Holography = holomorphy vision generalizes the realization of quantum criticality in terms of conformal invariance. Holography = holomorphy vision provides a general explicit solution to the field equations determining space-time surfaces as minimal surfaces $X^4 \subset H = M^4 \times CP_2$. For the first option the space-time surfaces are roots of two generalized analytic functions P_1, P_2 defined in H . For the second option single analytic generalized analytic function defines X^4 as its root and as the base space of 6-D twistor twistor-surface X^6 in the twistor bundle $T(H) = T(M^4) \times TCP_2)$ identified as a zero section

By holography, the space-time surfaces correspond to not completely deterministic orbits of particles as 3-surfaces and are thus analogous to Bohr orbits. This implies zero energy ontology (ZEO) and to the view of quantum TGD as wave mechanics in the space of these Bohr orbits located inside a causal diamond (CD), which form a causal hierarchy. Also the consruction of vertices for particle reactions has evolved dramatically during the last year and one can assign the vertices to partonic 2-surfaces.

$M^8 - H$ duality is a second key principle of TGD. $M^8 - H$ duality can be seen a number theoretic analog for momentum-position duality and brings in mind Langlands duality. M^8 can be identified as octonions when the number-theoretic Minkowski norm is defined as $Re(o^2)$. The quaternionic normal space $N(y)$ of $y \in Y^4 \subset M^8$ having a 2-D commutative complex sub-space is mapped to a point of CP_2. Y^4 has Euclidian signature with respect to $Re(o^2)$. The points $y \in Y^4$ are lifted by a multiplication with a co-quaternionic unit to points of the quaternionic normal space $N(y)$ and mapped to $M^4 \subset H$ inversion.

This article discusses the relationship of the holography = holomorphy vision with the number theoretic vision predicting a hierarchy $h_{eff} = nh_0$ of effective Planck constants such that n corresponds to the dimension for an extension rationals (or extension F of rationals). How could this hierarchy follow from the recent view of $M^8 - H$ duality? Both realizations of holography = holomorphy vision assume that the polynomials involved have coefficients in an extension F of rationals Partonic 2-surfaces would represent a stronger form of quantum criticality than the generalized holomorphy: one could say islands of algebraic extensions F from the ocean of complex numbers are selected. For the P option, the fermionic lines would be roots of P and dP/dz inducing an extension of F in the twistor sphere. Adelic physics would emerge at quantum criticality and scattering amplitudes would become number-theoretically universal. In particular, the hierarchy of Planck constants and the identification of p-adic primes as ramified primes would emerge as a prediction.

Also a generalization of the theory of analytic functions to the 4-D situation is suggestive. The poles of cuts of analytic functions would correspond to the 2-D partonic surfaces as vertices at which holomorphy fails and 2-D string worlds sheets could correspond to the cuts. This provides a general view of the breaking of the generalized conformal symmetries and their super counterparts as a necessary condition for the non-triviality of the scattering amplitudes.