

Figure 9a A five-fold axis of symmetry cannot exist in a lattice because it is not possible to fill all space with a connected array of pentagons. In Fig. 32 we give an example of regular pentagonal packing which does not have the translational invariance of a lattice.

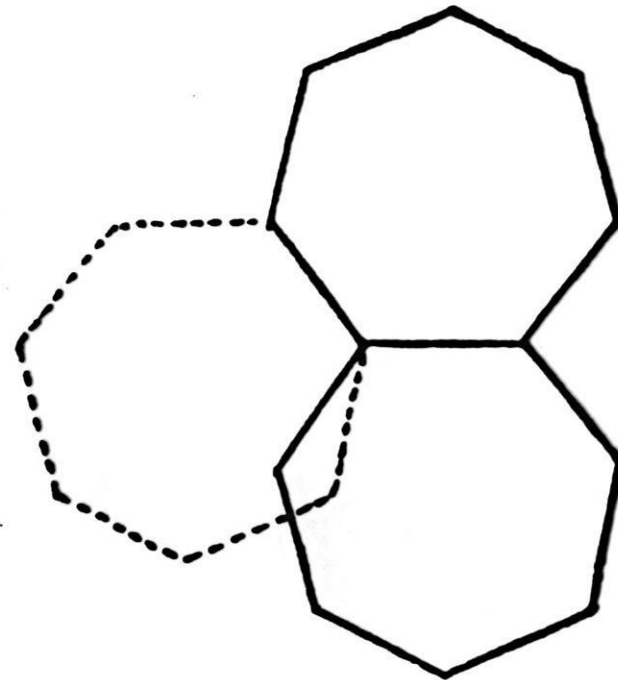


Figure 9b Kepler's demonstration (*Harmonice mundi*, 1619) that a seven-fold axis of symmetry cannot exist in a lattice. (*Gesammelte Werke*, Vol. 6, Beck, Munich, 1940.)