L^1 contraction for bounded (non-integrable) solutions of degenerate parabolic equations

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We will discuss new L1 contraction results for bounded entropy solutions of Cauchy problems for degenerate parablic equations. The equations we consider have possibly strongly degenerate diffusion terms. As opposed to previous results, our results apply without any integrability assumption on (the difference of) solutions. They take the form of partial Duhamel formulas and can be seen as quantitative extensions of finite speed of propagation local L1 contraction results for scalar conservation laws. A key ingredient in the proofs is a new and non-trivial construction of a subsolution of a fully non-linear (dual) equation. Consequences of our results are new a priori estimates, new maximum and comparison principles, and in the non-local case, new existence and uniqueness results.