archived as http://www.stealthskater.com/Documents/Transcendental_1.doc
(also …Transcendental_1.pdf) => doc pdf URL-doc URL-pdf

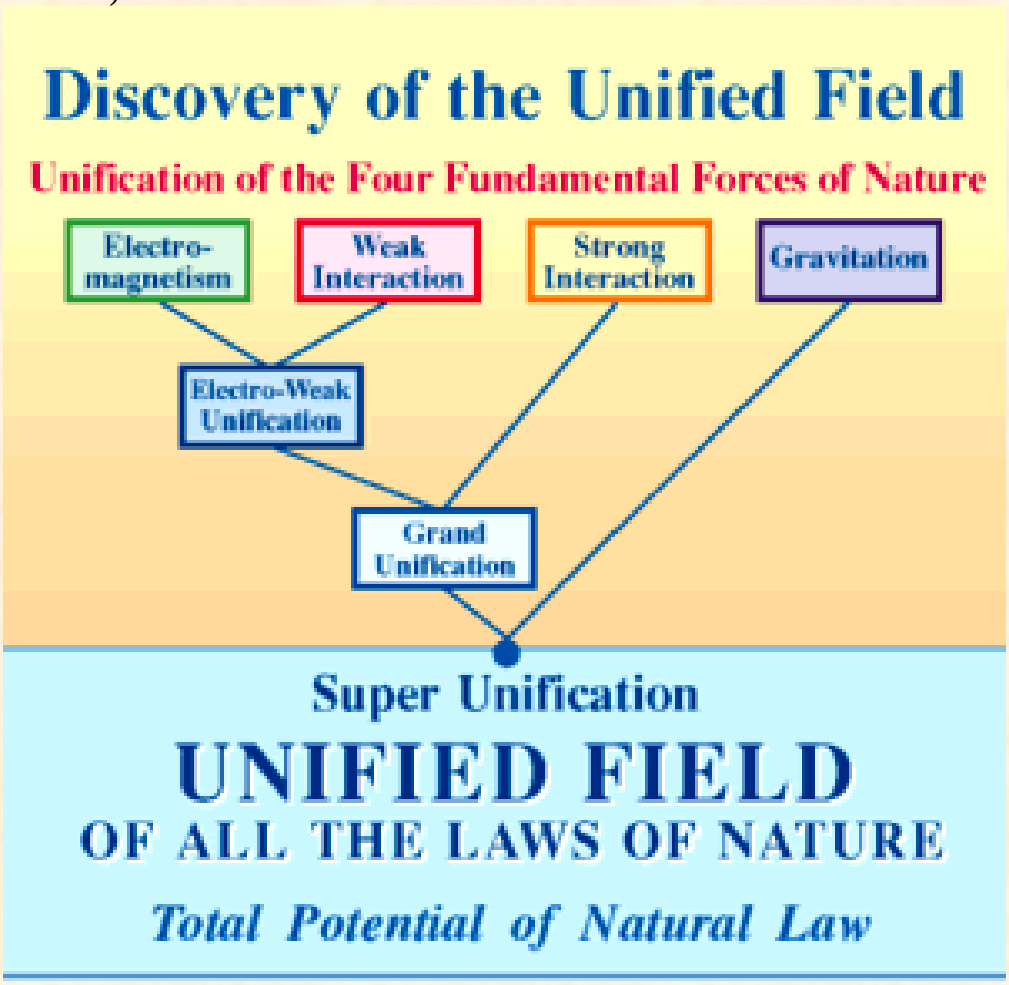
more of Physics is on the /Science.htm page at doc pdf URL

note: because important websites are frequently "here today but gone tomorrow", the following was archived from http://www.worldpeaceendowment.org/invincibility/invincibility5.html on January 7, 2002. This is NOT an attempt to divert readers from the aforementioned website. Indeed, the reader should only read this back-up copy if the updated original cannot be found at the original author's site.

Quantum Physics and Transcendental Meditation

(their homepage => http://www.worldpeaceendowment.org/index.html)

The discovery of the Unified Field occurred in several steps. First, progress in quantum physics brought to light that all phenomena in Nature can be understood in terms of different, underlying quantum fields. In particular, physicists discovered that all the known, dynamic interactions in nature can be described in terms of 4 separate fundamental force fields -- the force fields of the electromagnetic, weak, strong, and gravitational interactions (see **figure below**). With progress in unified quantum field theories, however, it was realized that all these different force fields (as well as the different matter fields) are simply different aspects of one single Unified Field of Natural Law -- the holistic transcendental field underlying all manifest phenomena found in Nature (see **figure below**).



This complete unification of all the different quantum fields (as described in Superstring Theory) has the most fundamental implication that the Unified Field is a purely self-interacting field. All phenomena in Nature are generated sequentially from the modes of the self-interacting or self-referral dynamics of the Unified Field.

A Note for the Expert in Quantum Physics

The property of pure self-interaction of the Unified Field can be seen from the Lagrangian of Superstring Field Theory depicted below.

Lagrangian of the Superstring Field Φ:
(highly symbolic notation)

$$\mathcal{L}_{SF} = \underbrace{|e|\,\Phi \times K\Phi}_{\text{Propagation of Vibrating Superstring}} + \underbrace{|e|\,V\,\Phi\times\Phi\times\Phi + \text{contact terms}}_{\text{Self-Interaction}}$$

Non-perturbative field theory of the string is a very advanced topic which is still under development. In particular, a sufficiently satisfying characterization of certain mathematical operations (like 'multiplication' of the string field and gauge fixing) that is necessary for a rigorous mathematical analysis of the Lagrangian of string field theory has so far been given only for specific versions of string field theory such as Witten's Open Bosonic String Field Theory and for the Closed Bosonic String Field Theory (a theory which has been considered by F. Englert, H. Nicolai, and A. Schellekens as a candidate for a fundamental Unified Field Theory from which they 'derived' the Heterotic Superstring Theory via E8 x E8 lattice compactification). This means that the above formula for the Lagrangian represents a highly symbolic form.

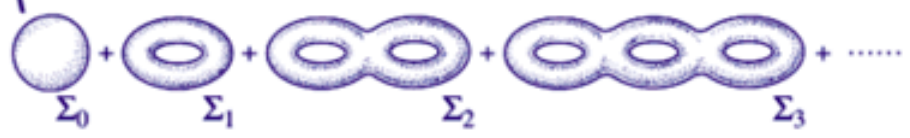
For this reason one still uses mainly Polyakov's perturbative formulation of superstring theory which gives precise meaning to the above symbolic formula in the perturbative regime. This is, however, enough to derive the property of pure self-interaction.

The formula below with the corresponding diagrams for perturbative superstring theory shows very clearly how the property of self-interaction expresses itself in an infinite series of loop diagrams in which the superstring refers back onto itself.

$$S_{\text{eff}}^{(D)}(g_{\mu\nu}, A_\mu, ..) \qquad \text{2-dimensional Lagrangian}$$

$$= \sum_{\Sigma_\gamma} e^{-\phi\chi(\Sigma_\gamma)} \int_{M(\Sigma_\gamma)} \int d\psi dX .. \; e^{\int d^2 z \mathcal{L}_{2d}(\psi, X, .., g_{\mu\nu}, A_\mu, ..)}$$

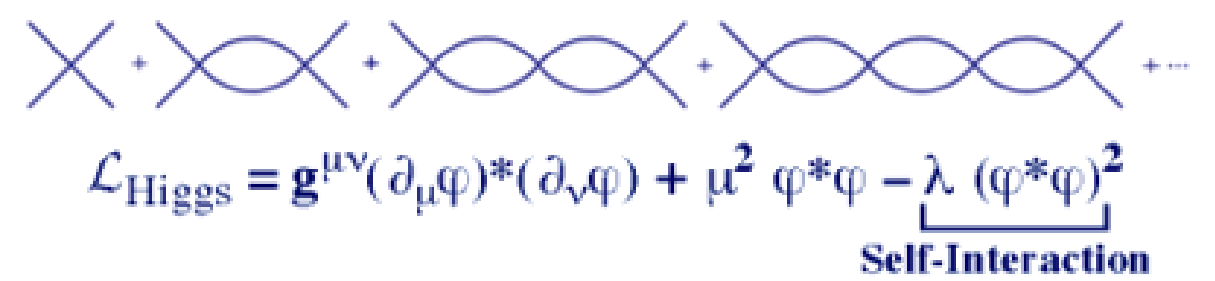
$$= \int d^D x \sqrt{g} e^{-2\phi} \underbrace{[R + \mathrm{Tr} F_{\mu\nu} F^{\mu\nu} + \ldots]}_{\text{general relativity, gauge theory, etc.}} + \underbrace{\mathcal{O}(m_{\text{planck}}{}^{-1})}_{\text{small string corrections}}$$



Self-Interacting Dynamics of the Unified Field

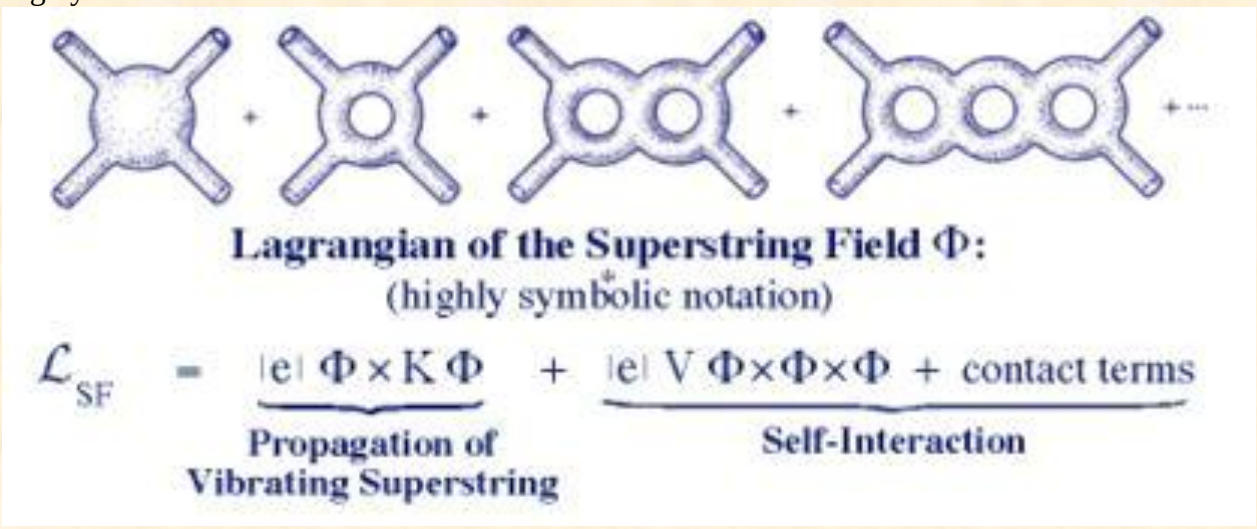
The Unified Field of all the laws of Nature discovered by modern quantum physics is a completely self-interacting, self-referral field (refer also to the page "**Discovery of the Unified Field**"). Although the property of self-interaction of the Unified Field can be compared with corresponding types of non-linear dynamics at more superficial levels (like non-linearly interacting fields, auto-catalytic feedback loops, or cyclic homeostatic feed-back loops), the dynamics of the Unified Field is unique because it displays the property of **complete** or **pure** self-interaction.

Even some specific quantum fields that are referred to as 'self-interacting' fields (like the Higgs fields and the gluon field) do not have the property of **pure** self-interaction. For the case of a Higgs field, the Feynman graphs below demonstrate classical 'self-interaction' through the meeting point of several lines (pertaining all to the same field) and quantum-mechanical 'self-interaction' by the repeated looping. However, this type of 'self-interaction' is **not pure** self-interaction because -- as shown in the formula -- the propagating Higgs field also interacts with the space-time geometry.



$$\mathcal{L}_{\text{Higgs}} = g^{\mu\nu}(\partial_\mu\varphi)^*(\partial_\nu\varphi) + \mu^2\,\varphi^*\varphi - \underbrace{\lambda\,(\varphi^*\varphi)^2}_{\text{Self-Interaction}}$$

In contrast, the infinite series of loops in the graphics below represent the infinite Quantum Mechanical self-interaction of the Unified Field. The following formula* of Superstring Field Theory shows that the Superstring Field -- the Unified Field -- is interacting with itself alone and with nothing else. This means **pure self-interaction**. In particular, the Unified Field creates its own space-time geometry through its self-interacting dynamics.



Lagrangian of the Superstring Field Φ:

(highly symbolic notation)

$$\mathcal{L}_{SF} = \underbrace{|e|\,\Phi\times K\,\Phi}_{\substack{\text{Propagation of}\\ \text{Vibrating Superstring}}} + \underbrace{|e|\,V\,\Phi\times\Phi\times\Phi + \text{contact terms}}_{\text{Self-Interaction}}$$

Three-in-One Structure

In physics, the description of the dynamics at the classical level is characterized by the fact that classical objects with fixed properties are referred to a classical space-time. In contrast, the pure self-interaction of the Unified Field at the most fundamental Quantum Mechanical level implies that one has neither classical objects with fixed properties nor a classical space-time geometry to which events can be referred.

This has enormous consequences. In order to establish sequentially progressing series of events (so-called histories), quantum measurement theory requires a series of "**measurement situations**" where correlations between values of observables are established. In the context of quantum cosmology, this leads to the conclusion that the self-interacting unified wholeness at the level of the Unified Field expresses itself in a

characteristic three-in-one structure: (1) 'Effective Observers' or 'Information Gathering and Utilizing Systems -- IGUSes establish (2) 'Quantum Correlations' between themselves and (3) 'States of Objects of Observation'.

It is essential to emphasize that quantum cosmology makes no real fundamental division into observers and observed. The 3 components of the 'measurement process' emerge from a unified description and in this way one has a real **three-in-one** structure.

A simple and yet most basic example that demonstrates from a slightly different angle how this type of three-in-one structure can arise has been given by T. Banks and is depicted by means of a series of formulas at the bottom of the chart (left side). The (1) space-time geometry emerges as the 'screen' to which the (3) states of the non-gravitational fields are referred. The (2) time parameter quantifies the 'quantum correlation' between these 2 aspects.

Identifying the Unified Field as the Field of Pure Consciousness

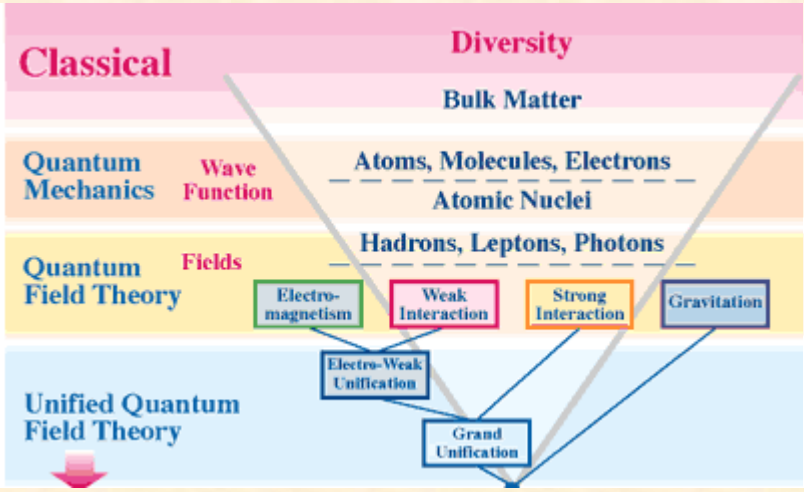
The property of **pure** self-interaction of the Unified Field together with the resulting three-in-one structure of the 'measurement process' in quantum cosmology implies that the Unified Field generates sequentially progressing series of events through the process of pure self-observation. This quality of pure self-observation in turn means that the non-material, Quantum Mechanical Unified Field can be identified as the field of pure self-referral consciousness.

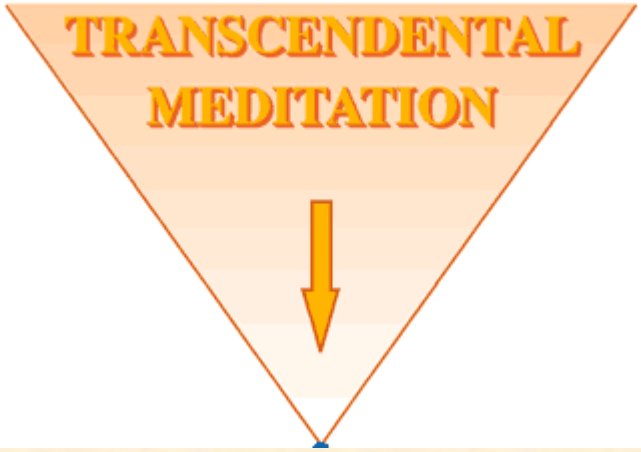
The Self-Referral, Self-Interacting Dynamic Structure of the

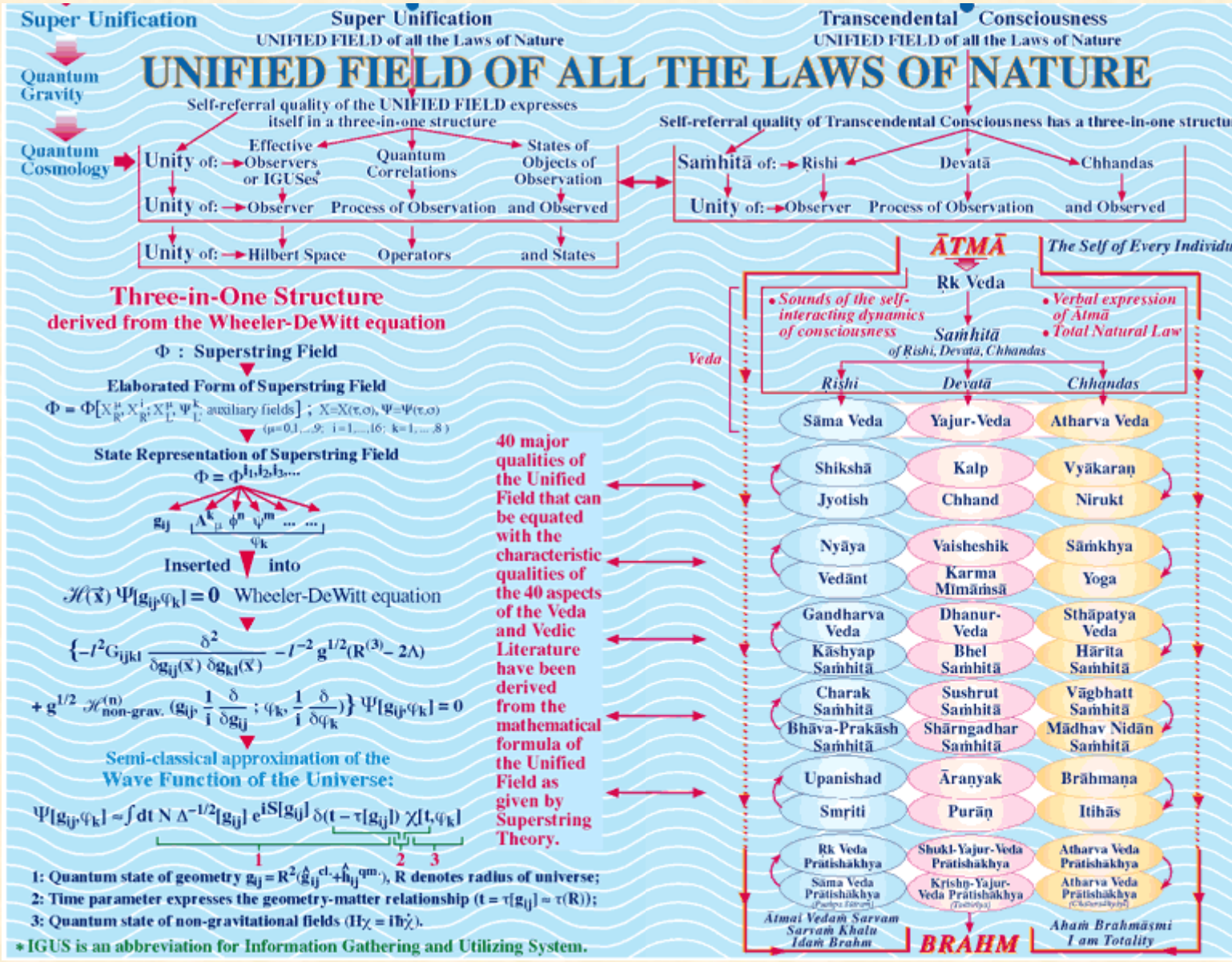
Unified Field of All the Laws of Nature -- the Holistic Basis of Nature's Functioning

Objective Approach of Modern Science

Subjective Approach of Maharishi's Vedic Science







[StealthSkater note: More on "Unified Field Theories" is on the "Science" page at => doc pdf URL and the "Consciousness" page at => (doc pdf URL)]

if on the Internet, press <BACK> on your browser to return to the previous page (or go to www.stealthskater.com)

else if accessing these files from the CD in a MS-Word session, simply <CLOSE> this file's window-session; the previous window-session should still remain 'active'