

**The consequences and possible causes of deformation partitioning
in the Gander Lake Subzone, northeast Newfoundland**

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In common with most of the Central Mobile Belt in Newfoundland, the Gander Lake Subzone displays rapid variations in structural complexity, metamorphic grade and intensity of igneous intrusion. Some of these complexities reflect the successive accretion episodes that occurred during closure of Iapetus, but this study will illustrate that substantial variations can arise due to more localized controls. During the mid-Silurian, sinistral-oblique collision occurred between the Avalon Composite Terrane and the Laurentian margin. The resulting deformation profoundly affected substantial regions of the Gander Group and was progressively localized into two kilometre-scale, sub-vertical belts of high strain: the Wing Pond and Hare Bay Gneiss shear zones. As the focusing of deformation develops, sequential cycles of overprinting and transposition are recognized, together with kinematic partitioning of the regional transpressional strain

into strike-slip and dip-slip dominant regions. Both shear zones also coincide exactly with focused belts of syn-tectonic igneous intrusion and markedly higher metamorphic grade \pm regional melting of the Gander Group. This suggests that the localization and kinematic partitioning of strains reflects rheological weakening within shear zones due to higher temperatures resulting from either shear heating and/or fluid fluxing from greater depths. These processes appear to be associated with, or to be responsible for the generation and upward channeling of magmas derived initially from a lower or sub-crustal source. Thus, prior to any regional-scale (i.e., late tectonic) interpretation of geological sequences observed in a set of outcrops, it is necessary to consider the additional complexities that may arise due to the interactions of deformation, metamorphism and syn-tectonic magmatism within shear zones.