

THE DINNER SPEECH HOSTED BY THE ACADEMY OF SCIENCES MALAYSIA

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"SCIENCE AND TECHNOLOGY -- THE FOUNDATION TO OUR ECONOMIC
GROWTH AND PROSPERITY "

I am honoured to be given this opportunity to address a community of eminent Malaysian scientists, engineers and technologists, a community which is of utmost importance in the next phase of the country's development and growth.

2. Science, engineering and technology (S.E.T) have a pivotal role in the development of our economy. It is through S.E.T that the Government will expect the growth of the economy to be facilitated.

3. The emergence of a new global economic order -- unrestricted by geographical and political barriers -- will result in greater integration of the world economy. Knowledge, skills, information and investment funds will move around freely. Properly utilised these new freedoms will bring about great prosperity for all. However we have seen how the sudden pull out of funds can result in the destruction of economies at a faster rate than the build-up. And so the infatuation with Science, Engineering and Technology must be accompanied by an even greater adherence to morality and the higher human values.

4. Today while there is a great deal of pressure for the opening up of countries and markets to everyone, there is not that much pressure for science, engineering and technology to be made available to every country and everyone. In fact the pressure to protect intellectual property is greater today than at any time in history. The machinery of international institution and those of powerful national Governments are mobilised to protect intellectual property rights as never before.

5. There seem to be something wrong in this. Why is it that while markets cannot be protected, markets which may be the sole asset of poor countries, intellectual properties must be protected at all costs.

6. A choice must be made here. If we want to protect intellectual property then we must also protect markets. Alternatively we should insist on markets and intellectual property to be equally free for everyone.

7. Science, Engineering and Technology are the results of studies and research. Although research seem to imply some mysterious inborn intelligence it is really a matter of money and manpower. Today sophisticated research laboratories can be set up by anyone but the cost is prohibitive. The personnel are again easily available if one is prepared to pay them.

8. Again here we see the impact of globalisation. Good researchers can be recruited from any country to work in any other country. There is no such thing as national loyalty any more. If the right pay is offered, researchers would be

easily employed from any country in the world.

9. Since poor countries have neither the costly laboratories nor have they the ability to offer good pay, they usually lose their researchers to the richer countries. The loss in most cases is permanent as the researchers are often offered citizenship as well. This brain drain is very costly to the poor countries as they will have to pay royalty for the results of research carried out by their own nationals in other countries.

10. Research today is much more methodical and much less dependent on individual genius. All that is needed is fixing the objective and making a series of modification to a product in order to improve the results. The method is the same whether it be in physics, chemistry, biotechnology or whatever. Eventually something worthwhile would be discovered or invented. This way almost everyday something new is discovered or developed.

11. Besides original research there are plenty of opportunities for applied research. The original discovery or invention may be done by someone else in some other country but the application of the results can be done elsewhere, including in developing countries too poor to conduct original research. The cost of applied research may also be high but there are ample possibilities for low-cost applications.

12. Merely by catering to local conditions for applications developed in the developed countries, numerous modifications can be made and patented. Although royalty may have to be paid for the original research, at least there will be ownership of local applied research results. Since most of the original and applied research are being done in the temperate climate, application in the warm humid climates of the tropics can be studied and developed in these regions. Tropicalisation is almost a science of its own and the scientists in the tropical countries have the whole country as a laboratory for testing in tropical condition.

13. Then there are cultural and religious needs and injunctions to be looked into. Muslims in particular require certain facilities and conditions in the products they use. Muslim and non-Muslim researchers can look into modifications to suit Muslim needs and requirements.

14. Malaysia is a developing country and has inadequate funds for research, original or applied. The royalty paid by Malaysia for imported technologies yearly is very high. This is of course a drain on our foreign exchange earnings. At this time of economic turmoil we cannot afford this outflow of funds. We should therefore develop our own technology and engineering innovations. It will not only reduce the cost of technology but we may even be able to export it to reverse the flow of royalties paid. Malaysia would do well to spend money on research, especially applied research. The economic recovery can be speeded up and we may emerge from the turmoil stronger.

15. The Seventh Malaysia Plan promotes a shift in the national development

strategy, from one that used to be input-driven towards one that is productivity-driven. This strategy is further emphasised in the Second Industrial Master Plan. For growth to improve further, the contributions from technical progress need to be enhanced. The Government has therefore emphasised research and development as well as accelerating the application of information technology, particularly in the development of the Multimedia Super Corridor (MSC). It is envisaged that these improvements will lead to increased productivity and enable the economy to generate an output at a higher rate of growth vis-a-vis resources availability and utilisation.

16. The realisation that productivity driven growth is very much dependent on the S.E.T strengths, R&D inputs and the capability of the people, has prompted the Government to invest in S.E.T. The Government of Malaysia has allocated RM1 billion through Intensification Research in Priority Area (IRPA) in the Seventh Malaysia Plan for the development of S.E.T. This is an acknowledgment by the Government that our long- term economic growth will be dependent on the increased use of knowledge, technology, and skills to enhance industrial productivity and competitiveness as well as to improve the standard of living.

17. To realise our goals of ensuring continuous scientific and technological development to support and sustain high economic growth, accelerate industrial development and build a society that is scientifically and technologically advanced as envisioned in Vision 2020, the Government has put in place a S.E.T management system that is aimed at harnessing the creation and innovations in science and technology for economic growth and development.

18. The S.E.T management system is created to satisfy three main objectives, namely to stimulate scientific curiosity, to develop new products and processes, and applications and to realise the social benefits of science and technology.

19. There are three components of the S.E.T management system: the policy, infrastructure and finance.

20. The National Science and Technology Policy was formulated to promote the use of science and technology in economic development and improving the quality of life of all Malaysians. It focuses on upgrading R&D capacity and capabilities as well as improving the scientific, educational and other relevant infrastructure. The task of driving scientific and technological development in this country is being shouldered by the National Council for Scientific Research and Development.

21. Within our S.E.T management system, we have created institutions at various levels to ensure that there is sufficient capacity, capability and financial resources to undertake S.E.T programmes. Our national education system is designed to provide trained manpower in S.E.T. The various science, technical and vocational schools across the country are meant to produce knowledgeable and educated workers for the S.E.T system.

22. The Government has also established various institutions to ensure that the

S.E.T management system delivers its result for the benefit of the nation. MIMOS, Technology Parks, Kulim Hi-Tech Park, MIGHT, MINDS, BAKSA, the various research institutions, universities and the Academy of Sciences Malaysia are parts of the S.E.T delivery system. To finance the commercialisation of R&D results the Government has established Malaysian Technology Development Corporation (MTDC). MTDC functions as a catalyst in developing venture capital and transfer of technology in Malaysia.

23. The Government is not hesitant to invest in R&D. We have made a fairly large sum of money available. But administering the fund is very complex. Administrators find it difficult to invest Government funds in something that cannot be quantified in the usual manner and the results of which i.e. the return on the investments, are not so tangible. The risk on the investment appears high simply because the results cannot be guaranteed and the usefulness of the result in terms of application cannot be properly assessed.

24. It is especially difficult to assess the value and the returns on basic research. Such research is not directed towards application. In many instances the applications will need research by other institutions. Yet we know that in many advanced countries, basic research has brought about huge returns for the nation due to applications devised by commercial organisations and their own applied research facilities.

25. It is therefore important for those in charge of disbursing Government funds for research to acquire expertise in evaluating research projects and to accept a long payback period. Indeed in some cases we have to accept that we should do research for the sake of research without knowing the possible returns on the capital outlay. There should not be too much of this kind of research of course. But a certain amount should be allocated for this.

26. I understand that there are a number of research facilities which are hardly utilised. While the equipments are provided for, there is a reluctance to employ research or to allocate funds for research work. This is indeed unfortunate. The institution concerned should make a study of the facilities available and determine how to utilise them more fully. If we don't have enough researchers we should be willing to employ foreign personnel. There is of course a risk of leakage but it is a risk we have to take. After all developed countries take all kinds of risks and have clearly profited from them.

27. The latest effort by the Malaysian Government to strengthen the country's economic position is the establishment of the Multimedia Super Corridor (MSC). Through MSC, Malaysia will compete in the new information era. An explosive array of innovations centering around telecommunications and informatics has produced a revolution in information technology (I.T). I.T will reorientate global commerce and redefine the workplace. It will have a serious implication on the labour market as demand will be on more knowledge workers.

28. The Government realises that investment in I.T is important as it is the central nervous system that will sensitise all the other sectors of S.E.T. Through

I.T. the potential of other technologies can be realised, creating subrevolutions in other areas.

29. Malaysia' s technology agenda remains very broad but focuses on the need to enhance efficiency and effectiveness of our industry. The Government has long recognised the importance of technology in poverty eradication and ameliorating environmental problems. In poverty eradication, relevant technologies can be diffused into the target groups or community to improve agriculture practises, increase food production and provide better health care services and population planning. For environmental problems, not only are there new technologies, but even existing ones can be modified to improve energy efficiency, exploration of new forms of energy, better forms of transportation, effective management of waste and new methods of fertilisation.

30. For the past 41 years since independence, Malaysia has made rapid technological evolution. From a predominantly agriculture nation, we have transformed ourselves into an industrialising nation. In preparing the nation for the next phase of growth, the Government is putting in place the fundamentals necessary for launching the country into the information age.

31. For us to succeed further, mastering of Science, Engineering and Technology is of paramount importance.

32. The Government remains committed towards promoting S.E.T. We have formulated the policy, built the infrastructure and allocated the financial resources. But beyond that we need the scientific and industrial community to push it further. To innovate and create; to continuously challenge old thinking with new ideas; to continuously search for new knowledge and solve problems. We have to strive for excellence and in the process transform Malaysia into one of the world players in science and technology.

33. Scientists and researchers should capitalise on the Government layout infrastructure and facilities to deliver their results. Over the years, our scientists have achieved major breakthroughs in various fields of S.E.T. It will be for the benefit of all of us if the Academy of Sciences Malaysia could take up the initiative to document all these breakthroughs. Although these breakthroughs are sporadic, it indicates that Malaysia possesses scientists and researchers who are capable of performing high level research.

34. Having said that, I challenge the Malaysian scientific community to produce a Nobel Laureate by the Year 2020.

35. I am very happy to note from the President' s Address that the Academy of Sciences Malaysia has been very active at various fronts in promoting S.E.T in Malaysia. I congratulate the Academy for adopting such a proactive stand on various issues of S.E.T faced by the country. The Government of Malaysia will continue to seek opinions and suggestions from the Academy on issues of S.E.T.

36. The Academy of Sciences Malaysia as the apex body of science and

technology in Malaysia has a very important role to play. It should provide the platform for scientists to channel their inputs and views into the national development process and at the same time provide coordination and direction to the scientific community. This is the kind of leadership that the Academy should play.

37. The Academy must prepare itself to play an advisory role on S.E.T to the Government as well as the private sector. The Government is always appreciative of the fact that we can bounce off ideas with the relevant individuals and institutions to ensure that our policies and plans meet the desired objectives. The Government too is open to constructive criticisms. Criticisms should not be an end but a beginning in a search for better solutions. In the area of S.E.T, the Government expects the Academy to assume this role.