Highly-ordered ultralong copper oxide nanotubes are fabricated by a simple two-step strategy involving the growth of copper nanowires on nanopatterned template substrates by magnetron sputtering followed by thermal annealing in air. As reported by A. A. El Mel and co-workers on page 2838, upon annealing, the nanoscale Kirkendall leads to the transformation of the solid nanostructures into hollow ones. This route is not only limited to 1D nanostructures, but can also be applied to different shapes including 0D nanodots.