For Raoul

February 7, 2009

"Friends come first, mathematics after." Raoul once said, as he smiled and wheeled his bicycle out of his office, and down the corridor to meet a visiting friend of his in a local coffee shop, his worn golden-brown portfolio balanced on his bicycle seat.

Raoul Bott was a wonderful colleague whose presence in any gathering made it joyous, and he was—as we all know—also one of the great mathematicians of the twentieth century. What a great range of profound insights and interests: from his early applied work in circuit theory, to his celebrated Periodicity Theorem which, in turn, introduced the power of Morse theory and loop-space arguments to differential topology; and which fed into the emergence of K-theory in the hands of Atiyah, Hirzebruch and Bott himself; and which connects with the majestic development of the Riemann-Roch theme in algebraic geometry and elliptic partial differential equations; and, in more recent times, to involvement with some of the marvelous issues in string theory.

Raoul's smile– his friendly quick laugh after saying something—meant that conversations with him often gleamed with a kind of humor, and sunshine. Raoul often presented himself as a skeptic. He said, for example, " I was always a little skeptical of Bourbaki. The subject is just too big. It doesn't just have one main road." But Raoul seemed to have developed utterly his own brand of skepticism that came along with such an extraordinary amount of humor and optimism and openness, that he could also claim, as he did: "I can't say that there is any mathematics that I don't like."

Often, in a mathematical seminar in a subject far from what he was working on at the time, Raoul would be the person to ask "the generous question." That is, a question that simply wells up in full simplicity, something that is, perhaps, second nature to the cognoscienti, but a question coming from an ardent desire to follow the thread, the type of question that most in the audience are thankful for its having been raised. Splendid generosity pervaded much of Raoul's involvement in mathematics: his work, his interchanges, and his teachings. How wonderful was his wise way of recommending that each of us refashion our mathematical understanding so that it sits well in *our* mind, rather than make do with formulations that might sit well in the mind of some dis-embodied Lagrangian deity; how marvelous his tip about how to make the best use of your time in a lecture where you understand ϵ of the material (your exercise, sitting there, is to try to shape in your mind *something, anything* however small that is alive to you and that can be "taken home" from the lecture with enjoyment, and possibly, with understanding).

Whatever a "mathematical samurai" is, Raoul claimed to be one. I suppose—in saying that—Raoul was simply acknowledging the freedom—the essential autonomy—of his intellectual spirit. "Its the problem you go after," Raoul once said, "rather than the field. You have to trust your instincts and hope that sometimes you will hit upon a subject to which you can maybe make a contribution." But to be successful here, it is is useful to have the extraordinary range of mathematical experience that Raoul had. And his good judgment. Judgment is key, as is his breadth of vision, his humility, his openness, and his humanity. But—on top of all that— it helps to be, as Raoul was, one of the great mathematicians of our times.

To remember Raoul is to savor all that I've just said, and beyond that, to remember the aura of Raoul's presence: as he smiled, made his way down a corridor, looked for his lost gloves, walked his bicycle. And to recall how he had the uncanny gift of being able to radiate appreciation . . . of people, of ideas . . . in such a way that appreciation itself became infectious.