

## **KEEP THE FLAG FLYING**

### **(To Professor Mihir K. Chakraborty An Appreciation)**

I was very pleased to receive an invitation to participate in the forthcoming seminar in honour of Professor Mihir K. Chakraborty. I have had the privilege of knowing Professor Chakraborty for over thirty years and take this opportunity to send an appreciation of his work in Logic and his service in the area of Logical research. (I wish I could be present at the seminar and offer my felicitations personally.)

Mihir K. Chakraborty's contributions in Logic are considerable. His dedication to Logic is an abiding source of inspiration for his students and has resulted in the creation of the Calcutta Logic Circle (CLC) some twenty years ago. Members of the circle belong to diverse disciplines. Under Professor Chakraborty's leadership they gather together to discuss problems arising in their fields, specifically problems of logical nature. "Logic has been esteemed as the lamp of all studies, the source of all actions and the shelter of all virtues" to quote the ancient Indian savant Kautilya of the third century BC. Modern Logic provides a space where Arts (Humanities), Sciences and Technology interplay to the mutual benefit of them all. It also gives valuable insights for Philosophy, Mathematics, Computer Science, Engineering, and Linguistics, to name only a few. The growth of Logic in recent times is astounding. For about two thousand years since Aristotle (384-324 BC) Logic remained in the shape which Aristotle gave to it. Then, about the middle of the 19<sup>th</sup> century some mathematicians (Boole, De Morgan, Peirce, and Schroeder et al) began to investigate the logical processes as they existed at the time. They brought to the open the mathematical nature of much that went in the name of Logic. For example, the propositional core of logic was seen to constitute a mathematical system, ushering in the Boolean Algebra. The Aristotelian System of syllogisms was extended to become the Predicate Calculus of today (Frege, Russell, Hilbert). (Why did this much needed generalization have to wait for so long?) Fundamental questions on the newly emerging logical systems were raised and answered using mathematical methods. This was possible because of a parallel event in Mathematics itself, namely, the emergence of Set Theory (Cantor, Dedekind, Zermelo). The concept of truth (at least in formalized languages) was cleared up by Alfred Tarski (1901-1983) putting Logic of derived knowledge on reliable semantic foundations. Model Theory emerged. Notions of completeness, decidability and axiomatizability of theories (mathematical) began to engage the attention of mathematicians. Kurt Godel (1906-1978) made groundbreaking discoveries in Logic and Set Theory. His arithmetization of logical syntax can be perceived as fulfilment of the Leibnizian dream. Way back in the seventeenth century G.W. Leibniz (1646-1716) had advanced the idea that Logic ought to be seen as a variety of Mathematics both in content and in form

(calculemos). All this happened in a brief span of time (1840-1930) blurring the distinction between Mathematics and Logic. Logic is no longer in the exclusive care of philosophers. Doors of cross-fertilization with other disciplines have been flung open. Alternative, non-standard logics have emerged (many-valued logics, model logics, Logic of fuzzy sets, Logic of Rough Sets). Computer Science appeared and is growing in rapid strides. We are witness to a magnificent era of cooperation, wondering at the power that interplay of disciplines can generate.

Members of the Calcutta Logic Circle are held together by this shared sense of wonder. They welcome everything that can be seen as the logical heart of their concerns. They meet regularly to discuss logical matters. Under Mihir K. Chakraborty's leadership the Calcutta Logic Circle has brought about a renaissance of logical studies in Calcutta and beyond. The July (2006) seminar is a fitting testimonial to the measure of respect and gratefulness which his students, colleagues and members of the Calcutta Logic Circle feel toward him. It is a lovely way indeed to felicitate a loving and caring teacher.

From overseas, I send Mihir Chakraborty warmest good wishes on his sixtieth birthday and wish him many more years of service to Logic and Learning. To the organizers of the seminar I say:

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