

3.1 PROJECT

SELF-REFERENCE, BARBERS, ALLIGATORS, AND PARADOXES

As you have learned in Section 3.1, not all sentences in English qualify as statements. There are several ways in which seemingly simple sentences can lead to head-scratching situations. In this project, we will consider three different sentences that do not qualify as statements.

First, consider a barber who operates under the following assumption, which is the barber paradox: The barber shaves all those, and those only, who do not shave themselves.

1. Suppose that Cristiano, who is not the barber, does not shave himself. Will the barber shave Cristiano?
2. Arjun, who is also not the barber, shaves himself every morning. Will the barber shave Arjun?
3. Does the barber shave himself? (**Hint:** Explore the consequences of answering “yes, the barber does shave himself” and “no, the barber does not shave himself.”)

Now, imagine the admittedly bizarre situation where an alligator steals a child and promises the child’s safe return if the child’s mother can correctly guess what action the alligator will take with the child next: returning the child safely or not returning the child.

4. How would the alligator respond in the case the mother guesses that the child will not be returned?

Finally, recall the famous tale of Pinocchio, whose nose would grow every time he told a lie.

5. What happens if Pinocchio says, “My nose grows now”?

The issues you may have encountered while thinking about these situations have to do with the phenomenon of self-reference; these are *self-referential statements*.

6. Perform an internet search and find the definition of self-reference.
7. Explain how self-reference is working in each of the three examples we covered in this project to make them paradoxes.