

Arthur M. Young

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The Theory of Process

THE THEORY OF EVOLUTIONARY PROCESS AS A UNIFYING PARADIGM

by Frank Barr, MD

Why? How? What's the purpose? How does one know? Questions relating to the cosmic dilemma have been considered in various ways at different times throughout human history. The cosmic dilemma, of course, concerns "ultimates"--absolutes or invariants. Do ultimates pertain to "objective" domains or to "projective" (non-objective) domains? In other words, which domain has ultimate priority: 1) the projective domain of intuitive insight, revelation, inner experience, faith, belief, emotional charge, motivational drive, intention, and volition; or, 2) the objective domain of physical sense data, observable behavior, measurement, relationship, pattern, form, formulation, concept, and hypothesis? Should ultimate questions center on projective purpose and value or objective fact and theory? Put another way, are ultimate questions to be relegated to the realm of religion or to the realm of science? Can mystical revelation and intuitive insight "project" a teleological pattern which is ultimately accessible to "objective" study, as many ancient mystic-philosophers believed? Is the objective search for the origin or cause of the laws of nature ultimately a projective religious quest, as many leading contemporary physicists now claim? How can the following "apparent" paradoxes and/or dichotomies be ultimately reconciled:

- 1) random chance/uncertainty vs. control/certainty
- 2) free will/freedom vs. determinism/constraint
- 3) mystical insight vs. empirical fact
- 4) mind vs. matter
- 5) creationism vs. natural evolution
- 6) teleology vs. reductionism
- 7) religion vs. science
- 8) God vs. Nature?

The philosopher/cosmologist Arthur M. Young (1974) maintains that:

Both religion and science have a common origin in the search for truth, but have approached this goal differently. Religion depends on revelation or inspired teachers, science on experiments and theories. It would appear that religion has declined in dignity and importance from those early times when all art was dedicated to it and architecture created its temples and cathedrals. Science, on the contrary, began humbly and piece by piece constructed an edifice which is yet to be completed.

The investigations I have made into these subjects indicate that these two quite different endeavors tell the same story, reach the same conclusions. The agreement to which I refer is to be found between the ancient myths and the most recent findings of quantum physics

It is because science became the Scientific Method and ceased to be the search for truth that it lost relevance and, like a time bomb ticking in an airliner, is dangerous because it is cut off from our control, following its own dictates. It is because the institutionalized churches have taken little cognizance of scientific discoveries and have insisted on a literal reading of all sacred writings that they have become irrelevant and have had their traditional teaching dismissed as superstition. Nor do the presumably humanistic types of

social reform fare better, for despite daily trips to the psychologist, himself floundering in uncertain doctrines. social reform has no notion of man's true nature and has created more discontent than it relieves.

In earlier times there were those who went into the desert to discover within their own depths, or to the mountain top to commune with god, and returned with a teaching for their followers. But that is all past. Twentieth century humanity has come of age. It is not to be led, but must draw out of itself the wisdom it needs. That is why I say we must look at what we already have in the earliest and undistorted traditions. It needs no new doctrine because the printed word makes available today the accumulated wisdom of all ages and of all teachings, which, with the help of science, we can now sort out and interpret. By science, I do not mean cultural anthropology but the ontology provided by Quantum Physics

In short, we have no need for more "isms" and schisms, movement to left or right. These divisions are the cause of our splitting up and can hardly lead to its cure. We need a new, integrating direction, but we cannot discover an integrating and unitary theory common to science and religion without postulating the unity of all things.

In sum, then, our -thesis is: we inhabit a *universe*, and this implies *one universal set of principles* or of truth. To discover these principles or truth, we must enlist both religious and scientific inquiry, and, recognizing the variety of expressions of both, be prepared to seek out the unity in its true implication and significance.

While science as it is presently represented is fragmented into a number of disciplines, and these disciplines seem not necessarily to indicate a common truth, we must look for their connection. Likewise, religions, which for thousands of years have been manufacturing schisms often merely to justify self-determination, need that overall survey that can see them as the various expressions of one truth.

For just as the world with its oceans, continents, and nations presents many facets, yet is one body of matter, so does our culture with its religions and sciences present many facets, yet is one body of life. Our task, then is to seek out this unity.

Indeed, over the Past 35 years, following his invention of the Bell helicopter (the first commercial helicopter), Young (1976a; 1976b; 1980) has himself "re-discovered" and extensively developed just such a unifying paradigm, which he appropriately calls the *theory of evolutionary process*. This paradigm consists of numerous unique and/or remarkable features (some of which are outlined below) which appear to resolve, or at least clearly point the way toward resolving, the dilemma of "ultimates." As Stanislav Grof (1983) recently noted: "[Young's] theory of process is a serious candidate for a scientific metaparadigm of the future."

A. Teleology and Projective Reality

In addition to the commonly accepted objective modes of reality--(e.g. sense data/behavioral facts and observation/ theory), the theory of evolutionary process gives formal status to the projective modes of reality--(e.g. purpose/ intention and value/"emotivation"). It suggests that such common knee-jerk statements as "Nature chose to..." or "Science requires..." should be strictly analyzed for the hidden inclusion of purpose and value. As Alfred North Whitehead (1929) has facetiously pointed out: "Scientists, animated by the purpose of proving they are purposeless, constitute an interesting subject for study."

Process theory clearly acknowledges teleology, the process of direction toward a purposeful end or ultimate goal. Furthermore, this teleological process specifically recognizes the hierarchically advanced status of evolving living entities, especially self-conscious human beings and beyond. Rather than being simply a meaningless "accident", self-conscious man is considered to be part of an advanced stage of a universal process, which can be formally represented by a self-reflexive, toroidal model of development.

This view contrasts sharply with the reductionistic assumption and tendency to confer emphasis (and sometime crypto-worship) on non-living physical substance, both deterministic molecular micro-matter and astronomical macromatter. The theory of process appreciates the fact that the current formulation of the behavior, measurement, and description of matter (i.e. the "scientific method" and the "laws of nature") were discovered, continuously modified/developed, and applied by advanced living entities. Although it realizes the practical role of reductionism within the larger scope of teleological process, this paradigm never loses sight of the evolving "mental" and "spiritual" characteristics and goal directed nature of advanced living entities. ¹

B. Four Levels of Reality

Young's philosophical formalism consists of four ontologically distinct, necessary-and-sufficient realms or levels of reality, which are primarily and precisely defined by degrees of freedom and constraint. ² These distinct levels, which Young equates with several ancient "four-fold" divisions, can be further equated with the descending "involution" of spirit into matter and the ascending stages of man's "evolution" as they have been articulated throughout ancient philosophy and religion (Tables 1 and 2).

FOUR-FOLD REALITY

	MODERN		ANCIENT		
Young's Level	Mind/Body Category	Key Attributes	Primordial Religion Category	Pythagorean Dimensional Category	Elemental Category
I	Projective/ Subjective Mind Non-Physical	No Space or Time Potential --- Purposive Action Recognition Memory Activation --- Retrieval Intuition	Spirit	Point	Fire
II	Projective/ Subjective Body Physical	Time-Like Substance --- Value Emotion Memory Motivation --- Experience Feeling	Soul	Line	Water
III	Objective Mind Non-Physical	Space-Like Form --- Concept Ratiocination --- Memory Comparison Thinking	Mind	Plane	Air
IV	Objective Body Physical	Space-Time Formed Molecular Substance --- Matter Sensory Input ---Raw Data Motor Output --- Control Sensation	Body	Solid	Earth

Table 1

FOUR-FOLD REALITY II

	Neo-Pythago- rean	Plato's Cosmology (Timaeus)	Aristotle's Causes	"Body of Buddha"	Yogacara Buddhism	Hindu Vedanta and Tibetan Buddhist	
						Level	Sheath

I	God	Fire (a ²)	Final (Purpose)	Dharmakaya (Essence- Body)	Cittamatra (Mind Only)	Atman- Brahman (Absolute Being)	----
II	World- Soul	Water (a ² b -Time)	Material (Substance)	Sambhoga- Kaya (Enjoyment- Bliss-Reward Body)	Ataya- Vijnana (Habit Energy- Archetype- Storehouse Conscious- ness)	Karana- Sarira (Causal- Astral Body)	Ananda- Mayakosa (Desire-Bliss)
III	World- Reason	Air (ab ² - Space)	Formal (Form)	Nirmana- Kaya (Apparition- Growth Transformation Body)	Manas/ Mano- Vijnana (Mental Conscious- ness)	Suksma- Sarira (Subtle- Ethereic Body)	Vijnana- Mayakosa (Ratiocination) Mano- Mayakosa (Discrimination) Prana- Mayakosa (Vitality)
IV	Matter	Earth (b ³)	Efficient (Formed Substance)	Rupakaya (Physical Form Body)	Sensory Vijnanas (Physical Senses)	Sthula- Sarira (Gross Body)	Anna- Mayakosa (Physical)

Table 2

The first level is "point-like" or zero-dimensional in character, is "outside/beyond" space and time, and has complete (three degrees) freedom. Level I projects the "firelike" Ground of Being--the teleological impulse of potential/realization.

The second level is "linear" or one-dimensional in character, "subsists" in time, and has two degrees of freedom and one degree of constraint. Level II precipitates and persists as the "watery" realm of becoming--the continuous charged flow of substance/force.

The third level is "planar" or two-dimensional in character, "relates" in space, and has one degree of freedom and two degrees of constraint. Level III defines the "airy" matrix of relationship--the mind-like pattern of form/field.

The fourth level is "solid" or three-dimensional in character, "physically appears" in space and time or space-time and has complete (three degrees) constraint. Level IV incorporates the observable, "earth-like" world of concrete physical reality--the fixed combination of form and substance, or formed substance.

The progression from Level I to Level IV is ontologically complete, as evidenced by the "necessary and sufficient" developments: point ---- line ---- plane ---- solid; no space/no time ---- time ---- space ---- space/time; and, no form/no substance ---- substance ---- form ---- formed substance. (See "A Formalism for Philosophy" and "[Constraint and Freedom: An Ontology Based on the Study of Dimension](#)" in Young, 1980 for a formal development of these levels.)

In psychological terms, Level I includes such "pointlike" or unitive manifestations as unconscious impulse, intuitive insight, recognition, purposive action, and decision; Level II consists of such "line-like" or asymmetric/directional manifestations as inner experience-in-time, "stream-of-consciousness." memory, emotion, motivation, value, faith, and belief; Level III involves such "planar" manifestations as comparison-in-mental space, ratiocination, cognition, concept formation, and logic; and Level IV is represented by the "solid" manifestations of observable sensori-motor behavior.

The two-category debate of the "mind-body" problem (Barr, 1982) in contemporary philosophy and neuropsychology remains at a stalemate primarily because of terminological ambiguity. For example,

"mind" is commonly used as a crude catch-all term for all categories other than the grossly objective sensori-motor body (e.g., it indiscriminately refers to insight/decision and emotion /motivation, as well as ratiocination/conceptualization). Many "new-age" consciousness models or frameworks of reality potentially offer only a slight improvement in that they loosely employ three categories: e.g. spirit, mind, and body; spirit, soul, and body; or soul, mind, and body. However, like the "mind" of contemporary academic philosophers, the vacillating meaning of the "spirit/soul/mind" complex of new-age religious thinkers (especially spirit and soul) can be confusing.

Young's four category formalism not only offers an unambiguous solution to this current categorical and terminological impasse, but it is also consistent with the essence of the ancient "primordial tradition" or "perennial philosophy", as described by Huston Smith, the noted professor of philosophy and religion. Smith (1976) distinguishes four necessary levels of reality or selfhood: 1) spirit, 2) soul, 3) mind, and 4) body (see Table 1), and he clearly characterizes the separate categories of spirit and soul. While spirit is the unitive or point-like immanent and transcendent Ground of Being (the Atman of Hinduism), soul is the line-like, directional or animational principle. Smith succinctly summarizes soul:

. . . We cut through elaborations to center on a single point: the soul's essential dynamism. ['Self-motion is the very idea and essence of the soul.' Plato, Phaedrus, 245d. 'Anything that has a soul . . . move[s] itself.' Aristotle, Physics 256b, 34.] In the faint glimpses of itself that the soul affords us, it appears less as a thing than as a movement; to paraphrase Nietzsche, it resembles a bridge more than a destination. Restlessness is built into it as a metaphysical principle. And though its reachings often seem random, they have a direction. . .

Even the contemporary slang usage of the term "soul," in describing personality or music, captures the respective feeling or emotional drive of Level II. And it is obvious that the directional (past-present-future) flow of Level II experience-in-time is clearly different from the static, frame-like comparison-in-mental space of Level III.³ To reiterate, the comprehensive elegance of these four necessary-and-sufficient levels is just that: they are all distinctively different categories of reality and they are inclusive, that is, no other category of reality is necessary or even possible.

C. Seven Stages (and Substages) of Process

Most simply stated, the theory of evolutionary process consists of seven sequential, cumulative stages, each associated with a particular essential property or Power (Figure 1a.). Each of these seven stages of evolution, in turn, contains seven substages with the same sequential powers (developed over the same four levels) as the major stages.

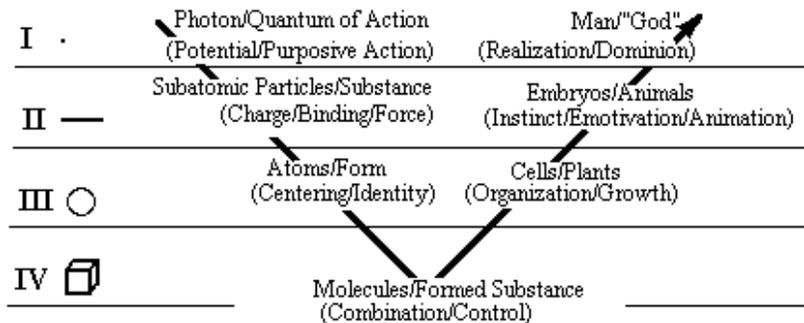


Figure 1a.

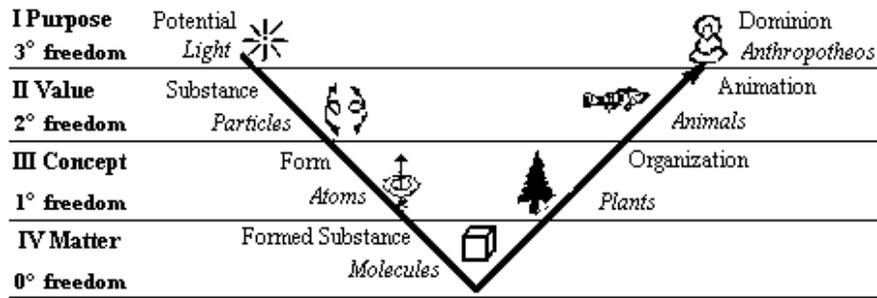


Figure 1b.

According to Young (1976a; 1980), the seven stages of process, which are found throughout ancient wisdom and esoteric literature, represent the seven topological distinctions possible with the torus, the most complex natural topological entity. The torus (Figure 2) is a self-referential "time-structure" with numerous unique properties (Young, 1976) such as:

- 1) composition from two rotating "perpendicular circularities";
- 2) the shape of a vortex, an entity which is consubstantial with its matrix--i.e., the only means by which self-sustained motion can exist in a given medium;
- 3) the same volume formula, $2\pi^2R^3$, as the Einstein-Eddington universe, the so-called hypersphere.
- 4) a universal distribution, occurring with photons and particles through the cellular centriole to the universal hypersphere;
- 5) the ability to reconcile the continuum of relativity and the discreteness of quantum theory;
- 6) the means to explain the ancient puzzle of "free will in a universe run by God" or how there can be self-determined entities in the continuum; and
- 7) seven topological distinctions--(i.e., a map drawn on the surface of a torus requires seven colors in order for all bordering countries to be distinguished by differences in color).

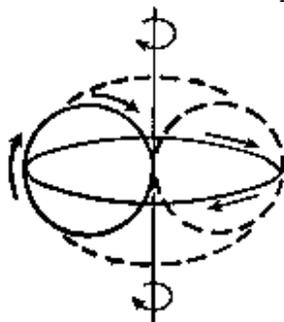




Figure 2a

Toroidal process may be schematically represented by a reflexive 7-staged arc manifesting on the previously described four levels. Through understanding and application of the arc of freedom and constraint, such universal myths as the "fall" of man from the "paradise" of freedom into deterministic matter and his eventual redemptive "virgin birth" (or self organizational/bootstrap "turn" back towards freedom) can be fully appreciated. The concomitant developments of; 1) the descent (and subsequent ascent) through the levels of freedom and constraint, and; 2) the sequential "forward" progression through the seven substages of anthropotheic (man's) process reinforce the validity of the myth of the "fall" and yet are compatible with the principle of the "pre/trans fallacy" (i.e. continuous evolutionary advancement), as discussed by Wilber (1960a; 1981).

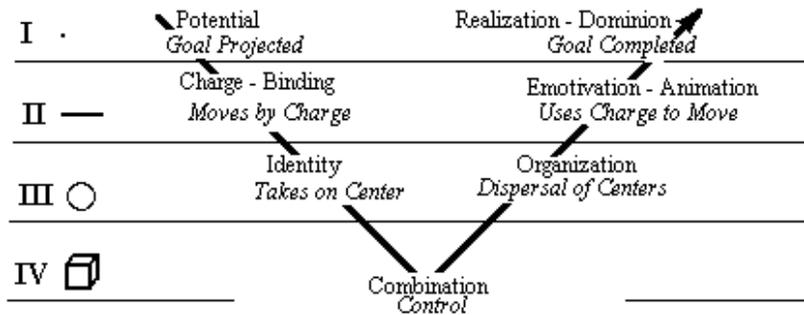


Figure 2b

The Old Testament Biblical myth of the Garden of Eden, though not necessarily the best example, suffices to mythically demonstrate the (sub)stages of the "fall" (involution) from freedom into determinism as well as to demonstrate the progression of the early (substages of process. A pure and innocent Anthropos, Adam, located in the paradisaical Garden of Eden with unlimited freedom, clearly represents 1st substage "anthropotheic potential". The creative extension of Eve from the rib of Adam, analogous to the linear charge or force of the "separated-but-attracted" subatomic proton and electron, symbolizes the 2nd substage "binding/desire principle". The "Tree of Knowledge" of good and evil in the center of the Garden is analogous to the establishment in the atom of a nuclear center with a stable structure and represents the self-conscious knowledge and form of the 3rd substage "identity principle". Complete banishment from the Garden (of freedom) into the ordinary physical world of constraint and law (determinism) where trial-and-error learning and responsibility of self-initiated action takes place, with the accumulation and combination of facts, represents the physical solidity of the ordinary world of molecular combinations and obviously symbolizes the 4th substage "combination/control principle". Following this latter deterministic predicament, the New Testament introduces the "virgin birth" of the self-organizational anthropotheos (Christ) and the ascending substages leading to enlightenment (or anthropotheic realization).

In *The Reflexive Universe*, Young (1976a) outlines several well-known cosmological myths which collectively portray the seven stages (and substages) of process. This collection is certainly not exhaustive, as numerous other worldwide myths (Eliade 1978; 1982) can also be shown to characterize the same stages of process. These ancient myths apparently globally precipitated from the watery, charged, archetypal 2nd substage of man's development (the so-called "collective unconscious") down to the 3rd substage. At the 3rd substage, the "identity" of self-conscious man (and logic/history) began, and these myths could be recorded. The detailed study of comparative mythology, perceived through

the lens of process theory, promises to further clarify both man's past and future evolution and the evolution and development of the other stages and substages of process.

D. Integration and Prediction by Process Theory

The theory of evolutionary process is designed to be comprehensive and, accordingly, to incorporate not only the fundamental principles of ancient and modern philosophy, psychology, religion, mythology, and esoteric systems, but also the entire range of contemporary science. The latter includes quantum physics, chemistry, molecular biology, cell biology, developmental biology, neurophysiology, psychopharmacology, developmental psychology, cognitive psychology, and transpersonal psychology.

Because the repeating seven stages and substages of universal process exhibit the same sequential pattern of development, learning the specific details of any particular stage or substage allows one to extrapolate these mechanisms to the other stages and substages and vice-versa. This continuous updating of the intricacies of process leads to remarkable integration and prediction. My own work with bioprocess, particularly bio-organization and neuropsychology (Barr 1983; 1982), has benefited enormously from the application of Young's process model, and I am convinced that the cross-disciplinary integration and theoretical predictions of this paradigm has advanced us to the threshold of several major scientific breakthroughs. Further integrative and predictive applications in all fields of research-, should clearly establish the astonishing efficacy of this approach. As John S. Saloma (1980) has noted:

The Reflexive Universe is written largely as an account of Young's discoveries as he applied the insights and formal analysis of process theory to the several kingdoms of nature. In this sense alone, the book is a remarkable document in the history of science-- as the personal account of a scientific visionary seeing the world in a new way for the first time..... To the extent that he has succeeded in identifying valid universal first principles and correlating them with modern science (as with the basic entities of physics), the theory of process constitutes an unprecedented system for 1) organizing all of the data of science, and 2) generating first-order hypotheses for scientific research. Without underestimating the hard intellectual work that remains, with the framework defined, the rest of the game is like "filling in the blanks.

In short, meticulous application of process theory should hasten progress toward the solution of such long-standing mysteries as:

- 1) the ultimate nature and function of the non-local "quantum of action" and its interactions with atomic particles;
- 2) the evolutionary sequence, characteristics and roles of the various molecules and molecular bonds;
- 3) the origin of life and the exquisite subcellular/organelle organization of the life-sustaining cell;
- 4) the varied and potent functions of the diverse plants and plant alkaloids;
- 5) the structural process which correlates ontogeny (embryological development) and phylogeny (the sequential development of the distinct functional animal types);
- 6) the "mind-body" problem and numerous related psychophysiological enigmas (such as schizophrenia, the mechanisms of psychedelic drugs, psychoneuroimmunology, tissue repair and regeneration, etc.); and
- 7) the nature of the past and future evolution of man. The application of process theory to scientific inquiry, once accepted, could lead to the following scenario: 1) university departments of theoretical biology and medicine in the life sciences (similar to theoretical physics in the physical sciences, 2) departments of integrative science (combining the physical and life sciences, both empirical and theoretical): and subsequently 3) exceptionally creative departments of evolutionary process or

consciousness studies (combining science and religion, experiment and experience, observation and insight). Only such a unified approach can lead to ultimate answers.

E. Action and Rotation as Ultimates

Finally, in tackling the domain of "ultimates," Young's process model features the ontological priority of "light"-the photon or "quantum of action" and its equivalence with rotation. Science relies on the so-called measure formulae (where M = mass, L = length/position, and T time) to describe the universe. The measure formula for "action" is ML^2/T , which is the same as that for angular momentum or "rotation." (Action -- i.e., random/'purposive, unconscious,' conscious impulse, insight or decision -- is instantaneous, point-like, and "projective particular" and is not to be confused with the "objective particular" behavior which it subsequently activates. (See Table 1.)

Advances in quantum physics, primarily derived from studies of the Einstein-Podolsky-Rosen (EPR) effect and Bell's Theorem (Stapp, 1983; Rohrlich, 1983; Davies, 1983), have recently culminated in a momentous series of experiments by a group of French researchers led by Alain Aspect (1982) which have clearly established that the quantum of action has "non-local" properties. That is, light is in some sense "beyond/outside" space and time. [The "speed of light" is an absolute or invariant--i.e., unlike all other velocities, it is constant and can have no other value--and, as the theory of relativity suggests, it creates a boundary between the photonic quantum of action and all particulate matter.] The omnipresent, cosmic egg-like "quantum of action" (ML^2/T , Planck's constant): 1) is itself counted (as are impulses, insights, and decisions, i.e., actions) and not measured. [As Young points out, you cannot lean out a window 1.42 times. Actions and quanta come in wholes without the fractions found in the measure components]; 2) contains the measure components; and 3) is the "window" of uncertainty/indeterminacy (free will), as noted by Heisenberg, which instantaneously breaks up (when observed or measured) into such measurable entities as energy and time, momentum and position, etc. In fact, through a process called "pair creation", the non-local, timeless, chargeless, massless photonic quantum of action literally creates time-bound, charge- and mass-containing particles (substance), such as the electron and positron or the proton and anti-proton. In other words, action appears to be ontologically prior to mass, charge, space, time, particles, forces, or fields.⁴

Distinguished physicists such as John A. Wheeler and David Bohm have recently joined Young in emphasizing the priority of the "elementary quantum phenomenon" or "light." In a recent Nobel conference and book, *Mind in Nature*, Wheeler (1982) reflects:

How did the universe come into being? Is that some strange, far-off process beyond hope of analysis? Or is the mechanism that comes into play one which all the time shows itself? Of all the signs which testify to "quantum phenomenon" (the quantum of action) as being the elementary act and building block of existence, none is more striking than its utter absence of internal structure and its untouchability. For a process of creation that can and does operate anywhere, that is more basic than particles or fields or spacetime geometry themselves, a process that reveals and yet hides itself, what could one have dreamed up out of pure imagination more magic and fitting than this?

Bohm (1983) points out that light "determines itself to make particles...." and that matter "is condensed or frozen light." Furthermore, he emphasizes that light is primary and time is derived from it and that, in itself, light has no time, no space, and no speed. He stresses that light (in its full sense) is one continuous, unbroken, undivided whole " . . . especially if you consider the quantum theory which says that the action in it is undivided as well." To bring home the ultimate nature of light, Bohm clearly points out that: "Light is what enfolds all the universe. . . it's the potential for everything . . . the fundamental activity in which existence has its ground. . ."

It is well known that every organic interaction--that is, every change of orbit of every electron of every atom of every molecule of every cell of every tissue of every organism--is ultimately due to the activational exchange of photons. Young's predictive theory and the ultimate significance of light led to my own research (Barr, 1983; 1982) regarding the light-absorbing black molecule (neuro)melanin.⁵ This unique phase-timing molecule--(and/or its closely related pigment polymer allies, such as

melanoidin and the isopentenoids)--is an excellent candidate for the primary turning point of evolutionary process. (See Figure 1.) That is, via the appropriate trigger-like spark of light/action (the original "virgin birth"), the melanin/melanoidin-building blocks (the 4th substage of the 4th stage) may have autopolymerized or self-organized into this remarkable light-absorbing polymer (the 5th substage of the 4th stage). Light (action) could then develop and utilize this autopoietic, phase-timing molecular vehicle for its evolutionary ascent--from the organization of DNA (Barr, 1983a; 1983b) and "life" to the organization of self-conscious mentation (Barr, 1982) and beyond. Of particular relevance to this light-directed ascent toward anthropotheic enlightenment is the ancient gnostic myth of an original being of light, recounted by Marie-Louise von Franz (1975):

Highly dramatic accounts are given by various Gnostics of the journey taken by the "Light-Man" or by the personified principle of light, the Anthropos, who is identical with the supreme godhead. At first he travels in a spiritual beyond but then, persuaded by evil star-powers, he falls or flows down into matter and is finally broken up into thousands of sparks of light or is scattered throughout matter as a "crucified world-soul," there to await redemption. His liberation is effected through the efforts of a Redeemer sent by God, or it may be the task of the single individual to free the pneumatic original being within himself and to return with him to the kingdom of light. The gnostic Anthropos myth lived on, underground, in the alchemical tradition and in Hermetic philosophy, down to the beginning of the contemporary period.

Throughout the history of religion and mysticism, light has been described as the ultimate mystical phenomenon (or noumenon). The spectrum of ancient religions--

- 1) Hinduism--Vedanta, Sankya/Yoga;
- 2) Buddhism--Tibetan, Pure Land, etc.;
- 3) Persian religions--Mithraism, Zoroastrianism, Islamic Sufism;
- 4) Neo-Taoism--(c.f. "The Secret of the Golden Flower")
- 5) Gnosticism, etc.; --have at one time or another unquestionably equated Light and God, especially in their earliest texts. (Eliade, 1965; 1978; 1982; Corbin, 1978; Jonas, 1963). Furthermore, contemporary near-death experiences (NDE's) center on ineffable light, as do ancient mystical transit texts such as the *Tibetan Book of the Dead*. Illumination or "enlightenment" is literally the name of the game.

Recall, however, that action and rotation have the same measure formula and that the torus itself consists of two perpendicular "circularities." Like action(s), angular momentum/rotation/rhythmic cycles are truly universal--from photons, particles, atoms, and molecules (including the resonating/rotating rings of melanin) to the rotating cellular centrioles, the direct current loops of cells and tissues, the rhythmic functional circuits of the neuroendocrine system, the ultradian/circadian/lunar/solar rhythms, and the rotation of solar systems, galaxies and the universe itself. As integrative religious scholars such as Mircea Eliade (1954; 1965; 1978; 1982) continue to point out, the comparative study of ancient religions and myths, throughout the world convincingly indicates that ultimate reality is a *coincidentia oppositorum* and is cyclic in nature.⁶ In *Hamlet's Mill* Giorgio de Santillana and Hertha von Deschend (1969) note that the most ancient and universal myths appear to have rotational motifs and astronomical/astrological origins. Ernest McClain (1976; 1982) believes that "ancient wisdom" (including the gamut of pre-literate oral traditions) is based on a numerical, rotating "tonal zodiac" (of 360 and 720 degrees). In short, several lines of inquiry suggest that action/rotation may be the key-to unraveling the dilemma of "ultimates."

In *The Geometry of Meaning*, Young (1976b) outlines what promises to be one of his greatest contributions to the study of consciousness: a "rosetta stone" of rotation delineating the "meaning" of the phases of rotation--(which includes the *coincidentia oppositorium*, though not explicitly stated as such)--both in terms of the contemporary measure formulae of physics and in terms of the ancient phase-timing system of astrology. Furthermore, his "cycle of action" and "learning cycle" (Young, 1976a; 1976b; 1980; forthcoming; Saloma, 1980) are not only consistent with the latest findings in

neuropsychology regarding the etiology and mechanisms of "attention" and conscious and unconscious action and reaction (Barr, 1982) but may very well clarify phase-timing in general. In a forthcoming book, Young discusses the problem of how photonic rotation can occur "prior" to space and time, suggesting that such rotation occurs in "meaning space," i.e., the rotation itself creates space and time. He also presents some of his potential breakthroughs in astrology, a subject that he has studied in depth for many years and has personally verified with amazing accuracy. His developmental extensions in astrological phase-timing beyond the foundations of "classical astrology" may perhaps-prove to be comparable to the advancement of twentieth century physics beyond classical Newtonian physics..⁷

Conclusion

Young's theory of evolutionary process successfully fulfills all the criteria for a unifying paradigm in that it satisfactorily unites:

- 1) the projective and objective realms of reality;
- 2) "mind" and "body";
- 3) freedom/free will and constraint/determinism;
- 4) teleology and reductionism;
- 5) God and Nature;
- 6) religion and science;
- 7) ancient wisdom and contemporary knowledge.

In addition, it proposes "Light" (action/rotation) as the immanent and transcendent "First Cause" and/or "Ground of Being," which purposively constrains, develops, and ultimately re-discovers or realizes Itself (and Its infinite manifestations) via a reflexive toroidal process composed of seven stages (and substages) evolving over four levels of freedom and constraint.

This theory is currently the only paradigm which thoroughly encompasses all realms of reality and is equally "at home" with the intricacies of both science and religion. It illustrates the unifying purpose and structure, the function and form of the ancient myths, the ancient religions, and the ancient esoteric systems (especially astrology). It also incorporates the effective core of solidly substantiated science as well as such avant-garde scientific theories as: 1) non-linear dynamics, "dissipative structures," and self-organizational systems (Prigogine, 1980; Jantsch, 1980; Lawrence and Adey, 1982; Mandell, 1982); 2) "morphogenetic fields" (Sheldrake, 1981); 3) holographic memory (Pribram, 1971); etc.

Unfortunately, only a relatively small amount of Young's extraordinary consciousness research has been published, and only a small amount of that which has been published is outlined here. Furthermore, even the most fundamental principles of the theory of evolutionary process cannot be satisfactorily summarized in such a cursory review as this. For example, the inner dynamics of toroidal process, which transpire through specific interlinking "triads" (the seven Veblen-Young "committees" of projective geometry) are not covered here. Moreover, the comprehensive nature of this paradigm demands a dedicated cross-disciplinary effort on behalf of each consciousness researcher/explorer in order to be fully appreciated. One must, as it were, "put it on and wear it" until it feels comfortable.

In summary, I fully agree with Grof (1983) that Young's process theory is a serious candidate for the metaparadigm of the future. It is especially valuable to the student of consciousness research who has been seeking in vain for a comprehensive approach that does justice both to science and to human experience. I enthusiastically encourage the open discussion, criticism, expansion, and application of this remarkably integrative theory.

Notes

¹ Francis Hitching (1982) has noted, as have many others, that Darwinian evolutionists tend to surreptitiously employ the term "natural selection" as a reductionistic euphemism for teleological selection:

'Natural selection,' ever since Darwin put the words, at his publisher's request, in the subtitle of *The Origin of Species*, has become not just biology's unifying principle, but its mantra: a phrase embodying a kind of spiritual power. "Darwin himself endowed it with an almost metaphysical quality: 'Natural selection is daily and hourly scrutinizing every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working at the improvement of each organic being.' Ernst Mayr compared it to a sculptor, Gavin de Beer called it a master of ceremonies, George Simpson thought it like a poet or builder, Theodosius Dobzhansky said it was similar to la human activity such as performing or composing music'.....

Nevertheless, most biologists officially promote a strictly purposeless reductionism and tenaciously persist (at least publicly) in ignoring and/or impugning the obvious teleological purpose and value projected by and through "Nature." The new-age historian William Irwin Thompson (1981) demonstrates the sometimes vacuous employment of reductionism by shooting holes in one of the latest trends in reductionistic thinking, sociobiology:

As a form of reductionistic thinking, sociobiology seems to be a new landslide of the detritus of nineteenth century materialism. First, it reduces a psychological or a cultural complex to a gene, and then it conceptualizes a gene as a hunk of matter rather than a crystal of sacred geometry and frozen music. Wilson (1975) speaks of the "upward-mobile gene" and the "homosexual gene"; we might as well speak of the car-stealing gene and the vandalism gene and arrest such criminals, through amniocentesis, in the womb. To say that a teenager steals a car because he has inherited a car-stealing gene is to fashion oneself in the sense of Moliere's doctor, who sagely explained that his drug could induce sleep because it possessed a certain dormagenic property.

² The rather involved discussion of the degrees of freedom and constraint is beyond the scope of this article, and the reader is accordingly referred to Young (1976a; 1976b; 1980; forthcoming) and Saloma (1980).

³ In his books, Young emphasizes that Level I (e.g. insight, decision) is projective "particular" and Level IV (e.g. physical object, observable behavior) is objective "particular"--the basis of all scientific research. On the other hand, Level II (e.g. value, belief) is projective "general", while Level III (e.g. concept, theory) is objective "general". The generality of the "in-between" levels, Levels II and III--with their mixture of freedom and constraint, their interplay of time and space, and their uroboric linear-planar dynamics--may lead to confusion if this categorical formalism is not strictly observed. For example, Level II "emotivational"/value/belief is sometimes mistaken for Level III concept/description/theory, primarily because of the continuous "shift" from one level to the other and back again. Likewise, the directional flow of Level II memory experience is categorically different from the static frame of Level III memory comparison or conceptualization, though each instantaneous Level III memory and/or sense data comparison (in the "mind's eye" or "mental space") immediately changes category as it flows into the temporal, experiential memory realm of Level II, with its associated feelings. (See Table 1.) In summary, Level II consists of time-like, Projective, tangible experience (the matrix of feelings and participation) with no definition possible, while Level III consists of spacelike, objective, intangible intellect (the matrix of definition and measure) with no participation possible. These points are explained in depth elsewhere (Young, 1980; Saloma, 1980; Barr, 1982).

⁴ Young believes that we should rejoice in the discovery by quantum physicists that indeterminacy (or the lack of certainty or constraint) is characteristic of subatomic particles and is complete with the photon, because this absence of constraint can be positively associated with freedom/free will.

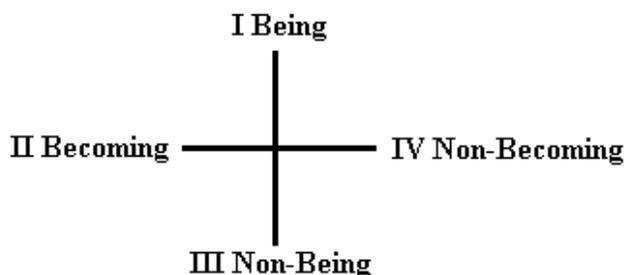
⁵ M.S. Blois (1965), a Stanford biophysicist, previously recognized the organizing potential of melanin and suggested that it was the "first polymer", preceding and possibly directing the formation of proteins

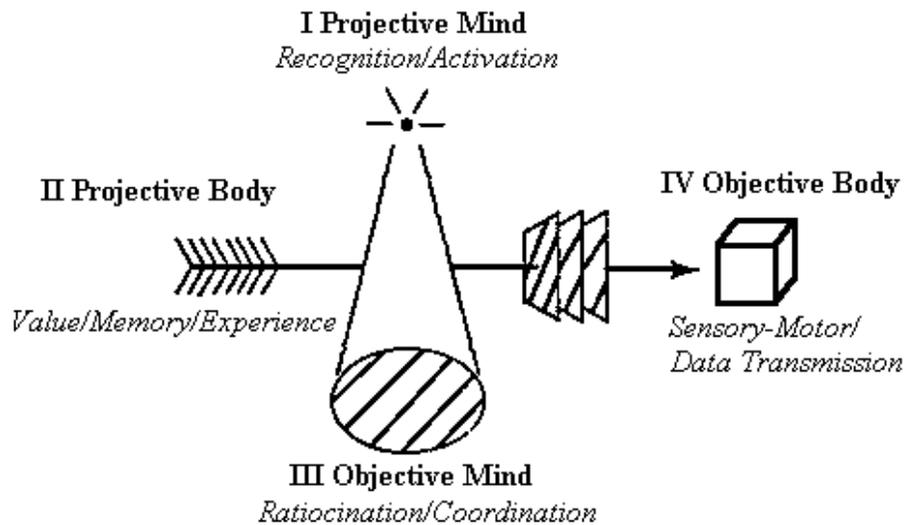
and nucleic acids. John Oro, current editor of the Journal of Molecular Evolution, has proposed that the closely related pre-biotic polymer, melanoidin, because of its special properties and "directing ability", may have acted as an organizing matrix for the specific selection of the ribose sugars and nitrogenous bases which constitute the nucleic acids DNA and RNA (Nissenbaum, 1975).

(Neuro)melanin has numerous unique and/or remarkable established and proposed properties which are potentially designed for extremely subtle control by light (action). It is: 1) an incomparable "black box/absorber" of both light and sound; 2) an excellent photon-(exciton)-phonon transducer (i.e., able to convert electromagnetic energy to vibrational energy and vice-versa); 3) an amorphous semiconductor and potential room-temperature superconductor; 4) primarily composed of planes of resonating molecular rings contiguous with or adjacent to other key functional "trigger" molecules; 5) able to produce, maintain, scavenge, and regulate free radicals (unpaired electrons); 6) able to bind and release the full spectrum of metal ions (necessary for enzyme activation, membrane dynamics, etc.); 7) a potential regulator of the various covalent modifications, with the related potential capacity to trigger and amplify reversible enzyme cascades; 8) capable of autopoietic polymerization primarily from monoamine "neurotransmitter monomers" (such as dopamine, norepinephrine, and serotonin); 9) primarily concentrated in the nervous system at the site of origin of the monoaminergic nerve tracts; 10) able to bind the various psychoactive substances (such as neuroleptics, stimulants, tranquilizers, psychedelics, etc.); 11) the potential origin of the organizational direct (electrotonic) current involved in regulating cell surface receptors, embryogenesis, tissue regeneration, etc.; 12) potentially capable of regulating homeostatic functions such as autonomic nervous system coordination and immunoregulation; 13) potentially capable of meticulously coordinating neuroendocrine phase-timing (i.e., the strategic release of amine neurotransmitters and peptide hormones); 14) the potential regulator of the neuroglial syncytium, the neuroglial analog current, and consequently, the "mind's eye" (ratiocination); 15) a potential "holographic film" capable of capturing wave interference patterns and storing memories; 16) etc.

The activational phase-timing of the brainstem neuromelanin system, and its neuroglia and neuroendocrine extensions, appears to be intimately involved (as far as can be determined by current scientific observation) in: the initiation and maintenance of consciousness and "altered states" of consciousness including "transcendent" states (Mandell, 1980); the control of vital autonomic functions, including respiratory and cardiovascular control; the organization of electroencephalographic activity; sensorimotor and emotional-motivational integration; the regulation of sleeping, dreaming, and memory; and the regulation of physiological rhythms and immunoregulation (Barr, 1982; 1983a; 1983b).

⁶ An in-depth study of the precise nature of rotational cycles (and the opposite phases contained within each cycle) may resolve the ongoing religious controversy of "the" ultimate mystical state or "the" ultimate aim of religion (Murti, 1955; Kaufmann, 1976; Van Over, 1977; Smith, 1976; Wilber, 1980b; Young, 1976). Though this is an obvious over-simplification, it appears that the various major religions have tended to focus on different specific cyclic phases. For example, Vedantic atman/Brahman-- (absolute Self or Being) is frequently contrasted with Buddhist anatman/Sunyata--(the Void or Non-Being), while the rapturous, insatiable, experiential "flow" or "God-intoxication" of Sufic longing-- (Becoming) may be compared with the traditional, "solid" constraint of Judaic law and the "fixed" anthropomorphism of Christian fundamentalism--(Non-Becoming).





⁷ Classical and modern astrology--including the natal chart, transits, and progressions, (and possibly pre- and post-natal charts), etc.--if sincerely and intensively studied (over a minimum of two years), can be demonstrated, in my opinion, to significantly challenge contemporary developments in psychoanalytic, humanistic, and transpersonal psychology in illuminating the dynamics of the human psyche. Astrology, as a map of process, encompasses both the objective and the projective aspects of reality and is therefore more inclusive than science (i.e. scientific method alone). Frequent statements and assumptions by scientists and "scholars" that astrology is a simplistic "pseudo-science" which has been proved to be false are without any foundation and serve instead to indicate the fervent reductionistic faith (and obvious ignorance) of these self-proclaimed "authorities." In commenting on the "Statement of 186 Leading Scientists" against astrology which appeared in the September/ October 1975 issue of the *Humanist*, the eminent philosopher of science, Paul Feyerabend (1978) incisively remarks:

Now what surprises the reader whose image of science has been formed by the customary eulogies which emphasize rationality, objectivity, impartiality, and so on is the religious tone of the document, the illiteracy of the "arguments," and the authoritarian manner in which the arguments are presented. The learned gentlemen have strong convictions, they use their authority to spread these convictions (why 186 signatures if one has arguments?), they know a few phrases which sound like arguments, but they certainly do not know what they are talking about. (This is quite literally true. When a representative of the BBC wanted to interview some of the Nobel Prize Winners [on the list] they declined with the remark that they had never studied astrology and had no idea of its details. Which did not prevent them from cursing it in public . . .)

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