are E statements cannot be valid.

The same goes for syllogisms in mood **OO**, since O statements are also negative. In fact, if we constructed syllogisms in all 64 of the possible combinations, and applied the seven rules we learned in *Book I*, we would find that only 19 of them are valid.



William of Shyreswood, a medieval philosopher, came up with names to help remember these syllogisms and put them into a mnemonic verse. You will need to memorize these lines in order to know how to do some logical operations in later chapters. The lines are as follows:

BARBARA, CELARENT, DARII, FERIO *que prioris*;
CESARE, CAMESTRES, FESTINO, BAROCO *secundae*;
tertia; **DARAPTI, DISAMIS, DATISI, FELAPTON, BOCARDO,**
FERISON *habet*; *quarta insuper addit*;
BRAMANTIP, CAMENES, DIMARIS, FESAPO, FRESISON.

Note that FERIO*que* is Latin for “and FERIO,” and that the *que* attached on the end is not really a part of the word.

Both the vowels and the consonants in these names represent important things about each syllogism. Let us content ourselves in this chapter to discuss what is indicated by the vowels.

We label a syllogism **BARBARA** if the first premise is an A statement (the first **A** in **BARBARA**), and the second premise is an A statement (the second **A** in **BARBARA**). The last vowel stands for the conclusion (the last **A** in **BARBARA**).

Remember that the first vowel always indicates the first (or major) premise; the second always indicates the second (or minor) premise; and the final vowel always indicates the conclusion.

What the above lines mean is that **BARBARA, CELARENT, DARII, and FERIO** are the four valid moods in the First Figure (*prioris* means *of the first* in Latin). **CESARE, CAMESTRES, FESTINO, and BAROCO** are the valid moods in the Second Figure (*secundae* means *of the second* in Latin); **DARAPTI, DISAMIS, DATISI, FELAPTON, BOCARDO, and FERISON** are the valid moods of the Third Figure (*tertia* means *third* in Latin); and **BRAMANTIP, CAMENES, DIMARIS, FESAPO, and FRESISON** are the valid moods in the Fourth Figure (*quarta* means *fourth* in Latin). This makes 19 in all.

Of these 19, however, only about five are commonly encountered in actual argument. We will be discussing all 19 of these arguments in later chapters, but for now, let’s take a look at the five common valid syllogisms.

Of the 19 valid syllogisms, only five are commonly used in actual argument.



Chapter 2

When we are presented an argument, we simply put it in the form of a syllogism and see if it is one of the syllogisms in the mnemonic.

How to Use the Mnemonic. The mnemonic (BARBARA, CELARENT, DARII, etc.) gives us a much quicker way to determine the validity of a syllogism than using the seven rules for validity. When we are presented with an argument, we simply put it in the form of a syllogism and see if it is one of the syllogisms in the mnemonic. If it is, then it is valid; if it is not, then it is invalid. There are three steps involved:

Step #1: Determine the figure.

Step #2: Determine the mood.

Step #3: Determine whether the mood is included in the mnemonic verse.

Five Common Syllogisms. The following are the five most commonly encountered syllogisms:

BARBARA
CELARENT
CESARE
CAMESTRES
CAMENES

An example of BARBARA (which is *sub-prae* or First Figure) would be:

All flowers are plants (A)
All roses are flowers (A)
Therefore, all roses are plants (A)

An example of CELARENT (First Figure) would be:

No flowers are trees (E)
All roses are flowers (A)
Therefore, no roses are trees (E)

An example of CESARE (a Second Figure or *prae-prae* syllogism) would be:

No trees are flowers (E)
All roses are flowers (A)
Therefore, no roses are trees (E)

An example of CAMESTRES (Second Figure) would be:

All roses are flowers (A)
No trees are flowers (E)
Therefore, no trees are roses (E)



An example of CAMENES (a Fourth Figure or *prae-sub* syllogism) would be:

- All roses are flowers (A)
- No flowers are trees (E)
- Therefore, no trees are roses (E)

Note also that the final letter is important in determining the syllogism's validity, although it does not determine the mood.

_____ **Summary.** This chapter concerns the mood of syllogisms. The mood of a syllogism is defined as the *disposition of the premises according to quantity and quality*. There are 16 moods per figure. Since there are four figures, that means there are 64 moods in all. Of these moods, only 19 are valid.

William of Shyreswood came up with names to help remember the valid syllogisms in a mnemonic verse. The verse is as follows:

BARBARA, CELARENT, DARI, FERIO que prioris;
CESARE, CAMESTRES, FESTINO, BAROCO secundae;
tertia; **DARAPTI, DISAMIS, DATISI, FELAPTON, BOCARDO,**
FERISON habet; quarta insuper addit;
BRAMANTIP, CAMENES, DIMARIS, FESAPO, FRESISON.

The vowels in each of these names indicate the mood of the syllogism by indicating whether each proposition in the syllogism is an A, I, E, or O statement.

Of the 19 valid syllogisms, only five are commonly encountered in actual argument. The five common syllogisms are as follows:

BARBARA
CELARENT
CESARE
CAMESTRES
CAMENES