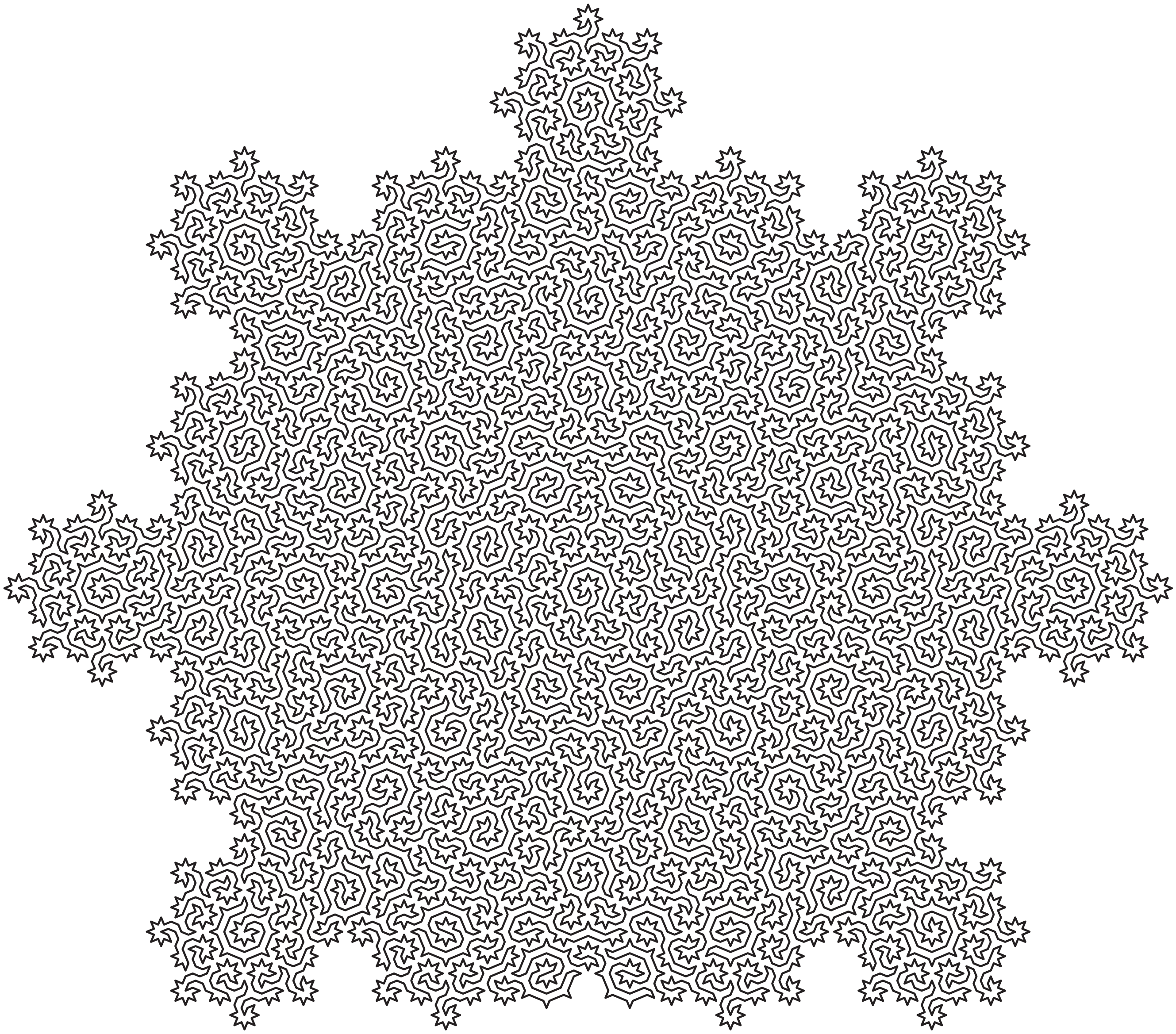

FIG. 6. The Hamiltonian cycle visiting all the vertices of a U_2 region (the AB tiles themselves are omitted for clarity). The image is obtained from Fig. 5 by placing e_1 and e_2 edges in alternate orientations along the red and blue loops, respectively, as shown in Fig. 11, and augmenting. Note the present figure has been rotated through $1/16$ of a turn relative to other figures to utilize the page efficiently.

V we can find a U_n such that $V \subseteq U_n$, the U_n admit a natural extension to the thermodynamic limit of macroscopically large cycles $U_{n\to\infty}$ (meaning arbitrarily large finite patches). The algorithm is of linear complexity in the number of vertices within U_n.

The region U_∞, without any surrounding tiles, can itself be thought of as an infinite AB tiling, in the sense that it is an infinite simply connected set of tiles generated by repeated inflations of a legitimate AB patch (followed by deletion of the surrounding tiles in W_∞).

It should be noted that an AB tiling can have at most one global center of D_8 symmetry (more than one would violate the crystallographic restriction theorem [85]), and the set of tilings with a global D_8 center is measure zero in the set of

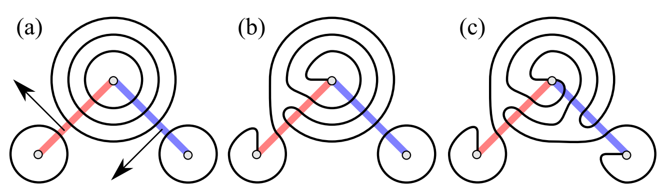

FIG. 7. The topology underlying the Hamiltonian cycle construction. (a) Every 8-vertex (gray disks) separated from another by an L_1 edge (red or blue) is enclosed by e_0 loops (black) as shown (see Fig. 3). Other 8-vertices are omitted for clarity. (b) [(c)] Augmenting the red [blue] e_1 edge, with e_1 orientation indicated with arrows as in Fig. 4, rewires the loops as shown. Hence, augmenting a *loop* of e_1 edges results in a *single* L_0 cycle visiting the chosen 8-vertices. The argument holds at all levels of inflation.