ONE DOG, ONE CAT, ONE MOUSE

Alcuin's famous river crossing puzzle from the 9th Century has been traditionally stated with *a fox, a goose and a bean bag* or *a wolf, a goose and cabbage.* In the mathematical section of the Pacific Science Center in Seattle the riddle has been presented to the general public as an exhibit (with a small boat and tokens depicting wolf, goat and cabbage).
The riddle could alternatively be stated with *a dog, a cat and a mouse* because it is intuitive that one cannot leave the cat alone with the dog, nor with the mouse.

ONE DOG, ONE CAT, ONE MOUSE
A dog, a cat and a mouse are on the move. You have to bring them to their new home.
- You cannot transport more than one animal at a time.
- It is not possible to leave alone the cat with the dog.
- It is not possible to leave alone the cat with the mouse.

Place the animals in their old home (the box on the left) and bring them to their new home (the box on the right). Let the moving begin!

The riddle is *straight-forward* and the solution can be constructed step by step with the only reasonable thing to do, namely the choice that respects the rules and avoids going back to a previous configuration. The dog and the mouse are interchangeable but up to that the solution with the minimal amount of moves is unique.
The *key idea* is realising that some animals have to be transported back.

EXHIBIT MATERIAL

- *Three plushes: one brown dog, one black cat, one grey mouse.* The plushes should be children-safe and washable. They should have comparable sizes and not be too big.
- *Two boxes without lid.* They should be equal but possibly with different colours. They should be big enough to contain the three plushes easily but not larger than that. The boxes should not be too far (transportation should be easy) but not too close either (beyond giving the idea of moving, for the solution one should better concentrate on one box at a time).
- *Explanation panel.* The explanations in the requested languages.
- *Inclusion:* An audio message can replace the explanation panel. The exhibition panel can also be written in Braille. Blind people can in principle use the exhibit but it is conceivable to make an adapted version with tiny boxes and tiny figures with shapes that are easily distinguishable by touch (the adapted material should be 3D-printable and made freely accessible world-wide).

REFERENCES

The riddle can be found online in several websites. The English Wikipedia page mentioning it is “River crossing puzzle”. Other keywords are “Fox, goose and bag of beans puzzle” and “Wolf, goat and cabbage problem”.