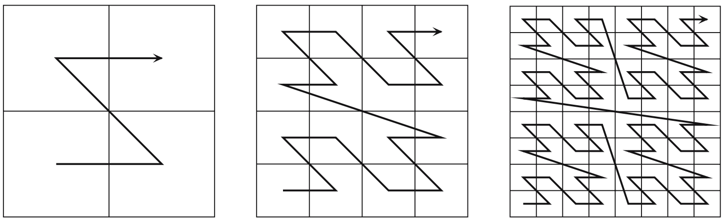

Fig. 8.22. Three steps in the construction of the Lebesgue curve.

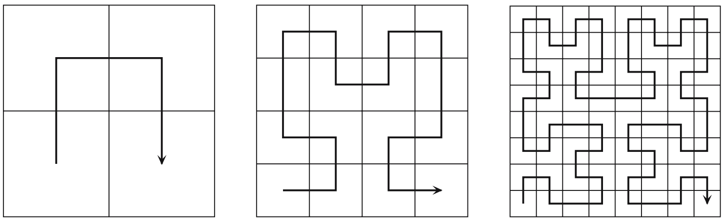

Fig. 8.23. Three steps in the construction of the Hilbert curve.

connected by a straight line, only the common edge of the two squares is crossed. The construction is made clearer in Figure 8.23. One can show that the sequence K_n for Hilbert's curve converges uniformly to a curve K, which implies that the limit curve K is continuous. For the Lebesgue curve, the sequence only converges pointwise and the limit is discontinuous.

The construction can be generalized to arbitrary space dimensions `DIM`, i.e. to curves $K : [0,1] \to [0,1]^{\mathtt{DIM}}$. Such a Hilbert curve is shown for the three-dimensional case in Figures 8.24 and 8.25.

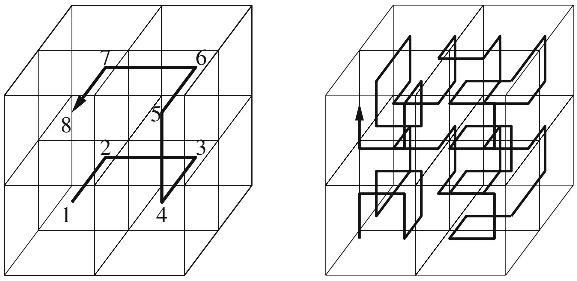

Fig. 8.24. Construction of a three-dimensional Hilbert curve.