



THE ENGINEERS' ROLE AND CONTRIBUTION

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The latest film in the Lord of the Ring (LOTR) trilogy, "The Return of the King", has gained good reviews for its splendor but little has been said of the technical and engineering support that made the film possible. The animation and other special effects that have been used in the film would not have been possible if not for the advancement in computer engineering in developing the animation and rendering software with the necessary supporting hardware to bring fantasy to life on celluloid film.

From the entertainment world to more down to earth happenings, Malaysia has seen the manifestation of the wonders of engineering in the developments in public amenities such as the supply of electricity and water, transport infrastructure such as roads and highways, railways and related Light Rail and Monorail transport systems, the Penang Bridge, the Petronas Twin Towers and the Multimedia Super Corridor (MSC) intelligent facilities in Cyberjaya. Engineering technocrats also contributed towards the development of equipment for a better quality of life for the physically or mentally challenged. Engineering principles are put into practice in the design, application and production of artificial limbs, hearing aids and other equipment such as lasers for optometric corrections. Though this part of contribution seemed to have been overlooked, it is still a significant contribution towards the betterment of welfare for our fellow Malaysians who may require them for a better quality of life.

As for the national economy, there is an apparent shift from sole dependence on mining and agricultural trade to the manufacturing and service sectors. The list can go on and on. It goes without saying that the contribution of the engineering, science and technology fraternity has become an important part of the country's socio-economic development and has improved the well-being of the country and the quality of life of Malaysians from all walks of life.

The engineer's contribution is a straightforward recognised fact though unsaid, as it is taken for granted as part of the everyday facts of life. There is another facet, which has not been made known to the general public at large. Some engineering professionals have also joined the ranks of our unsung heroes in uniform in contributing towards the country's security. Engineers have contributed to national security in ensuring the security of supply in the port, railway, water and electricity infrastructure in times of national need. There is an engineering specialist section in the Territorial Army in the form of the Regiment 40, 50, 60 and 70 which give technical support to the normal Engineers Corps in the Armed Forces in maintaining essential services such as port and railway facilities for transportation and water and electricity supplies to sustain the nation through any times of need, crisis or emergency. Most of the members are from government or statutory bodies and some from the private sector. They have been mobilised during the Commonwealth Games in 1998, to

ensure smooth running of all programs at all venues throughout the period without undue interruptions. The troops in these Regiments could also be mobilised should the country face internal or external threats. Some engineering professionals have also joined the Police Voluntary Force and Civil Defense Corps.

There is also a humanitarian side to many engineering professionals in helping out at the various charitable organisations such as the Spastics Children homes and associations, the Association for the Blind, Montfort Boys' Home, orphan and old folks' homes, etc., just to mention a few of them. These engineering professionals not only support these charitable organisations financially but also spend time with them whenever possible.

The only difference between professional engineering bodies and the other professional bodies such as the Malaysian Medical Association (MMA), the Malaysian Institution of Accountants (MIA) and the Malaysian Bar Council is that professional engineering technocrats are more introvert in nature and do not mind to be in the background in supporting whatever good causes that come along the way, be it contributing to industries that thrive in the modern globalised economy and trade, the security of amenities or helping our less fortunate brothers and sisters enjoy a better quality of life.

Engineering professionals have been the prime mover of national development and will be relied upon to play an important role to help Malaysia to achieve Wawasan 2020, to become

an industrialised and developed country by the year 2020.

The engineering fraternity needs to rethink its present day roles and contributions to pave the way forward in order to face the challenges of globalisation, trade liberalisation and in supporting Malaysian in achieving its vision. The roles and contributions of yesteryear will still be applicable but will not be sufficient in the present day scenario. Engineering professionals have to widen their views, scope and capabilities in order to get accepted and be given due recognition by the public at large in the present times and in the future towards Wawasan 2020.

The first and foremost change should be the attitude of engineers on professionalism. Some engineers think that achieving the highest qualifications and awards would make one become a professional. This is a wrong perception and such recognition is illusory. Professionalism is a mindset or attitude on how one performs and fulfill one's duties and responsibilities towards God, country, society, the profession, oneself and our fellow Malaysians and how one could further the respective fraternity's cause and contribution towards fulfilling its moral obligations and responsibilities to society. As one saying goes, "What is the point of gaining the whole world but loses one's soul."

The first classic example is that there is already the Registration of Engineers' Act (Act 138) in 1967, a law which requires all engineering graduates to be registered with the Board of Engineers before they are able to be employed to work in the engineering discipline. There are many professional engineers who have climbed the corporate ladder and have reached the top management level. It should be their responsibility to know this legal and mandatory requirement and not overlook the fact that some of the staff is not registered as required. It would be ethically and morally unprofessional to joke about it and at times use the loophole as an excuse

that their posts are not designated as engineers but use positions such as managers and assistants to get over the purview of the Act. This is where professionalism should come in, as it is the responsibility of all professional engineers to comply with all laws and regulations and not to interpret them to their own advantage, whims or fancy. This will give a wrong perception or message to up and coming young engineers that they would be expected to do the same for certain advantages or benefits to oneself or the company.

The author sincerely appeals to all professional engineers to ensure this does not happen and to take steps to remedy or mitigate this situation. This will increase the size of the engineering fraternity and give the BEM and IEM more support in the increase of members and activities well as financially in terms of yearly subscriptions. We can get some tips from other professional bodies such as the MMA, MIA and the Malaysian Bar Council.

The second concern is the continuous training and upgrading of capabilities of young engineers. Gone are the days when adequacy in just one engineering discipline is sufficient for an engineer to compete in the marketplace. The present day engineering professional will need to be a T-Person, that is, one should be broad by acquiring general proficiency in other disciplines or trades as indicated by the top line of the T, together with sufficient depth in one's own professional field as indicated by the long down stroke. The engineer must now be multi-skilled in both engineering and other fields such as management, communication and business. As the present world has achieved great advances in Information and Communication Technology (ICT), one has to master some basic computer skill so as not to be left behind. There are new emerging fields such as nanotechnology and biotechnology. Hence the role of engineers should now be increased towards a

knowledge-based economy direction with emphasis on putting engineering principles into practice as well as research and development in new technologies to adapt to new challenges ahead and beyond.

The more experienced and senior professional engineers should act as mentors to the junior up and coming young engineers under their charge to ensure that they pick up the correct attitude and aptitude to uphold the prestige and integrity of the engineering profession. There could be instances where some young engineer's role is reduced to that of a puppet with strings being pulled to the liking of the employer. Hence, it is the role and responsibility of the professional engineer who are at the senior or top management level to ensure that they, when subjected to pressures from higher up, do not pass the buck to the junior or fresh engineers with added conditions and demands. It would be pitiful if such cases exist. The author appeals to engineering professionals to be aware of these pitfalls and avoid them by giving advice and guidelines as mentors should to their charge. This is also part of the professionalism and ethics expected from a professional in whatever discipline they may be in.

There is a scheme of continuous professional development (CPD) courses already put in place by BEM and IEM. Engineering professionals could encourage better usage of such training schemes for the betterment of all engineers, inclusive of the young and the more senior ones.

The author suggests that a section of professional engineering bodies such as BEM and IEM to be set aside to deal with any complaints, concerns or issues that affect engineers in general in relation to the above matters or any other matters that could contribute towards upholding the integrity and prestige of the engineering fraternity. This would give an avenue or channel for young engineers to see some justice being

done in preparing their future paths towards greater heights and achieving professional status.

With globalisation setting in, the Malaysian engineering fraternity has to benchmark themselves against internationally recognised standards in order to compete with the outside world. If external expatriates and specialists are in high demand here in Malaysia, why can't we be in the same position as to widen our horizons to be able to provide engineering service and expertise to the outside world? BEM and IEM have been active in the promotion of international registration for engineers for the ASEAN and APEC regions as well as the EMF register. This will provide the platform and the impetus to our Malaysian engineering professionals to leap into the international scene and offer their services to the global arena.

Also, Malaysian has organised international conferences such as the 11th CEPIS (1996) in Kuala Lumpur and the World Engineering Congress (WEC) in Sarawak. This shows that we are capable of organising international conferences and would be able to offer the venue for other prestigious international conferences for locals to network with other professional counterparts and open up the market place.

Another important aspect is the perception that the recognition of the good work by engineering professionals go to others whilst any shortcoming or limitation ricochets back to them. The engineering discipline has always incorporated a factor of safety in designs and it is other constraints that cause the defect or problem. Hence the engineering professional should stand up for their professional ethics even if sometimes it could cost them heavily in not getting the project if they do not toe the line. It is better to bite the bullet than let the profession go into ill repute.

Finally, the author feels that the engineering profession should be seen as being responsive to environmental issues and concerns introduced by development. Hence, the awareness of the concept of Green Productivity should be made available to the engineering fraternity and put into practice. This will increase both productivity as well as environmental performance. The engineering profession should improve its public relations to project a caring and professional image towards society. By working closely with government authorities, the general public and other fellow professionals, the engineering fraternity will be put in good light.

In conclusion, the general public expects the engineering profession to play a vital role in its contribution towards the betterment of their quality of life as well as supporting Malaysia in achieving Wawasan 2020. It is up to us to portray this image with better public relations with everyone around us. The author feels that the "ingenieur" should be better off by associating more with "ingenuity" than "engines" per se to upgrade the profession, and become more innovative and adaptable towards the ever-changing environment and its challenges. ■