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FOURTEENTH CONGRESS ON LARGE DAMS, CIGB/ICOLD, Rio de Janeiro 1982, Vol. V, pp.202-'3.

40 – Prof. V.F.B. DE MELLO (Brazil)

I am sorry to come in with comments that I believe have been made so very often; but I am concerned about the fact in the very title of this Session, monitoring equipment and instrumentation are associated with the evaluation of safety. It seems to me that planning any instrumentation always presupposes some theory, some plan, and therefore it is a repetitious situation. Now, we saw the case of San Luis Dam, Zeuzier, Tarbella and others that have been mentioned here, evere one densely instrumented; setting aside the extreme case of instrumentation itself being considered responsible for the trouble, the least that must be concluded is that it was not planned to cover the problem that arose. The same old questions keeps coming up again. What is an accident, what is safety? Obviously, an accident is something that was not foreseen, something beyond what was planned. We monitor for foreseeable behavior; at most we might detect misbehavior; but even there, we generally lack the quantifiable criteria to clarify behavior vs. misbehavior. And there is especially if we begin to feed all this misplaced confidence into the eager young people. I think of them principally because they are the most susceptible victims. In my dual activity as Consulting Engineer and as professor, the basic problem is that the large mass of engineering today is done by younger people who have, unfortunately an eagerness for computed or measured certainty. Having the privilege of youth, can they also have the privilege of experience or the wish for accelerated aging? So how do you gather experience with something that is not repetitive? Does instrumentation really help against safety, or does the actual situation occur all of a sudden in a position which was not foreseen and that might at best be seen by surveillance, conscious visual inspection? Our cause-effect analysis-synthesis programmed Society was recently shaken by the strangely revealing events concerning "Rubic's cube". The multimillions of trials that would be required of a computer were estimated to take thousands of hours for solving the problem. Yet eleven and twelve-year old youngsters not yet subjugated by the analysis-synthesis impositions, were able to find solutions by intuition in a couple of minutes. So also experience and a sense of commitment unleash intuitions in a professionnal. Now I cannot be against instrumentation, but it seems to me that all over and over again we have to warn, especially when a dam is handed over, from design, construction and early observations on first filling, to routines of instrumentation monitoring and data digestion by computer and operational people. We have to lean over backward because the psychology of the people who are going to take over the surveillance through instrumentation is that when they have all these things put into computers, everything is guaranteed, and then all of a sudden you are going to have the next accident because people were confident that the accidents had been taken into account and averted. Now I hate to keep repeating this point (cf. Rankine Lecture, 1977), but it seems to me that statistics of averages we handle pretty well, but putting together all sorts of dams, all sorts of accidents, etc., in a variable and varying statistical universe, into some pseudo-statistics, I think that is catastrophic for the young professional. Thank you.