Particular Affirmative and Negative

I. Lesson

In the previous lesson, we learned about the Universal Affirmative and Universal Negative propositions. Now we will address the Particular Affirmative and Particular Negative propositions. These are the other two types of categorical propositions. They can be defined as follows:

- **Particular Affirmative (Some A's are B's):** a proposition stating that some member(s) of a given category (A) are *also* members of another category (B). This takes the form "Some S are P," where S is the Subject and P the Predicate.
- **Particular Negative (Some A's are not B's):** a proposition stating that some member(s) of a given category does *not* belong to another category. This takes the form "Some S are not P," where S is the Subject and P the Predicate.

It is also important to note that, as with universal propositions, Particular Affirmative and Negative propositions can each be true or false. We want to avoid confusing the word "affirmative" with the word "true" and the word "negative" with the word "false."

I. Examples

- **Particular Affirmative:**

(1) "Some cats are albinos"
(2) "Some cats are dogs"

Propositions (1) and (2) are both examples of the **Particular Affirmative.** However, there is an important distinction: (1) is true because some cats are in fact albino (2% of them, actually!). But (2) is false, given that cats and dogs are separate species (no member of one category is *also* a member of the other).

- **Particular Negative:**

(3) "Some snakes are not reptiles"
(4) "Some snakes are not poisonous"

Propositions (3) and (4) are both examples of the **Particular Negative.** But once again, there is an important distinction: (3) is false whereas (4) is true.

[Activity]: Fill in the box below with your own examples of a Particular Affirmative proposition that is true, a Particular Affirmative proposition that is false, a Particular Negative proposition that is true,

and a Particular Negative proposition that is false. You can even mix it up! When you're done, share your examples with at least two of your classmates so you can check each other's work.

Particular Affirmative (true)	**Particular Negative (true)**
Particular Affirmative (false)	**Particular Negative (false)**

II. Visualization

To get a better sense of how Particular Affirmative and Negative propositions compare to one another, we can once again turn to Euler Circles.

- **Euler Circles:**

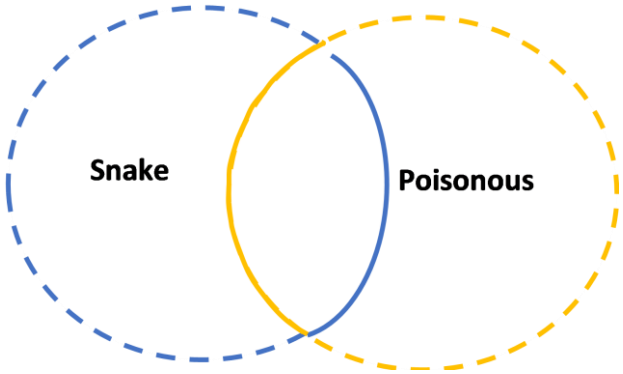

Figure 1: "Some snakes are poisonous"
(Particular Affirmative)

Remember from the previous lesson that in the case of Euler Circles, we must look at circles representing categories to interpret these kinds of propositions.

We are supposed to recognize that a portion of the area in the circle labeled "Snake" is included in the circle labeled "Poisonous." This spatial relation represents the Particular Affirmative proposition "some snakes are poisonous."

We can think of the left circle as containing *all* of the members of the category "snake" and the right circle containing *all* of the members of the category "poisonous". Notice, however, that if all we know is that some snakes are poisonous, it could be the case that *all* snakes are poisonous. That is, if "all

snakes are poisonous" is true, then it would also be true that "some snakes are poisonous"! In other words, if *all* members of the category "snake" are *also* members of the category "poisonous," then it is also true that *some* of the members of the category "snake" are also members of the category "poisonous."

Therefore, because we do not *know* just from "some snakes are poisonous" if there are any snakes "outside" of the things that are poisonous, we draw a dotted line to finish the circle. **The dotted line represents what is unknown, while the solid line represents what is known.** Since we *do* know that there are at least some things that are both members of the category "snake" *and* the category "poisonous," we draw the part of the "snake" circle that is *inside* the "poisonous" circle with a solid line.

Furthermore, we notice that "Some snakes are poisonous" is true *if and only if* "some poisonous things are snakes" is *also* true. In other words, if

i. Some members of the category "snake" are *also* members of the category "poisonous,"

then we know that

ii. There are some members of the category "poisonous" that are *also* members of the category "snake" (those very same members!).

Therefore, the diagram is symmetrical. In other words, the outside of the "Poisonous" circle is also dotted. This diagram can represent *both* that "some snakes are poisonous" and that "some poisonous things are snakes." All Particular Affirmative propositions will look like this when diagrammed. Let's look at one more example:

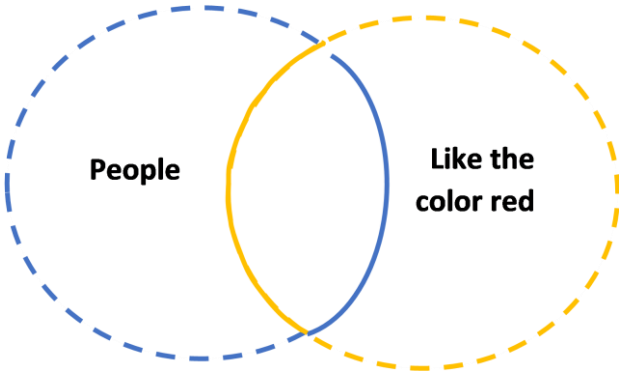

Figure 2: "Some people like the color red"
(Particular Affirmative)

Now, for an example of a Particular Negative proposition:

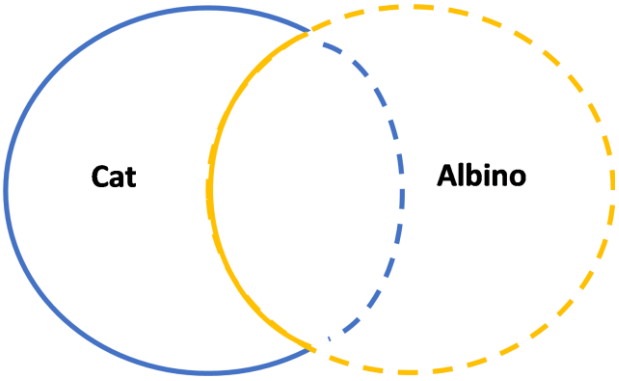

Figure 3: "Some cats are not albinos"
(Particular Negative)

We are supposed to recognize that a portion of the area in the circle labeled "Cat" is not included in the circle labeled "Albino." This spatial relation represents the Particular Negative proposition "some cats are not albinos." Thus, we see that the part of the "Cat" circle outside of the "Albino" circle is a *solid line*. However, just from "Some cats are not albinos," we do not know if there are any cats which are albinos! There might be, but we are not sure from the information given. Therefore, we draw a *dotted line* for the part of the "Cat" circle that is inside the "Albino" circle.

Likewise, it could be the case that "all albinos are cats" while still being the case that "some cats are not albinos." *All we know* is that which is enclosed by a solid line on all sides: the space which represents that there are some things that are in the circle of cats that are outside of the circle of albinos. All Particular Negative propositions will look this way. Here's one more example:

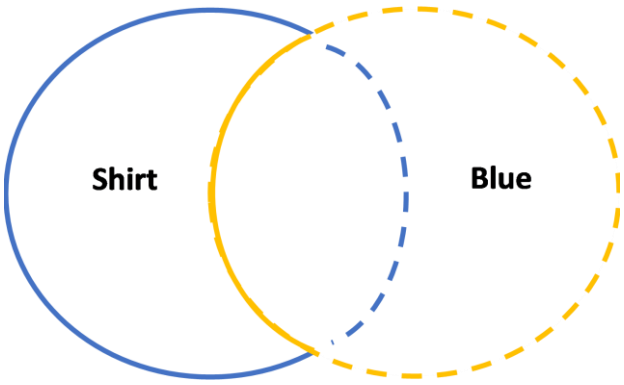

Figure 4: "Some shirts are not blue"
(Particular Negative)

III. Exercises

1. Looking at the following four statements, decide which one is an example of a Particular Affirmative proposition that is true, a Particular Affirmative proposition that is false, a Particular

Negative proposition that is false, and a Particular Negative proposition that is true. Hint: don't forget about platypi!

i. Some dogs are not mammals.
ii. Some dogs are butterflies.
iii. Some mammals lay eggs.
iv. Some mammals don't lay eggs.

2. (REVIEW): Without looking at the previous lesson, consider the following examples of *universal* propositions. Diagram them using Euler Circles. (Remember, while "Amy" is a single person, any subject of a proposition with a proper name guarantees that proposition is treated as a *universal* proposition).

i. Amy is happy.
ii. Amy is not joyful.
iii. Amy is angry.
iv. Amy is not sad.

3. Represent the proposition "Some dogs are happy" with Euler Circles.

4. Come up with your own Particular Affirmative proposition. Represent it with Euler Circles and explain why it is represented that way.

5. Represent the proposition "Some concerts are not loud" with Euler Circles.

6. Come up with your own Particular Negative proposition. Represent it with Euler Circles and explain why it is represented that way.

7. Challenge: is "some cats are animals" an example of a Particular Affirmative proposition that is true, or a Particular Affirmative proposition that is false?

V. Conclusion

Just like many of our assertions about the world are instances of Universal Affirmative or Universal Negative propositions, we also make many assertions that are instances of Particular Affirmative or Particular Negative propositions. Getting a sense of how these propositions function and relate to one another helps us understand what exactly it is that we're saying about the world around us. Furthermore, diagramming them will help us to visualize what we really mean and don't mean when we make such claims.

VI. Lesson Goals

At the end of this lesson, students will be able to:

- describe what Particular Affirmative and Particular Negative propositions are;
- explain the difference between true and false propositions of each type;
- determine which *individual* propositions are examples of each *type* of proposition;
- use Euler Circles to represent each type of proposition

Answer Key:

Exercise 1:

i. Some dogs are not mammals – Particular Negative, false
ii. Some dogs are butterflies – Particular Affirmative, false
iii. Some mammals lay eggs – Particular Affirmative, true
iv. Some mammals don't lay eggs – Particular Negative, true

Exercise 2 (review):

i.

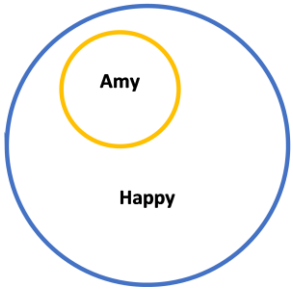

Figure 5: Euler Circles for "Amy is happy."

ii.

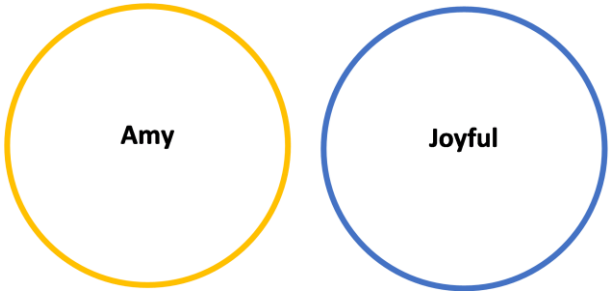

Figure 6: Euler Circles for "Amy is not joyful."

iii.

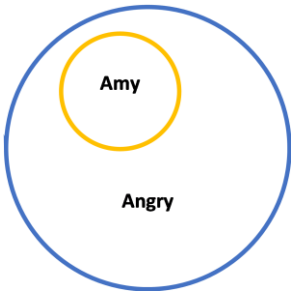

Figure 7: Euler Circles for "Amy is angry."

iv.

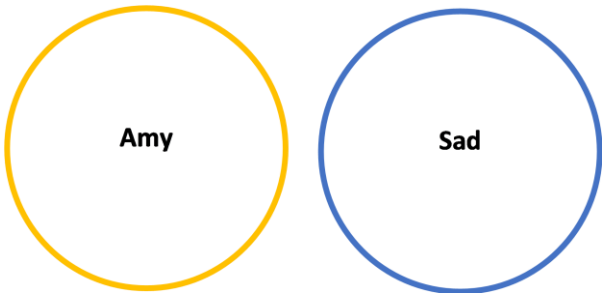

Figure 8: Euler Circles for "Amy is not sad."

Exercise 3:

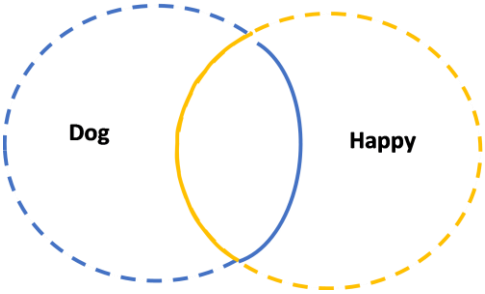

Figure 9: Euler Circles for "Some dogs are happy."

Exercise 4:

Answers will vary, but diagrams should look similar to the ones directly above, with explanations similar to those given in the "Examples" section of this lesson.

Exercise 5:

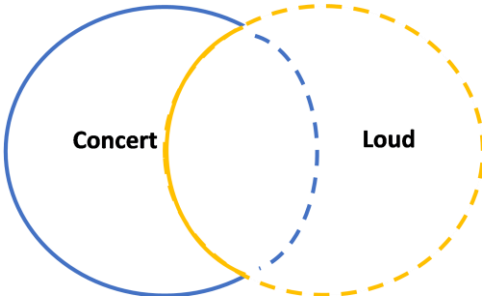

Figure 10: Euler Circles for "Some concerts are not loud"

Exercise 6:

Answers will vary, but diagrams should look similar to the ones directly above, with explanations similar to those given in the "Examples" section of this lesson.

Exercise 7:

"Some cats are animals" is an example of a Particular Affirmative proposition that is true. It may initially appear as though it is false because *all* cats are animals, but we must remember that "some" is a subset of "all." So, the proposition is technically true, albeit misleading.