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coming up heads on any flip. If your life depended on your prediction of a single flip, you would probably devote your career to the indicated mechanics and computers, not the mathematical probability theory of independent Bernoulli trials.

So, too, in engineering, probability should be used because it is the most effective way known to treat uncertainty in design. Its use should not interfere with or obscure engineering scientists in their search for better and more useful understanding of the governing physics or phenomenological evidence. Nor need confirmed engineering probabilists despair. These scientific results will reduce but never eliminate our profession's uncertainty. Nature is too complicated to be predicted by the handbook formulas necessary for conventional design practice.

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Free Discussion / Discussion libre / Freie Diskussion

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In their very interesting paper, Professor Tall and Dr. Alpsten mentioned that it is possible to predict the behaviour of a compression member provided that we have a thorough knowledge of the properties and geometry of the material. I would like to extend this statement by considering the entire safety problem. In his General Report, presented at the 8th IABSE-Congress, one of the leading statisticians in engineering science, Professor A.M. Freudenthal, stated that the principal theoretical problems are the existence of non-random phenomena and the impossibility of observing the relevant random phenomena within the ranges that are significant for safety analysis. Furthermore, statistical results can lead to errors if sufficient data are not available. The behaviour of a structure is somewhat complicated and there are so many different types of structural components and structures that it seems to be impossible to consider the safety problem in a purely probabilistic manner. Therefore, we have to utilise all the deterministic methods that may be helpful in predicting the behaviour of the structure until failure occurs.