are not aware of any komatiites *sensu strico* that contain unequivocal spatter and bombs, but komatiitic basalts with such features have been described in the Möykkelmä area in Finland (Räsänen *et al.*, 1989) and ferropicrites with such features have been described at Kotselvaara in the Pechenga belt (Green and Melezhik, 1999). *Autoclastic* lavas have been reported at Kambalda by Beresford *et al.* (2002) at Bannockburn (Houlé *et al.* 2005), and are also observed at Sattasvaara in Lapland (Thordarson, pers. comm.), but these are blocky rather than a'a lavas. Komatiitic a'a flows are unknown, and are very unlikely to have formed from such low-viscosity lavas. *Epiclastic* komatiites have been described at Spinifex Ridge by Gélinas *et al.* (1977b), at Karasjok by Barnes and Often (1990), and probably occur locally in most localities.

Komatiite flow facies

Komatiites form many of the *flow facies* recognized in basaltic flow fields, particularly submarine basaltic flow fields, including simple and compound volcaniclastic units, compound pillowed and lobate flows, simple differentiated and undifferentiated sheet flows, and simple and compound differentiated and undifferentiated lava conduits (Table 9.1).

Sheets and conduit facies exhibiting many of the same lithofacies as flows may also form in invasive (downward burrowing) flows, deeply erosive flows, intrusive sills, or feeder conduits. For example, the differentiated sills at Dundonald Beach (Arndt *et al.*, 2004b) and Boston Creek (Houlé *et al.*, 2001) exhibit many of the compositional and textural characteristics of differentiated flows, and were originally interpreted as flows (see Muir and Comba (1979), Stone *et al.* (1987)). Because the contact relationships that are required to distinguish between extrusive, invasive and intrusive modes of emplacement are often not exposed, we have grouped them all under flow facies.

Very-low-viscosity high-Mg komatiites normally form compound flow lobes rather than compound pillowed flows, but pillows occasionally form in low-Mg komatiites (e.g., Belingwe: Nisbet *et al.* (1977)) and commonly form in komatiitic basalts.

Archean geologists normally encounter komatiites in small outcrops and drill cores, so one-dimensional profiles through individual cooling units are commonly used as a basis for their description and interpretation. Many of the *flow facies* in Table 9.1 can be portrayed on a simple matrix (Figure 9.1) of two variables: (1) the amount of excess olivine (vertical axis) and (2) the degree of *in situ* textural and compositional differentiation (horizontal axis).

The first variable is the amount of accumulated olivine, calculated by comparing the weighted average bulk composition of the unit with the aphyric