The Latvian Mathematical Society after 10 years

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In January 2003 the Latvian Mathematical Society (LMS) marked its 10th anniversary. Compared with such bodies as the London Mathematical Society (established in 1865) or our neighbour the Estonian Mathematical Society (which celebrated its 75th anniversary in 2001), we are still in our infancy, being one of the youngest mathematical societies in Europe. However, mathematics and mathematicians existed in Latvia long before the LMS was founded, and therefore I would like to say some words about the prehistory of the LMS, mentioning some facts about mathematics and mathematicians related to Latvia before 1993 when the LMS was founded.

Piers Bohl

Probably, the first outstanding mathematician whose life and work was closely related to Latvia was Piers Bohl. He was born in 1865 in Valka (a town on the border between Latvia and Estonia) in the family of a poor German merchant. In 1884, after graduating from a German school in Viljandi (Estonia) he entered the faculty of physics and mathematics at the University of Tartu [1]. Two years later, in 1886, Piers presented his first research work 'Invariants of linear differential equations and their applications', for which he was awarded the 'Golden Medal'. Bohl graduated from Tartu University in 1887, earning a Master's degree at the same university in 1893. In his Master's thesis, *Über die Darstellung von Functionen einer Variabeln durch trigonometrische Reichen mit mehreren eines Variabeln proportionalen Argumenten*, he introduced a class of functions which, ten years later, were rediscovered by the French scientist E. Esklangon under the name *quasiperiodic functions*.

In the period 1887-95 Piers Bohl worked as a teacher of mathematics in countryside schools, but in 1895 he was invited to be the Head of the Department of Mathematics at the Riga Polytechnic Institute – at that time the only institute of higher education in the territory of Latvia. In 1900 he was awarded the degree of Doctor in Applied Mathematics from Tartu University for his research work in the applications of differential equations to mechanics. He continued intense work in different areas of mathematics – in particular, in the field of differential equations. In his paper 'Über die Bewegung eines mechanischen Systems in die Nähe einer Gleichgewichtslage' (*J. reine, angew. Math.* **127** (1904), 179-276), he studied the existence and smoothness problems of stable and unstable manifolds for a quasilinear system of differential equations. In the course of studying these problems, as auxiliary results he established that *a sphere is not a retract of a ball* and proved that *a continuous mapping of a ball into itself has a fixed point*, a famous result which is often called the 'Brouwer fixed-point theorem', although Brouwer published the result seven years later *(*see L.E.J. Brower, 'Über die Abbildung von Mannigfaltigkeiten', *Math. Ann.* **71** (1911), 97-115. In his paper, 'Über ein Dreikörperproblem', *Z. Math. Phys.* **54** (1906), 381-418, Bohl proved a famous theorem about quasiperiodic functions, as well as some important results about differential equations with quasiperiodic coefficients. Of course, here we have been able to mention only a few results of this insightful mathematician.

It is worth mentioning that Piers Bohl was known also as a very strong chess player. One of the chess openings discovered by him is known as the 'Riga version of the Spanish game'. During the First World War, Riga Polytechnic Institute was evacuated to Moscow, and Bohl spent three years in the capital city of Russia. He returned to (now already independent) Latvia in 1919 and was elected Professor of the Engineering faculty of the recently founded University of Latvia. Unfortunately, two years later in December 1921, Piers Bohl died from a cerebral haemorrhage.

The first Society of Latvian Physicists and Mathematicians.

Of all the mathematicians who were active during the time known as the first republic of Latvia (1918-40) we shall mention Edgars Lejnieks, Alfreds Meders, Eižens Leimanis, N. Brazma (Brower), Kārlis Zalts and J. Cizarevičs. None of them is known as a world-famous mathematician or as the founder of a 'mathematical school', but each played an enormous role in the development of the mathematical culture and education in a newly founded state – the Republic of Latvia. The first time that Latvia gained its independence was after the World War I in 1918, and this was also the first time that Latvian came into use as the official language and that students could acquire education in their native language.

Edgars Lejnieks was born in Riga in 1889. After graduating from Moscow University in 1907, he worked for a time in Göttingen University. In 1919 he returned to Riga and was elected the first dean of the faculty of mathematics and natural sciences at the University of Latvia. In 1923 he organised the first congress of Latvian mathematicians. Lejnieks is also recognised as the founder of the library of the University of Latvia, which now contains the largest collection of books and journals in mathematics and physics in Latvia (more than 180,000 items).

On 10 March 1939 the Latvian Society of Physicists and Mathematicians (LSPM) was founded. The first Chair of the Society was the physicist F. Gulbis. The mathematician members of this society included E. Leimanis, A. Lāsis, A. Meders, P. Putniņš, N. Brazma and E. Grinbergs: on the whole, the physicists and astronomers were better represented and more active in that society than the mathematicians. The Society held about ten scientific sessions. In December 1940 the activity of the Society's activities were stopped by the Soviet authorities, who aimed to exclude the appearance of national thought in all its possible forms. The Society had a brief recovery in January 1943, but in May 1944 it was again closed. The total time that the Society existed was 26 months. The conclusion of these not very cheerful glimpses into the history was that after Latvia regained its independence in 1991, the physicists decided to establish the Latvian Physical Society as the renewed LSPM, while the mathematicians founded the Latvian Mathematical Society as a new body.

Mathematics in Latvia during the Soviet period (1945-91)

In the years 1940-45 some mathematicians emigrated to the West, while others found themselves in Stalin's camps. Thus the face of mathematics in Latvia started to produce other persons. Some of them originated from Latvia, but after graduating from the University of Latvia they often went to develop their theses at other universities – usually Moscow (Šrei, Klokov, Reizi *et. al*) and Leningrad (Detlovs, *et al*.), where the level of mathematical education and researches was very high. At the same time, a considerable number of mathematicians, some outstanding ones among them, came to Latvia from other parts of the USSR. This process was especially intense during the first fifteen years after the incorporation of Latvia into the USSR.

There were two main stimuli for this process. On the one hand, the living standards in Latvia (and in the Baltic on the whole) were relatively higher than in the 'old part' of the Soviet Union, and hence there was a natural interest by scientists (and others!) to come to live and to work in the Baltic. On the other hand, the politics of the Soviet government (with regard to the incorporated states) was to assimilate the local population, and it therefore encouraged such a movement of people. In any case, this process was beneficial for mathematics in Latvia, since the Latvian mathematical community was replenished

[1] We use here modern geographical names. At the time when Bohl studied in Tartu this city was called by its German name Dorpat, but later, by the time he defended his Doctoral Thesis, it had been renamed by the Russians as Yurjev.

with such serious mathematicians as A. Myshkis, B. Plotkin, I. Rubinštein, M. Goldman, S. Krachkovskij, L. Ladyzhenskij and others. Some of them created strong schools here in different areas of mathematics: we should especially mention A. Myshkis, B. Plotkin, I. Rubinštein and M. Goldman, whose strong influence on mathematical life in Latvia is still felt nowadays. Unfortunately, their professional activity was also often hampered by the authorities.

We now mention briefly some of the mathematicians who 'defined the mathematical face of Latvia' in this period and afterwards.

Ei ens ´ri (1911-84), a Latvian, was born in Krasnojarsk, in Siberia, where his father was in exile. In 1920 the family returned to Riga. After having graduated from the University of Latvia, ´ri continued his education at postgraduate level at the Moscow State University. He developed his Candidate (PhD) thesis under the supervision of L. V. Keldysh, a famous Russian topologist. ´ri was a mathematician with a diverse spectrum of interests. He wrote papers in the descriptive theory of functions (his thesis was devoted to partially continuous functions on products of topological spaces), theoretical computer science, and cybernetics. Besides, Ari had a great organisational talent: in particular, he is remembered as the founder and the first director of the computer centre at the University of Latvia, one of the first such institutions in the Soviet Union.

Emanuels Grinbergs (1911-82) was born in St Petersburg into a family of diplomats and artists. In 1930 he entered the University of Latvia, and graduated from it in 1934. Later he studied at the *Ecole Normale Superieure* in Paris. Grinbergs was elected as docent at the University of Latvia in 1940. In 1943 he defended his doctoral thesis, 'On oscillations, superoscillations and characteristic points', but unfortunately was then drafted into the German Army. In 1944 the Soviets again entered Latvia, and his presence in the German Army (over which he had no choice) was regarded as an unforgivable sin. He was sent to Stalin's camp in Kutaisi in the Caucasus.

Although permitted to return to Latvia in 1947, he was only allowed menial work at a factory. Only after Stalin's death in 1954 was Grinbergs permitted to work at the University. In 1956 he defended his Candidate thesis, 'Problems of analysis and synthesis in simple linear circuits' (his first thesis was not acknowledged by the Soviet authorities, since it had been defended during the period of German occupation), and was then appointed as Head of the section in the computer centre of the University of Latvia. The main contributions of Grinbergs and his collaborators were in the theory of electrical circuits, in research on non-linear circuit theory, in magnetic hydrodynamics, in telephony, and in the development of numerical methods in the analysis of Markov processes. A significant achievement of Grinbergs' group was the development of analytic methods for calculations of planar contours of 3-dimensional components of the hulls of ocean-going ships. These methods were highly acclaimed throughout the Soviet Union and were used by many shipbuilding companies. However, Grinbergs' main interest was in graph theory, where he had several publications and an archive of about 20,000 (!) pages of unpublished papers.

The first mathematician who graduated from the University of Latvia and spent all his working life lecturing at that university was **Arvids** Lßsis (1900-69), whose brother Jânis became a well-known geneticist. Born to a family of peasants, he received his first education at a village school, and then entered the University of Latvia from which he graduated in 1924. During the following 45 years he lectured in different courses of theoretical mechanics and applied mathematics. His main scientific interests were in differential and integral equations, but he is mostly remembered as a the teacher of many Latvian mathematicians who started their research work in the second half of the 20th century.

Anatoly Myshkis, at that time one of the leading USSR specialists in the field of differential equations, came to Riga and started to work at the University of Latvia in 1948. He was soon promoted to the post of Head of the Department of Higher Mathematics. His outstanding skills of lecturing and competence drew to him many good young mathematicians and students. As a result, a very strong group of researchers in the field of differential equations was created, and can still be felt, more than 50 years later. It is unfortunate that he soon had to relinquish the post of head of the department, due to political insinuation, and then in 1956 was forced to leave the University of Latvia and Latvia forever. Nevertheless, his influence on the development of mathematics there was (and still is) extremely strong. In particular, most of the people researching into differential equations (H. Kalis, L. Reizi , A. Reinfelds, A. Lepins, *et al*.) can consider themselves as the mathematical offspring of Myshkis.

One of the outstanding representatives of this school was **Linards** Reizi (1924-91). Linards' studies at school were interrupted by the Second World War. To escape being drafted into the German Army, he went to the North of Latvia and then to Estonia. Near the small town of Paide he was arrested by German soldiers and taken as a prisoner to Riga. He was released in 1942, and soon after, he passed his high-school final exams. After the war he entered the University of Latvia, and after graduating in 1948 he continued his studies at postgraduate level under the guidance of Lßsis, specialising in the field of differential equations. In his Candidate thesis he studied the qualitative behaviour of homogeneous differential equations and obtained results that were highly regarded by specialists.

A large part of Reizi research energy was directed to the investigation of conditions under which two systems of differential equations are dynamically (topologically) equivalent. Among other results he found a formula giving the relationship between the solutions of full and truncated systems of differential equations. During his later years he worked on Pfaff's equations.

Reizi was the author of two monographs. He was the scientific advisor of several students who later became successful researchers and administrators – among them, Andrejs Reinfelds (the director of the Institute of Mathematics), Oj rs Judrups (from 1991-2002 the dean of the faculty of physics and mathematics at the University of Latvia) and K rlis Dobelis (a former rector of the Liep ja Pedagogical University).

Ernsts Fogels worked in number theory, and his main interest was the ζ-function. Trying to solve the famous problem on the location of the zeros of the ζ-function, Fogels obtained a number of important results as by-products. In particular, he discovered new effective proofs of the Gauss-Dirichlet formula on the number of classes of positively definite quadratic forms, as well as the de la Vallée-Poussin formula for the asymptotic location of prime numbers in an arithmetic progression.

In the 1960s and 1970s, much interest among Latvian mathematicians was focused on functional analysis. Especially, noteworthy was the work of **Sergej Krachkovski** and **Michael Goldman**, whose scientific interests included Fredholm-type functional equations and the spectral theory of linear operators. Further work in functional analysis was done by Imants K rkli , a student of D. Raikov, and Andris Liepi .

In 1960 a very talented algebraist, **Boris Plotkin**, came to Riga. His scientific competence, energy and enthusiasm attracted many young and not-so-young mathematicians. Under his supervision several dozen of Candidate (= PhD) and doctoral theses were worked out. (Recall that in the USSR there were two levels of scientific degree – Candidate of Sciences and a Doctor of Science; the demands for the second one were usually very high.)

In 1967 a large algebraic conference was organised in Riga by Plotkin and his collaborators. One of his important accomplishments was the founding and guiding of the 'Riga Algebraic Seminar' – well known among specialists throughout the whole Soviet Union and in other countries. Among active members of this seminar were many of Plotkin's former students: I. Strazdi , A. Tokarenko, L. Simonyan, Ja. Livchak, A. Kushkuley, L. Gringlass, J. C rulis, A. Pekelis, A. B rzi , R. Lipyanskij, Je. Plotkin, V. Shteinbuk, L. Krop and I. Ripss. The last of these merits special attention.

The most talented of Plotkin's students, Ripss, was very sensitive and keenly felt the injustice reigning around him. On 13 April 1969 he attempted self-immolation in the centre of Riga, near the Monument of Freedom, protesting the Soviet invasion

of Czechoslovakia in August 1968. The militia beat him severely and he was later committed to a mental hospital; then, after some days, he was imprisoned. The conditions in the prison were terrible, but nevertheless Ripss found the strength and energy to continue his work in mathematics and to obtain some brilliant results. In particular, while in prison, the 20-year-old mathematician solved the famous long-standing Magnus problem on dimensional subgroups, constructing a counter-example for the case $n = 4$. This was a major event in 20th-century mathematics. However, for political reasons, this work could not be published in the Soviet Union and only later was it published in Israel, creating a great deal of interest among mathematicians.

One of the consequences of Ripss' action was that Plotkin, the author of five monographs and an outstanding scientist and lecturer, lost his job at the University of Latvia: the 'crime' of a student was also the 'sin' of the teacher, arising from 'bad education' – this was an unwritten rule of the Soviet system. Fortunately, Plotkin had influential friends who helped him to find a job in another institution, the Riga Institution of Aviation. As a result, the 'Algebraic centre' in Latvia moved from the University of Latvia – its appropriate home – to the Institute of Aviation.

Many of the members of the Riga Algebraic Seminar have now emigrated from Latvia, mainly to the USA and Israel. Since 1996 Plotkin has been living and working in Jerusalem. However, he still keeps close contact with colleagues and former students in Latvia and regularly comes to Riga and gives talks at the sessions and seminars of the LMS.

Mathematics in independent Latvia

In the late 1980s in Latvia, as well as in other Baltic republics, much of the country's intellectual and artistic energies were focused on the independence movement. This movement in Latvia was called *Atmoda* (Awakening) and showed itself in different forms. In particular, organising national scientific and professional Societies was among the most vivid and popular ideas. (However, as the experience of Estonian mathematicians shows, the idea of organising such societies during the Soviet Era was usually put to an end by the state authorities, who were afraid of any national movement.)

One of the first bodies of this kind was the Union of Scientists of Latvia, created in 1988. The Latvian Mathematical Society was founded on 15 January 1993 by the decision of the Constituent Assembly of mathematicians of Latvia. Before its foundation much preliminary work was done by a group of enthusiasts, including Uldis Raitums (the first Chair of the Society, from 1993-97), Andrejs Reinfelds (the present Chair), Jānis Cīrulis, and the author of these notes (the Chair from 1997-2000). The Society is governed by a Board of seven members, one of which is the Chair of the Society. As its main aims, the society considers the following activities:

Participants of the 4th conference of the LMS in Ventspils. The castle is mid-14th century of the Livonian Order.

- Consolidating the mathematical community of Latvia, to make Latvian mathematicians feel as a body and not as isolated individuals. In particular, the Society aims to stimulate exchange of ideas between mathematicians representing different areas and fields of science. This is especially important in a country of the size of Latvia, where the number of mathematicians is small. Besides being interested in various fields of mathematics, they usually keep closer scientific contacts with foreign colleagues and not with their compatriot colleagues.
- Stimulating the development of Latvian mathematical terminology. This is especially important since the overwhelming majority of mathematical publications are written in English, while our lectures for students are usually given in Latvian.
- Representing Latvian mathematicians and mathematics developed in Latvia in international circles such as the European Mathematical Society, and establishing to keeping contacts with mathematical societies in other countries.
- Supplying libraries with current mathematical publications. This was especially urgent during the first years of independence, when the financial situation of our universities and our Academy was extremely poor and they could afford no new publications. During these years the Latvian Mathematical Society received books, journals and other kinds of information, through some agreements in the form of exchange, as donations, or by greatly reduced prices. In particular, we have got such important materials for every working mathematician as *Mathematical Reviews* and *Zentralblatt-MATH*. (Here especially should be noted the activities of the AMS by the FSU program, as well as support by the EMS and personally by Bernd Wegner, the Editor-in-chief of *Zentralblatt-MATH*.

As one of its main goals, the Society views the organisation of seminars and conferences. During the first ten years of its existence, the LMS organised more than one hundred seminars, at which both local mathematicians and their foreign colleagues have given talks. In particular, the following speakers have given talks at our seminar: Wiesław Żelazko and Tomasz Kubiak (Poland), Wesley Kotzè (SA), Andrzhej Szymanski (ASV), Mati Abel, Arne Kokk and Heino Turnpu (Estonia), Ulrich Höhle, Hans Porst, Horst Herrlich and Helmut Neunzert (Germany), Boriss Plotkin (Latvia-Israel), Juris Stepr ns (Canada), and many others. The topics presented at these seminars covered practically all fields of mathematics.

The LMS organises biannual conferences. The guiding principle of these conferences is that they are not specialised: everyone working in mathematics in Latvia is welcome to give a talk. The working language of the conference is Latvian – this has both positive effects (stimulating the development of mathematical terminology in Latvian) and negative ones: there are usually no foreign guests at these conferences – the only exception was the third conference held in 2000, where about 20 foreign guests were invited by And ans to commemorate the 50th anniversary of the movement of Mathematical Olympiads in Latvia. The first two conferences (in October 1995 and 1997) were held in Riga, the capital of Latvia, where about 80% of Latvian mathematicians live and work, while later we decided to go to other regions, in order to propagate mathematics more widely while gaining a better conception about the problems of mathematicians in the rest of the country. For example, our third conference in April 2000 was in Jelgava, a town known for its University of Agriculture. The fourth conference in April 2002 was in Ventspils, a town in the west of the country, in the region called Kurzeme, an important harbour on the Baltic Sea. The main organisers of these conferences were Andrejs Reinfelds and local organisers: Aivars Abolti from the University of Agriculture in Jelgava, and

Jānis Vucāns, the rector of Ventspils University. The next conference will be held in 2004 in Daugavpils, a city in the Southeast of Latvia in the region called Latgale.

So far about the activities of the society as a whole. However, any professional society gains its strength through its members and their scientific and social activities. So, here are the main fields in which Latvian Mathematicians are working.

We first mention *ordinary differential equations*, interest in which was essentially influenced by P. Bohl and later by A. Myshkis and L. Reiziņš (see above). The leading people in this area are now Andrejs Reinfelds, Yurij Klokov, Arnold Lepin and Felix Sadyrbajev. Reinfelds' main scientific interests are the qualitative theory of differential equations, dynamical systems and impulse differential equations; Klokov, Lepin and Sadyrbajev work in the qualitative theory of ordinary differential equations, studying boundary-value problems (Klokov, Sadyrbajev) and the topological properties of solutions of differential equations (Lepin).

Problems of *optimal control for partial differential equations and calculus of variations* are investigated by Uldis Raitums, who also works on the problem of *G*-convergence of elliptic operators.

In recent decades one of the most rapidly developing areas has been *mathematical simulation*, represented by Andris Buiķis, Jānis Cepītis, Andrejs Reinfelds, Aivars Zemītis and their students. One of the principal aims of this group is to develop mathematics for the needs of industry, specifically for the wood industry that is among the most important branches in Latvia. Evident confirmation of the success of the activities in this direction were provided by the seminar 'Baltic days: Mathematics for industry' in June 1995 with the participation of ECMI experts, and the 14th ECMI conference in September 2002. Both of these events took place in Jurmala, near Riga, and were organised under close collaboration with the LMS. For more information about these and related activities of Latvian mathematicians, see ECMI Newsletter **29** (March 2001), 20-23.

Research in *partial differential equations* received a strong impulse from Isaak Rubinshtein, who came to Riga in 1961 and left for Israel in 1974. The main representatives of this field are now Andris Buiķis, Harijs Kalis, Maksimilian Antimirov, Vladimir Gudkov and Andrej Kolyshkin.

Important results in the *theory of functions* were obtained by Eduards Rieksti (1919-92). In particular, he studied problems of asymptotic expansion of functions: he was the author of five monographs related to this subject. The fate of Rieksti during the war and the first years after it has much in common with Reiziņš fate which we discussed above. Interesting results in the field of the theory of functions were obtained by Georgs Engelis (special functions, operator theory), Teodors Cīrulis and Svetlana Asmuss (approximation and expansion) and their collaborators.

Jelgava Palace. At present the Latvian University of Agriculture is in this palace. The 3rd coference of the LMS took place here in April 2000.

The 3rd LMS conference in Jelgava, April 2000

Researches in *mathematical logic*, and in particular in the theory of recursive functions, started in the early 1950s by Vilnis Detlovs who, after graduating from the University of Latvia, completed his Candidate thesis under the supervision of A. A. Markov (Junior) at the University of Leningrad. One of Detlovs' first students, Jānis Bārzdiņš, developed his Candidate thesis in Novosibirsk (Russia) under the supervision of a well-known Russian logician B. A. Trahtenbrot: the thesis was devoted to the problem of universality in automata theory. Bārzdiņš continued his professional education at the Moscow State University where he wrote his Dr Sc thesis, collaborating with the famous Andrej Kolmogoroff. The most active in the field of mathematical logic is currently Jānis Cīrulis, who has important results in algebraic and many-valued logics as well as research papers in different areas of *abstract algebra*.

The field of *algebraic geometry* is represented by the talented mathematician Aivars Bārzdiņš, who, in particular, has found conditions under which two extensions of a given field have the same geometry.

Set-theoretic topology, the direction started in Latvia by Michael Goldman in the 1960s is now developed mainly by the author of these notes and his students. Our group is currently working in classical set-theoretic and in categorical topology, as well as in *many-valued* (*or fuzzy*) *topology*.

The field of *numerical analysis* is represented by Harijs Kalis, Andris Buiķis, Teodors Cīrulis and Ojārs Lietuvietis.

Stochastic aspects of Probability theory is the field of research by Jevgenij Tsarkov and his group including Kārlis Šadurskis, at present the Minister of Education and Science in Latvia.

Mathematical statistics is represented by Jevgenij Tsarkov, Aivars Lorencs, Jānis Lapiņš and their students and collaborators.

It should also be noted that a large amount of work in the field of *theoretical computer science* is carried out by a group of

Latvian scientists, headed by J nis B rzdi and Rusi M rti Freivalds. In particular, the results obtained by Freivalds and his collaborators in the theory of probabilistic automata and of quantum computers are well known and highly regarded by colleagues all over the world. Problems of structural synthesis of probabilistic automata are studied also by Aivars Lorencs.

As a separate direction in mathematics in Latvia, we should mention *modern elementary mathematics*, whose founder and undoubted leader is Agnis And ns. Every year And ns and his group organise two olympiads for school pupils interested in mathematics. In one of these olympiads all pupils can participate on their own initiative. To participate in the other one, a pupil has to get good results in a series of local olympiads. Many advanced textbooks and problem books in elementary mathematics have been published. As evidence of the immense work done by And ns and his group (including Aivars B rzi , Andris C bulis and L ga Ramana) are the relatively high places which the Latvian team usually earns at international mathematical competitions. In 1998 the World Federation of National Mathematical Competitions selected Andþâns as a recipient of a Paul Erdös Award to honour his 'significant contribution to the enrichment of mathematical learning in Latvia'. And ns was the main organiser of the 2nd International Conference on 'Creativity in Mathematical Education and Education of Gifted Students', which took place in Riga last July.

Last, but not least, we wish to emphasise the important role played by an outstanding teacher of mathematics, J nis Mencis (Senior) in the development of *mathematical education* in Latvia. His son, J nis Mencis (Junior), has followed in his father's footsteps and is also the author of several mathematical textbooks for schools. For their enormous contributions to the rise in level of the mathematical culture of pupils in primary and secondary schools in Latvia, J anis Mencis (Senior) and Agnis And ns were awarded the 'Three Star Order', the highest national award from the Latvian Government.

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Slovenian Mathematical Society: some further comments

Peter Legisa

In my report on our Society, in the previous issue, I concluded with an unfortunate personal critical opinion of connections with our northern and western neighbours. It stirred dust and I should like to do some explaining.

It is a fact of life that undergraduates who study abroad tend to stay abroad. For obvious reasons, many undergraduates study at universities directly across the border. The concern of losing too much talent is one of the reasons why Slovenia is now establishing the third university near our western border. (Language is the main obstruction to the arrival of foreign undergraduates in our country.) Graduate students, who are more likely to return, disperse far and wide, and in countries to the north and west cooperation seems to be better with the more distant centres. With hindsight I connected these two facts, plus some political concerns, in a way that strongly resembled the proverbial elephant in a china shop. No wonder that mathematicians who invested a lot of effort in our cooperation have been upset.

I received a letter from Prof. Dr. Heinz W. Engl, President of the Austrian Mathematical Society. He presented counter-examples to several of my conjectures. He also helped to dispel many of my concerns and offered more contacts, a gesture that I appreciate very much. My colleagues also informed me that there was much more cooperation than I was aware of, especially with Austria. They even warned me against including a list of names, since contacts were so numerous I would almost surely omit somebody. They also told me that personal relations with mathematicians across the border are excellent and that even in political discussions agreement was quite common.

To correct the imbalance in my previous writing, I shall state some facts.

- Prof. Josip Globevnik from Ljubljana gave an invited plenary lecture at the International Congress of the Austrian Mathematical Society in Linz in 1993. We can consider this as a formal contact between the two societies.
- The extremely fruitful cooperation with Montanuniversität in Leoben resulted in a joint book, several PhD degrees and exchanges of graduate students. Prof. Wilfried Imrich (Leoben) recently held a colloquium talk in Ljubljana to a large audience. The LL [Leoben-Ljubljana] Seminar in Discrete Mathematics is an annual (or semi-annual) meeting with 30-40 participants and a history going back two decades.
- There is a long established cooperation between universities in Graz and Maribor (as well as Ljubljana), producing at least one PhD degree. We work with other Austrian universities as well.
- There were two joint regional conferences: one, concerning technology-supported mathematics teaching, was organised in 2000 in Portorož on the Adriatic coast (by the universities in Maribor and Klagenfurt/Celovec).
- If we look towards Italy: Prof. Tomaž Pisanski from Ljubljana lectured at the University of Udine for three years. Exchanges in graduate students produced at least one PhD degree in Italy and a MSc degree in Slovenia.
- Several of our colleagues have been guests in the Abdus Salam International Centre for Theoretical Physics in Trieste. There have been other joint ventures in numerical analysis, discrete mathematics, geometric topology, etc.
- There is good research co-operation with Hungary, another bordering country.

The title 'Links in my report' was inaccurate, since I limited myself to regional contacts. I never mentioned the prevailing connections of the Slovenian mathematical community with other countries. (A high point was reached this year when Prof. Dana S. Scott of Carnegie-Mellon University (US) was awarded an Honorary PhD degree by the University of Ljubljana.)

Finally, I turn to the future. Slovenia voted overwhelmingly for membership in the EU and that means better opportunities for exchanges of graduate students and researchers in all directions. I am also glad to quote Prof. Engl of the Austrian Mathematical Society:

Our next international congress in Klagenfurt in 2005 will be specifically devoted to contacts to our neighbours in the south and in the east, just as we do this year with our Italian colleagues in Bolzano.