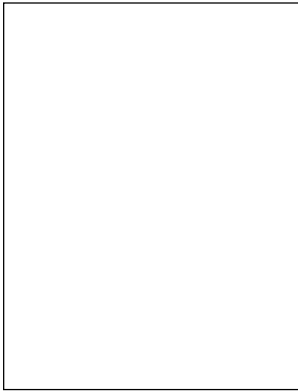


SCIENCE AND CULTURE

VOLUME 73 □ NOVEMBER-DECEMBER 2007 □ NOS. 11-12

 EDITORIAL

REASONING BACKWARD ANALYTICALLY



Given to them a turn of events, most people would be able to tell the results. There are few people; given to them a result would be able to evolve the steps which led up to it. This power which Sherlock Holmes, the most famous solitary scientific sleuth of fiction designed by Sir Arthur Conan Doyle in 19th

investigating team may be a sign but a sign not related to the problem under investigation. When found in uncontaminated and undisturbed scene the same may turn into a clue, which on scientific analysis becomes capable to link the sign and sign maker. As signs, they must be read with utmost caution. The site of initial contact, the assault site, the murder site and the dump site may each be a separate scene separated by miles and the chance of discovery of the clues diminish over time, making reasoning backward analytically more challenging and cumbersome.

Century, meant 'reasoning backward analytically'. The result demanding explanation invites this reasoning characteristic of the investigators and forensic scientists who require to reconstruct the steps which finally lead to the true story of the occurrence.

To read clues forensic scientists must have the ability and skills to recognize signs at the scene of occurrence interpret their significance and expertise to test them.

Application of logic and science forming the heart of forensic detection begins with the careful observation of the scene of occurrence to read signs and to recognize clues to sort evidence from coincidence and it requires trained eyes to do so. A sign is something, which helps us to know something more, a ray of light with the ability to crack

'Reasoning Backward Analytically' involves reading signs, formulating all probable explanations and methodically testing them. To read clues forensic scientists must have the ability and skills to recognize signs at the scene of occurrence and to interpret their significance and expertise to test them. French criminologist of Nineteenth Century Edmond Locard said, 'Every contact leaves a trace'. Finger print, foot print, hair, fibres, blood spatter, the cut mark, cartridges and fired cartridge cases, bullets, bullet marks, splinters, glass pieces all and many like these may be important and raise questions and doubts. There may be plenty of signs but they may or may not turn into clues to explain the events. A cigarette butt left by a member of the

the unknown world of darkness. It is an instruction to read and interpret pragmatically. Sign requires an object appearing to those schooled in observation. It disappears to the novice or not careful or hasty. The art of forensic detection emphasizes minute details and those who have the eyes only can read them. And this is the basic.

To expose nature's general laws has been the goal of scientific explanation in natural science. The goal of discoveries remains universal. The goal of forensic science has been less to discover general laws, more to explain particular cases using laws of natural science. Natural scientist tries to find reasons from the phenomena and discovers the laws. While one investigation appears

impersonal and universal in nature, the other appears personal, individual and unique. Both the activities count as discoveries.

To improve the chance of reaching correct results scientists develop and modify procedures. Limitation in methods and efforts to modify those to overcome limitation cause advancement of science. Once conclusion has been reached, forensic scientists do not have a chance to modify. Expert opinions based on successful scientific arguments require withstanding the scrutiny in the courts. Scientific evidence by forensic scientist in courts requires to establish the findings and to convince the court for acceptance. The purpose is to establish the fact 'beyond reasonable doubt'. The issue of using suitable scientific methodology becomes very important and it, therefore arises whenever experts depose evidence in courts.

For admitting scientific evidence, the scientific findings, tests or methodologies applied in scientific examination of physical evidence require general acceptance by the workers of relevant scientific community.

The common criteria for legitimate scientific evidence include testability, peer review, error rates associated with standard techniques and general acceptance. The issue relating to 'Correct Methodology' is important and it becomes the focus for admissibility. One may agree with the view that "while it is up to the law to decide how science is used in court, it is up to the science to decide what counts as good science".

Expert opinions based on successful scientific arguments require to withstand the scrutiny in the courts. Scientific testimony by forensic scientist in courts requires to establish the findings or the probability of a conclusion and to convince the court for acceptance.

This special issue presents a collection of some informative articles on various areas of forensic science. The contributions have been made by those who remain active in research and development work and are well recognized in the fields spread over the important disciplines of forensic science such as ballistics, physics, chemistry, explosive, toxicology, DNA and include some of the emerging techniques and new facilities such as analysis of gun shot residue particles for shooter

identification and allied problems in forensic ballistics, forensic psychology, nano technology etc. It is hoped that readers of this issue will get an idea about the scientific status of forensic science and its trend in India. □

C. N. Bhattacharyya



Dr. C. N. Bhattacharyya is the Director, Central Forensic Science Laboratory, Kolkata. He earned his Ph.D. degree in Physics from Punjab University, Patiala on forensic ballistics. His research interest is in the areas of ballistics. He was trained on gunshot residue particle analysis for shooters identification in Ottawa, Canada. He has been awarded the prestigious Home Minister's Awards for excellence in 2003.

Editor's Note : This special issue has been sponsored by the Central Forensic Science Laboratory, Kolkata, Directorate of Forensic Science, Ministry of Home Affairs, Govt. of India.

STOP PRESS !

**We just received the news of sad demise of
Dr. A. P. Mitra who was the President of ISNA.
We deeply mourn this irreparable loss.**