

want to have proper mathematics. Well, mathematics is too important to be left to mathematicians, so you build computers. They do not make mistakes. And you build bigger and better computers. Pretty soon, hopefully, what you have is the scientist who takes the tape and puts it into the computer. This is the dignity of scientific labor. The scientist is the intermediary between the machine that measures the entity and the computer that figures out what in hell it all means.

I would like to suggest, and I think it should by now be quite obvious, that I consider all three of these views wrong, and that, in fact, it is a kind of stew of all three that has to a certain extent created the crisis in which we exist today. From Baconianism come the papers that are published that mean nothing, or that are lost; that are published and are never sighted again; which literally clog the lines of communication.

I always use, as my favorite, a paper which was published in Nature, which I read for my sins, entitled "The Non-Random Distribution of Bull Sperm in a Test Tube." Well, who can pass by an article such as that? I sat down and read it. The conclusion was that bull sperm do not collide elastically with glass. I gather the practical, important point is, never buy a glass-lined cow. This paper, I am sure, not only was lost, but it should have been lost, and, in fact, should never have been published.

But notice, on the Baconian view, it is after all a fact. And who knows? This is the great justification; you go back--and you can always do this with history--and pull out an example. Look at Semmelweiss in Austria where he showed the germ theory to physicians and nobody paid any attention to it. Supposing they had listened to him? Think of the lives that could have been saved. And so, who knows how important this paper on bull sperm will ultimately be? But, somewhere along the line some kind of critical judgment must be made.

I would like to suggest that there is a fourth way of looking at science, which permits the exercise of this critical judgment and which removes--I would not say all--these difficulties involved, but which removes some of them. This is a view which by no means is original with me; it is the view of Karl Popper--probably many of you know of him--a British philosopher of science, who has written a number of bad books, but who has had, I think, one important idea in his life.