deformed in unconfined compression tests such as to promote fractures along potential planes inclined at high angles to bedding but free to occur at any azimuth with respect to the bedding. The author reports that the induced fractures trend parallel to the main sets of macrofractures developed in the field (Figure 13). Mauriño and Limousin (1966) found from loading orthoquartzite specimens normal to the bedding that the induced fractures occurred parallel to the regional system of macrofractures. Also rupture strengths for these directions are lower than for other directions of test loading. Paulmann (1966) applied unconfined "ball" and "needle" tests to a suite of sandstone specimens and recorded breaking strengths for different directions. He found directions within the rocks for which the breaking strengths were considerably lower than in others. These directions are oriented parallel to the tectonic anisotropy in the rock mass and depend upon the strike and dip of folds, faults, and macrofractures. Highest values of breaking strength were found in specimens taken from zones of anticlines, synclines, and from the vicinity of faults, that is from zones of high strain.

These examples strongly suggest that pervasive geologic deformation can produce or modify microscopic fabric elements that in turn control the observed anisotropic behavior. Unfortunately, the authors did not present microscopic observations so that a specific statement on this point is not possible. On the other hand, one cannot ignore the hypothesis implied by Boretti-Onyszkiewicz that the observed anisotropic behavior is related to the state of stored elastic strain (residual elastic strain) that was "locked" in the rocks during the geologic deformation. Friedman (1966), for example, has shown that such strains can date from at least the Laramide period of deformation (Late Cretaceous). These strains are not necessarily manifest in observable fabric elements, but are a source of internal energy that is capable of influencing mechanical behavior (Emery, 1964).