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Preface

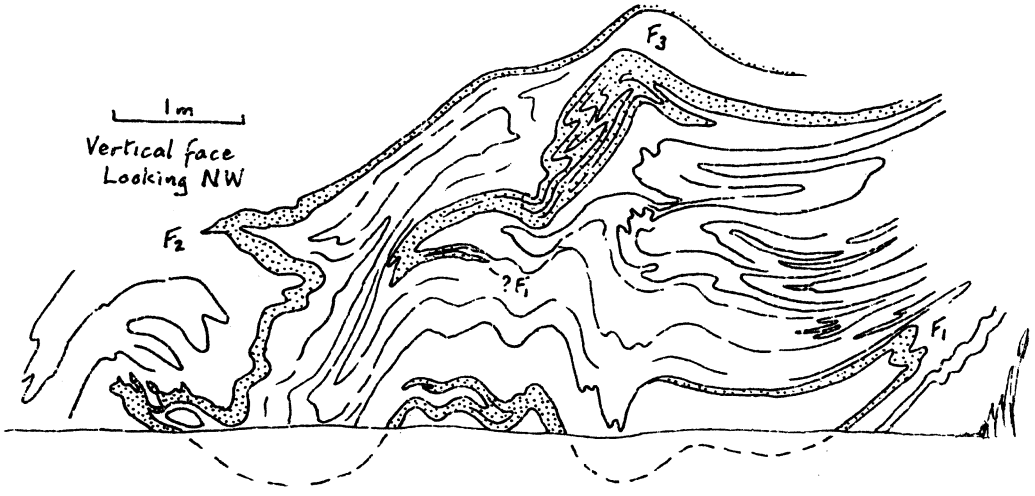
This Special Issue honours the career of Professor Paul Frederick Williams, a career extending over four decades and four continents—from the UK to Australia (Sydney and Townsville), Antarctica, North America (Albany), Europe (Leiden), and back to North America (Fredericton). Over this time, Paul has exerted a profound influence through his papers, teaching and resolution that the rocks have the final say. To recognize this influence, a Canadian Tectonics Group/Geological Association of Canada NUNA Conference was convened in September 1998 at Canmore, Alberta, sheltered in the Rocky Mountains, followed by a field trip through to the Monashee Mountains where Paul continues to work.

The 26 papers included in this Special Issue are representative of the conference theme, *Evolution of Structures in Deforming Rocks,* reflecting Paul's interest in the geometry and processes of natural deformation at all scales. A measure of this is the representative (but in no sense complete) selection of references from his bibliography that mirror the topics described herein. Notably, the authors of these contributions include long-standing colleagues, many former graduate students and, in turn, their students.

The papers are arranged, in a general sense, from smaller to larger length scales, and grouped into categories reflecting the important research interests of Paul over the past 40 years—microstructures; the interaction of metamorphisms and deformation; kinematics; and regional studies with a strong emphasis on geometry.

The opening paper by Williams and Jiang on folding in a rock analogue hearkens back to earlier research of a similar ilk (Williams and Means, 1971). A group of papers on simulated and modeled fibrous veins (Means and Li; Bons; Hilgers et al.) demonstrate the challenges remaining within this topic (Urai et al., 1991), while Fueten and Goodchild's discussion of automated fabric analyses represents the communities continued efforts to achieve simple, rapid and reliable texture analysis (Price and Williams, 1989).

The succeeding group of papers can be viewed as the conceptual progeny of the type of study Paul carried out for his Ph.D. (Williams, 1972) in which deformation and metamorphism and cleavage development are examined as



Overprinting relationships in marble in the hinge of a large antiform, Selkirk Range, British Columbia. Sketched by Paul F. Williams.

Fig. 1. Overprinting relationships in marble in the hinge of a large antiform, Selkirk Range, British Columbia.

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a common data set. Issues of static recrystallization (Ho et al.), dynamic recrystallization related to metasomatism (van Staal et al.), mass transfer and crenulation cleavage development (Williams et al.) and metamorphic reaction-controlled weakening (Urai and Feenstra) are examined.

The theory behind and interpretation of kinematics of deformation at all scales (Williams and Schoneveld, 1981; Lister and Williams, 1983; Lin and Williams, 1992) are represented by the contribution of Passchier on 'flanking structures', a pair of papers (Kraus and Williams, Beaumont-Smith) considering kinematics and reference frames, and studies of observed (Holcombe and Little) and predicted (Jiang et al.) kinematic paths in large fault/shear zones.

Geology in the field (Fig. 1) has been Paul Williams' professional love, which he has practiced around the world (Williams, 1967; Williams and Zwart, 1977; Passchier et al., 1981; Roberts and Williams, 1993; Goodwin and Williams, 1996; Johnston et al., 2000) in most of the areas for which this issue has contributions. The papers track the geography of his career. Camacho et al. describe an excellent example of potential shear heating from central Australia, while Llana Fúnez and Marcos describe crustal-scale shear zone in Iberia. Papers on the northern Appalachians (Lin; Murphy et al.; Solar and Brown) are symbolic of Paul's current abode in that part of the world. Given Paul's ardour for mountains, his research has moved west in recent years. Ray Price leads off a 'cordilleran' section with an evaluation of kinematic models for fold-and-thrust belts, followed by a slickenline analysis of the Crowsnest culmination by Norris, while Crowley et al. present an integrated study from the Monashee Mountains. Lafrance and John and Kalaky et al. have contributions examining the interaction of faults and emplacement of igneous rocks. The transect to the Pacific is completed by a study of Cretaceous plate convergence producing the Skeena fold belt in British Columbia (Evenchick). Jumping the Pacific to Japan, Lin discusses multiple fabrics developed in cataclastic rocks.

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