**Vocabulary…..you have to love it…..or despair…….**

**(“Rheology is the study of material behavior.”** Bill Dunne (2010)**)**

**Defines the relationship between strain and stress during actual or possible deformation:**

…*no use of “rheology”* rather a consideration of “relationship between the components of stress and the components of strain at a point in a rock at one instant in time.” The answer depends on the material **constitution** of the rock and equations relating stress to strain are accordingly called **constitutive equations**.” Means (1976)

**Or:**

“Rheology is the science that deals with the quantitative response of rocks to stress.” C.W. Passchier and R.A.J. Trouw (1996, 1st Edition)

**Or:**

“The rheology of the lithosphere is often shown by a plot of stress against depth, or a *lithospheric strength envelope…*” Tom Blenkinsop (2000)

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**A particular scale of observation and a characterization rather than a mechanical explanation:**

“…but rheology considers them (material parameters) only as phenomenological constants and does not concern itself with the microscopic physics that determines them.” Jean-Paul Poirier (1985)

**Definitely:**

Rheology is not used in a book concerning deformation-mechanism maps, but deformation mechanisms are quantitatively defined and related. Harold J. Frost and Michael F. Ashby (1982)

**Well, maybe not by everybody:**

Use of term, “rheology”, without ever defining it…. Rather using it to name macroscopic behaviors (e.g., elastic-perfectly plastic rheology) and also to provide a basis for describing quantitatively deformation mechanisms (e.g., diffusion creep). Donald L. Turcotte & Gerald Schubert (2002, 2nd addition)

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**Behavior of classes of materials:**

“Rheology is the study of the mechanical properties of solid materials as well as fluids and gases…… Rheology and continuum mechanics deal with the flow of rocks, while rock mechanics primarily deals with the way rocks respond to stress by brittle faulting and fracturing…..In a simple and idealized continuum mechanics context, materials can be said to react to stress in three fundamentally different ways: by elastic, plastic and viscous deformation.” Haakon Fossen (2010)

Note: elastic is deformation description for a solid and not a “flow behavior”…..!

**Or maybe only some of them:**

“**Rheology** is the study of the flow of matter, primarily in the liquid state, but also as 'soft solids' or solids under conditions in which they respond with plastic flow rather than deforming elastically in response to an applied force.” Wikipedia (2012)

