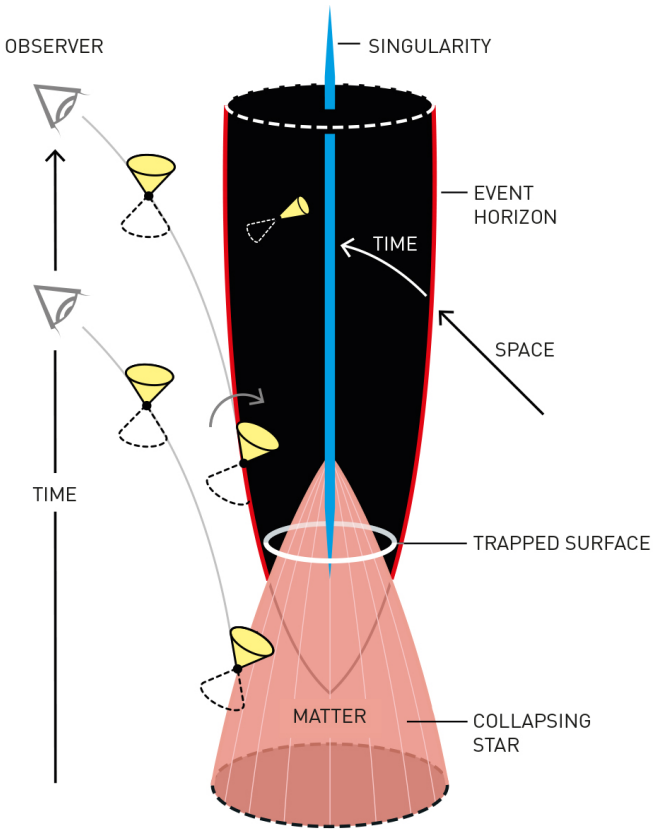

Figure 2. *The diagram is based on Penrose's paper from 1965 and shows the collapse of matter into a black hole. On a trapped surface all light cones are tipped inwards, and the formation of a singularity is inevitable.*

To visualize space-time, Penrose introduced a technique using *conformal transformations* (Penrose 1963). Such transformations can change the scale but they always retain angles. This means that points infinitely far away in space, and events in the infinite past or future, can be brought in from infinity to fit inside a diagram of finite size. If a light ray originally corresponds to a line at 45 degrees, it will remain at the same angle after the conformal transformation. Such diagrams are called *Penrose diagrams*, and they are indispensable tools in the study of curved space-times. A Penrose diagram where a star collapses to form a black hole is shown in figure 3.