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Nathan Reading* (nathan_reading@ncsu.edu) and **David Speyer** (speyer@math.mit.edu).

A Cambrian approach to cluster algebras.

Cambrian lattices and Cambrian fans arise from a lattice-theoretic construction on the weak order on a Coxeter group. The closely related sortable elements provide an explicit combinatorial construction of these lattices and fans. Surprisingly (a priori), the Cambrian constructions reproduce the combinatorics and polyhedral geometry of cluster algebras.

I will discuss combinatorial models for cluster algebras arising from Cambrian fans/lattices and sortable elements. I will also describe how the Cambrian approach gives new insights into the combinatorics of cluster algebras and the geometry of the \mathbf{g} -vector fan. (Received February 16, 2010)