A Space-filling 3D Serial Polyaxis



Fig. 5. Symmetrical patterns of serial polyaxis <5*5*5> as a module for recursive construction of <<module>*2*2*2> or <<module>*3*3*3>, where <2*2*2> and <3*3*3> are connecting patterns for recursion. The serial polyaxis <<module>*2*2*2> or <<module>*3*3*3> becomes the next module of a higher-level serial polyaxis.

7. Knots

A single knot, square knot, and vertical knot can be expressed by many forms (Fig. 6), but all forms are a type of serial polyaxis. The square knot and vertical knot are constructed using the cubic method (Fig. 6; Sc, Vc). A single knot is formed as a space-filling serial polyaxis of type <5*5*1 (-1, 2, 0)–(-1, 1, 0)> (Fig. 6; left half of the Sc, Vc), which is an odd type ($5 \times 5 \times 1 = 25$). The single knot has three crossings (three more spaces), causing the odd-numbered spaces to become even-numbered, starting from an even/odd numbered space (-1, 1, 0)/(-1, 2, 0) and ending at an odd/even numbered space (-1, 2, 0)/(-1, 1, 0)