same scale. The long-range properties of the non-perturbative vacuum are then characterized by gluon and quark condensates which are proportional to the non-vanishing vacuum expectation values $\langle\chi\rangle \equiv \chi_0$ and $\langle U\rangle \equiv U_0$ in the long-distance limit.

Our central idea is that the effective gluon condensate field χ plays the driving role in the generation of confinement and chiral-symmetry-breaking mechanisms: the non-perturbative gluon self-interactions are assumed to modify the long-range properties of the vacuum in such a way that the propagation of the *elementary gluon fields* A^μ is altered with increasing space-time distances and eventually completely suppressed (confinement). As a direct consequence [11], the self-energy of the *elementary quark fields* ψ will be modified accordingly through the quark-gluon coupling, so that it generates dynamically an effective quark mass term which becomes infinite at large space-time distances. The coupling between the perturbative regime with elementary fields A^μ, ψ and the non-perturbative vacuum represented by the condensate fields χ, U is mediated by a single dimensionless "color-dielectric function" $\kappa(\chi)$ [15], which vanishes in the short-distance limit, but approaches unity at large distances. There is no need to introduce an additional coupling to the field U, nor to consider an explicit chiral-symmetry-breaking quark mass term, because, as mentioned, the quarks aquire a dynamic mass via their coupling to the gluons in the presence of the field χ.

We thus obtain an effective QCD field theory which in the short distance limit ($\langle\chi\rangle = 0, \langle U\rangle = 0, \kappa(0) = 1$) is chiral invariant and incorporates free gluon and quark propagation (asymptotic freedom), whereas in the long distance limit ($\langle\chi\rangle = \chi_0, \langle U\rangle = U_0, \kappa(\chi_0) = 0$) no gluon or quark propagation can occur (confinement). In between these two regimes, the effective theory interpolates and governs the dynamics of the conversion of short-distance fluctuations (partons) to non-perturbative bound states (hadrons) embedded in the physical vacuum. As a prototype case, we study in detail the parton-hadron conversion in $e^+e^- \to$ *hadrons*. We visualize the process $e^+e^- \to \bar{q}\,q$ as producing a "hot spot" in which the long-range order represented by χ_0 and U_0 is disrupted locally by the appearance of a bubble of the naive perturbative vacuum. Within this bubble, a parton shower develops in the usual perturbative way, with the hot spot expanding and cooling in an irregular stochastic manner described by QCD transport equations. This perturbative description remains appropriate in any phase-space region of the shower where the local energy density is large