Dynamics of the transverse-field Ising model in 3D MARKUS SCHMITT, Institute for Theoretical Physics, Georg-August-Universitaet, Goettingen, MARKUS HEYL, Max-Planck Institute for the Physics of Complex Systems, Dresden — We formulate the dynamics after a quench in the three-dimensional transverse-field Ising model in terms of classical partition sums, which can be evaluated using conventional Monte Carlo methods for classical spin systems with system sizes markedly beyond the capabilities of, e.g., exact diagonalization. In this way, we obtain insights into the time evolution of observables and dynamical quantum phase transitions in the Loschmidt echo, which we analyze in the vicinity of critical times similar to [M. Heyl, Phys. Rev. Lett. 115, 140602 (2015)].