

## GLACIAL GEOLOGY LECTURE #5

### GLACIAL DEPOSITION

**WHERE DOES IT OCCUR?**

**Various parts of the glacier  
bed-interface first**

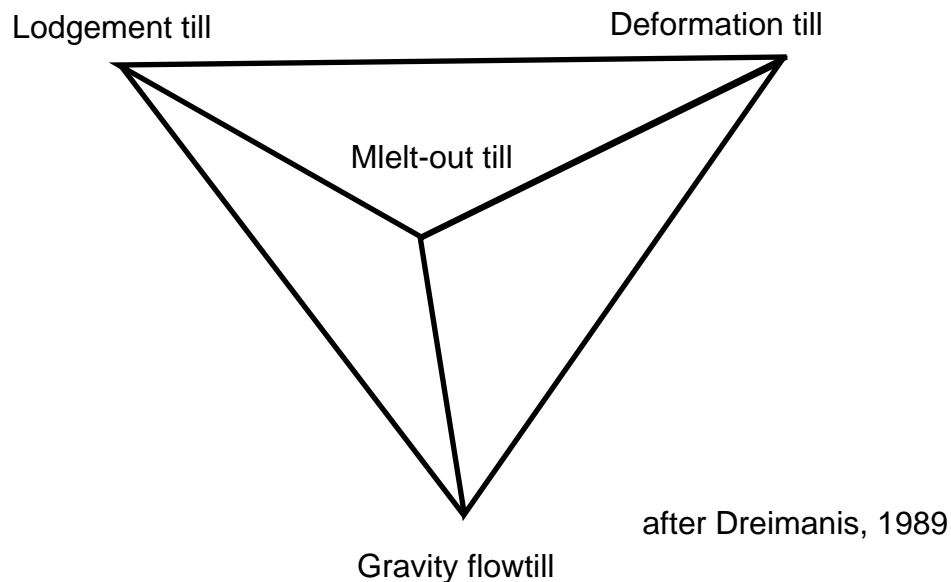
### GLACIAL CLASSIFICATION, TERMS

Drift, Till, dimicton, position terms

by environment, by sediment, by morphology (Fig. 1)

Why Processes?

Each Processes different properties and distribution



### GLACIAL LODGEMENT

**DRAG > FORWARD PUSH**

**FACTORS**

**Clast Velocity (fig 2)**

**Downward Pressure (fig 3)**

**Nature of the Bed**

**Basal Melting Rate**

**Flutes- What about them?**

### GEOTECHNICAL PROPERTIES

Figure 4 (after Boulton and Paul. 1976)

**OVERCONSOLIDATION**

**DISTRIBUTION**

GLACIAL DEPOSITS

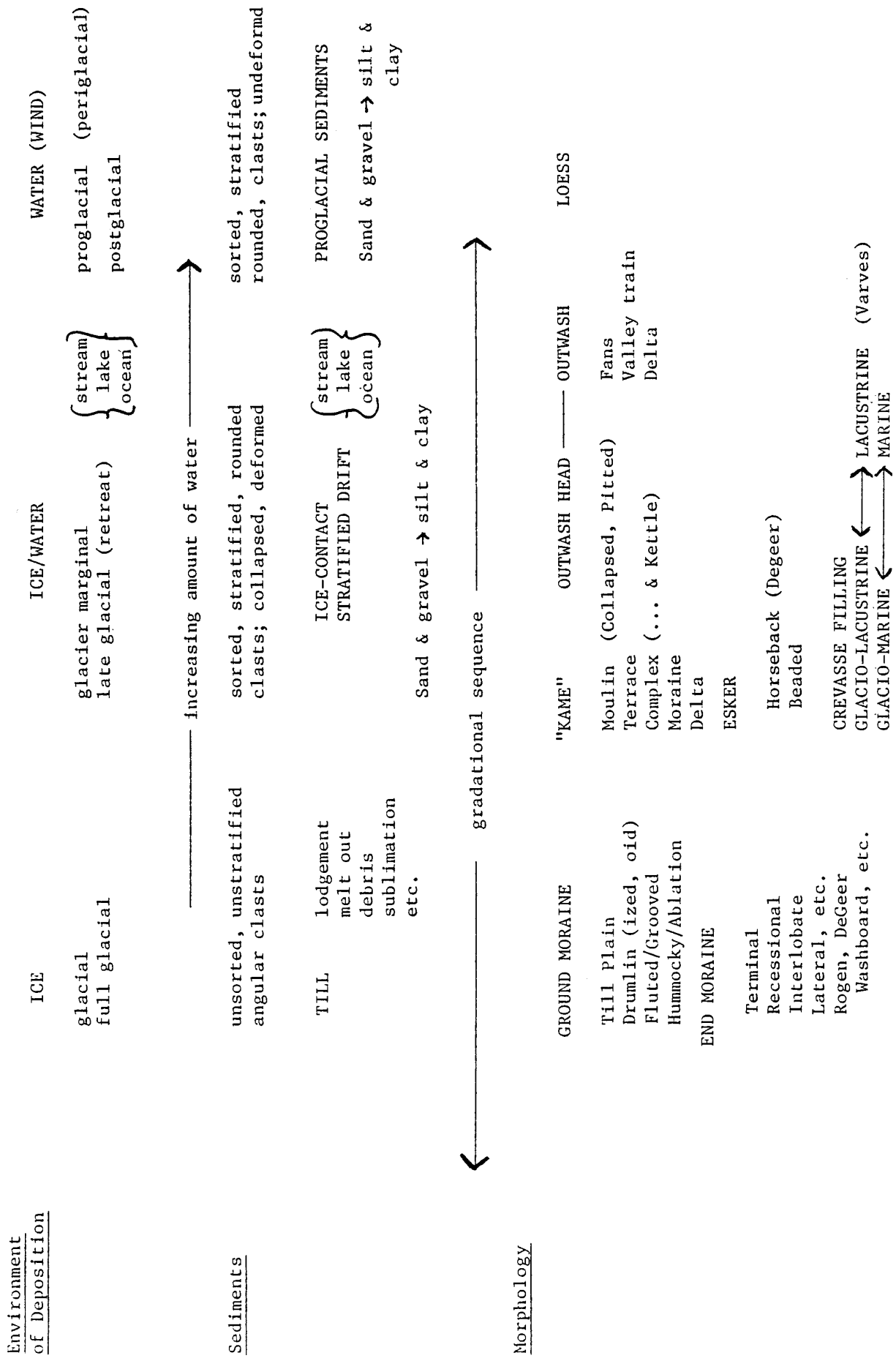


Figure 1. Classification of glacial deposits by various ways.

Development of lodgement clusters      Some basal particles lodged      All particles in motion

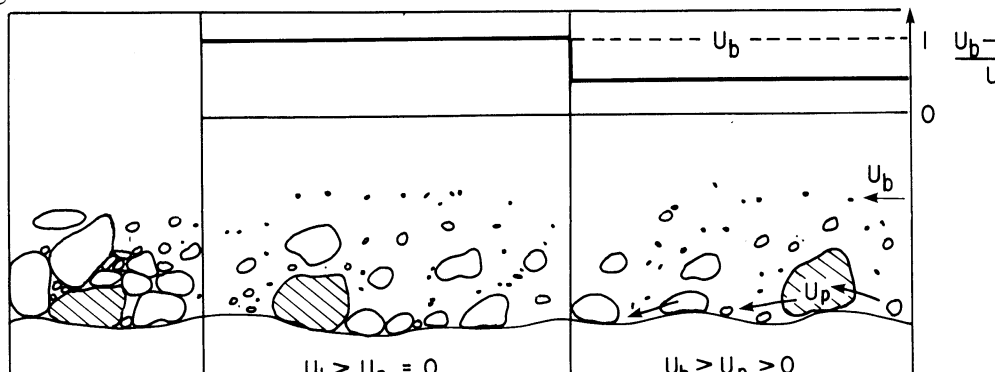


Figure 2 Motion and lodgement of entrained particles in the basal part of an ice mass. Ice flow is from right to left. Upper right graph shows normalized basal ice velocity ( $U_b$ ) relative to particle velocity ( $U_p$ ) for the shaded clast. When  $U_p = U_b$  the scale is set to 0, when  $U_p = 0$  the scale reads 1.0). A All particles are moving over the bed, although at different velocities according to size. B Conditions now favor lodgement of a certain size of particles (shaded Last). C Retardation of large clasts can cause the development of lodgement clusters.

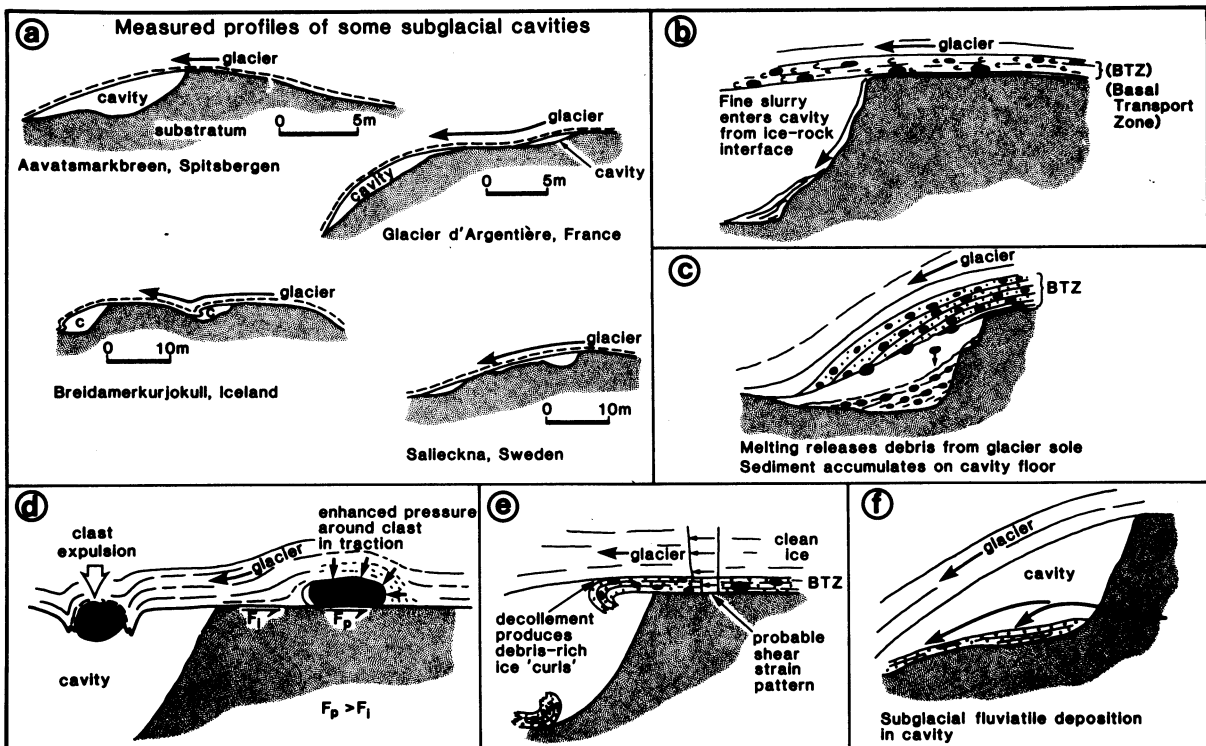


Figure 3. Modes of till lodgement in subglacial cavities (From Boulton, 1982)

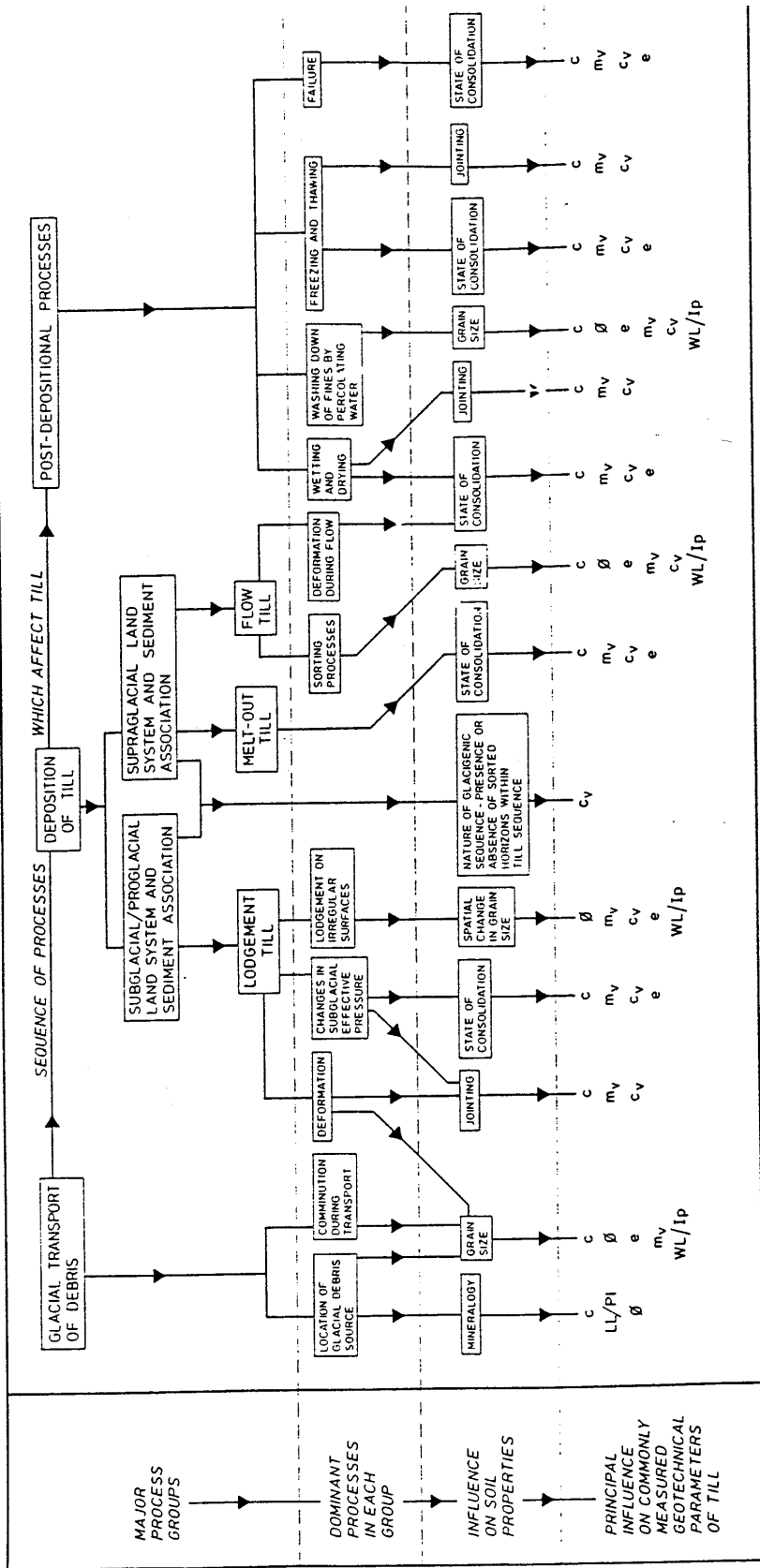


Fig. 21. Diagram illustrating the dependence of some important soil properties, and the related geotechnical parameters, on genetic processes for till.