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We review the major subglacial till forming processes as presently understood by glacial researchers and define the parameters within which tills are produced and reconcile them with sedimentary end members. Processes of deformation, flow, sliding, lodgement and ploughing coexist at the base of temperate glacier ice and act to mobilize and transport sediment and deposit it as various end members, ranging from glacitectonically folded and faulted stratified material to texturally homogeneous diamicton. The dominance of any one subglacial process varies both spatially and temporally, giving rise to the possibility that a till or complex till sequence contains a superimposed signature of former transportation/deposition at the ice-bed interface. We recommend that, while glacial geologists and geomorphologists should be able to recognize the sedimentary imprints of various subglacial processes, genetic fingerprinting of subglacial tills should be less process-specific and till classification must reflect the range of products encompassed by the subglacial till production continuum. Glacial geologists can presently unequivocally identify: a) glacitectonite (rock or sediment that has been deformed by subglacial shearing/deformation but retains some of the structural characteristics of the parent material); b) subglacial traction till (sediment deposited by a glacier sole either sliding over and/or deforming its bed, the sediment having been released directly from the ice by pressure melting and/or liberated from the substrate and then disaggregated and completely or largely homogenised by shearing); and support the theoretical case for c) melt-out till (sediment released by the melting of stagnant or slowly moving debris-rich glacier ice, and directly deposited without subsequent transport or deformation). Because observations on contemporary glaciers reveal that their beds are most likely to be mosaics of deformation and sliding and warm based and cold based conditions, the patterns of which change temporally and spatially, it is extremely unlikely that subglacial till end members in the geological record will be anything but hybrids produced by the range of processes operative in the subglacial traction zone.