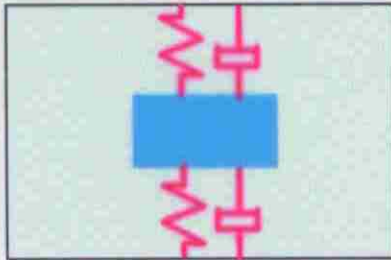
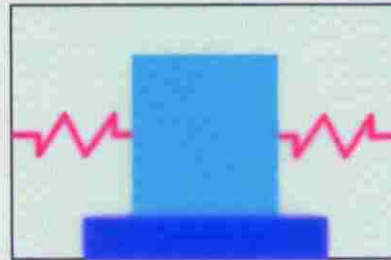
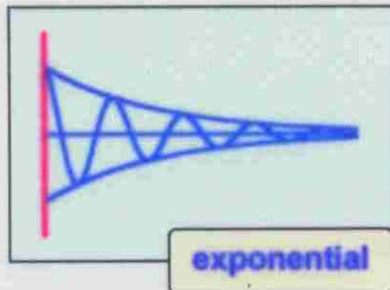


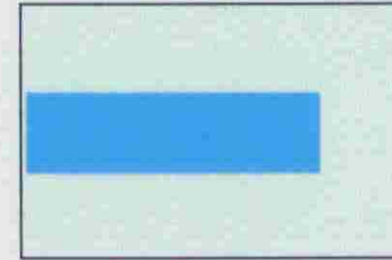
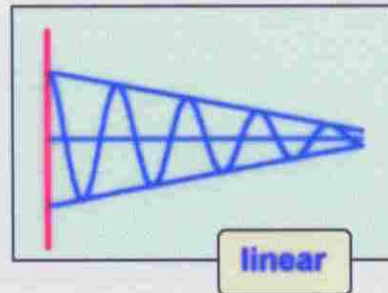
## Casuality in Modelling



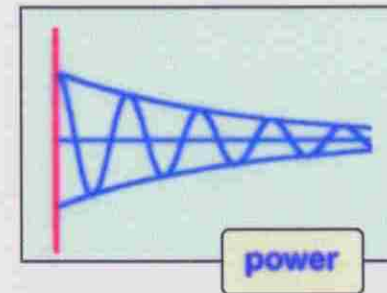
Viscous Damping  
Casuality O.K.



Coulomb Damping



Hysteretic Damping  
Casuality ?



S. S. Rao (1990) ?  
J. Argyris (1991) ?

$$m\ddot{u} + k(1 + i\eta)u = P(t) \longrightarrow m\ddot{u} + h \frac{u}{\dot{u}} \dot{u} + ku = P(t)$$