

Express Riddler

22 October 2021

Riddle:

Duke Leto Atreides knows for a fact that there are not one, but two traitors within his royal household. The suspects are Lady Jessica, Dr. Wellington Yueh, Gurney Halleck and Duncan Idaho. Leto's advisor, Thufir Hawat, will assist him in questioning the four suspects. Anyone who is a traitor will tell a lie, while anyone who is not a traitor will tell the truth.

Upon interrogation, Jessica says that she is not the traitor, while Wellington similarly says that he is not the traitor. Gurney says that Jessica or Wellington is a traitor. Finally, Duncan says that Jessica or Gurney is a traitor. (Thufir, being the logician that he is, notes that when someone says thing A is true or thing B is true, both A and B can technically be true.)

After playing back the interrogations in his mind, Thufir is ready to report the name of one of the traitors to the duke. Whose name does he report?

Solution:

There are $\binom{4}{2} = 6$ ways to have two traitors among four people, whom I designate J, W, G, and D. I list these scenarios below. They are organized by whose statements are true or false, along with whether the resulting statements are logically consistent:

True	False	Consistent?
J W	G D	No
J G	W D	Yes
J D	W G	No
W G	J D	No
W D	J G	No
G D	J W	Yes

There are two scenarios which are logically consistent, so the identity of both traitors cannot be determined. But in both of those scenarios, Wellington is one of the traitors. So the solution is **Dr. Wellington Yueh**.