Aspect of Science Communication

Percy Jayamanne

The greatest experience a man can obtain in his lifetime is that realization of that "**knowledge is attractive**". A child who grows up in his house, spending time in playing hide and seek with his friends, would eventually understand that there is more to life.

"One day when he steps out of his home, he meets a bird. Another day he picks up a beautiful stone. Then he is inquisitive to know why one bird is different from another bird? Why one stone is different from another stone? He inquires the way a bird flies, the way in which a stone is made of. Subsequently he asks many questions in his thoughts. He tries to answer these questions alone. All of a sudden he realizes that knowledge is attractive. Now he is a person stepped into a new world. Now he wanders in a world of mystery things, where there is a connection between various things."[1]

One book, which compelled me to be a science communicator, illustrated the above paragraph at its beginning, and its still fresh in my mind. The name of the book is also '**Science**'. The above book, which is a translation, was published by the Department of Education, three decades ago. This book was published in order to introduce science in Sinhala. A large number of people who were influenced by this book became science communicators, working enthusiastically to give knowledge to the future generation. I particularly mention the above quotation for this very reason.

I see the above section as a good example on how to begin science communication. I think that is a very good introduction on how science should be introduced to the ordinary reader. It contains the simplicity of science communication, its precision and the way it should be aimed at.

Science began with curiosity. Therefore, I think science communication also should begin with curiosity. **Dr Issac Asimov**, who is considered as the greatest science communicator, has drawn attention to this matter. He begins his book '**Guide to Science**' thus.

"At the beginning curiosity prevailed almost entirely". Inquisitiveness, which cannot be drowned, the desire to find out how, is not seen in a lifeless thing. It is also not seen in certain living things. This inquisitiveness is also the indication of the fact that we are living and are alive.

A tree is not inquisitive of its surroundings at least not in the way we are used to. A sponge, a shellfish, displays the same behaviour. The wind, rain and sea waves bring them their requirements (food ***etc***.) almost to their doorstep. From them, these creatures absorb whatever they can. Yet if fire, poison, predators or parasites approach them, they accept death in silence, without any resistance.

"At the very beginning of life, certain living creatures tried to obtain free movement or mobility. It was a giant step to win the nature. The creature, which could move, no longer needed to wait until food came to it. It started searching for food. Exploration came into the world. Inquisitiveness was born."[2]

This was how **Asimov** in his book tried to draw the attention of man to science.

In a similar way, the writer should be able to perform by drawing the attention of the reader. Whatever the subject the writer intends to write, he should prepare for it. He should know the subject matter is absolutely correct. He should have facts to present his thoughts in a strong manner. If diagrams are needed to clarify certain points he should find them. After that, he should pay more attention to the introduction of the article. He should think of the best way of introducing the article so as to get best attention of the receivers. For this, it is better to find out several alternative methods and use the best alternative method.

The Importance Of An Appropriate Introduction

Several examples can be given of good introductions. **Asimov** who writes an article on Botany starts it as a detective story. At the very beginning he brings the world famous detective character, Sherlock Holms. He inspects the murder that has taken place in the home garden using photographs. The dead person had cultivated flowers as his hobby. His severely beaten body was found in a flowerbed.

The wristwatch, the dead man was wearing has stopped owing to damage. Sherlock Holms sees a difference in time, the time the dead man was subjected to beating and the time the wristwatch stopped. He notices something odd in the flowerbed near the vicinity of the dead body. The flowers had been grown, to resemble the face of a clock. The flowers had been so arranged, that they were opening or blooming in sequence, as that of a moving clock. Sherlock Holms finds out that the murderers have deliberately changed the time on the wristwatch. This he finds out by examining the time at which the flowers opened. Thus in his article, **Asimov** has first forward the fact that in Botany, there are flowers that bloom all 24 hours a day. Thereafter, **Asimov** writes an exploratory article on the wonders of the plant kingdom.[3]

Asimov writes a book on '**Words of Science and the History Behind Them**'. In this book he explains how scientific words have been made and details behind them. Thus, he turns an ordinary reader who is not keen on scientific jargon, in to a reader of scientific articles. At the very beginning of the book he explains that the word 'alcohol' is used in science, as a thing used by ancient Arabic ladies as a perfume. He begins the article thus; for many centuries, ladies darkened their eyelashes using a dye, thus giving an impression of a brighter and more sparkling look. To make the dye, they used a finely powdered compound. The meaning of finely powdered is 'alkohl' and the powder got the name alcohol.[4]

The history of science can be written in various ways. One can start at the very beginning from the very first day man began to explore the world due to his curiosity. Otherwise, it can be written by dividing according to time periods or eras, describing what changes took place in each of them. Another way of writing this history is to begin from the Stone Age about 15,000 B.C. describing what instruments people used then, and describing what discoveries man has made up to now. But, **Isaac Asimov** does this in a completely different way. He begins his history with **Imhotep**, an Egyptian scientist who is believed to be the beginner of the scientific generation,

and who lived in Egypt between 2980-2950 B.C. Then he expands his writing to include, **Ahmose, Thales, Anaximander, Pythogorm** and **Cyril Ponnamperuma** of Sri Lanka, **Neil Armstrong, Carl Sagon** and finally he, himself. In this book, **Asimov** has not given any attention to private lives of these scientists. Instead, he has given their scientific achievements, and there by arranged the scientific knowledge man has acquired so far. Where necessary, he has given some details of the private lives of scientists. This book has described the great scientists and their thoughts and the vast knowledge they have accumulated for the benefit of mankind. His book, **Asimov's Biographical Encyclopaedia of Science and Technology**[5], has a special place among the hundreds of articles he has written. In this book, the information is given according to the time periods, in which scientists were born. Hence the progress of science can be read through their biographies.

Scientific matter written for the general public should be very simple and accurate. Not only that those should be facts that can be accepted based on standards. That is why the science communicator should take pains in science communication. He should obtain help from the experts in the field or else he should study the books and get the correct facts.

It should be understood that science is not a collection of facts, but something that binds all of us in our day-to-day lives. Facts should be supported not merely by words but also by relevant pictures and diagrams.

There are two main objectives in science teaching and learning. One objective is that by learning science, based on facts shown to be correct by scientific experiments, one gets intellectual training on how to arrive at a solution to a problem. The other objective is that by scientific discoveries, one expands one's horizons. One also realizes that one's general knowledge is incomplete by not knowing the basic principles of science.

"For every branch of life, - in connection with health and prosperity, science has a great influence, every citizen should have a knowledge on science. The knowledge on scientists and scientific methods takes the first priority. For the general public it is sufficient to give training on one special branch. Every branch is not applicable, but a wide knowledge is essential. Therefore, it has been accepted without debate, that every man should be given a wide science education"[6].

One cannot enumerate the benefits of science to everyday life. For example, one can show the requirement for knowledge on health and nutrition. Today both printed and electronic media have generated very attractive features on these subjects.

Scientific Method

For successful science communication, one should follow the scientific methods taught generally in science. A scientist looks at a particular work with a scientifically trained eye. He obtains the knowledge in a scientific method. To obtain knowledge according to a scientific method, the following methodology can be shown.

1. Observation
2. Inference
3. Expressing as a concept

4. Verifying the concepts by new observation
5. If the concept is further confirmed by later observation, then putting forward a more correct version of the concept

There is no limit to the amount of concepts and inferences required to gain knowledge. Scientists aware that a concept, which was correct yesterday, can be proven wrong today or tomorrow. Therefore, one should be alert on others' knowledge. If one comes to know of any change in the concept, he should update his knowledge.

I think that by following this principle, a science writer will be able to fulfil his objectives. Like a scientist, the science writer must also continuously update his knowledge. For this he needs a good style of writing and a clear language.

The Importance Of a Clear Language

Any science communicator can express his facts correctly and clearly only if he uses the words correctly. **Mr Elian de Silva** once gave a very good example. It is about the dates in the newspapers. Many daily newspaper editors make mistakes with regard to dates. It can be shown in the words of **Mr. De Silva**. "If 4th of January is a Wednesday, many write it as 'January 4th Wednesday'. Even though there could be 4 Wednesdays in January that the 4th day need not be a Wednesday. To mention that the 4th day of a month is a Wednesday is one thing, to say the 4th Wednesday of a month is another. It is important in science to express ideas clearly and precisely" **(Sinhala Sipyuru Wadan – 1, page 18)**. [7]

Here is an extract from a passage where a writer has expressed a technical matter written in English into Sinhala. " After that, use the ignition switch and check whether the needle in the ammeter is pointing towards the discharger and also check whether the warning light is on. If it is motionless, then it indicates that one of the wires joining the distributor and condenser is loose". In the Sinhala text, the writer has used many technical terms directly as they appear in the text. Here one has to consider whether his objectives were satisfied. One could argue that these terms mentioned in the text are common technical words and that they could be understood by many people, and that therefore, it is not a grave mistake to write the English words in Sinhala. Yet it could be an insult to Sinhala, because Sinhala language is very rich in words and has its own technical terms to describe such situations.

For this, the writer should be familiar with the glossary of words. For this purpose, a book of glossary words has been published for every subject. Sometimes for the same word or term there could be two glossary words. Therefore, the writer should have the ability to choose the more appropriate glossary word. The writer should have access to very good glossary books. If the writer is writing in Sinhala, there should be a Sinhala Science Dictionary (Here it will be very useful to have, '**Modern Sinhala glossary dictionary**' written by **Dr Harischandra Wijayatunge**). [8]

Sometimes the writer will have to coin a glossary word at the time of writing. At times like this, it is not possible to look for an expert on glossary words. Even if one could reach such a person, he possibly would not have the glossary term or word at his fingertips. The writer should have the ability to coin up a glossary word (without depending on word

makers or experts) and carry on with his writing.

Chartered Engineer, **Mr Elian de Silva** has written a guidebook on making a glossary words, related to the subject. The book '**Sinhala glossary words**' has mentioned the following. "If the description is on some technique in words, or the features of the technique, it is known as a technology. This is the English term. When technology improves, the country as a whole improves. If the technology needs to improve or progress, there should be corresponding technical terms in our language. Special feature of such a language should be a one with clear, uncontroversial, meaningful, short but correct technical terms".

Science communication done in an expert manner and an attractive way provides two services. On one hand, good communicators are made. On the other hand, by disseminating successful knowledge, a generation with science knowledge is created. It may also lead to the creation of world famous scientists. This could be achieved by producing good science communicators.

Reference:

1. **Bronowski, J., Sir Gerald Barry, James Fisher, Sir Jullian Huxlay. 1972, Macdonald illustrated science; Sinhala translation published by Education Publication Department.**

2. **Isaac Asimov, Guide to Science 1: Physical science.**

3. **Isaac Asimov, Essays on Science, the New American Library.**

4. **Isaac Asimov, 1969. The words of Science and the History behind them, The new American Library.**

5. **Isaac Asimov, Asimov's Biographical Encyclopaedia of Science and Technology, Pan Books Ltd, London.**

6. **Science – Illustrated Library (in Sinhala)**

7. **Elian de Silva, 1999, Sinhala Technical Terms – 1, Modern Boom Company (in Sinhala)**

8. **Harishchandra Wijetunge, 1999, The Modern Glossary Dictionary, S. Godage Brothers – 1999 (in Sinhala).**