Fig. 5.5. A Wavelet Tour of Signal Processing, 3rd ed. The Heisenberg box of a wavelet $\psi_{j,n}$ scaled by $s = a^j$ has a time and frequency width proportional respectively to $a^j$ and $a^{-j}$. The time-frequency plane is covered by these boxes if $u_0$ and $a$ are sufficiently small.