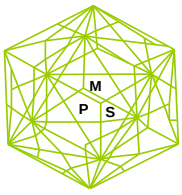
Pakistan Mathematical Society

Newsletter



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EDITORIAL

When you cannot express in numbers, your knowledge is of a meager and unsatisfactory kind.

Lord Kelvin (1824-1907)

On November 6, 2006, Transparency International promulgated its report embodying its findings pertaining to the most corrupt nations of the world. The group of 163 nations was graded by commencing with the least corrupt and terminating with the most corrupt. Shockingly Pakistan occupies the 141st position from the top while Saudi Arabia and India both share the 70th slot in this list of 163 countries. This report makes it abundantly clear that the Islamic injunctions are not respected anywhere, not even in Saudi Arabia, which is regarded as the citadel of Islam. Corruption has pervaded in all strata of our social life including the education sector. The maxim: "They have come for teaching who cannot learn," holds good in the context of the educational scenario in Pakistan. Since the question: why and how corruption has dominated Pakistan? cannot be answered in the space available in the Newsletter, we limit our considerations to our specific sphere, namely higher education.

According to a recent media report, the Islamic world invests 2% of its GDP in research while the remaining countries of the world invest 3% in research. Therefore it is a bygone conclusion that the Muslim countries shall lag behind in research forever. The following table showing the distribution of the premier universities of the world, will enable us to form an appraisal of higher education in the Islamic world.

Ser. #	Name of the country	Number of topmost universities
1	America	54
2	U.K	24
3	Australia	17
4	China	10
5	Japan	10
6	Holland	10
7	France	9
8	Germany	9
9	Switzerland	7

10	India	3

All the member countries of OIC taken together have not been able to establish a single topmost university. This state of affairs is indeed extremely lamentable but none of the OIC members seems to have bothered to rectify this situation. It is worth noting that the best ten computer science centers of the world are also functioning in USA

In the whole Islamic world, there are at most 600 universities while America has 5,500 universities, India has 8,407 universities, China has 900 universities, etc.

It may be mentioned that China and India together induct 950,000 engineers every year while USA produces 70,000 engineers annually. No wonder then that USA wishes to be an ally of India, China etc. while enslaving and subjugating Muslim countries. The only remedy is intellectual revolution in all spheres of our life if we wish to lead a free and happy life. It is not difficult to conclude that the governance in all the members of OIC is not conducive for creative thinking.

EDUCATION EXPERIMENT

They call it the School of the Future. When it opens in September, 170 Philadelphia teenagers will be the first to participate in a bold experiment in American education.

The campus will be wired up, and the students will carry laptop computers. They will access the school network and the Internet wirelessly, in and outside their classrooms, anywhere, anytime.

State-of-the-art classrooms will feature flat panel screens to display presentations and drawings sent over the wireless network.

When they need a break from schoolwork, students can take a walk in the scenic park next to the school, or make use of two gymnasiums, basketball courts and an indoor swimming pool.

The facilities are rich by any standard, but the students are not children of the city's wealthy folk. Three out of four will be selected from the poor and radically segregated part of west Philadelphia.

The US$ 63 million school has been sited deliberately in a poor suburb where many homes and office buildings are rundown or derelict.

Philadelphia's school officials believe disadvantaged students can excel in the right learning environment, and in the 21st century, that means having access to digital tools.

Given criticism of the quality of high school education in the United States, the School of the Future is an experiment to give youngsters an education more relevant to the needs of the workplace.

It is not all about hardware though. There is also heart ware: teachers who will act as guides to learning rather than founts of knowledge. It is not just about using technology for learning or for support, it is about adding to the rigour of learning. Teachers will present lessons on interactive whiteboards connected to the Internet, equipped with speakers and capable of playing DVDs.

A special teacher dashboard will give teachers information on their students like test marks, subjects taken and even family background. The school aims to be paperless. Routine administrative tasks will be computerized and smart card readers at classroom doors will clock student attendance.

RESEARCH AREAS OF PAKISTANI MATHEMATICIANS

Qaiser Mushtaq

Production per year of research papers in mathematics has increased with the passage of time. In 1977 the first research paper out of an M.Phil. dissertation at Quaid-i-Azam University was published in an Indian journal. Incidentally it was a paper in the area of Group Theory and its Generalizations. It was a produce of the first two-year M.Phil. in Pakistan. Later years saw an upsurge in mathematical research even at M.Phil. level. Nowadays, a large number of M.Phil. dissertations contain original research, which students publish in the form of paper(s) with joint authorship of their supervisors.

The production of Ph.D.s has also increased since the first local Ph.D. was produced, again at Quaid-i-Azam University in 1971. With the increase in production of doctoral theses, the number of research papers has thus increased as well.

Another factor which has increased the production of mathematical research papers, is that universities have started giving money per paper per year. Productivity allowance per year has also contributed to an increase in research papers in science in general and mathematics in particular.
Yet another factor for the increase in mathematical research papers is that many Pakistani mathematicians who had left Pakistan for 'greener pastures' have been returning to Pakistan due to retirement from foreign universities on the one hand and due to lucrative salary offers from the Higher Education Commission on the other hand.

Where these factors have increased the production of mathematical research papers, they also have had adverse effects on the mathematical culture in the country. Multiplicity of authorship has increased. For instance, research papers from dissertations and theses contain authors other than the

supervisors and supposedly the authors of the dissertations and theses. This has given way to bribery and nepotism in research. For example, if one is short of a few papers to qualify for a selection/promotion, he/she will befriend a researcher to have his/her name included in a research paper. Particular research groups have attained the character of mafias. Rehash of mathematical research has become an acceptable fashion. Certain branches of mathematics in which research is comparatively easier have become popular and those branches of mathematics which are considered mainstreams of research and in which research is difficult are becoming unpopular. There is no realization of this trend. Consequently, there is no effort on the part of universities authorities or most of the researchers or the Higher Education Commission to stop these practices. On the contrary, heads of these organizations are happy as they take pride in showing off the rise in the statistical data of 'productivity'.

An analysis was conducted on the basis of data collected from the Mathematical Reviews of the American Mathematical Society with the purpose of seeing in which areas Pakistani mathematical researchers are producing papers. It has been observed that the following branches have been the main thrust of mathematical research in Pakistan:

05	Order, lattices, ordered algebraic structures
16	Associative rings and algebras
20	Group theory and generalizations
47	Operator theory
65	Numerical analysis
76	Fluid mechanics
82	Statistical physics, structure matter
83	Relativity

IMPACT FACTOR

Researchers who work in mathematical areas which though very theoretical but have some resemblance with applied sciences, have a wider range of journals to publish their papers in. This not only increases the probability of getting a paper published but also the process of getting it published is much faster than for those journals which are exclusively meant for mathematics.

These journals have much greater Impact Factors than the mathematical journals, not because they are qualitatively better but because they have a wider readership and the time spent from acceptance of a paper to its publication is much shorter.

HEC uses the list of Impact Factors published by the Thomson Company, which lists only 255 mathematical journals. Recently, the American Mathematical Society has created its own Citation Database at MathSciNet which includes 7 times more journals with non-zero impact factors. Moreover, it is more realistic because it takes into account the last five years' publications for calculating the citation index and impact factor. It therefore introduces some adjustments to the order found in the Thomson's citation index (used by the Information Scientific Institute, Philadelphia), and the relative picture is much closer to the reality.

It is therefore better that instead of using the incomplete list produced by the Thompson Company, HEC uses the list produced by the MathSciNet. It will increase the number of mathematical journals with non-zero impact factors and in this way, researchers will have a fair competition.

HEC'S LIST OF FOREIGN EXPERTS FOR TENURE TRACK

Qaiser Mushtaq

Pakistani universities are going through a sort of an overhaul. This all started when the former University Grants Commission received a new mandate and started functioning as the Higher Education Commission. The university faculty is being lured by provision of high salaries with the condition that the university establishments will have massive powers. The universities' salary system will supposedly be along the lines of those in the American universities. Consequently, the academic system and the procedure and criterion of selection of a faculty member will undergo radical changes. The claim is that the standard of teaching, research and the faculty will thus improve.

Ser #	**Speciality According to Mathematics Subject Classification 2000**	**Number of Referees**
1	20: Group Theory & Generalizations	4
2	65: Numerical Analysis	3
3	41: Approximations & Expansions	2
4	16: Associative Rings & Algebras	4
5	47: Operator Theory	2
6	26: Real Functions	4
7	82: Statistical Physics, Structure Matter	1
8	90: Economics, Operations Research, Programming & Games	1
9	46: Functional Analysis	1
10	35: Partial Differential Equations	2
11	03: Mathematical Logic and Foundations	3
12	53: Differential Geometry	1
13	06: Order, Lattices, Ordered Algebraic Structures	1
14	11: Number Theory	2
15	60: Probability Theory& Stochastic Processes	2
16	28: Measure & Integration	1
17	51: Geometry	1

The other reason for a change to the tenure track system is to bring compatibility between private and public universities. Most of the private universities, offering better salaries, attracted faculty members from public universities where they were getting far less salaries. One can easily cite several examples of faculty members who performed poorly as teachers and researchers in their parent public universities but were offered huge salaries in new private and public universities. The criterion of their selection was subjective and ad hoc. How then will the standard of teaching and research improve at these universities? The situation at the public universities will not change either if the selection criterion is subjective and ad hoc. Quaid-i-Azam university is a good example whereby in its few initial decades, by and large, faculty members who were good in teaching and research were appointed because the selection of their foreign referees was well defined and based on honesty. The list of the foreign referees was carefully prepared and only those experts were included in the list who were experienced, eminent, and who were from reputed universities located in scientifically developed countries.

Ser #	Country	Number
1	UK	1
2	China	2
3	USA	6
4	Australia	10
5	Italy	2
6	Japan	2
7	Norway	1
8	Canada	6
9	Romania	1
10	Poland	1
11	Hungary	1

One has reasons to be skeptical that the standard of teaching and research, at least in mathematics, will change due to the tenure track system. The skepticism is created by the following list which is on display on the Higher Education Commission's website. It should be noted that the third column is included by the author so that one can know their specialty. Not only that many names are incorrectly spelt but also above all, it shows biasness on the part of those who proposed these names.

Some of the names in the list are taken from the list of referees approved by the Board of Studies, Mathematics Department, Quaid-i-Azam University, Islamabad. The interesting thing is that none from the department owns responsibility for recommending the names. Another surprising thing about the list here is that most of the specialities are not in concurrence with the

specialities of the Pakistani researchers. How then will it be possible to obtain a competent evaluation of the applicants for posts in the Tenure Track System?

EXCELLENCE IN SCIENCE AND TECHNOLOGY DEPENDS UPON THE QUALITY OF EDUCATION

It is important for a developing country to excel in science and technology. Excellence in science and technology depends upon the quality of education, especially at higher levels, said Ms Aneesa Tahirkheli, the State Minister of Education.

The Minister was the chief guest at the 10th national seminar on mathematics organized by the Pakistan Mathematical Society (PakMS) at the National Language Authority.

Ms Tahirkheli said that our government has realized that without developing education in general and science and technology in particular, our country will continue to lag behind. The government has thus brought about a paradigm change in its policy towards education in order to bring about a change in the quality of our education in general and science and technology in particular.

Ms Tahirkheli also said that a greater portion of our GNP is now being spent upon science and technology. Higher education has now been given a new status due to its mandate of developing our human resource. She said that while we are spending a huge amount in this endeavour, we would like to make sure at the same time that the money spent is well utilized and the objective is achieved. We therefore have to evolve an adequate system of assessment.

One way to assess the quality of our highly educated work force is to monitor their research, continued Ms Tahirkheli. The Higher Education Commission, she pointed out, uses an index called the Impact Factor to measure the quality of research. However, from the argument given by Dr Qaiser Mushtaq in his speech, she said, it seems that, for the mathematical community at least, this index gives, in some cases, a misleading impression of the relative standing of mathematical journals. Since the Higher Education Commission and the

Pakistan Council often use this data for faculty assessments, she agreed that it should give a fair assessment of one's scholarship.

She said that it did not require much effort to understand from the information and analysis of Professor Mushtaq that the use of Impact Factor needed some modifications to suit the very nature of mathematics. She said that we could adopt a more pragmatic approach to this problem rather than a protectionist approach.

She suggested that we form a group of representatives from the Ministry of Education, the Higher Education Commission, and the Pakistan Mathematical Society, including Professor Mushtaq who is the proponent of the idea of change in the use of impact factor for mathematics, to sit together and help bring the necessary changes for improving the system of assessment of education and research in mathematics.

Professor Dr Qaiser Mushtaq, who was the speaker at the 10^{th} National Seminar on Mathematics, explained what the impact factor is. He described why the impact factor, as it is calculated today, is not suitable for mathematical journals and how to change the present method of impact factor calculation to reflect the realities of research in mathematics.

He said that he strongly believed that the negative impact and damage to science arising from the Impact Factor's "drawbacks" and "many problems" is more than any advantage which the proponents say using the Impact Factor will have in Pakistan.

Professor Mushtaq said that the Pakistan Council for Science and Technology used the list of Impact Factors published by the Thomson Company, which listed only 255 mathematical journals, whereas the list of journals (with a non-zero impact factor) produced by the MathSciNet of the AMS, which has created its own Citation database, was 6 to 7 times the list by the Thomson Company. He suggested that this list should be used rather than the one, which is incomplete.

CONFERENCES/SEMINARS

7th International Pure Mathematics Conference 2006
Algebra, Analysis, and Geometry
5-7 August 2006
Hotel Margala, Islamabad, Pakistan

The 7th International Pure Mathematics Conference 2006 is the continuation of the series of pure mathematics conferences held in 2000, 2001, 2002, 2003, 2004, and 2005. The 7th International Pure Mathematics Conference 2006 (7 IPMC 2006) is a thematic conference on Algebra, Analysis and Geometry. It will provide a stimulating opportunity to meet experts from various countries in a variety of branches of pure and applied mathematics. There will be free boarding and lodging for non-local participants. Several recreational trips will be organized in and around Islamabad.

International Steering Committee:

Dr R.M.Ali (Malaysia), Prof L.A.Bokut (Russia), Prof Y.Q.Chen (PRC), Prof B.K.Das (India), Prof. M.Deza France), Prof W.A.Dudek (Poland), Prof S.Guantian (PRC), Dr M.Hasanov (Turkey), Prof W.Hemakul (Thailand), Prof Z.Ming (PRC), Prof P.K.Jain (India), Dr S. Mohammad (Brunei), Prof C.E.Praeger (Australia), Prof M.T.Rizvi (USA), Prof S Sahab (Saudi Arabia), Prof K.P.Shum (HK), Prof S.N.Sidki (Brazil), Prof P.W.Sy (Philipines), Prof M.Toomanian (Iran), Professor D.A.R.Wallace (UK).

Foreign Speakers:
41 foreign experts from 18 countries have already registered for the conference. A few of them are: Prof M.Arslanov (Russia), Prof W.S.Cheung (Hong Kong), Prof B.K.Dass (India), Prof M.Deza (France), Prof C.K.Gupta (Canada), P.K.Jain (India), Prof K.P.Shum (Hong Kong), Prof M.Ynusi (Tajikistan)

Convener:
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Registration is open and is available in both paper-based and online formats at
http://www.pmc.org.pk E-mail: info@pmc.org.pk
Sponsors
Pakistan Mathematical Society
Higher Education Commission
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Pakistan Telecommunication Company Ltd

International Conference and Instructional Workshop on Discrete Groups

17 July to 4 August 2006
The Morningside Centre of Mathematics, Beijing
People's Republic of China

Description:
Locally symmetric spaces and discrete subgroups of Lie groups have played a fundamental role in many branches of modern mathematics. Various aspects of these important objects are often studied by different groups of people using different methods. It would be beneficial and fruitful to bring together experts in all these areas to exchange their results and techniques, to develop possible collaborations, and to show the power and beauty of locally symmetric spaces and discrete subgroups of Lie groups.

Information and registration:
For more information the following persons can be contacted: Xiaoning Li (for hotel and arrival information); e-mail: xnli@mail.math.ac.cn; Chen Fang (for titles and abstracts of talks); e-mail: qjpam@henu.edu.cn.

Lahore University of Management Sciences
Centre for Advanced Studies in Mathematics
The Centre for Advanced Studies in Mathematics (CASM) is organizing the Summer Conference in Mathematics from 29th to 30th July 2006. The purpose

of the conference is to broaden the research interests of young mathematicians by providing an exposure to modern research trends in different areas of mathematics and by introducing them to research methodologies. All interested are invited to register before July 20, 2006.

The Conference Registration Form is obtainable from the Organizing Committee: M. Aslam Butt (Convener), M. Naeem Qureshi, M. Yaseen, Imran Aziz, Samina Ashraf. For further information Contact: Secretary, Centre for Advanced Studies in Mathematics, LUMS, 54792-Lahore (e-mail: **kashifi@lums.edu.pk**), Phone: 042-5722670-79.