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LEADERSHIP VISION: ACCOMPLISHMENTS AND GOALS

My Philosophy of Life
 While there is a will there is a way

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Summary — Leadership vision demonstrated in 15 roles played in carrying out progressively-increasing responsibilities (motivation, administration, crisis management, conflict resolution, establishment of national projects/laboratories, reducing corruption) for Higher Education Commission (Government of Pakistan), National Testing Service Pakistan, Transparency International Pakistan, University of Karachi, Defense Housing Authority (DHA) and Karachi Grammar School as well as grooming future leaders through the Early Talent Research Participation Program, resulting in policy change, elevation of education standard, improvement in examination system and involvement of high school students in research activities.

<p>DOVE <i>Indirect & Supporting</i> CONFLICT TRANSFORMATION</p>	<p>PEACOCK <i>Direct & Supporting</i> CONFLICT MANAGEMENT</p>
<p>OWL <i>Indirect & Controlling</i> CONFLICT RESOLUTION</p>	<p>EAGLE <i>Direct & Controlling</i> CONFLICT GENERATION</p>

Fig. 1. Taken from the abstract of a seminar “Intelligent Power and Conflict Resolution”, Department of Political Science, University of the Punjab, March 31, 2011
<http://www.ngds-ku.org/Presentations/IR05.pdf>

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Philosophy To set and to realize goals, by proper planning, execution, monitoring and evaluation, without compromising ethics and principles; to achieve efficiency and effectiveness, through knowledge, skill and attitude, without affecting relationships; to create opportunities for faculty, staff and students by mentoring and effective delegation, with adequate follow through and follow up.

Methodology Before taking up the charge of Chairmanship of Department of Mathematics, University of Karachi I attended a number of training sessions, *e. g.*, “Skills for Successful Supervision”, “Human-Resource Management”, “Interviewing Skills”, “How to Conduct Performance Appraisals”, “Training-Needs Assessment (TNA)” and “Goal Setting”. It is very important to know the personality trait of one’s subordinates, one’s colleagues and one’s bosses as well as one’s own management style. For example, my self an “owl” (indirect and controlling), I have to move at a faster pace and try not to present information in detail with “eagle” (direct and controlling), whereas I should openly show concern and appreciation as well as learn to compromise with others while dealing with a “dove” (indirect and supportive). With “peacock” (direct and supportive) I have to be more direct and be accommodating. I analyze the style of the person I have to deal with and use appropriate strategy (cf. Fig. 1). During the 3-year (full) term of my Chairmanship (2003-6), all major policy decisions were taken after taking into confidence the faculty. The same strategy was applied in the 14 other roles of leadership, which I had the opportunity to play as Head, Mathematics and Physics, Karachi Grammar School (1979), Head, Departments of Mathematics and Physics, DHA Degree College (1991-2), Convener, National Curriculum Revision Committee for Mathematics, Higher Education Commission (HEC), Government of Pakistan (2004-present), Convener, Subject Committee (Mathematics), National Testing Service (NTS) Pakistan (2009-present), Convener, Sub-Committee (Schools) of the Education Committee, Transparency International (TI) Pakistan (2011-present). Included in the list are assignments at the parent institution as Project Director, the NGDS Pilot Project (1998-present), Chairman, Board of Studies for Mathematics (2003-6), Convener, Program in Industrial and Business Mathematics (2003-6), Acting Convener, Testing Services Committee (2008-10, during absences of Convener), Head, Research Groups in Astrodynamics (1995-present), Image Processing (1996-present), Mathematical Biology (1998-present) and Mathematical Physics (2005-present) as well as Director, the Syed Firdous Growth and Imaging Laboratory (2008-present). I am, also, contributing in grooming future leaders as Program Convener of the Early Talent Research Participation Program, University of Karachi (2002-present).

Realizing that every manager is not a leader, but every leader must be a good manager, I have stricken a balance between routine and development work, made systems of paper handling and task management, improved upon the punctuality of the staff and the students during the three-year tenure of Chairmanship. I am a good listener and have been able to handle stressful situations, appropriately. On the academic side, four seminar series have been revived, a new seminar series (Professional Skills-Development-Seminar Series) launched, a major seminar conducted and industrial sector contacted to conduct TNA and to provide internship for our students. The department got its own multimedia projector. The computer lab was upgraded with latest P4 computers and laser printers installed. Department website was made and inaugurated by Registrar of the University. On the human-resource-development side, new posts in various cadres announced, applications collected and processed (scrutiny completed). In addition, behavior-based interviewing system has been devised and implemented for the hiring of cooperative teachers. I, also, started faculty-development programs. PC-1 forms were prepared and submitted for future expansion and enhancement of the department.

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Methodology (continued) The qualities, which provide me leadership opportunities are *a)* communication skills (forming opinions), *b)* presentation/speaking skills (persuasive — changing thinking and initiating action), *c)* networking (resolving conflicts), *d)* ability to portray vision

Accomplishments Board of Studies for Mathematics, University of Karachi, under my chairmanship, prepared and approved BS, MS and PhD programs, in line with revised HEC curricula of 2005. In fact, Department of Mathematics was the first to put forward these curricula, in response to April 5, 2005 instructions of Vice Chancellor. All decisions were taken with consensus. Not a single meeting was adjourned because of lack of quorum.

As Convener of Program in Industrial and Business Mathematics, University of Karachi, I was able to establish industry-university linkage. Faculty from Department of Mathematics gave workshops and professional development short courses for industry. In return, industry offered internships and jobs to our students. Students of morning program could also pursue Masters in Industrial and Business Mathematics.

As Director of the Syed Firdous Growth and Imaging Laboratory, University of Karachi has the honor to step ahead of rest of world in anthropometric measurements (heights, masses and mid-upper-arm circumferences can be obtained to accuracies of 0.01 cm, 0.01 kg, 0.01 cm, respectively, at other places these measurements are obtained to accuracies of 0.1 cm, 0.1 kg, 0.1 cm, respectively). Other distinctions of laboratory are world's lightest full-length moiré recording system. Currently, our lab is involved in developing algorithms for growth-and-obesity profile of child, edge-based moiré and edge-based raster.

Achievements of research groups are highlighted in *Research: Accomplishments and Goals* <<http://www.ngds-ku.org/goals/Univres.pdf>>. Some of the notable concepts put forward by me are **the fourth law of thermodynamics**, **the sixth paradigm of physics**, **cross lattice** (generalization of reciprocal lattice — condensed matter physics), **intelligent power** (generalization of soft power and smart power — international relations), **modeling money (flow) as a substance-like quantity** (mathematical economics), **edge-based moiré** (combination of moiré fringe topography and edge-based algorithm — computer vision), **air-spacecraft of the third millennium** (green-engineering principles — aeronautics and astronautics), **mathematical definition of brain death** (exploring group structure of covariant model of global electrocortical activity — mathematical neuroscience) and **anthromathematics** (mathematics of body sizes, forms, proportions and structures). *Aerospace*, *health-care* and *security technologies* are impacted by research conducted in our laboratories.

As Project Director of the NGDS Pilot Project, I was able to provide leadership to my team to develop:

- a)* Human-rights and ethical standards for conducting a research project involving minor subjects and parents with little or no education
- b)* Inexpensive, indigenously-built anthropometric instruments
- c)* Standardized-anthropometric techniques for obtaining reliable and reproducible measurements (manual prepared, containing step-by-step procedures as well as sources of error and hazard/injury)
- d)* A method to generate a detailed growth profile of child based on heights of biological father and biological mother
- e)* Moiré fringe topography apparatus (a stereophotogrammetric technique) for somatotyping and screening of trunk deformities, without using X rays

As Convener of Subject Committee for Mathematics, National Testing Service, I was able to formulate, with consensus, policy outline and guidelines for developing GAT (Graduate Admissions Test) items, which was later approved by the Academic Committee,

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Accomplishments (continued) of which I was a member by virtue of being the Vice Chancellor's Nominee. As Convener of National Curriculum Revision Committee (NCRC) for Mathematics, Higher Education Commission, I was given the task, in 2005, to prepare framework for BS and MS programs (introduced at national level for the first time) as well as bring PhD program in line with equivalent programs in developed countries. These programs were revised and updated in 2008 by the same committee.

As Convener of Sub-Committee (Schools), the Education Committee, Transparency International Pakistan, I am trying to develop protocols to foresee opportunities for corruption in a new project, monitor (follow through) operations to make sure that laid-down procedures are followed and evaluation (follow up) to determine corruption/performance index by employing a model based on ideas from thermodynamics.

As Acting Convener, Testing Services Committee (TSC), University of Karachi, presented report in Academic Council, which was approved by the august body. An opportunity to demonstrate skills of conflict resolution (cf. Fig. 1) came up during conduct of the first consolidated test (since the formation of TSC) on January 24, 2010, when I took key decisions regarding testing of medical doctors, which averted major clash between the administration and the prospective candidates.

As Head of Department of Mathematics and Physics, DHA Degree College, I supervised a staff of 5, dealt with local suppliers. This assignment provided me a chance to establish Physics Laboratory from scratch.

One's leadership skills are, truly, demonstrated during crises situations. I had to deal with two such incidents, one involving fire in the sub-station next to Department of Mathematics and the other resulting from clash between two rival student groups during students' week. Both of them occurred when I was not holding chairmanship of department. However, I remained in the department till the end, directing the staff to protect human life (vacate the building), contain inflammables, unplug computer and electrical equipment and secure laboratories and building, as per internationally-established norms and procedures.

Honors During my tenure as Chairman (2003-6), Department of Mathematics won a grant of Rupees 2 million, annually, for a period of 3 years from National Center of Mathematics. Vice Chancellor and Dean, Faculty of Science, both, visited the department twice within a span of 6 months, Pro-Vice Chancellor 3 times and Registrar once (to inaugurate the departmental website). Foreign guests, included professors/scientists from Norway and Sweden as well as Former Division Chief, United Nations Capital Development Fund from New York, USA. In the words of Acting Director, the International Center for Chemical and Biological Sciences, Department of Mathematics was on the forefront during this period (16th meeting of senate on December 20, 2006).

The model of MS courses prepared by NCRC of Mathematics was adapted by committees of other subjects.

The NGDS team was asked to train master anthropometrists of the Tawana Pakistan team (project conducted by the Aga Khan Foundation). The height-measurement system, developed by the NGDS team, was adopted by the Tawana Pakistan team.

On October 28, 2008 a team from French Embassy in Islamabad visited our department and discussed possible projects for collaboration.

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Goals I am trying to work with the current chairwoman to make Department of Mathematics, University of Karachi, the best department among all the mathematics departments in the entire country. Quality of the faculty, technical aspect of the facilities, functionaries of the department as well as the academic freedom to explore, to teach and to disseminate determine prestige of any department. I am trying to work on all these fronts, simultaneously.

Selected Talks Aimed at developing leadership vision

Intelligent Power, Conflict Resolution, Complexity and International Trade
Seminar, Institute of Business Administration, City Campus, Karachi, May 28, 2011
<<http://www.ngds-ku.org/Presentations/IBA.pdf>>

Intelligent Power and Conflict Resolution
Seminar, Department of Political Science, University of the Punjab, the Quaid-é-Azam Campus, Lahore, March 31, 2011 <<http://www.ngds-ku.org/Presentations/IR05.pdf>>

Time Management
Professional-Skills-Development Seminar, Department of Mathematics, University of Karachi, September 14, 2006 <<http://www.ngds-ku.org/Professional/TM.htm>>

Goal Setting
Professional-Skills-Development Seminar, Department of Mathematics, University of Karachi, March 30, 2006 <<http://www.ngds-ku.org/Professional/Goal.htm>>

Department of Mathematics, University of Karachi: Challenges and Opportunities for the Twenty-First Century and the Third Millennium (Opening Remarks)
Guest Research Seminar, Department of Mathematics, University of Karachi, August 6, 2005

Web address of this statement: <http://www.ngds-ku.org/goals/Univleader.pdf>

HTML version of this statement: http://www.ngds-ku.org/goals/leader_syn.htm

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