NEWSLETTER

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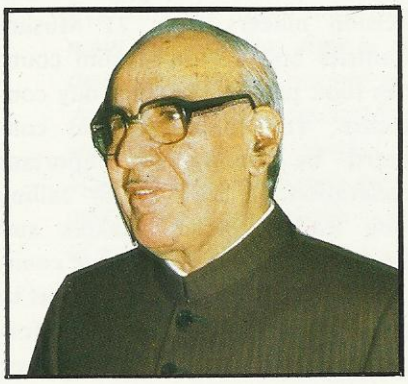
H.E. MR. GHULAM ISHAQ KHAN PRESIDENT OF PAKISTAN PATRONIZED IAS CONFERENCE ON S&T POLICIES

Under the Patronage of H.E. Mr. Ghulam Ishaq Khan, President of the Islamic Republic of Pakistan, a three day conference organized by IAS on "S&T Policy for Self-Reliance in the Muslim World" was held in Islamabad, Pakistan, during the period 3-5 December 1988. A message from HRH Crown Prince Al-Hassan bin Talal, Patron of IAS was also read during the opening session of the conference.

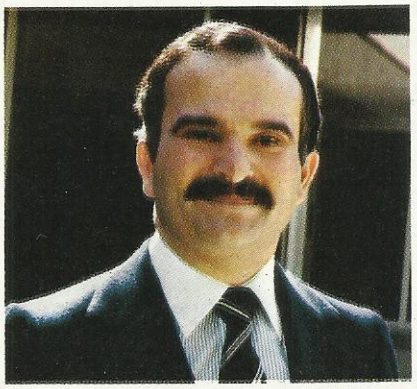
In his inaugural speech, His Excellency, the President of Pakistan emphasized the crucial role of S&T in the renaissance of the Muslim Ummah and the key role of muslim scientists. The President urged the participants to view the issue in a broad perspective starting with high school education and the issue of equal access of education for women in the Muslim World. H.E. Mr. Khan, recalled the achievements of Muslim Scholars in the earlier era of Islam and called upon muslim scientists to deeply ponder on the clear guidance of the message of Islam on attaining and spreading knowledge and science. The President reviewed the common problems of the Ummah manifested by poverty, ignorance and disease prevailence despite material abundance through the



H.E. Mr Ghulam Ishaq Khan.

Islamic countries. This, the President added, lends special urgency to the need for giving a correct sense of direction to scientific activity in the Muslim World. Calling for joint effort and consolidated action, H.E. the President praised the role of IAS in tackling the most urgent problems of the Ummah and bringing together muslim scientists to exchange views and share experiences.

In his Highness's message read by Dr. Adnan Badran, Secretary General of Jordan's Higher Council for S&T, Crown Prince Al-Hassan, called for joint efforts by Islamic countries to set suitable S&T policies to help develop self-reliance. The Crown Prince said in his message that higher education institutions should shoulder the responsibility of promoting new ideas and developing resources to attain human and social demands. HRH called for developing means of helping less developed Islamic countries in the field of planning, framing and implementing



H.R.H. Crown Prince Al-Hassan

S&T policies. HRH Patron of IAS urged the participants to focus discussions on applications and adaptabilities of new concepts and to define bases of cooperation in S&T to maintain the support of policy makers and funding agencies. HRH also called for the establishment of a reliable information centre to help make accurate and objective assessments and decisions.

In his statement, Prof. Mumtaz Kazi, President of IAS, thanked H.E. the President of Pakistan for patronizing the conference and addressing the participants. IAS President, expressed the Academy's gratitude to the Government of Pakistan, COMSTECH and IFSTAD for sponsoring the activity. Prof. Kazi reviewed the present status of S&T capability in the Muslim World expressing hope that the conference will be a step forward on the course of enhancing joint action in the field of building endogenous capacity of S&T in the

Muslim World. IAS President, emphasized the urgent need to build a strong S&T base as the world stands at the threshold of new economic era marked with rapid increase in technological and industrial progress. In concluding his statement, Prof. Kazi reviewed the background of the establishment of IAS, its objectives and programmes.

On behalf of the Government of Pakistan, Mr. Masihuddin, Secretary of the Ministry of S&T welcomed H.E. the President and thanked him for inaugurating the conference.

Mr. Masihuddin, welcoming the participants, emphasized the vital importance of the issue of S&T policy and expressed hopes that the conference will match the hopes of the Ummah.

In his statement, Prof. Moh'd K. Mahmoud, IAS Fellow and Vice-President of IAS, Chairman of the conference scientific committee, summarized the reasons behind choosing the theme of the conference and highlighted the main topics of the conference and its objectives. Prof. Mahmoud thanked the authors and the participants for taking part in this important activity.

Sixteen working papers were presented in the conference by top muslim scientists and specialists as well as eminent specialists from various countries, regions and international organizations. Nine papers were country or region case studies highlighting the experiences of these countries in framing and implementing S&T policy.

Around 70 scientists, planners and decision makers from 21 Muslim countries and 4 Non-Muslim countries took part in the three-day conference. The conference was concluded by issuing an important Declaration on S&T Policy calling upon leaders, policy makers and decision makers of the Islamic countries to provide committed support to the cause of technological transformation and to move from ad-hoc technology affecting decisions to ones which are guided by proclaimed national technology policies in order to assure their implementation.

The Declaration urged the Governments of the Islamic countries to develop arrangements for the exchange of experience and pooling of intellectual resources in the formulation and implementation of national S&T policies.

The participants also issued a set of recommendations proposing specific steps and mechanisms for drawing, implementing and assessing S&T policies aimed at the rehabilitation and survival of the Ummah and its development to the level of advanced countries.

The conference, the second in the Academy's programme, was supported by the Government of Pakistan, COMSTECH, and IFSTAD in addition to IAS.

Conference Opening Session of "Science and Technology Policy for Self-Reliance in the Muslim World"

IAS DECLARATION ON "SCIENCE AND TECHNOLOGY FOR SELF-RELIANCE IN THE MUSLIM WORLD"

The following Declaration was issued by IAS and adopted by the participants of the Conference on "Science and Technology Policy for Self-Reliance in The Muslim World" held in Islamabad last December:

PREAMBLE

Whereas, Allah Subhanahu-Wa-Taala has provided abundant bounties and resources to mankind to improve their lives and living.

Whereas, the Holy Quran invites mankind to observe, reflect, think and reason on the various aspects of natural phenomena.

Whereas, Allah the Almighty has promised not to change the lot unless and until they change themselves.

Whereas, the Prophet of Islam has enjoined upon every Muslim to seek knowledge from where-ever he can and to use it for beneficial purposes.

Whereas, Islam ordains that the believers have a common destiny and consequently they should cooperate and work together for the common good of humankind.

The Islamic Academy of Science

Realizing, that it has become a reality of our contemporary world that technology is the engine, and indeed the most powerful mover, of socio-economic development in all its material aspects.

Realizing, Further that technological transformation, therefore, has become not just a prerequisite for growth and advancement, but is becoming linked in a causative relationship to the very survival of societies in the world of tomorrow.

Being convinced, that without such transformation, the possession of even vast reserves of natural resources will not be a secure or controllable asset, whereas with science and technology the lack of natural resources will not be an unsurmountable obstacle.

Cognisant, of the fact that the wide-scale deterioration in terms of trade of primary commodities, which has been amply vindicated in recent years, is a forceful illustration of the validity of this conclusion.

Having, analyzed the prevailing realities in many Muslim countries and arrived at the realization that the state of technological dependence results chiefly from the marginalisation of the national S&T community and the continued resort of foreign-sourced technologies in providing social needs for goals and services.

Noting, the profound impact that new and emerging sciences and technologies have produced until now on the processes of socio-economic development, and their anticipated impact in shaping the

EDITORIAL LETTER

Although most of the Islamic countries have become more aware of the potential role science and technology can play in their socio-economic development, more effort is still needed to create the political will that would actually move the Islamic countries from the stage of stressing that potential role, to a stage where actual concerted efforts are undertaken towards building their endogenous capacity in science and technology.

Realizing the importance of such a move, and in pursuance of its main purpose that aims at increasing the interaction among scientists, decision makers and planners as to facilitate the exchange of views and ideas associated with the development of science and technology in the Islamic Countries, the Islamic Academy of Sciences took the timely step of organizing a conference on Science and Technology Policies in the Islamic Countries with the objective of achieving self-reliance in this field.

The crucial role of S&T for the reniassance of our Ummah that we are emphasizing, as well as the key role the muslim scientists should play, were clearly elaborated upon in the conference inaugural speech of His Excellency the President of the Islamic Republic of Pakistan. We also share the views of His Excellency regarding the attribution of the causes of many problems facing our Ummah such as hunger, poverty, ignorance.... etc to the lack of actual utilization of science and technology for socio-economic development.

In laying the responsibility of helping the Islamic countries which have not reached the stage of building competent human and technical infrastructure on those Islamic countries that have reached an acceptable level of self-reliance in S&T on one hand, and stressing the need for developing means and venues that would facilitate the utilization of science and technology outputs in the production system and services across the various sectors of our society on the other, His Royal Highness Crown Prince Al-Hassan, Patron of the Islamic Academy of Sciences, has highlighted in his message to the conference a new dimension for efforts to be exerted by those organizations active in the field of S&T. We strongly feel that such a new dimension should receive the utmost attention by the relevant institutes, agencies... etc.

Before concluding, we at the Academy highly appreciate the directives of both H.E. the President of Pakistan and His Royal Higness Crown Prince Al-Hassan and the generous contributions of the conference participants towards making the conference reach its objectives.

patterns of life and even relations within and between societies of tommorrow.

Being, apprehensive, therefore, that procrastination of action or inadequate and fragmentary action for technological transformation would only lead to increasing the difficulty of the inevitable change and multiplying its cost while compounding the adverse effect of technological under development.

Realizing, nevertheless, as an assured conclusion that what the Muslim countries have missed until now, can be remedied and that this is realizable only through intensive targeted and policy-guided efforts for technological transformation that aims at speedy technological catch-up with the other newly industrializing countries.

I **Appeals to the Heads of States and uppermost authorities in the Muslim countries** to provide committed support to the cause of technological transformation in their respective countries. The most prominent examples of transformation in the newly industrializing countries provide testimony to the profound, even crucial, influence of such support in removing obstacles, mobilizing resources and enlisting cooperation of all the parties involved.

II **Urges Governments in the Muslim countries** to move quickly from ad hoc technology - affecting decisions-to ones which are guided by proclaimed national technology policies in order to assume in their implementation, continuity, sustainability and objectivity of national actions in the field of S&T. Such policies would have the overall objective of increasing the state of scientific and technological sophistication of the society, and strengthening the national capabilities for the acquisition of technology through its generation by endogenous efforts and through its importation under equitable terms and conditions while maintaining a socio-economically favorable balance between the two sources of supply.

III **Urges further the Governments in the Muslim countries** to develop arrangements for the exchange of experiences in the formulation and implementation of national technology policies.

IAS-AL-ALBAIT FOUNDATION JOINT SEMINAR POSTPONED

The Organizing Committee of IAS-Al-Al Bait Foundation joint seminar on "Coordination and Cooperation Among Institutes of Research and Studies and thier Applications Within the Framework of Islamic Thought" has announced the postponement of the seminar originally scheduled for February 1989 until June 1989.

This move was taken to allow the largest number of institutes to participate in the seminar and to give participants enough time to submit their working papers to the Organizing Committee.

The Seminar shall be held on the 24th June 1989 following the conclusion of Al-Al Bait Foundation's Seventh Conference which is scheduled for the 19th of June 1989.

Positive response from (10) institutes was received until the 15th of January and the number is expected to rise to (16).

IAS GENERAL ASSEMBLY MEETS IN ISLAMABAD

The General Assembly (G.A) of the Islamic Academy of Sciences held its third meeting in Islamabad, Pakistan under the Chairmanship of IAS President Dr. M.A.Kazi on the 7th December 1988 following the conclusion of IAS Conference on S&T policy.

The meeting was attended by 27 of the 38 Founding Fellows. The G.A. discussed the items on its agenda and took the appropriate decisions. Among the various actions approved where, the IAS Council report, the Secretary General report, and the Treasurer's report.

The highlight of the G.A. meeting was the ceremony of induction of newly elected Fellows. Out of the eleven new Fellows, eight were present and three were inducted in absentia.

The G.A. reviewed progress made in implementing IAS programme and expressed satisfaction with what has been accomplished. Reports of IAS Standing Committees were also discussed and adopted by the G.A.

As for IAS H.Q. permanent building, a model and plans for the building were presented at the G.A. meeting. It was agreed that IAS Fellows will assist the Financial Committee in its endeavour to seek financial support for the Academy's projects including the building of the H.Q.

The G.A. approved plans of publishing three books dealing with selected contemporary scientific issues, namely Biotechnology, Informatics and Food and Nutrition, proposals of which were presented at the meeting.

IAS Third General Assembly Meeting

IAS FELLOW Prof. Dr. AHMED MARRAKCHI

As for organizing a conference in the year 1990, the G.A. adopted the theme "S&T Manpower Development" and asked IAS H.Q to pursue its contacts for holding this conference.

Regarding the 1989 conference on New Technologies to be held in Kuwait in Dec. 1989, the G.A. expressed satisfaction with the accomplishments of the organizing committee.

Progress of IAS Scientific Journal was reviewed following a report submitted to the G.A by chief editor Prof. N. Bor. The second issue of the Journal is expected to be ready for distribution soon.

Other issues on the agenda were discussed and appropriate decisions were taken.

NEW TRENDS; Neurons-Neural Networks*

Many funds are actually awarded to the field of neurons research. A great deal of interest to the subject has been observed from the beginning of 1980's and many laboratories in the universities (Europe and U.S.A) are becoming more involved in the secret structure of neuron as well as in its functioning. Multi-disciplinary groups try to identify the ways of transmitting a message by neurons and their mutual interactions.

RESEARCH PROJECTS SUPPORTED BY U.S. GOVERNMENTAL AGENCIES IN THE FIELD OF ARTIFICIAL NEURAL NETWORKS

AGENCIES	TYPES OF PROJECT
Office of Naval Research	Artificial Neural Network, Implementation VLSI, Modilization of Biological Phenomena.
Tactical Technology Office	Analysis-Simulation and Test of Artificial Neural Network.
Office of Scientific	Adaptation-Learning, Biological Constraints.
Wright Aeronautical Labs	Adaptative Network, Sensor Program, Adaptative Control.
National Science undation	Artificial Neural Networks, Artifical Intelligence.

Thus, the neural network becomes an interesting area of investigations requiring a large number of specific fields such as Mathematics, Electronics, Optics, Neuro-sciences, Informatics, Signal, Processing etc...

In U.S.A., specialized centres are very active in this domain as the Computational and Neural Systems Centre (CALTEDCH) and the Centre for Adaptative Systems (Univ. of Boston) in addition to small groups of research in different universities.

The financial support for a long term research programme of governmental agencies and the expected military applications give a good impulse to these activities. A yearly budget of about 8 million $ is awarded to the running projects.

At the same time, industry is working hard in that field for immediate applications (Helcht Nielson, Synaptics, Nestor...) such as the Simulation of neural networks. A particular effort is made for implementation network on VLSI (Very Large Scale Integration) chips.

No doubt, that in USA, this sector of specific research is going to be well structured in the next coming years according to the growing number of specialized centres and scientific meetings related to the topic.

On the other hand, in Europe, many laboratories are carrying on their own research programme on the topic. Besides this, E.E.C. (European Economic Community), has awarded about 2 million $ for joint research projects in the area of neural computing to understand how the human brain works, in order to built more intelligent computer.

About thirty (30) laboratories are involved (France, UK, West Germany...) in this activity which covers a wide spectrum of subjects as the Article Intelligence, Image and Speech Recognition, Neural Computing Machine to run Intelligent Robots..

This research work converges the focal question "How the robots of the future can learn all these practical things that will, one day, make them useful in industry according to the same principles as the human brain uses in learning".

By the end of this century and by the beginning of the next one, we expect to know more about the functioning of neurons and the use of Neural Network to build up new computing systems with the help of the artificial intelligence.

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* Article written by, Prof. Dr. Ahmed Marrakchi, IAS Founding Fellow.

IAS EDG PARTICIPATES IN THE EGM ON DESERTIFICATION

Based on an initiative from the United Arab Emirates University (UAEU) for establishing an Inter-Islamic Network on Desertification, and in accordance with COMSTECH Executive Committee decision, an Expert Group Meeting (EGM) was held at El-Ain last December.

The meeting which was attended by IAS EDG, Dr. Mulki, discussed the issue in details, emphasized its importance and prepared a proposed Charter and Terms of Reference for the proposed Inter-Islamic Network.

COMSTECH Secretariat in Cooperation with UAEU is expected to study the outcome of the EGM and make the appropriate arrangements.

SOME USE UNIVERSITIES AND CENTERS WORKING ON NEURAL NETWORKS

LABORATORIES	FIELD OF RESEARCH
Carnegie Hollon University	Informatics-Artificial Intelligence.
Penn. State University	Theorical Evaluation - Electronics - Optical implementation.
Berkley University (California)	Evaluation of networks performance, Electronic implementation.
University of California Los Angeles Distributed Machine Intelligence Group	Networks Theory - Network oscillators... Neurosciences - Mathematics.
Stanford University	Non linear adaptative networks, Distributed parallel calculus theory.

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