



Jun Ajpu' and Xb'alamke' asked a rat to retrieve a ball: How clever are animals?



The cognitive science behind the adventures of
Jun Ajpu' & Xb'alamke'

Part 2.1

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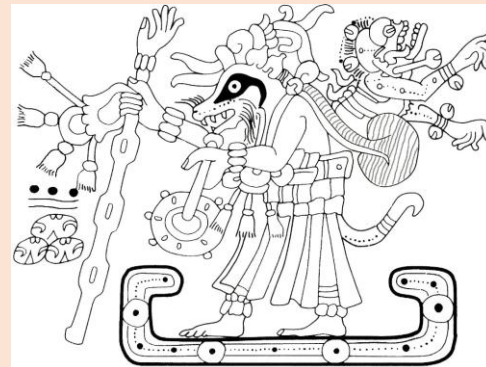
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Outline

1. A story from the *Popol Wuj*
2. Comparative psychology
3. Discussion time
4. Challenge yourself!

(1) *Popol Wuj*

Jun Ajpu' and Xb'alamke' asked a rat to retrieve a ball

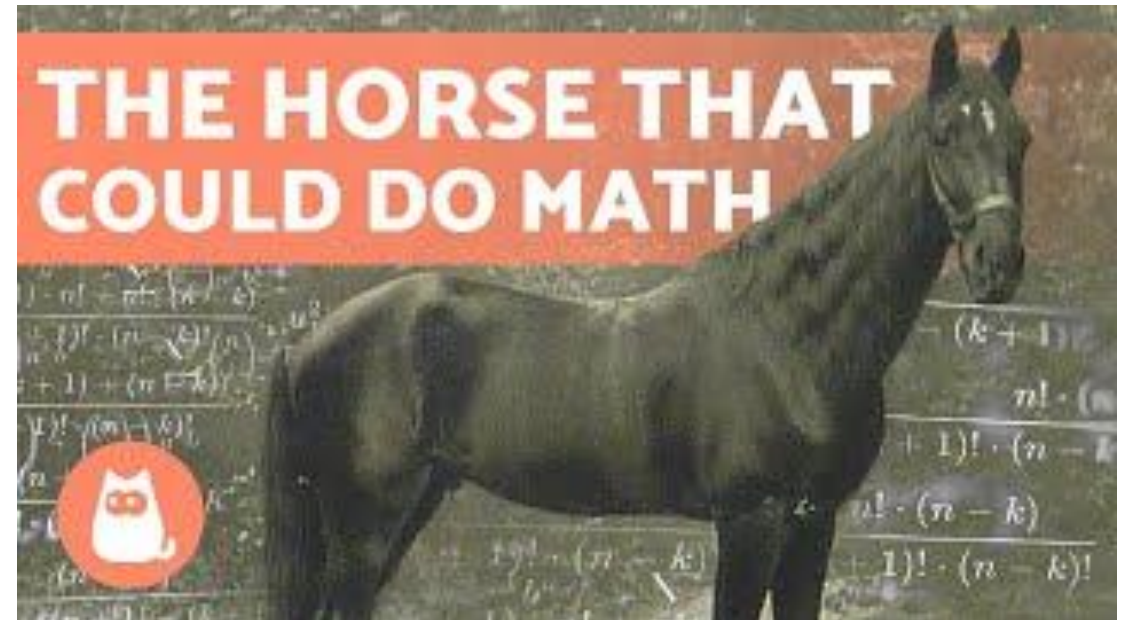
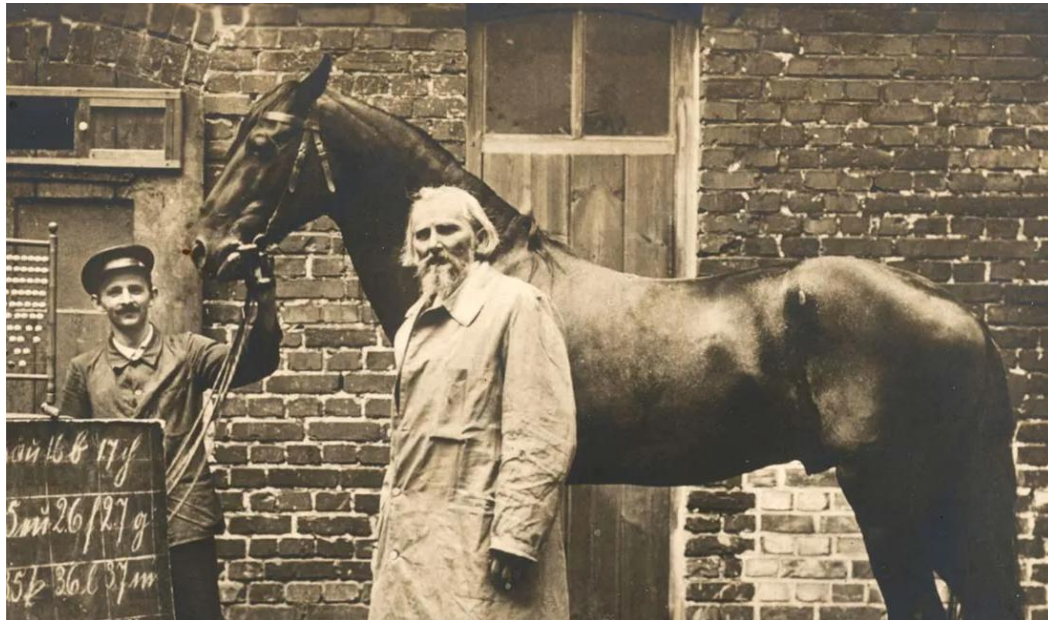


***Jun Ajpu'* and *Xb'alamke'* asked a rat to retrieve a ball**

1. The ball of the twins' father was hung high up in the house
2. The twins tricked the grandmother to leave the house
3. The rat was asked to retrieve the ball and their father's equipment

Clever Hans

- Animals are clever in their own way, but we have to be careful with the way we interpret their intelligence





(2) Cognitive Science

Comparative psychology: Animal cognition

Can animals learn?

1. Associative learning

- Learning to associate two events or stimuli with each other.
- Lab: eye-blink conditioning (tone + mild shock at the cheek)
- Wild: food -> stomachache -> avoid food

2. Discrimination learning

- Learning to differentiate between two or more stimuli or groups based on their distinct features or outcomes.
- Lab: perceptual learning (two stimuli leading to two events)
- Wild: differentiate between food and poison

Can animals count?

- 1. Insects display evidence of **circadian rhythm** (internal body clock)
- 1. Pigeons are sensitive to **relative numerosity** (which group has more items)
- 1. Parrots and chimps: when trained, are able to do **simple addition** – but how they achieve the correct answer may be different from humans

Can animals talk?

1. Animals do communicate (the dance of honeybees, various cries of vervet monkeys)

1. But is that language?

- Has arbitrary units
- Is meaningful
- Goes beyond current state and time (e.g., what happened in the past)
- Can be constructed differently to convey different meanings



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(3) Discussion time

Why is critical thinking in science important?

Think

- How do we know that the findings can be trusted?
- What is the difference between critical thinking and scepticism?
- The danger of spreading false findings:
- A reduction in number of vaccination due to a false claim that vaccination causes autism
- **[VACCINATION DOES NOT CAUSE AUTISM]**



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(4) Are you up for the challenge?

Explain what you have learned in K'iche'

The challenge:

- Knowledge is knowledge, regardless of the language that it is conveyed in.
- Many children around the world learn science in their mother tongue when they are younger, and switch to English only when they are older.
- Can you explain today's session in K'iche' to children who are not fluent in Spanish?