

La prova Cangur, the Catalan Kangaroo

By the end of 1995, the Catalan Mathematical Society had been organising the Catalan stage of the Mathematical Olympiad within the framework of the IMO (International Mathematical Olympiad) for many years. The then governing board of the SCM got wind of an activity called the “Kangaroo” that had a very different aim from that of the Olympiad: its goal was to stimulate and motivate a broad majority of students and encourage everyone to take part in a mass scientific demonstration in the form of a real Mathematics festival. The activity is a game aimed at attracting the largest possible number of students without drawing comparisons between countries.



It was with this goal in mind that André Déledicq created *Le Kangourou des mathématiques* (Mathematics Kangaroo) in France in 1991. He gave it this name because it was based on the model of the Australian national competition invented in Canberra in the late 1980s by Peter O’Halloran. At that time, the competition was the only one of its kind and its goal was the participation of vast numbers

of students, regardless of their academic level and output. This popularizing activity spread rapidly to several European countries and was consolidated by the founding of the international association *Kangourou Sans Frontières* (Kangaroo without Frontiers), created in 1995 with the sponsorship of the Council of Europe. Other countries in Asia and America have since joined.

Francisco Bellot created the *Asociación Canguro Matemático* (Kangaroo Mathematical Association) in Castilla-León and the first edition was held in 1994. It was he who passed the news on to the members of the SCM and with his formal support, the first Kangaroo competition in Catalonia was held in late 1995, almost as an experiment. The level of results was interesting and there was very positive feedback about the activity and so the board of the SCM decided to give it strong backing.

Participation grew and the Kangaroo became consolidated as an annual event in Catalonia. For this reason, the SCM applied to have its own national representative in the *Kangourou sans Frontières* association and has been a member since 1999. Our Kangaroo has grown tremendously. The SCM Kangaroo committee has moved from being merely Catalan to representing Catalonia, Valencia and the Balearic Islands, thus covering the three Catalan-speaking territories. Between the first and eleventh editions, the number of participating centres multiplied by 4 and the number of participating students by more than 11. The following table is quite explicit:

SCM Kangaroo (I: 1996; XI: 2006)											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Level 1	648	666	833	1,663	2,255	2,425	3,031	3,659	4,113	4,839	5,288
Level 2	453	696	867	1,323	2,072	2,544	2,098	3,082	4,049	4,621	5,260
Level 3	212	473	576	742	961	1,311	1,590	1,802	2,309	2,942	3,176
Level 4	- - -	275	329	414	619	599	765	967	1,219	1,410	1,774
Students	1,313	2,110	2,605	4,142	5,907	6,879	7,484	9,510	11,690	13,812	15,498
Centres	106	126	167	244	299	297	314	372	406	450	487

We say that our Kangaroo has grown very big, though anyone comparing this data with that of other countries would draw the opposite conclusion. But there is an aspect of the organization of the SCM's Kangaroo that is quite different from that of other countries, where the problems are sent out to each centre and the Kangaroo takes place almost as a regular class activity.



Here, the idea materialised of *doing maths together*, at the same time as colleagues from other centres, other towns and other countries and the competition was organised in *head-quarter centres* that took in participants from other centres. Mathematical fun activities complementary to Kangaroo were often prepared and lunch provided. And so, on the whole, the event became the *Mathematics celebration*.

This philosophy, aimed at sharing Kangaroo headquarters among several centres, often on a rotational basis from one year to the next, was a resounding success. In following editions, several regional civic centres and the universities of Catalonia and Valencia offered their classrooms so that groups of students could come together to take part in the Kangaroo. The idea of a festival does not prevent, but rather encourages the desire to enjoy oneself while getting to grips with the mathematical challenges posed. *Doing Mathematics* is unquestionably about solving problems. And if you can enjoy yourself at the same time, as most Kangaroo participants do, the aim has been achieved.

At the Kangaroo committee, we are happy to see how, year after year, the enormous geographical diversity of the participants is reflected in the prize winners. Among the prizes awarded this year in a ceremony presided over by Catalan educational authorities (held in recent years in the Aula magna of the Catalan

universities with Mathematics degree courses), the mentions that acknowledge up to 1 % of the best participants in each level and the prizes for other activities, which we will discuss later, have provided 165 distinctions and we can say that there are no “specialist centres” as the students receiving the awards belonged to 116 different centres. We believe that this diversity is largely responsible for the success of the Kangaroo.

Another aspect that may make the organisation of our Kangaroo different from that of other nations is the constant feedback. The organising committee is open to suggestions from the entire school community that drives participation in the different centres. This exchange of opinions makes it easy to collect many interesting ideas and we will always be more likely to implement them if we really listen to the teachers of the participating centres than if we just limit ourselves to the ideas of the committee members.

For example, this was how the idea of holding the Kangaroo in university centres came about and these teacher meetings have also given birth to some interesting complementary activities, such as sprint problems, poster competitions and short-story competitions.



In 2000, the World Mathematical Year began with a competition to solve problems aimed at teams in the centres and designed to be run online over the Internet. This activity is now called *Sprint problems* because the first team to send all the correct answers is, naturally, the winner. To date there have been 10 editions which were highly rated by the participating centres. Each centre organises the team as they see fit, with the sole condition that the team must be of mixed levels (ages between 15 and 18

years). There are problems with different levels of difficulty and the groups of students who tackle the “easier” problems must pass on information to the groups doing the “harder” problems, thus establishing complicity between students from different classes-something everyone sees as very positive.

Here is the opinion of one of the centres that took part in the latest edition:

We felt it was very important that no boy or girl should feel excluded from an activity like problem solving. We can also see that the different levels of difficulty of the problems helped us to handle the diversity of students. We insisted that everyone was capable of solving some of the problems. In fact, we were not thinking of a prize. The students were distributed in groups throughout the school (which is linked by cable) and each group started with different problems and then compared results.

At the organising committee, we believe that the statement that the students were all “capable of solving” mathematical problems more than covers the goal of the activity and encourages us to continue.

Another area where the Kangaroo aims to promote activities based on suggestions from the different schools is the interdisciplinary area, interrelating Mathematics with other areas of education and culture.

With this objective in mind, since 2002 there have been three calls for posters to go alongside the official logo of *Le Kangourou*, work of Raoul Rabba, in order to personalise our Kangaroo. The results have revealed an outstanding quality of design and this has sometimes made us reluctant to organise a new competition as we do not wish to abandon something we have made our own.

Finally, the first *Kangaroo short story competition* was held in 2005 for short stories with a Mathematics-related theme. As with all activities in the framework of our Kangaroo, this competition was aimed at the 15-18 age group. In Catalonia, there are other associations grouped in FEEMCAT (Federation of Organisations for the Teaching of Mathematics in Catalonia) that carry out similar work for younger children aged 11 to 14 who are in the last years of primary school and the first years of secondary school. The success of both these competitions in terms of quantity and, especially, quality has encouraged us to continue.

Who knows? Perhaps, in the future, we will sign up to the linguistic Kangaroo being organised by our Romanian colleagues or maybe we will organise a Kangaroo fun run, though indeed the real race to run is ensuring that each year the Kangaroo shows many boys and girls that *doing Mathematics* can also be a real festival.

Antoni Gomà

Chair of the *Cangur* commission



Winners of the 10th *Cangur*