MEMORIAL LECTURE

The 11th birth anniversary of Eng. (Prof.) Robert Haisington Paul, (popularly known as R. H. Paul) was commemorated on 9th February, 2015 with a memorial lecture at the Wimalasurendra Auditorium of the Institution of Engineers, Sri Lanka (IESL) at 120/15, Wijerama Mawatha, Colombo 7. This year’s R. H. Paul memorial lecture was delivered by Eng. Anura Wijayapala on ‘Engineers and Scientists who can save the Planet Earth’.

The movement of engineering skills around the world is part of the dynamics of global interdependence and unbalanced global development. Its sustenance is through mutual understanding among nations about the quality of such expertise and their ability to establish standards that conform to internationally recognized benchmarks. Through our membership in the Washington Accord, the benchmarked standards we establish for delivering engineering Degree programmes will ensure that our engineering graduates who have followed degree programmes accredited by us will possess attributes that will make them acceptable for work or for higher studies be they in Sri Lanka or elsewhere. Thus overseas chapters have a vital role to play in the future.

Overseas Chapters have been set up with the aim of reaching out to our globally dispersed membership enabling them to have access to membership services of the IESL. The Chapters can provide a forum for them for social networking and for sharing of knowledge and experience among their colleagues in Sri Lanka. The members of the Chapter can also organize themselves to pass on the knowledge and experience they have gained by working in a country where there is a lot of technology transfer from developed countries like America, Europe, Japan, Australia, etc. to their fellow members in Sri Lanka who can gain much from the overseas exposure of their colleagues in overseas chapters.

The success of an overseas chapter depends greatly on the support given by its members through playing a positive role in the activities of the chapter. The NSW Chapter in Sydney was the first overseas chapter to be set up by the IESL in 2009. Today, the Chapter is doing yeoman service fulfilling our expectations of an overseas chapter. It is actively engaged in membership drives and act as a bridge between the mother centre and its members in NSW Australia enabling the members there to continue to maintain professional links with the engineering community back in Sri Lanka. They have donated engineering text books last year to the engineering faculty of the Jaffna University. The Chapter also donated equipment to the library at the headquarters in Colombo. That the newly established Chapters in Perth Australia, Qatar and New Zealand too would, in time, fulfill the expectations of their members, I have no doubt. The need to establish similar chapters in other West Asian countries and experience they have gained by working in a country where there is a lot of technology transfer from developed countries like America, Europe, Japan, Australia, etc. to their fellow members in Sri Lanka who can gain much from the overseas exposure of their colleagues in overseas chapters.

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NOTICE TO PAST MEMBERS

REINSTATEMENT OF MEMBERSHIP

The Institution of Engineers, Sri Lanka (IESL) has decided to offer an amnesty to its past members in the classes of Fellows, Members and Associate Members to reinstate their membership if it has been lapsed due to non-payment of subscription fees.

If you are a past member, you may reinstate your membership by providing only the following:

- A formal request for Membership Reinstatement addressed to the Executive Secretary using the form available for downloading at our website.
- A payment of Rs 15,000/- if you were a Fellow or Member and Rs 12,000/- if you were an Associate Member.

Since this procedure for reinstatement of membership will be in force only up to May 5, 2015 you are kindly requested to make use of this opportunity at your earliest to enjoy the benefits of membership at the IESL.

EXECUTIVE SECRETARY
THE INSTITUTION OF ENGINEERS,
SRI LANKA
120/15, Wijerama Mawatha
Colombo 7.
HAVE YOU WATCHED IPTV?

by Eng. Tharindu Weerasinghe
[BSc.Eng, MSc.Eng(Hons), C:|EH, MIEEE, AMIESL]

In Sri Lanka you are able to enjoy the IPTV facility. According to my knowledge it has been in the local market since 2008; so at present you might be using IPTV at home. I thought it will be good to write an article on IPTV systems to enhance your knowledge on it.

IPTV stands for Internet Protocol based TeleVision. It is the mechanism which transports television content over the Internet. In a nutshell, video/audio streams are encoded and transmitted as IP packets over the internet and the receivers decode them to show them to the users. But let me explain you how the IPTV systems work.

I referred "http://www.althosbooks.com/ipteba1.html" to compile this information as I thought that reference is pretty good to understand the basics.

IPTV system gathers data from various sources like live broadcasts, stored media on the internet, and other types of communication links and so on. A centralized place called Headend, manages all data received and prepares in a way that they can be transmitted. That means data management and encoding/modulating are done in this place. Managed and modulated data are transmitted over broadband connections. Signals are transmitted as IP (Internet Protocol) packets.

Received signals are processed and converted into a format that allows users to watch TV, by a special equipment places at each user’s home, Set-Top-Box (STB). If you use IPTV at home, it is the box that you switch ON before you watch TV. The following diagram explains the functionalities in a nut-shell: Ref: http://www.althosbooks.com/ipteba1.html

Functionality of IPTV STB:

The IP STB extracts the transport stream (TS) from IP packets. The channel decoder detects errors in the signal and corrects them and sends the transport stream to the descrambler assembly. The descrambler assembly gets key information from either a smart card or from an external conditional access system (e.g. via a return channel). Using the key(s), the STB decodes the transport stream and the program selector extracts the specific program stream that has been selected by the user. The DEMUX circuitry of IP STB then demultiplexes the transport stream to obtain the program information.

Demultiplexing is the mechanism of extracting each single signal from a multi-signal transport medium. It is the opposite of multiplexing. Multiplexing is arranging many signals in one transport medium to ease the transmission.

The big picture of the IPTV STB

Ref: http://www.althosbooks.com/ipteba1.html

IP Video System

You might be wondering how video can be sent via an IP transmission medium. The following diagram illustrates that an IP video system digitizes and reformats the original video, encodes and/or compresses the data, adds IP address information (unique identifier in the internet) to each packet, transfers the packets through a packet data network, recombines the packets and extracts the digitized video, decodes the data and converts the digital video back into its original video form.

Ref: http://www.althosbooks.com/ipteba1.html
RE - INTRODUCTION OF RUBBLE AS A BASE COURSE MATERIAL & ITS APPROPRIATENESS FOR THE RURAL ROAD CONSTRUCTION, Comments by Eng. M. Chandrasekera

It is good that an Engineer working in RDA itself is raising this issue. However, I felt that the ‘non – technical style’ of his writing impairs highlighting/justifying some of the points he is attempting to raise.

See the following extracts.

a. it can withstand more load & transfer more load to the ground with less settlement
b. more energy can be absorbed before crushing
c. It is cheaper material than ABC
d. In a situation where the quality rock is not available in the village, ABC material will have to be transported at a higher cost.
e. it can be organized as a village centered labor intensive program to supply rubble from the village itself
f. the road built on rubble base since it provides heavy foundation, will be passable even after subjecting to a flood until its repaired whereas no sign of road remains after a flood when built on ABC base.
g. easier to handle during rainy season is another factor towards positive direction.
h. the benefit of using rubble bases is not limited to the rural roads. It can be widely used for National roads as well
i. Theoretically a rubble base course needs less compaction since it transfers load mainly by means of interlocking
j. As far as the large volume acquired by the rubble (being the main constituent) is concerned, energy required for crushing to ABC particles & compacting again into dense form as is the present practice is completely eliminated
k. As stated earlier, it is an added advantage to relax the quality of filling material in presence of rubble

There are many qualitative statements in his article similar to above, some of which could be accepted on technical considerations while some others will have to be treated merely as the writer’s opinions until/unless technically supported.

Also, I find that there are several misleading statements in Eng. Deshapriya’s letter. For example, rubble was replaced by ABC (or DGAB) not merely because of ‘easiness in handling’ as mentioned by Eng. Deshapriya.

In the good old days roads had pavements of the type called ‘penetration macadam’. It consisted of a (10 – 12 ton static roller compacted) layer of 150/225 mm rubble, followed by two layers of 50mm and a layer of 20mm aggregate. First coat of hot tar (penetration grade bitumen, say 80 pen) was applied on it and blotted with sand. The second seal was done after allowing the section to traffic for about a fortnight. We must not forget that this method of pavement construction was introduced to us by the British Engineers. In late 1970s, with the introduction of vehicles with heavier axle loads, the Highway Agency in UK switched over from ‘penetration macadam’ type pavement to:

- ABC with single seal
- ABC with double seal and
- ABC with asphalt concrete, depending on the design loads to be carried in each road.

This change was done subsequent to detailed studies undertaken by the Transport Road Research Laboratory (TRRL). As analysis of pavements from the first principles using ‘Bousineque’s Equation’ was tedious; based on the results of their analysis, they published TRRL Laboratory Report 833(1978). Later, the Overseas Development Agency published Road Note 31(1993). These two documents laid out empirical methods to enable the pavement design Engineers to determine the type of road pavement based on the assumed design life, subgrade CBR values and the ‘the calculated number of equal standard axles expected to pass over the road during the assumed design life’.

As you will know, the two official documents issued by the RDA;

- RDA Standard Specification for the Construction and Maintenance of Roads and Bridges – 1989 and,
- The Guide to Structural Design of Roads under Sri Lankan conditions – 1999

have been prepared in line with the recommendations of TRRL Report No. 833 and Overseas Road Note 31. In these documents, there is no reference to road pavement design or construction with ‘penetration macadam’.

A possible reason may be the absence of any empirical relationships to relate the ‘Benkleman beam deflection values’ of existing pavements to a proper pavement design with a macadam base.

As far as the large volume of ABC is concerned, it has to be transported at a higher cost.

As a matter of fact, the RDA adopted the ‘penetration macadam’ type pavement and not ABC type pavement. It is the wrong practice that we have to change. As far as the large volume of ABC is concerned, it has to be transported at a higher cost.

As far as the large volume of ABC is concerned, it has to be transported at a higher cost.
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Sri Lanka Engineering News - January/February 2015

5th International Conference on Sustainable Built Environment 2014 was successfully held on 12th, 13th & 14th December 2014 at Earl’s Regency Hotel, Kandy. Prof. Mohan Munasinghe was the chief guest of the conference. There were 06 keynote speeches done by Prof. Krishna Reddy (University of Illinois, Chicago), Prof. Rajib Basu Mallick (Worcestershire Polytechnic Institute, USA), Prof. K. Baskaran (Deakin University, Australia), Eng. Anil Hira (University of Melbourne, Australia), Archit. Jose Alfano (University of Melbourne, Australia), Dr. Dasanath Jayasuriya (Bureau of Meteorology, Australia). The conference was conducted in five parallel sessions and over 250 papers were presented. It was amazing to see the presence of more than 450 participant in the conference including nearly 200 foreign participants.

With all the efforts and good deeds, I am confident that ICSEB will make a difference in sustainability and also this will create a novel platform to those who presented their research ideas and experiences to innovate ideas in a creative and a fruitful manner, towards sustainability and to make the way forward.

Developing technologies as well as capacity building is equally important and prominent. The theme of the conference is timely valuable and significant to today’s context to gain experience, share the ideas towards sustainability. ICSEB surely helped in reaching the targets of 2015 and beyond.

6th International Conference on Structural Engineering and Construction Management (Capacity Building for Development)

We are pleased to announce that the 6th International Conference on Structural Engineering and Construction Management is scheduled to be held from 11th - 13th December 2015 at the Earl’s Regency Hotel, Kandy, Sri Lanka.

The Conference will explore the concepts of novel construction designs in Structural Engineering to treat the ever growing construction needs of the society and helps to understand attributes that enable physical, socio-cultural, politico-economic and natural systems to adapt in the world we live in.

The Conference incorporates the following major themes

- Structural and Solid Mechanics
- Construction Materials, Systems and Management
- Loading Effects
- Structural Health Monitoring
- Construction Safety
- Architecture & Architectural Engineering
- Coastal Engineering
- Hydraulic Structures
- Geotechnical and foundation engineering
- Materials
- Sustainability

You are kindly requested to submit and Abstract on or before 31st May 2015.

For More Details
Miss. Arashi Tennakoon
Conference Secretary
Tel: +94 71 8058441
arashi.issecm@gmail.com
Fax: 081-4437697

Miss. Kanchana Ratnayake
Conference Coordinator
Tel: +94 71 3168544
koordinator@icsebm.org

For Abstract submission deadline and for further details, please log in to www.issecm.org.
Astrology and our destiny: Believe in self rather than unknown planets

by Eng. Thushara Dissanayake (M - 4943)

Department of Irrigation

We respect your freedom of beliefs. But for us astrology is non-other than psychology. We have come to this conclusion after comparing real life events with astrological predictions relevant to many people. However, the important thing is that these predictions can shape our lives either positively or negatively. For that reason rather than labeling it as a pseudo-science we can use it as a positive reinforcing method for the betterment of peoples’ lives. With the idea of justifying above opinion fundamental psychological concepts behind the astrological prediction process are discussed in following paragraphs.

Ambiguity

Most of the astrological predictions are vague. They do not convey clear interpretations due to the complexity of the predictions process itself. Sometimes, there are many interpretations on the same object. Let us see an example. An astrologer may have predicted that your son would become highly successful in his or her education. In case your son could not get through advanced level examination to enter to a university, the same astrologer will present reasons for it by saying that the child is having a bad period due to the malicious effects of such and such planets. Thus, the astrologer can get away with any challenge to his predictions. Eventually, you may pay attention on doing some remedies on such ill-effects while taking astrology for granted.

Selective perception

Selective perception is the process by which individuals perceive what they want to while ignoring contradictory information. Selective perception is a psychological bias as we interpret information in a way that is consistent with our existing beliefs.

Confirmation bias

Confirmation bias refers to tendency where we pay attention to the information that confirms our preconceptions. Suppose your astrologer says that you are having a bad period through out this year according to the planetary position. Then you will attribute all your troubles and failures to this bad planetary influence. Some of those failures may be due to your own faults and can be easily avoided. As far as you indulged in those beliefs you will not try to rectify your faults.

Self-fulfilling prophecy

According to self-fulfilling prophecy predictions become true, by the very terms of the prophecy itself, due to positive feedback between belief and behavior of an individual. Some astrologers are used to working down life predictions for individuals based on their horoscopes. Suppose the representative person reads these predictions during his early childhood. Then there is a higher probability of becoming those predictions true. In fact, what happens is these early childhood predictions guide the person’s behavior. For instance suppose the predictions say a person will go into a certain profession. Then there is a higher probability that he reaches that level. At least he would engage in career related to medical stream.

On the contrary, if a child is discouraged by criticizing his weaknesses he will eventually fail to achieve the things even if he could have achieved his inherent talents. If a child’s astrological predictions say that he will not get a good education and unable to reach to a higher level in society the same things will become the reality as all his behaviors are formed according to these predictions. Ultimately, we believe astrology to be true while neglecting the psychology induced behavioral process that led the child to the miserable situation.

Astrology for self-development

Your beliefs matter a lot in shaping your life. The authenticity of those beliefs is immaterial as far as you believe them to be true. In that sense astrology can be used as a personal development tool. Positive predictions on life during childhood will greatly influence an individual make his life successful. The astrologers can play a big role if they are genuinely dedicated to such an endeavor. Unfortunately, most of them are trying to earn money by some unethical practices. Some astrologers highlight impending ill-effects to their customers and at the same time propose remedial measures to avoid those effects. They charge big money for such remedies and the amount depends on the economic position and social status of the customer. The main reason for the propagation of such activities is that those who are having a worrying life period see the astrologer to be their last resort.

Final thoughts

John Galbraith, a Harvard economist who was also the US Ambassador to India once said “There are two kinds of forecasters: those who don’t know and those who don’t know they don’t know”. Therefore, let us believe in ourselves rather than unknown planets to make our lives better.
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