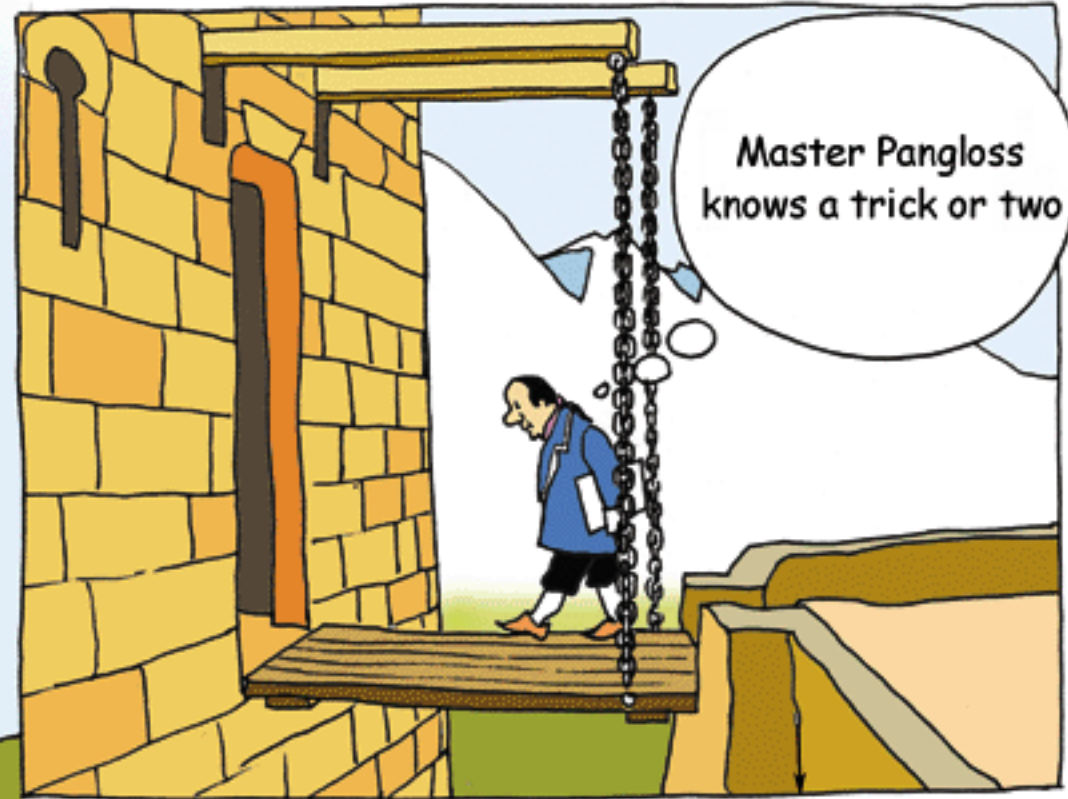
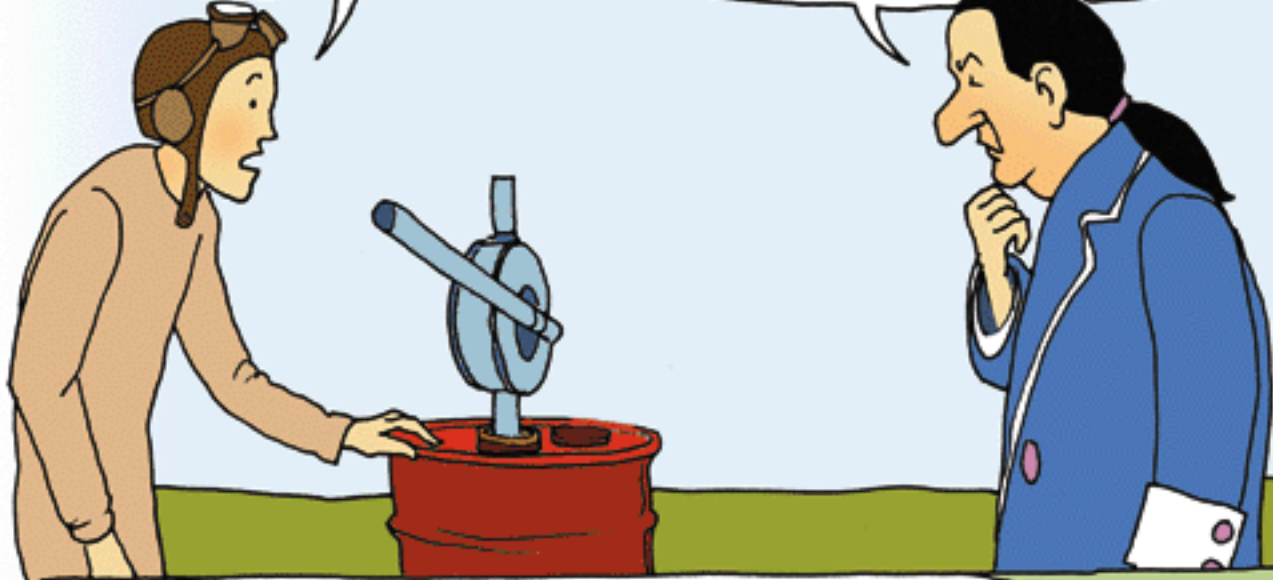


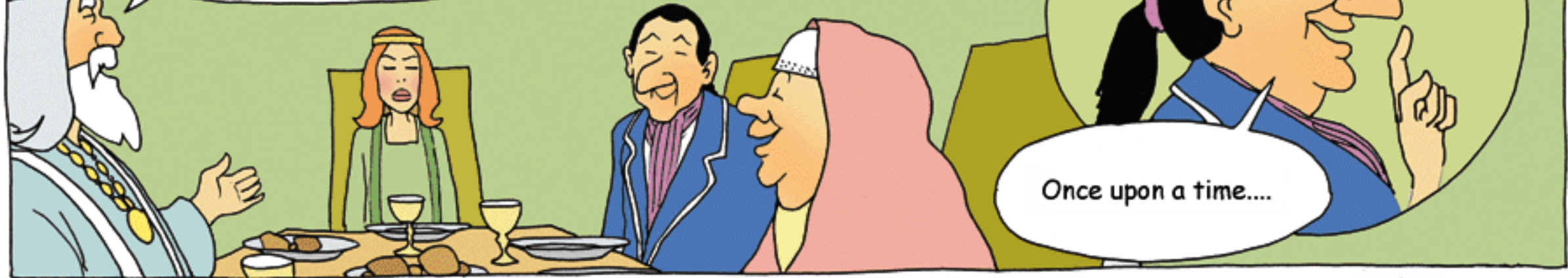
You're right Master Pangloss. But what can I do?

I'm dining at the castle, I'll find a way of telling her



Ah Master Pangloss, why not tell us a beautiful story, full of philosophy which will help make our brainless daughter a little wiser?

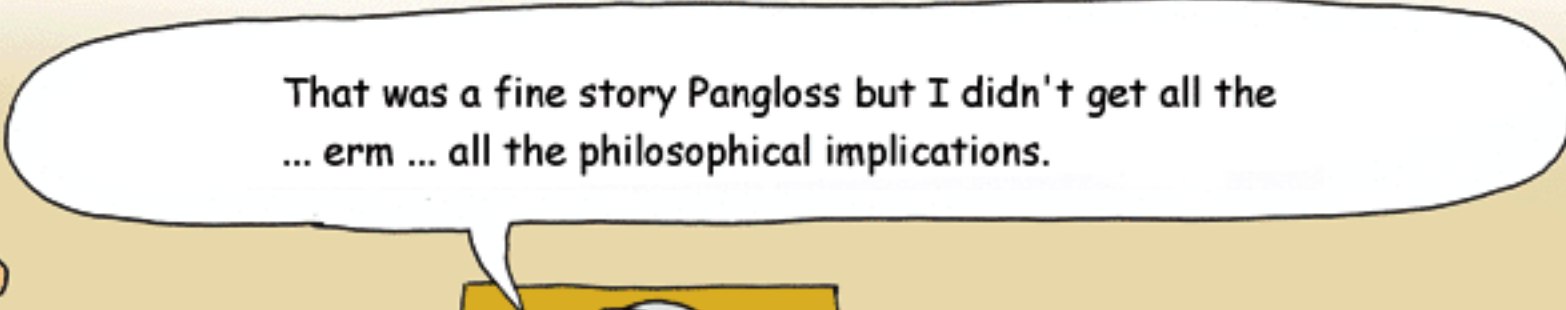
Ah yes Master, your philosophical tales are very popular here



...and then the prince, at the time the church bell rang the twelve strokes of midday, climbed onto his magic carpet and went to free the princess, who was waiting on top of the highest tower in the castle.

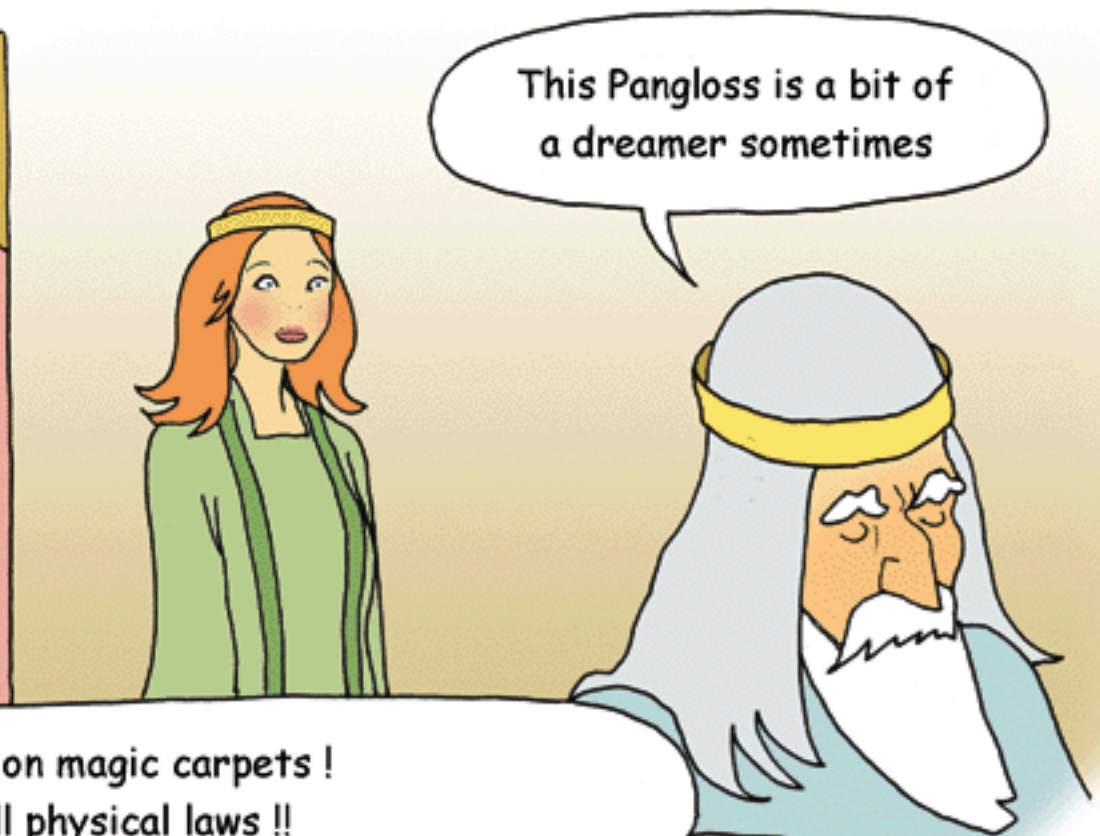


That was a fine story Pangloss but I didn't get all the ... erm ... all the philosophical implications.



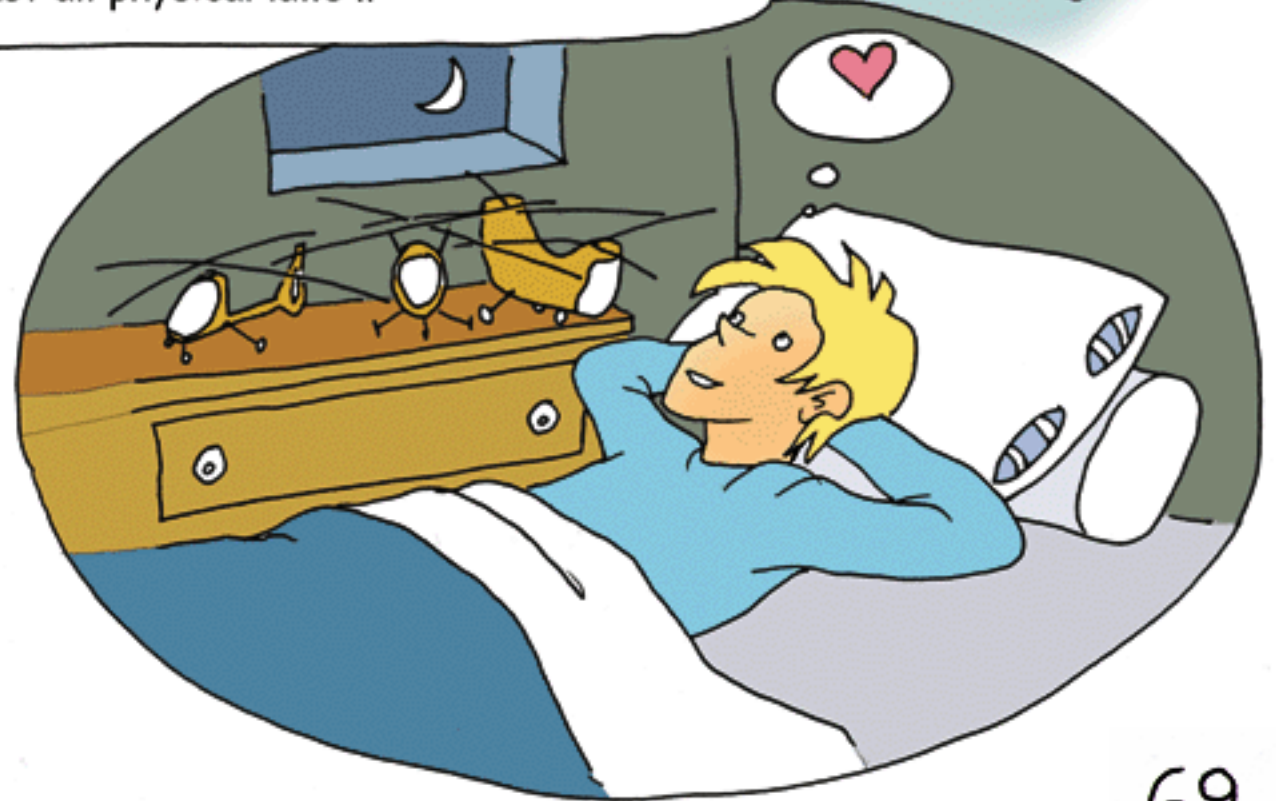


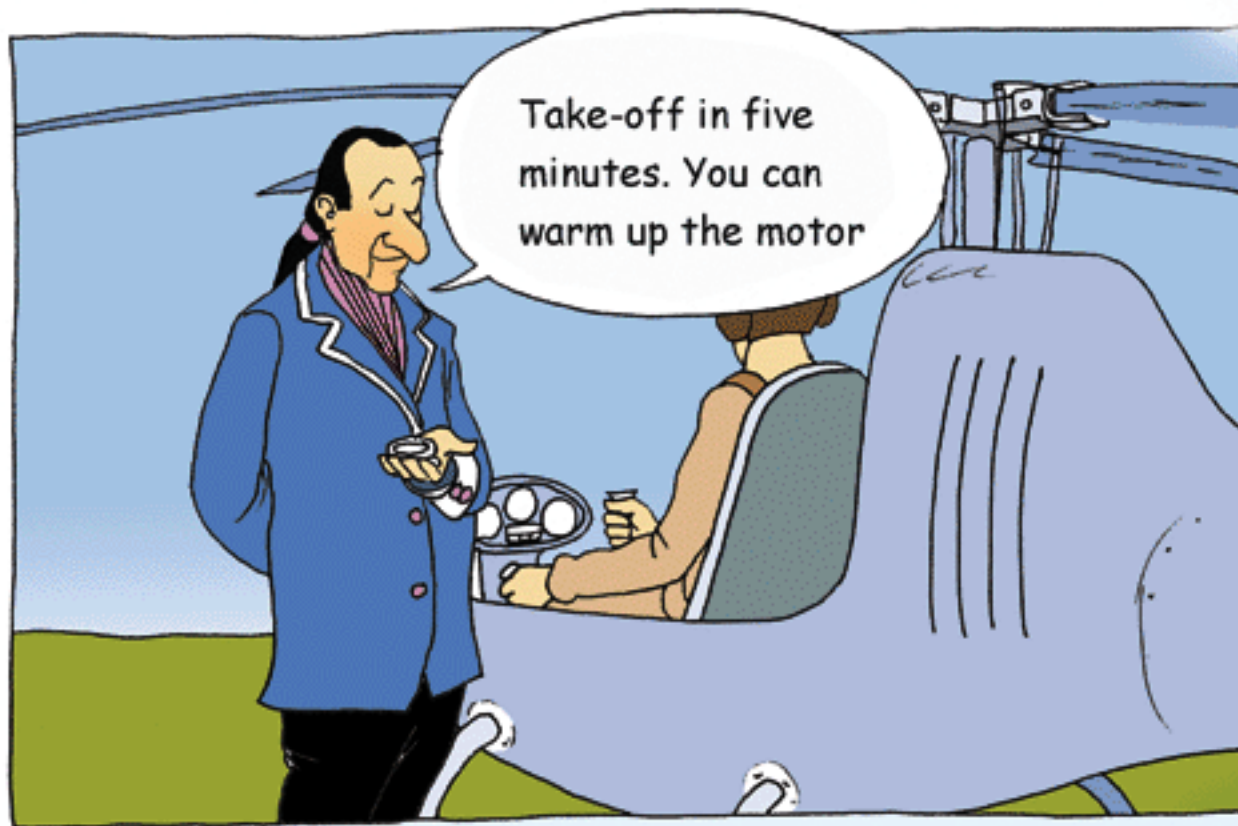
Stories like that only exist in fairy tales, or you have to believe in Father Christmas



This Pangloss is a bit of a dreamer sometimes

Princes arriving on magic carpets!
It's against all physical laws!!



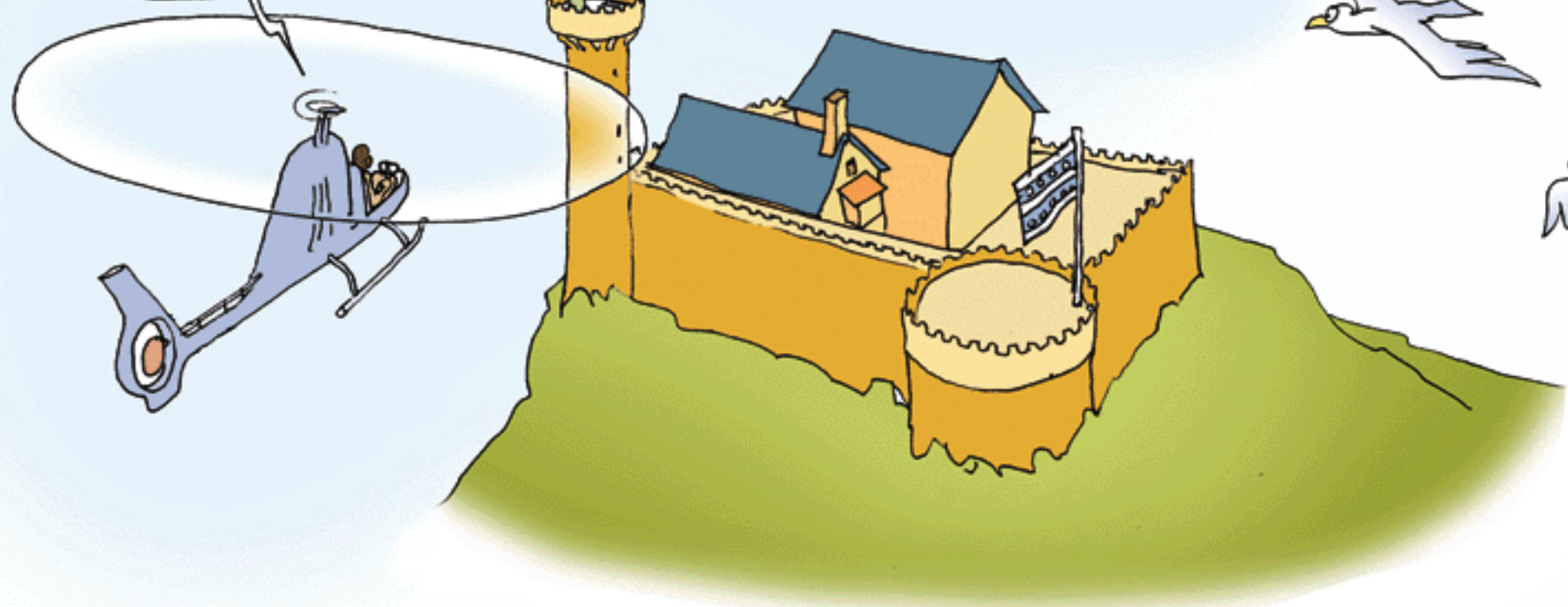


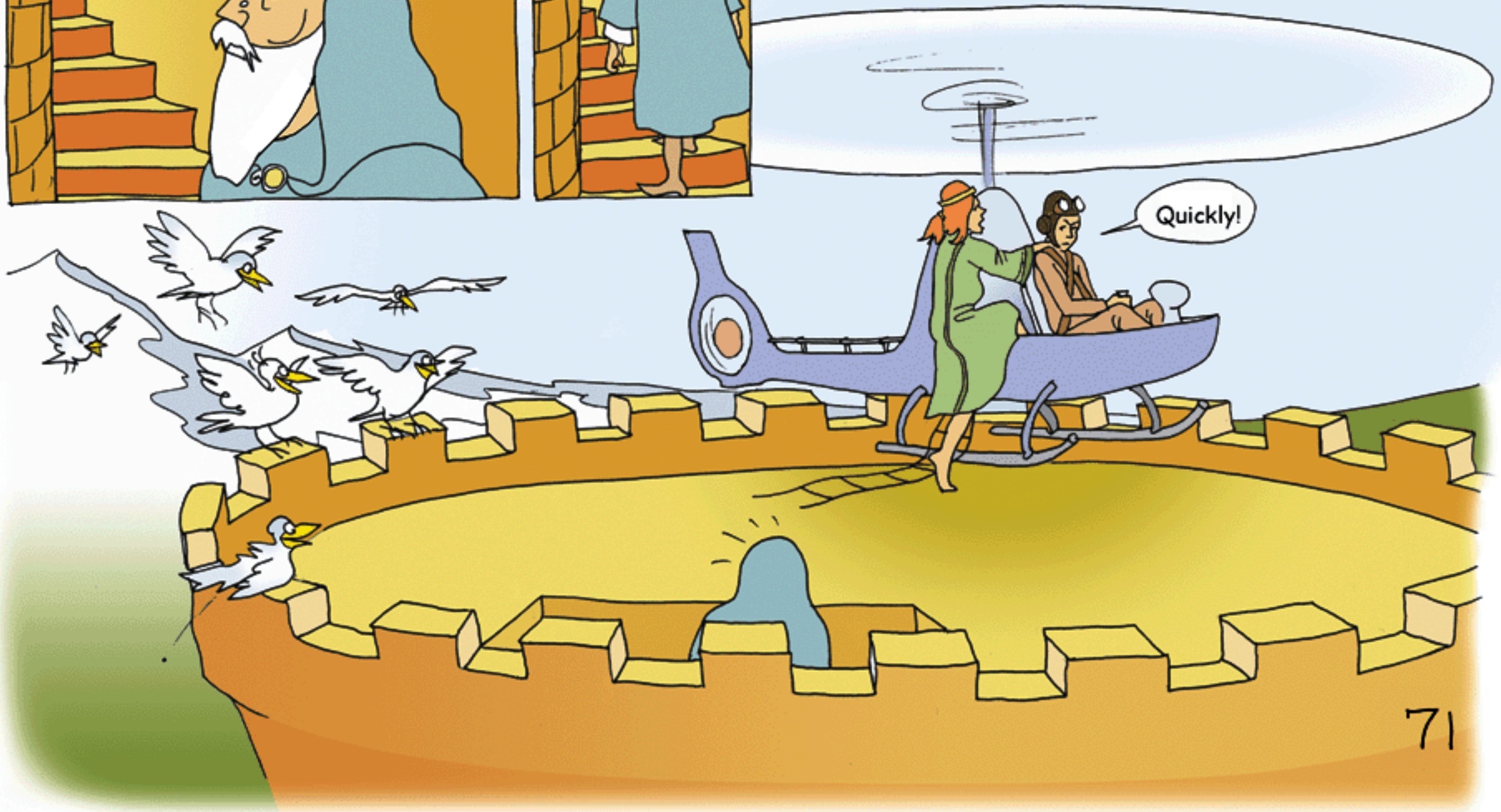
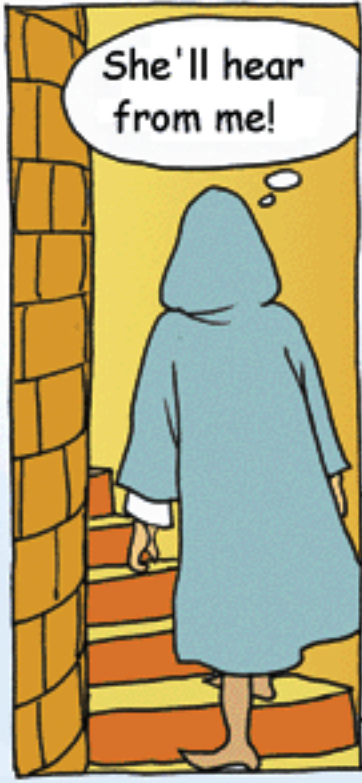
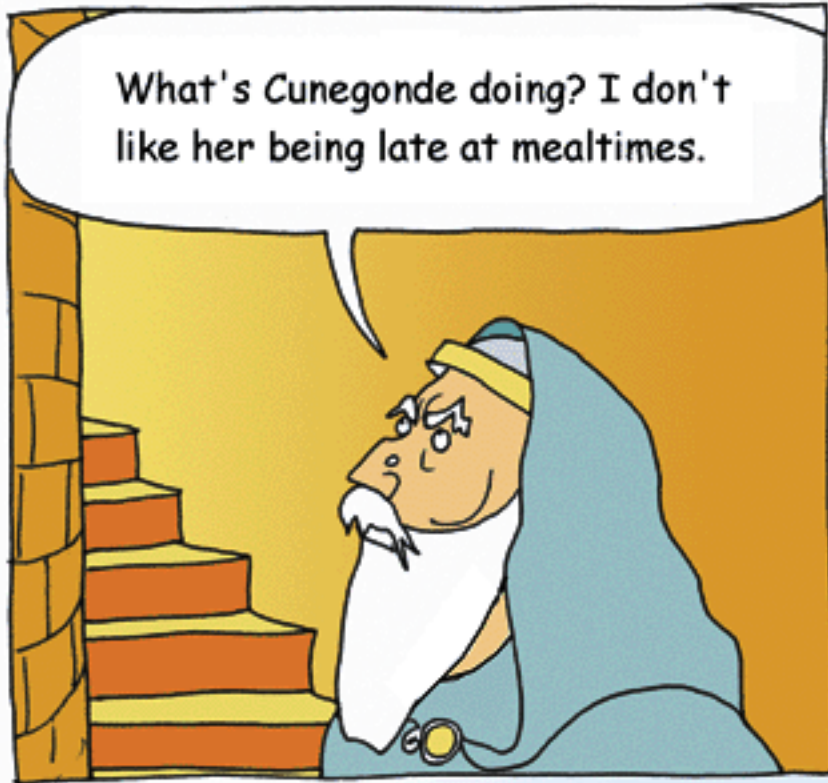
Take-off in five minutes. You can warm up the motor

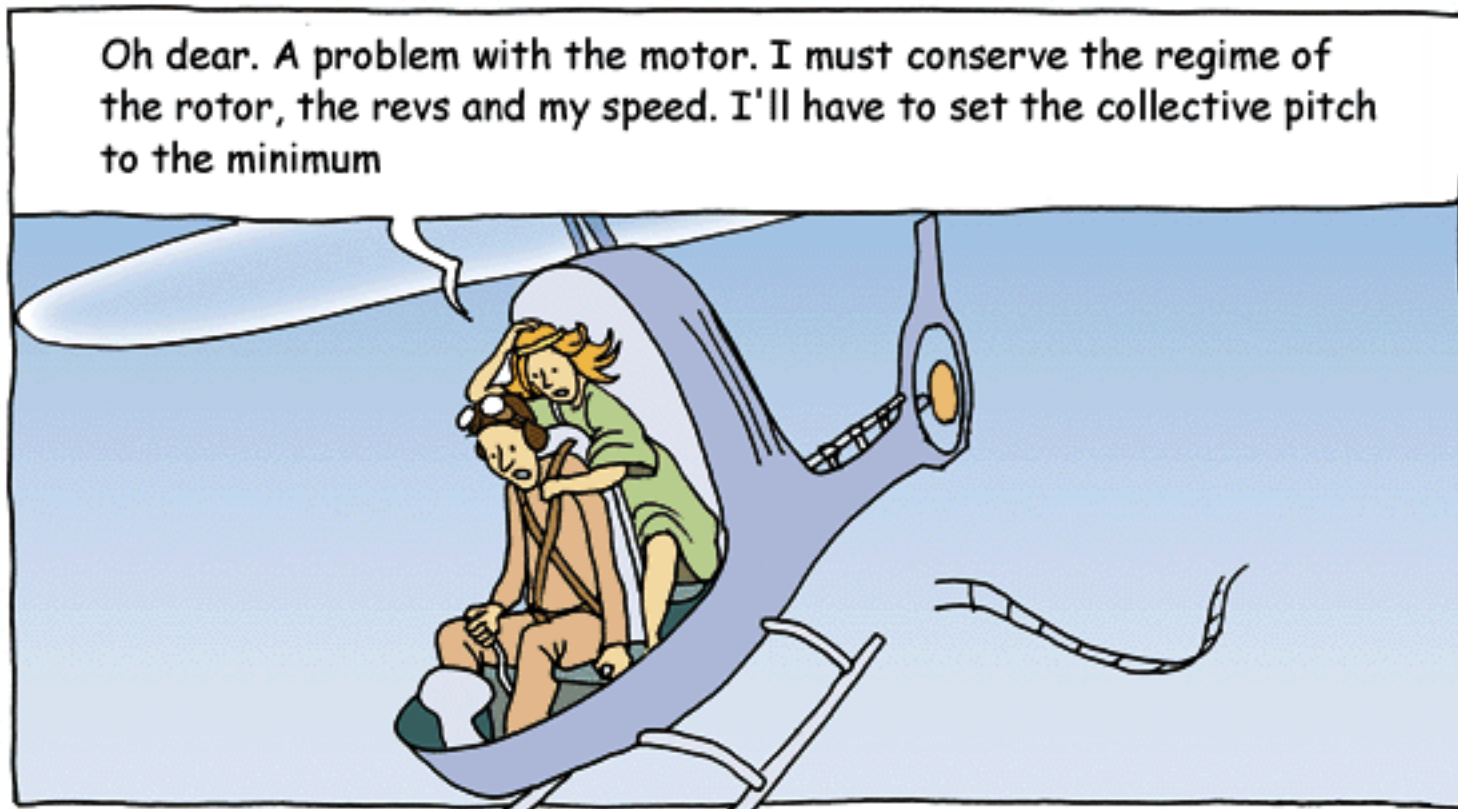
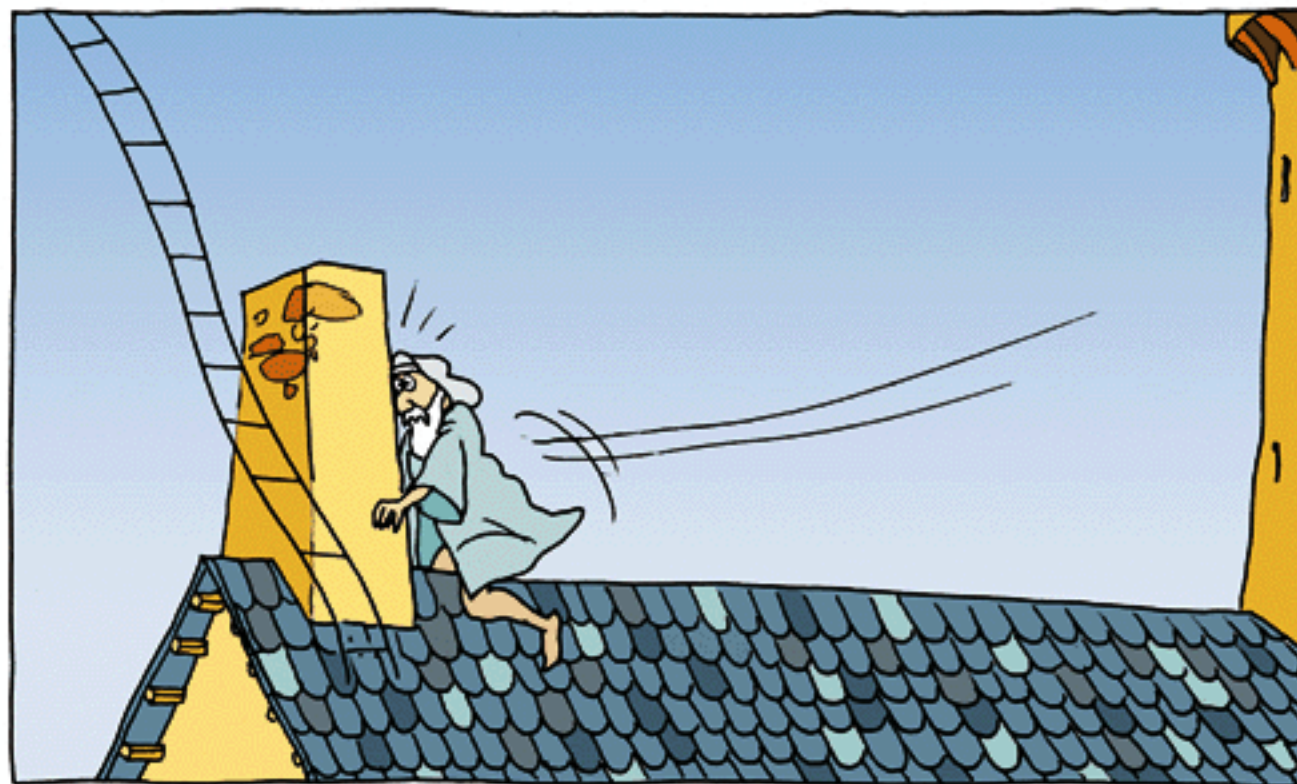
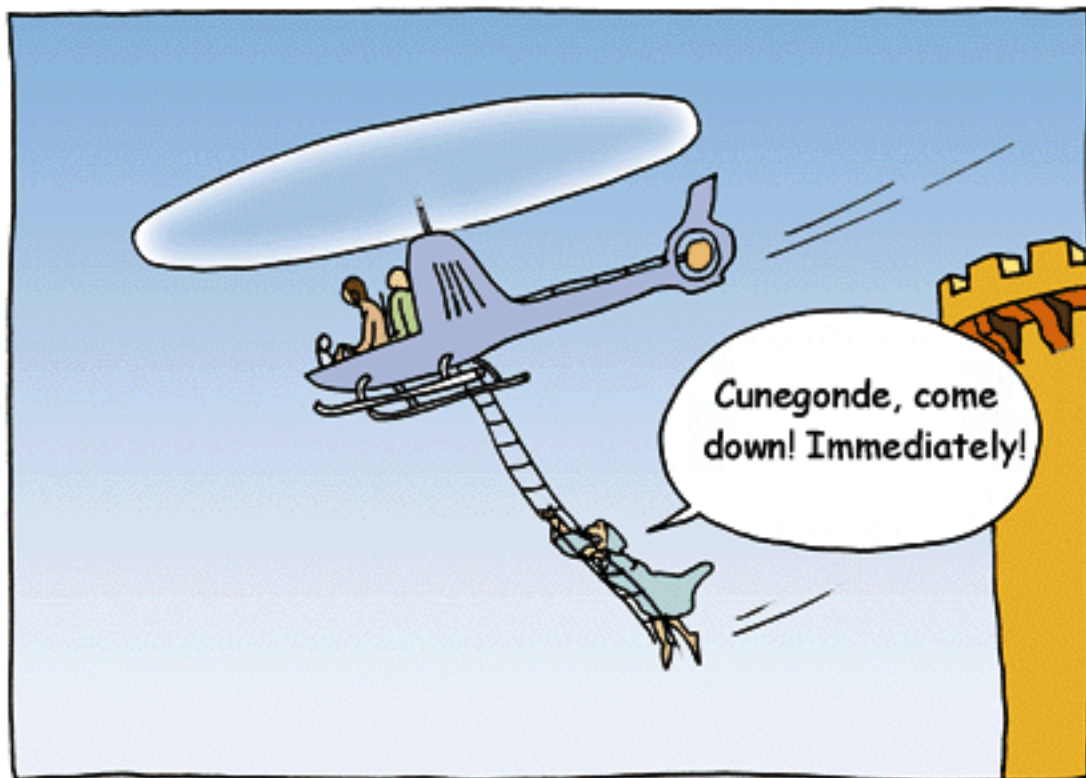


Pangloss said midday. The clock is beginning to strike. I must get up to the terrace

Here we are!!









OK, now the air flow is inverted. It's going from the top to the bottom. My helicopter has been turned into an autogyro. The motor part, the rotor's autorotation, pulls the rest.

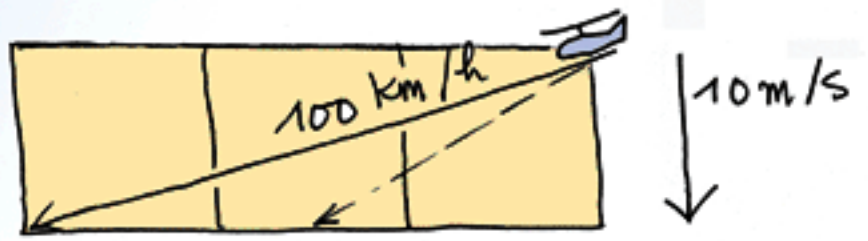
So a helicopter can ... glide?

Have to believe it.

We're descending very fast though: 10 m/s
Not like a stone, but not far off.

In an autorotation regime a helicopter has a speed of 100 km/h, which corresponds to a aerodynamic efficiency of 3 (♥). In a vertical autorotation regime the falling speed will be 20 m/s and on impact all passengers would be killed. To clarify, a man could support an impact at 5 m/s, which is equivalent to jumping off a wardrobe (*). An impact at 10 m/s corresponds to a drop from 5 meters.

The Management



Impact at 5 m/s

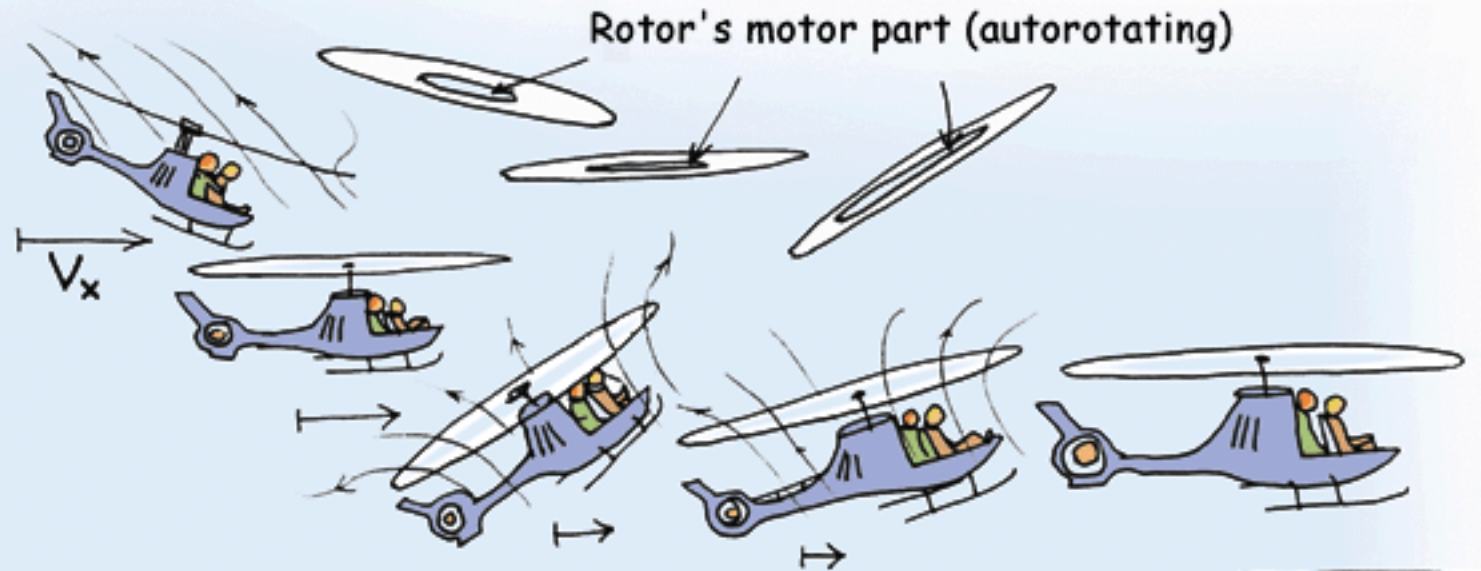
$$(*) V_{(m/s)} = \sqrt{2gz} = \sqrt{20z} \text{ (meters)}$$

♥ Maximum value: around 1,5 for most of machines

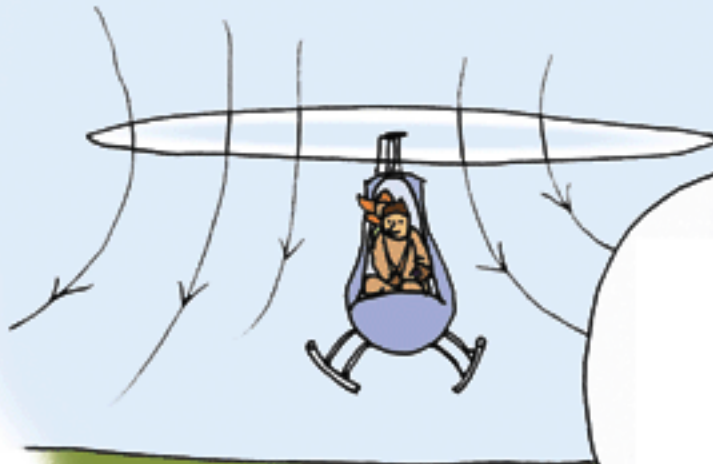


FLARE

I'll have to improvise ...



At ten meters up Candide pulls the joystick hard and maintains the collective pitch at minimum. The machine lifts up its nose and the blades are attacked with a stronger relative wind incidence, which increases the motor part of the autorotating rotor. It then converts the translation's kinetic energy into rotational energy. Then he pushed the joystick.



Then he pulls down the collective pitch lever. The airflow inverts. The rotor then goes from an "autogyro" regime to a "helicopter regime". By using the ground effect he uses the energy stocked by the rotor (*)



(*) This manoeuvre consumes a lot of adrenaline

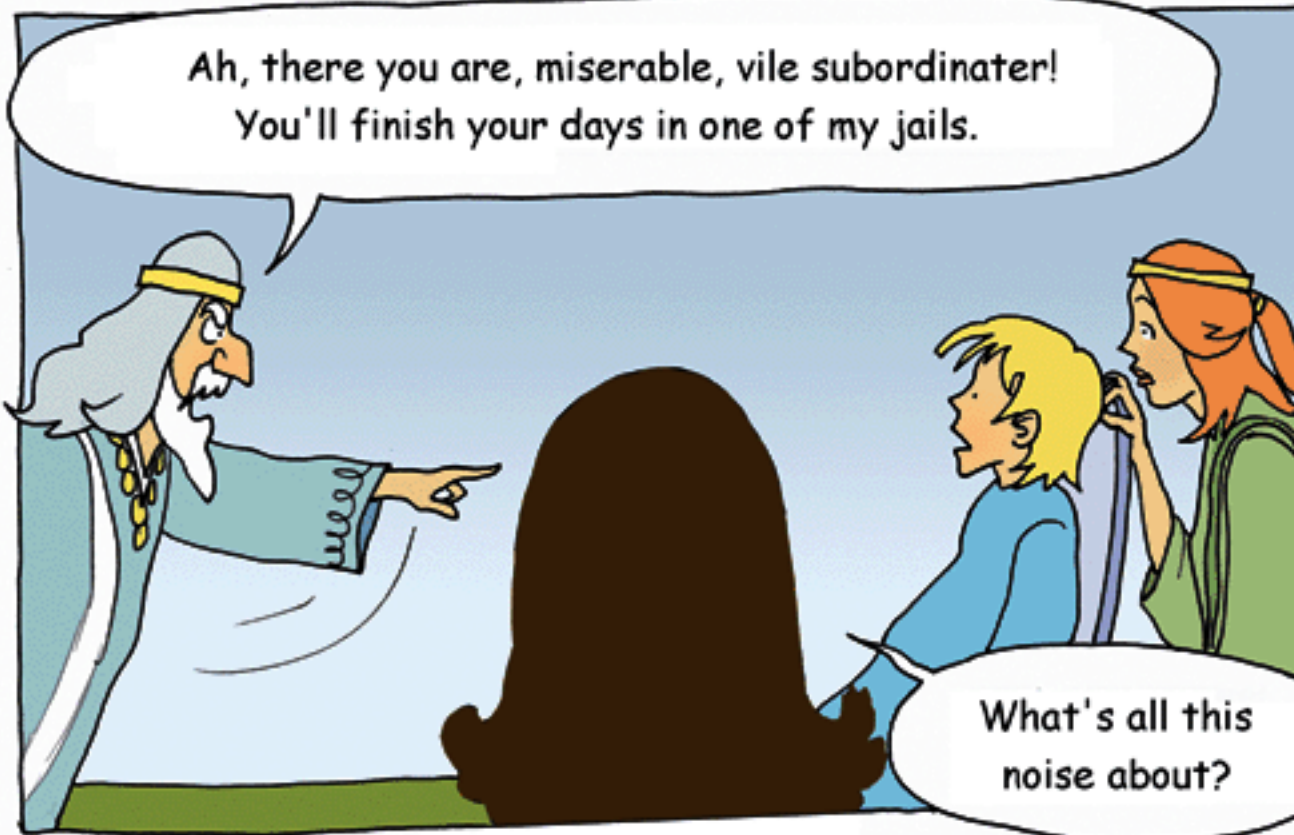


Sir...



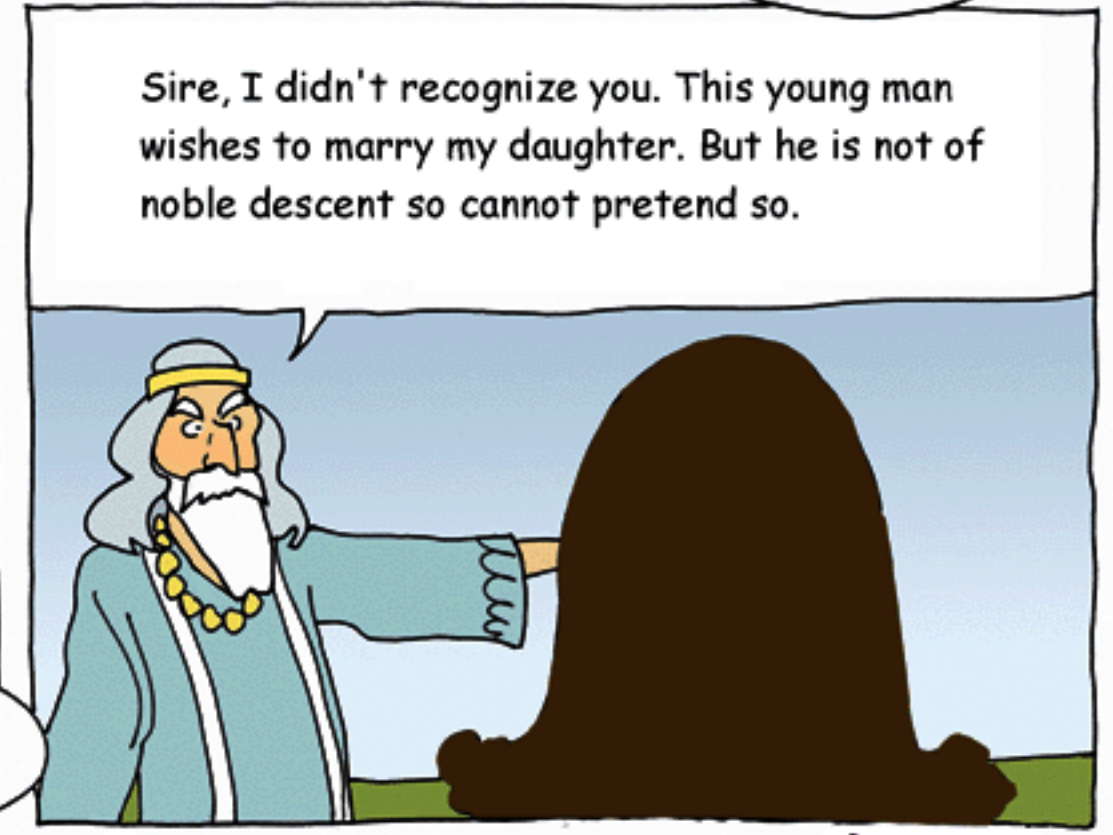
His majesty is very interested by your remarkable demonstration on your flying sparrowhawk

My what?



Ah, there you are, miserable, vile subordinator!
You'll finish your days in one of my jails.

What's all this noise about?

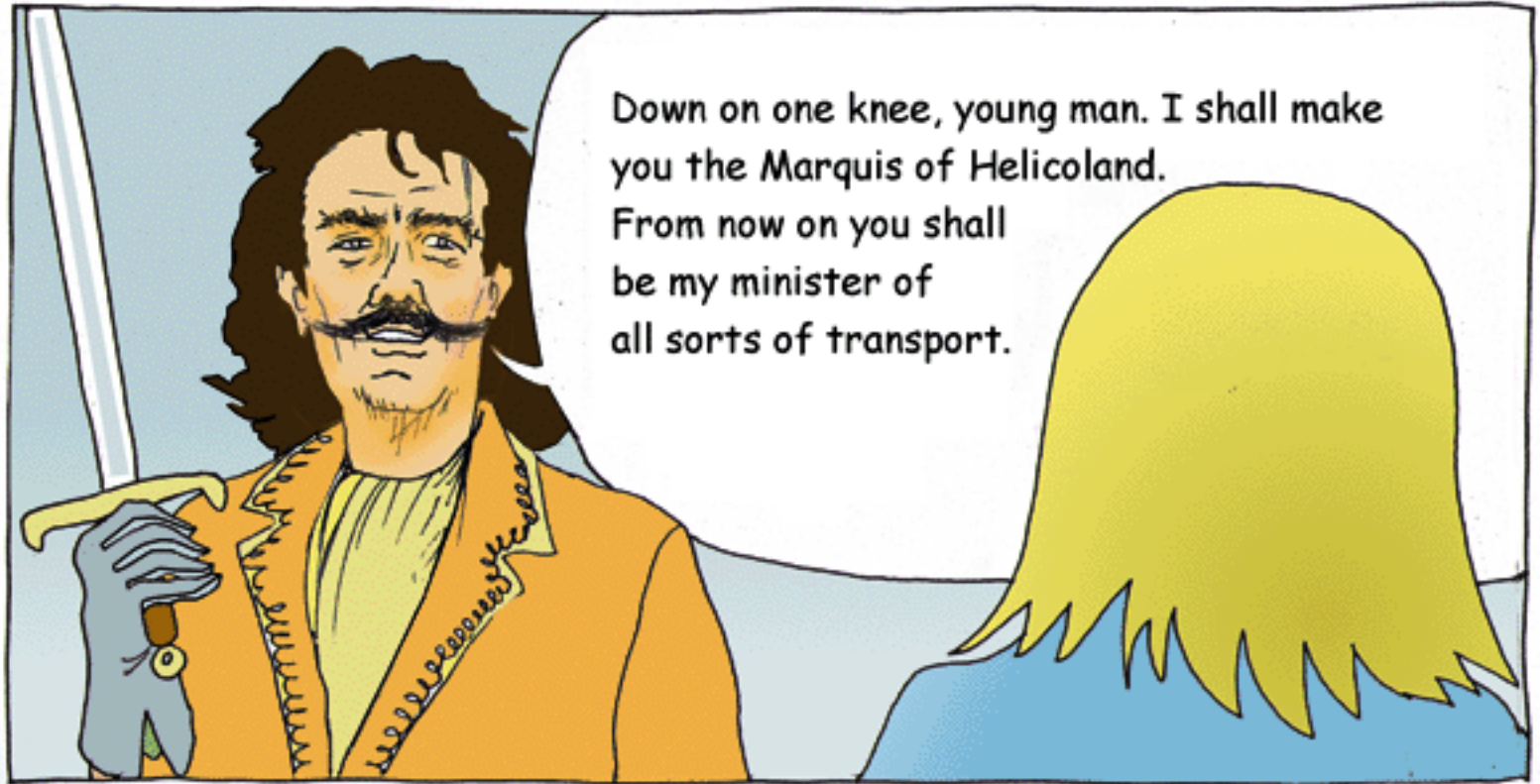


Sire, I didn't recognize you. This young man wishes to marry my daughter. But he is not of noble descent so cannot pretend so.

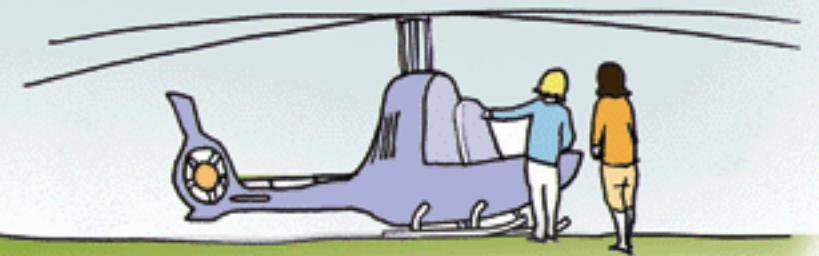
How boring this baron is. For once something amusing appears and he wants to lock up the inventor. We shall sort this out. Plissonneau, pass me your sword if you please.



Down on one knee, young man. I shall make you the Marquis of Helicoland. From now on you shall be my minister of all sorts of transport.



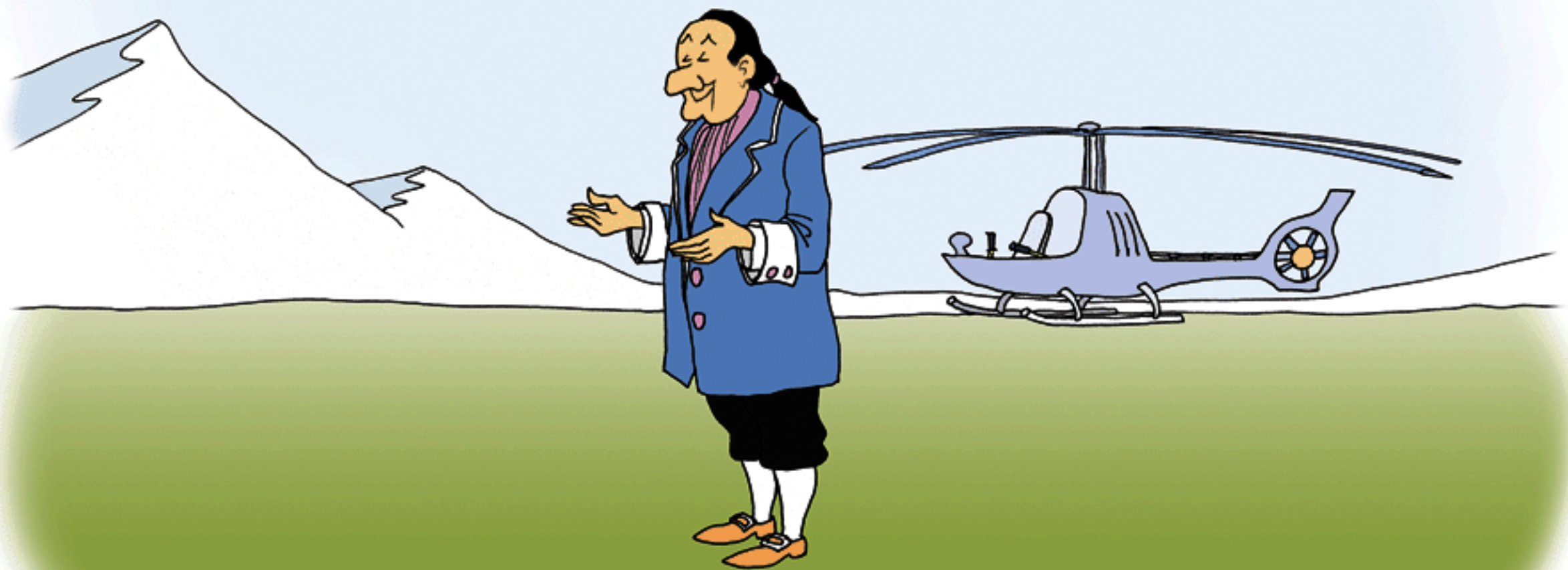
And Marquis is much better than Baron. So now will you go easier daddy?



End

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You see, my dear Candide, that everything is for the best in all possible worlds. For if you had not been thrown out of the baron's castle, with many kicks in your nether regions, you wouldn't have invented the helicopter



Many thanks to Pascal Chrétien for his precious technical advice