The purpose of the second part of the chapter is to develop a detailed model for the relationship between electroweak and strong interactions at the level of the embedding space H developed in the first part of the chapter. The initiative came from Martin Ebner who wanted to find clearcut predictions related to the standard model, in particular Weinberg angle. This led to a project involving Martin and two AI agents, who did extremely valuable work identifying the numerous errors in my paper and pencil calculations and also in the earlier view about Weinberg angle estimated in my thesis dating back to 1982. The project led to a rather dramatic increase in the understanding of the relationship between electroweak and strong interactions in the TGD framework.

TGD explains the coupling pattern of electroweak interactions but gluon couplings do not appear in the embedding space and space-time variants of the Dirac action. The fact that the holonomy group of CP_2 is identifiable as a subgroup of the color group acting as isometries of CP_2 motivates the conjecture that color interactions and electroweak interactions are parts of the same pattern. The pleasant surprise was that the induced gauge couplings included not only electroweak gauge potentials but also a $U(1)$ gauge potential assignable to strong interactions and coupling to strong isospin. The 3-D generalization of the Weinberg mixing and conformal invariance for the photon emission vertex relate the Weinberg angle and the strong interaction coupling strength α_s to the choice of the monopole harmonic and to a second parameter of the generalized Weinberg mixing.

A generalization of the Weinberg mixing is proposed. The assumption that the emission of photons having wrong helicity with respect to the direction of fermion momentum – lightlike in 8-D sense – vanishes, relates the Weinberg angle and the strong interaction coupling strength α_s to the choice of the monopole harmonic and to a second parameter of the generalized Weinberg mixing. Electric-magnetic duality states that $U(1)$ interaction at X^4 level corresponds to color interaction of QCD such that the two coupling strengths are inverses of each other. A model for WCW wave functions as monopole harmonics at partonic 2-surfaces leads to a 3-D generalization of Weinberg rotation and an estimate of the Weinberg angle, identification of strong and weak interactions as parts of color interaction and estimate of the strong coupling strength. What is required is charge fractionation and $SL(2, C)$ acting as global conformal symmetries at partonic 2-surface allow representations with fractional spin.

This view would give at the space-time level a concrete realization for the idea that strong *resp.* weak interactions represent orbital angular momentum-like *resp.* spin-like aspects of color interactions and that strong interactions relate deeply to electroweak interactions as the old-fashioned hadron physics assumed. I have speculated for decades about a kind of duality between QCD description and low energy hadronic description in terms of strong isospin and it seems that this finding makes possible a precise quantitative realization of this vision.

TGD also predicts the M^4 counterpart of Kähler force as a new $U(1)$ interaction possibly related to gravitation. If this interaction is strong as compared to the gravitational force, it could relate to the hadronic strings with transversal M^4 degrees of freedom. Perhaps the more plausible option is that M^4 Kähler gauge potential generalizes the Newtonian gravitational potential.