

How Do Planes Fly The True Story

By

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Do You Have to Accept Everything You Have Been Taught?

- The Earth is flat
- If you travel faster than 40 mph (70 kph) you will suffocate
- Can't take the square root of (-1)
- Nothing travels faster than light
- The religion I was brought up with is the only religion
- Lift from a wing is based on the Bernoulli's Principle

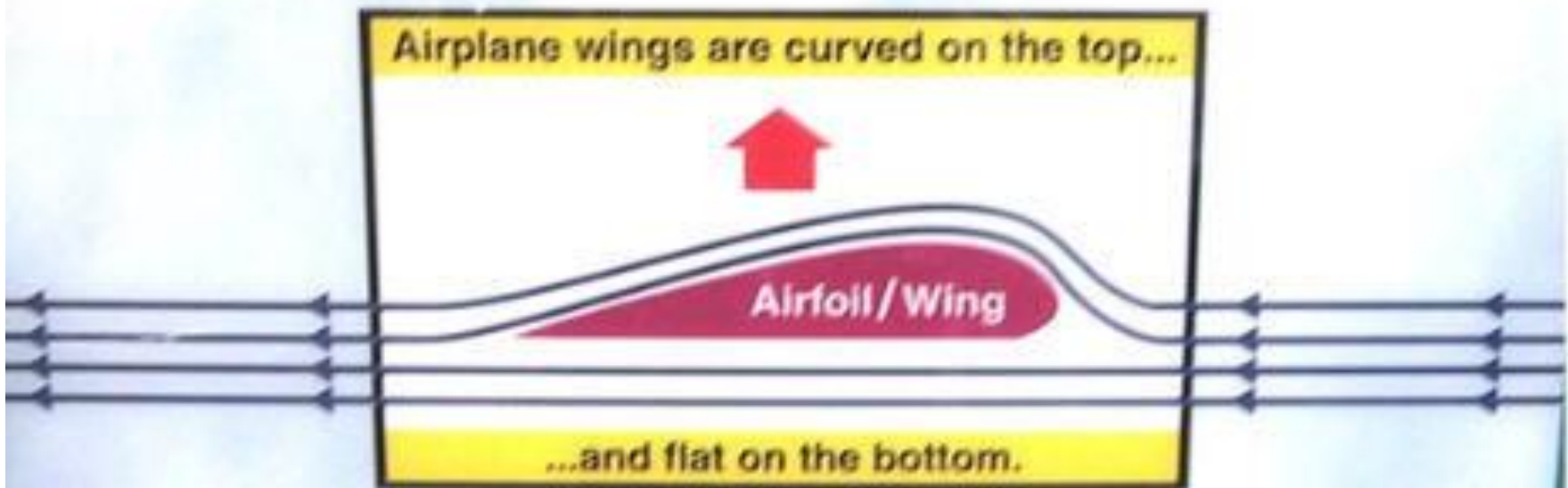
How Do Planes Fly

- Are we using the correct model?
- What are the alternatives?
- Describe the classic model (Based on Bernoulli's Principle, who was born 1654)
- Describe the Coanda Model (Based on Newton's Law, who was born 1642)

Classic Bernoulli

1 A wing moving through the air creates lift because there is less pressure on the curved top side than on the flat bottom side.

2 Since air traveling along the *top* of the wing takes a longer path, the air above the wing is traveling faster. This faster-moving air has lower pressure than the surrounding air.

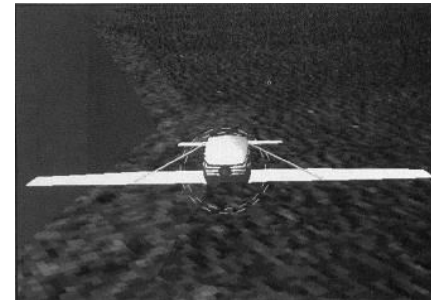


3 Under the wing, the air is moving slower and has more pressure.

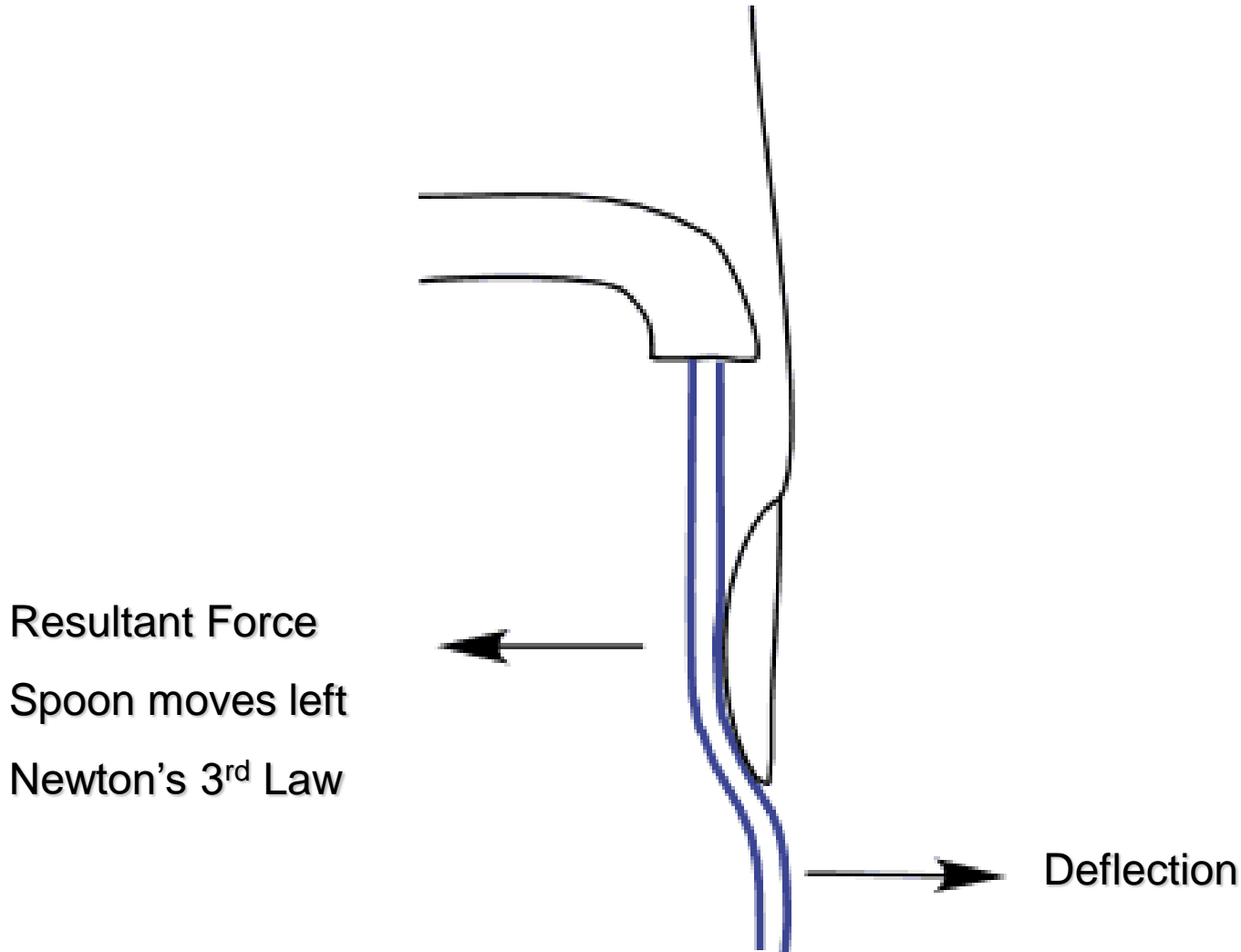
4 The difference in air pressure below and above the wing will cause the wing to lift.

What is Wrong with Applying Bernoulli's Principle?

- Only about 4% lift attributed to pressure difference
- The Red Baron would not get off the ground, wings are flat
- A basic balsa wood plane glides with flat wings, yet still requires lift
- How would you sustain inverted flight?

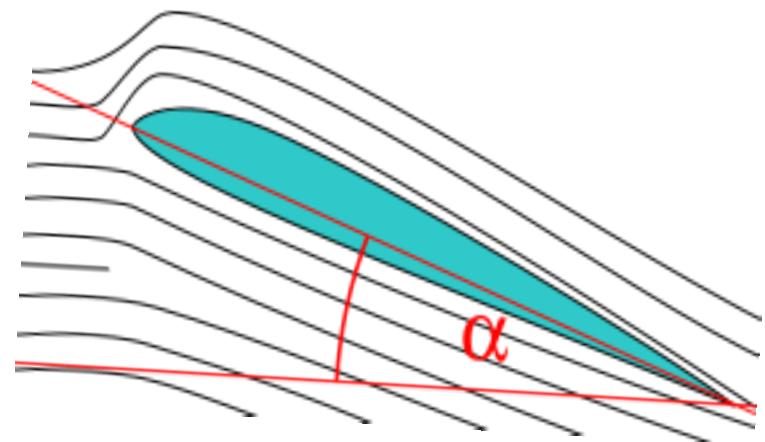
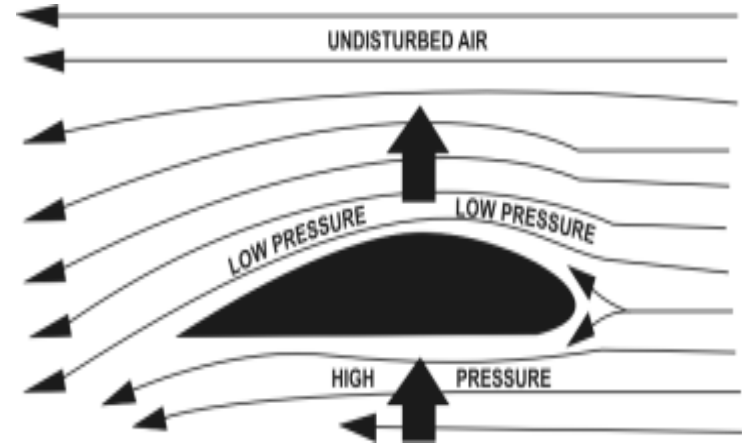


Coanda Principle Explained with Water onto a Spoon



Coanda Model Explained for a Wing

- Air clings to the surface of the wing
- As it leaves the end of the wing the air is deflected down
- The resulting deflection has a resultant upward lift (Newton's 3rd Law)
- This deflection is related to the angle of attack



Conclusion

- Sometimes you need to question things
- Alternative approach to the principles of flight
- Don't take something on board if you have doubts
- Look at the evidence and make a decision
- Have an open mind
- Maya Angelou: "There's a world of difference between *truth* and *facts*. *Facts* can obscure the *truth*."