analysis procedure centered around the successful application of the St. Venant dictum; as stated repeatedly here, the results confirmed that this assumption was appropriate. As to the question of the grade of the mesh, it was not based upon the integrity of the boundary conditions at all, but on the fact that stress concentrations were to be examined near the ledge region, shown in Fig. 6 of the paper. At the risk of insulting the intelligence of most readers, we state that in order to analyze stress concentrations by common eight-noded, three-dimensional finite elements of the type shown, it is necessary to refine the mesh near the location of the stress concentration. In any case, the "irony" query is most strange; the discusser seems to imply that all approximations should be equally crude throughout an analysis.

The conclusion (final paragraph) offered by the discusser is a vague statement that deals in generalities. The statements, in no way whatsoever, follow from his discussion of his own work or the negative critiques of our paper. In fact, it appears that his conclusion would be in harmony with that which our work sought to verify. The wrapper plate counterbore and the nonstructural welds may have been atypical, but were clearly "empirical" solutions to a common construction problem. In this case, as the results of our paper soundly confirm, such solutions are not likely to work in the long term.

In conclusion, the authors would like to thank Mr. Guerguerian for pointing out the dimension error in the diagram of Fig. 1 and the accompanying text. However, the remainder of his statements should be dismissed.

Application of Transfer Matrix Method to Analysis of Transient Response of Beam[1]

C. W. Bert.[2] The authors are to congratulated for performing what this discussor believes to be the first application of the transfer matrix method to determination of the nonlinear transient response of beams. Previously the method was applied by Sato[3] to free vibration analysis of stepped beams, assuming a sinusoidal temporal response.

The transfer matrix method is a powerful tool for static and dynamic analysis of beam-type structures. It has been successfully applied to sinusoidal forced vibration analysis of anisotropic beams with bending-twisting coupling, transverse shear deformation, and material damping[4], to transient response analysis of beams bimodular material (different stiffnesses in tension and compression)[5], and to quasistatic response of wind-turbine blades.[6] Currently, effort is underway to apply the technique to nonlinear dynamic analysis of elastic mechanisms.

[1]By M. Goya, T. Hayashi, K. Ito, and H. Ohki and published in the July 1987 issue of the JOURNAL OF VIBRATION, ACOUSTICS, STRESS, AND RELIABILITY IN DESIGN, Vol. 109, pp. 248-254.

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[3]Sato, H., "Non-Linear Free Vibrations of Stepped Thickness Beams," *Journal of Sound and Vibration*, Vol. 72, No. 3, 1980, pp. 415-422.

[4]Wallace, M. M., and Bert, C. W., "Transfer-Matrix Analysis of Dynamic Response of Composite-Material Structural Elements with Material Damping," *Shock and Vibration Bulletin 50*, pt. 3, 1980, pp. 27-38.

[5]Bert, C. W., and Tran, A. D., "Transient Response of a Thick Beam of Bimodular Material," *Earthquake Engineering and Structural Dynamics*, Vol. 50, 1982, pp. 551-560.

[6]Veragen, P. M., "Nonlinear Analysis of a Flexible Blade for a Horizontal-Axis Windturbine," M.S. thesis, Mechanical Engineering, University of Oklahoma, Norman, Aug. 1985.

Authors' Closure

I would like to express my thanks for the encouragement by Prof. Bert to our study.

As Prof. Bert has pointed out, the Transfer Matrix Method is indeed a powerful scheme for deformation analyses of beam type structures. Recently, some effort has been made on the analysis of the transient response of a elasto-plastic beam.

Furthermore, I suppose that the method is applicable to analyses of the transient response of axisymmetric structures which is considered to be essentially a one-dimensional problem.