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How is Silurian-Early Devonian faulting in the North America continental interior related to orogenic processes at plate boundaries? A working hypothesis from the Canadian North

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The Paleozoic Appalachian/Franklinian orogen that rims the North America continent on its eastern and northern sides is comparable in size with Tethyan orogenic belts. However, the far-field effects in the continental interior of the multiple Ordovician to Carboniferous deformation phases that built the orogen were relatively minor if compared with those associated with the Himalayas and Alps, a characteristics related to the high integrated strength of the North American craton. Despite the generally little deformation of the continental interior, two regional-scale tectonic features preserved evidence of significant Paleozoic tectonism: the fault bounded Hudson Bay Central High (HBCH) and the Boothia uplift/Cornwallis fold belt (BUCF) in the Canadian Arctic.
In the Hudson Bay intracratonic basin, the lower part of the sedimentary succession (Upper Ordovician to Lower Devonian) is cut by high-angle faults and overlain by a saucer-shape, essentially underformed sedimentary package (Middle to Upper Devonian). The main structural feature is the NNW-trending HBCH that extends for a minimum length of 500 km with normal faults characterized by throws up to 500 m that were mainly active during the Silurian - Early Devonian period.
The >700-km long, N-trending BUCF is nearly perpendicular to the deformation front of the Franklinian mobile belt. In its southern segment (Boothia uplift), its western side is characterized by an east-dipping reverse fault zone that puts Precambrian rocks over Paleozoic strata. In its northern segment (Cornwallis fold belt), the Paleozoic succession is involved in open folds and cuts by steeply dipping reverse faults. Syn-tectonic clastic sediments constrain the age of structures to the latest Silurian-Early Devonian.
Comparison of the HBCH and BUCF indicates that they are grossly parallel, partly contemporaneous but with different kinematics. This kinematic variability may be explained if they are genetically linked with different segments of the Appalachian/Franklinian orogen. If true, both tectonic features can contribute to the understanding of plate interactions during the Silurian-Early Devonian period. A working hypothesis is proposed in which the HBCH was dynamically linked with the building-up Appalachian orogen located >1400 km to the SE through several grabens where Paleozoic faulting has been inferred. The nearly perpendicular trends of the BUCF and Franklinian mobile belt do not discard a genetic link between both features, as the Franklinian deformation front is much younger (latest Devonian-earliest Carboniferous) than the BUCF. A simple hypothesis, including a major change in strike of the building-up Franklinian orogen north of the Canadian Arctic islands is proposed and successfully accounts for the orientation and kinematic of the BUCF.