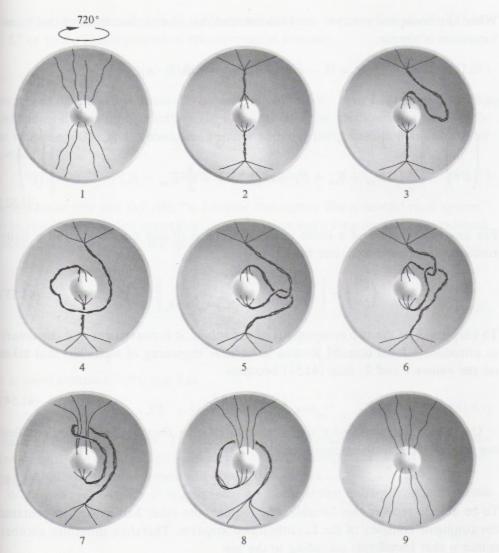**Figure 41.6.**
An object is connected to its surroundings by elastic threads as in Figure 41.5. (Eight are shown here; any number could be used.) Rotating the object through 720° and then following the procedure outlined (Edward McDonald) in frames 2–8 (with the object remaining fixed), one finds that the connecting threads are left disentangled, as in frame 9 (lower right).

Such a quantity is known as a spinor. A spinor reverses sign on a 360° rotation. It therefore provides a reasonable means to keep track of the difference between the two inequivalent versions of the cube. More generally, with each orientation-entanglement relation between the cube and its surroundings one can associate a different value of the spinor $\xi$. Moreover, there is nothing that limits the usefulness of the spinor concept to rotations. Also, for the general combination of boost and rotation, one can write

$$\xi \longrightarrow \xi' = L\xi. \tag{41.51}$$

Lorentz transformation of a spinor