

Your majesty  
Excellencies  
Professor Szemerédi  
Distinguished Guests

Once upon a time, there was a little boy named Nils. He had five siblings, and when the father died the family was very poor. So Nils would go out in the forest to find food to eat and wood to burn. One day he got lost. He found himself by a lake, where seven beautiful maidens were swimming. When they saw him, they took fright and shouted: "A human! Let us fly back to Soria Moria!". They turned into swans, took off, and Nils saw them disappear towards the South.

He decided to follow them. He walked South, and eventually he reached Christiania. At the gate at the city stood a small troll, who asked him: "What is the algebraic formula for solving equations of the fifth degree?". Nils answered: "There is no algebraic formula for solving equations of the fifth degree. What is the way to Soria Moria?". The troll said: "I don't know, but go to Berlin. You will find my brother there, he is older and bigger than I am. Perhaps he knows the way to Soria Moria."

Nils then went to Berlin, and there he met the second troll, who was uglier and meaner than the first one. The troll asked him: "Is there anything more beautiful than the trigonometric functions?". Nils answered: "Yes, the elliptic functions, because they are periodic on a lattice. What is the way to Soria Moria?". The troll said: "I don't know, but go to Paris. You will find my brother there, he is older and bigger than I am. Perhaps he know the way to Soria Moria."

Nils then went to Paris, and there he found the third toll, who was much uglier and meaner than the other two put together. The troll asked him: "Can you divide the arc of the lemniscate?". Nils answered: "Yes, I can even do it for any curve of degree four. What is the way to Soria Moria?".

By now, I think you all have recognised the story of Nils Henrik Abel, but I hope some of you have recognised another one, for it is also the story of Askeladden. Askeladden, for those who don't know him, is the hero of many Norwegian folk tales. Typically, he is the youngest of three brothers, and they set out to marry the king's daughter. There are three impossible tasks to fulfil, and whoever succeeds will get the princess. Askeladden's brothers fail miserably, because they are strong and arrogant, and they quickly find out that strength is not enough. It is Askeladden who wins the princess, because he is smart and helpful: he helps people along the way, so he gets help in return.

There is an Askeladden in every mathematician. We do not need expensive equipment or time-consuming experiments to practice our craft: brain power is enough. Niels Henrik Abel on his own, a poor student in Norway, did better than all these famous professors in Berlin or Paris. And yet, our collective efforts have significantly contributed to shaping the modern world. Endre Szemerédi pointed out this morning the internet and medical imaging rely on discrete mathematics. There is another lesson that we learned from Askeladden: give, and you will be given back much more than you gave. Don't stay in your office, share your ideas with other mathematicians, go out of your way to talk to physicists, to biologists, to economists, to managers, find out about their problems. This is how mathematics will progress, this is also how science will progress.

There is even another twist to the Askeladden story: strength and wealth will turn to ashes, what is important is to be smart. If you worry about the future, don't invest in gold and oil, invest in education

and research. However, I would not presume to give lessons to government, so I will get back to my story. The Paris troll told Nils the way to Soria Moria, he went there and met the princesses again. He married the youngest one, and they lived happily ever after.

Well, perhaps it is not the way it ended, but this is the way it should have ended.

Thank you very much

Ivar Ekeland

Akershus castle, May 22, 2012