

**FRONTIERS
OF
RESEARCH
*FOR***

HUMAN BIOLOGISTS

NEXT HUNDRED YEARS

DR. ASOK KUMAR MUKHOPADHYAY. MD.

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Dr. Asok Kumar Mukhopadhyay

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ON AUSPICIOUS BIRTH DAY OF
MA MONI

(Brahamacharini Samhita Devi)

Dedicated to

AKHANDAMANDALESWAR
SRI SRI SWAMI SWARUPANANDA PARAMAHANSA DEV

ACKNOWLEDGEMENT

The hypotheses are mine, but they would not have seen the light of day, if it had not been for:-

MY GURUDEV : Whose 'CONSCIOUSNESS' I am bestowed with.

MY PARENTS : Whose 'GENES' I inherit.

MY RELATIVES : Whose 'LOVE' and 'AFFECTION' I cherish.

MY TEACHERS : Whose 'GUIDANCE' I remember.

In bringing out the hypotheses, in form of a book, I owe my debts to:

MY COLLEAGUES : Whose 'CRITICISM' I am fond of.

MY FRIENDS : Whose 'FRIENDSHIP' I enjoy.

Dr. Baldev Singh (Emeritus Professor of Neurophysiology, AIIMS), Dr. Subimal Roy (Professor of Neuropathology, AIIMS) and Dr. Gomti Gopinath (Associate Professor of Neuroanatomy, AIIMS) have gone through the first article on 'consciousness' and indebted me.

DR. ASOK KUMAR MUKHOPADHYAY

1st January, 1985.

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PREFACE

The world has been taking a new turn. At this point, we all should take a firm grip of the situation with the advanced knowledge of biology and evolution, philosophy and science. Four main fronts have been opened up. The last topic is most exciting. I hope, these ideas will stimulate many to explore the unknown. Constant criticism, repeated experimentation and sustained endeavor by the truth seekers will solve the riddles and surely bear fruit. The consciousness has to be elevated. Love has to be preached and practiced. Distinction of love from sex is thought essential at this critical juncture. The challenging endeavor of controlling the limbic horse with the cortex has to be made successful. The expressions of desirable characters or qualities, hidden in the genes, are to be encouraged. The human biologists are alert, realizing the gravity of the situation. A lot of plans are awaiting a work out. The future is always brighter.

Dr. Asok Kumar Mukhopadhyay, MD.

1st January, 1985

States of Consciousness – A Holistic Hypothesis. Supracortical Consciousness - An Existing Reality.

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ABSTRACT

The human being, evolved after millions of years through millions of phases from primordial life, the protoplasm, may be visualised as an evolving consciousness which has passed through “Brainstem-consciousness”, “Limbic system-consciousness” to achieve a “Cortical-consciousness”. The human brain has been evolving to tap the inexhaustible ‘cosmic consciousness’ which in medical terminology could be called “Supracortical consciousness”.

INTRODUCTON

In unicellular organisms, consciousness is manifested as awareness of the surroundings. Adaptation to the changing environment combined with the aspiration to sense it more properly has been responsible for the evolution of the nervous system. The development of the cerebral cortex has occurred late in the course of evolution. The power of suppression of infra-cortical activities is an additional emergence. The direction of further evolution can be speculated.

THREE LEVELS OF CONSCIOUSNESS IN HUMAN BEINGS

The human cerebral cortex has four million modules; each is consisting of 2500 neurons. Activation of these modules in different spatiotemporal pattern is responsible for the infinite variety of consciousness in the human brain (1).

This activation occurs either through the brainstem or limbic system or it spontaneously originates in the cortex itself resulting in three basic forms of human consciousness, namely ‘brainstem-consciousness’, ‘limbic system-consciousness’ and ‘cortical-consciousness’.

A. Brainstem-Consciousness:

1. Manifestations.
 - a. Wakefulness-sleep
 - b. Awareness of the surroundings.
 - c. Orientation in relation to time, place and person.

3. Consciousness personified.
Those who are solely limbic system conscious, (if such a thing is at all possible!), are concerned about their own pleasure. They can do anything for their own sensual gratification. Homicide, suicide, extreme sadism is not impossible in their character. People call them selfish.

C. Cortical Consciousness:

1. Seat of origin.
The cerebral cortex with two hundred millions of fibers in the corpus callosum, innumerable associations amongst 10,000 billions of neurons in 4 millions of cortical modules, spread over an area of 2500 sq cm (1) with a huge synaptic density (about 11.05×10^8 synapses/cumm \pm 0.41 SEM, in the frontal lobe (8) is the seat of its origin.
2. Manifestations.
 - a. Self-consciousness (1). Recognition of one's own image in a mirror is characteristic of the human brain. A 'conscious' baby becomes a 'self-conscious' child in about 18 months (9).
 - b. Unity of consciousness (1). Consciousness is different in the dominating and non-dominating hemispheres. Unity is achieved by 200 million fibers of the corpus callosum and other smaller commissures (10).
 - c. Creative imagination and activities (1).
3. Consciousness personified.
They are geniuses or leaders in various fields of science and religion, politic or sociology, biology or economics. The leading ideas in the various fields of human endeavor constitute human values.
4. Difference between 'cortical' and 'limbic system-consciousness'.
 - a. Origin. 'Limbic system-consciousness' originates in exteroceptors or interoceptors while 'cortical consciousness' originates in the cortex itself.
 - b. A pure 'cortical-consciousness' is without any motive. Art is for art's sake. It does not matter whether it satisfies the creator or anybody else.

INTERRELATIONSHIP AMONGST THE THREE

These different types of consciousness are not watertight compartments. There are numerous association, projection and commissural connections amongst them at various levels. Varying grades of combination are manifested in any particular individual. Let us analyze some of the facets of this complex interrelationship.

1. By a dominating 'limbic system-consciousness', 'brain stem-consciousness can be overcome. The self-stimulatory experiment with electrode implanted in the 'pleasure centre' of limbic system has shown that animal could be made totally immersed in that pleasure-consciousness, being completely unaware of the

- surroundings and going sleepless (brainstem-consciousness) for days without having suffering form physical exhaustion of sleeplessness.
2. The 'cortical-consciousness' abounding in human values can overcome the limbic system completely, Examples are seen amongst soldiers on the battle-front fighting for the motherland, spending sleepless night without even the bare requirements of food and drink. The same is true for those who sacrifice their whole life for an 'ideal' or an 'ism'.
 3. Those who do not pay heed to the 'limbic system-consciousness' are motiveless people. Unless they are busy in manifesting their 'cortical-consciousness', they are as useless as rock. In the absence of both 'cortical-consciousness' and 'limbic system-consciousness', a person become living luggage for his guardians.
 4. A few people learn the technique of manipulation of the limbic system through their 'will' (cortical activities) and become expert at changing the heart rate or respiration, overcoming thirst and hunger, and can remain underground in sealed compartment. Ample examples are seen amongst Indian Hath-Yogis.
 5. Even in talented people, who work mostly at the level of cortical-consciousness, with profound creative imagination and activities, lashes of compulsive sensual desire are not very uncommon particularly where the limbic system is let free rein. They enjoy various types of food and drink, seek sexual gratification from innumerable women (or men) and sometimes go beyond all established norms.
 6. Out of the millions of geniuses, only a few have been able to combine profound activities of the 'cortical-consciousness' and a reasonable restraint over the limbic system. They are ideal. From history, three names are worth-mentioning, Karl Marx, Charles Darwin and Louis Pasteur.

A FOURTH DIMENSION - 'SUPRACORTICAL CONSCIOUSNESS'

Finally attention shall be drawn to the existence of another level of consciousness which is called 'cosmic consciousness' by the physicists and 'spiritual consciousness' by all religious authorities and scriptures. For a medical scientist, it can be named 'SUPRACORTICAL CONSCIOUSNESS'.

1. Evolution.
The day, an animal started feeling for its fellow, identified its own 'self' in other, the dawn of 'supracortical-consciousness' had arrived. In human being, this has evolved to formulate human values. Stretched further, human being does not want to be singularized as one individual. In stead, he wants to feel and practice oneness with others in every sphere.

2. **Manifestations**
When 'supracortical-consciousness' start acting upon cerebral cortex, the manifestation is pure LOVE, the one and only visible sign of which is sacrifice for the beloved. Love then exudes in all cortical activities, may it be literature or science, art or commerce, logic or theosophy, social work or politics.

3. **Characteristic.**
The characteristic of 'supracortical consciousness' is its inexhaustibility. When any of the 'cortical consciousnesses' becomes visibly inexhaustible e.g. a person is writing volumes after volumes, unveiling mysteries after mysteries, or one witnesses inexhaustible love, inexhaustible sacrifice, inexhaustible altruism, then one looks 'UP' for an inexhaustible source. Where is all this coming from?

4. **Difference from 'cortical' consciousness.**
 - a. 'Supracortical consciousness' can manifest only through 'cortical consciousness'.
 - b. A pure 'cortical consciousness' is without motive. Is cosmic consciousness similarly motiveless? When love becomes inexhaustible, sacrifice becomes inexhaustible what is the motive behind it? The same basic question poses. Is evolution a mere chance or necessity or has it some purpose?

5. **Differential diagnosis.**
 - a. In motivation guided consciousness, the motive is only self-pleasure. The 'supracortical consciousness' is directed towards other's pleasure.
 - b. Thought - reading, telepathy, planchette are primitive attempts by the human cerebral cortex to tap 'ideas' outside it. These 'supracortical phenomena' should not be confused with 'supracortical consciousness' as proposed and characterized in this article. Basic neuronal mechanism involved in all these situations, may or may not be identical.

6. **Supracortical consciousness personified.**
 - a. Some people are constantly 'conscious' only to 'tap', 'sense', 'perceive' the 'supracortical consciousness'. They are in 'SAMADHI', the divine ecstasy. Have they been successful to establish a supracortical connection in cortico-limbic discharge to 'pleasure centre'!
 - b. A few persons tap this inexhaustible source and manifest it through 'cortical consciousnesses'. They are the preachers of love or ideals (e.g. Christ and Buddha).

7. **Is there any neurological basis to tap 'supracortical consciousness'?**

Cerebral cortical modules are mostly stimulated from below, the end organ receptors for senses or at best manifest their intrinsic rhythm. Could they be stimulated from 'above', the world outside the cranial vault? Various 'supracortical phenomena' indicate such probability. Does static electricity of the

hair prevent its tapping in the early stage of yoga? Is this why eastern monks keep their heads shaved? Or can 4 million keys in the cerebral cortex reflect the omnipresent 'supracortical consciousness', just like one million keys in the television screen pick up infinite number of picture waves around it? Could it ever be experienced through exteroceptors? The world outside the nervous system belongs to physicists. Biologist's domain is human body. Will physicist and biologists combine their efforts to discover the missing link?

CONCLUSION

Human being has evolved from a mass of protoplasm after millions of years. In the process, it has passed through many phases; in every phase there had been a phase specific consciousness. The whole history of biology is of an evolving consciousness, which has achieved 'cortical consciousness' in human being. Now this biological instrument is perfectly ready to tap the supracortical cosmic consciousness. A few have already shown its possibilities in the past. The future beckons to us.

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Physiology of Controlling Sex - Its Need and Ways

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ABSTRACT

Sexual values have changed with time. There is a need to control this strongest of the motivation guided consciousness to permit unhindered cortical activity and to allow the manifestation of the 'supracortical consciousness'. One does not want to remain a slave of sex, throughout life. Neither does one like to spend time, wrestling with it. A short course to gain control over it has been discussed.

INTRODUCTION

The cardinal sign of life is creation. This biological need is manifested as sex (sex-for preservation of the race). With the evolution of the limbic brain, sex has been admixed with a pleasure consciousness (sex - for sensual pleasure). Emergence of cerebral cortex has imposed a natural restraint on the selection of the reproductive partner or of a pleasurable mate (Restrained sex). The need, felt more acutely now, to transmit favorable genes to one's offspring has elevated the whole process to a more refined plane (sex - for vertical transmission of desirable quality or the 'genius-genes'). With the understanding of 'supracortical consciousness' the biology of sex is taking a new turn. At this point, therefore, to acquire control on the sexual urge is imperative to ensure our continued preeminence.

NEUROLOGICAL HIERARCHY OF SEX CENTRES

The following is a brief account of the neurological hierarchy, involved in sex drive.

A. Cortical

Paracentral lobules.

B Limbic system

1. Highest autonomic centre.
Preoptic hypothalamus.
2. Centres for pleasure consciousness.
Septal nuclei.
Lateral amygdaloid
Septal nuclei and two lateral amygdalii are at the apices of the 'NEUROLOGICAL PLEASURE TRIANGLE'
3. Neocortical projections
Cingulate gyrus.
Parahippocampal gyrus.

4. Distinguished nerve bundles.
Medial fore brain bundle.
Tract through substantia nigra.
5. Other centres.
Paraventricular hypothalamus.
Intralaminar nuclei of thalamus.
6. Memory.
Visual, auditory and olfactory association cortex, along with hippocampus.

C Spinal cord

1. Tracts.
 - a. Descending. Reticulospinal.
 - b. Ascending. Spinothalamic.
2. Centres.
 - a. Somatic. S2, S3, S4 segments
 - b. Sympathetic. Lower thoracic and upper lumbar segments.
 - c. Parasympathetic. Sacral segments.

D Peripheral nerves.

1. Internal pudendal nerves for external genitalia.
2. Other nerves supplying erogenic areas.

The maximum neurons, fibres, circuits and activities for sex are in the limbic system. Spinal cord and peripheral nerves are the conveyers. Function of the cerebral cortex in this context is ill defined. The adventure of winning 'the sex', by a number of trained neuro-biologists can unveil the real picture behind its mystery.

SEX IS A PHYSIOLOGICAL URGE. WHAT HARM IF IT IS LET FREE REIN?

Like thirst and hunger, sex is a basic physiological motivation. Unlike those, it is not vital for survival. It is the greatest sensual pleasure one can have. If it is let free rein, the temptation to indulge in it at any cost is high. Almost all motives and every endeavor of an average human brain have a hidden tinge of sex. Once sex, the strongest self-pleasure-motive, starts guiding all creative activities of cortex, one can imagine the disaster for the others around. This has been repeatedly witnessed during revolutions, in war and social calamity.

Disturbing three elements in it are:

1. It is mostly used for self pleasure.
2. It disturbs pure cortical activities.
3. It is the strongest obstacle for the manifestation of 'supracortical consciousness' through infrastructures of human body.

WHY IS IT ESSENTIAL TO GAIN A CONTROL OVER SEX?

Sex drive brings huge waves in the cortical modules. The ebbs and tides of sex disturb the calmness of the cortical ocean. If the cerebral cortical modules are left minimally disturbed from below-

1. Pure cortical activities can continue unperturbed. Leading ideas are then born.
2. Tapping of ideas from external cosmos is not interfered with.
3. Manifestation of 'supracortical consciousness' through infrastructure of nervous system becomes easier. The philosophy of 'universal brotherhood', 'love for all' can manifest in reality. Love becomes personified.

AIMS AND OBJECTIVES

One's aim can never be abolition of sex. One wants to surpass it, to ride on this wild horse and to use it when needed either for pleasure or for reproduction. Sexual pleasure constitutes a very small part of human life. On the contrary, the absence of pleasure makes life monotonous. Once, it is felt that one has been deprived of one's legitimate pleasure, revolt shakes up the whole psyche. Sudden renouncement of sex can bring disaster.

So, be slow. Use it judiciously, with proper person, in proper time and place. In human, at least, nature has ensured that the cortex has primacy over the desire of sex. Supervision of infracortical activities is a function of the cerebral cortex. Nature has not let sex free rein. Look at it in the correct perspective. What does nature want to make out of human being?

PSYCHOLOGICAL PREPARATION FOR CONTROL OF SEX

1. At the outset one must be absolutely clear about the reasons and arguments for gaining a control over sex. One can pursue only after one's aims and objectives are neatly defined. To have a command, is not going against physiology. It is to reset the physiological hemostat to a higher and finer plane.
2. One must be convinced about its probability of success with a human brain. Many leaders, genius, preachers have done it in the past. The cerebral cortex, physiologically, has been bestowed with the power to hold the rein of limbic horse. Leave no room for doubts or hedging in your success.
3. It is an adventure. It needs patience, tenacity, determination and foresight.

THE METHOD – A PRACTICAL APPROACH

The whole process is slow, gradual and progressive. Four phases are proposed. The control has to be achieved phase by phase.

A. Craniospinal Control:

The theory:

There is lot of 'sex-consciousness' in the human brain, inherited or acquired. Visual and auditory association cortex, the hippocampal memory circuits harbor a considerable quantity of it. The external world only stimulates these areas.

The method:

Cut of all connections from external sex world. Visual, auditory, olfactory, gustatory and mucocutaneous stimuli should be shut off. No external stimulus should be allowed to initiate a sex reflex. The nervous system is to be shield from external sex world.

B. Control of Limbic Brain:

The theory:

Once all external communications have been terminated, you will realise the vastness of internal sex world. Whole phylogeny of sex is hidden in the seed form. The sex worlds of different animal kingdoms will be revealed. Sex partner is not there. There is no provocation through vision, voice, sound or other objects. But strong lashes will continue to torment you. Alone, you have to cross the jungle of compulsive desire. Your only hope that you possess cerebral cortex, the most majestic part of the nervous system. The cortical neurons, their thick dendrites mats, innumerable spines and a huge synaptic density are all tremendously plastic. Birth of thousands of new neurons in adults canary birds has been demonstrated by Fernando Natterbohn (1). Why such a thing would be at all improbable in human brain! Why this plasticity can not be modulated, the way one wants! Have faith in your cerebral cortex. The cerebral cortex has been endowed with-

1. Power to VOLUNTEER
2. It can OBSERVE.
3. It also LEARNS, and finally
4. It COMMANDS.

The method:

1. Volunteer.
Never volunteer for any auto sexual activities. Take off the red carpet, you have woven for it in the past.
2. Observe.
Still it will come, with all vigours it has, with all might it possesses. Observe the roaring lion. Let it jump, bite and injure you. Never put recommendation in face of its mounting offence. Never utter a pleasing word for it. Never add your volition to encourage its erratic rhythm. Never admit it to you counsel. Know that it will stop. Know that it will retire. Know that it has its end.
3. Learn.

One learns a lot by watching. You learn its periodicity, the intrinsic rhythm, the extent of its erraticness. Now, you are one step higher. During its arrival, keep yourself busy, in 'cortical' and 'supracortical' endeavors. Lashes are felt more powerful than this preoccupation; don't accept the defeat under the immediate effect of the blow. With time, with patience, with perseverance, with devoted tenacity the enduring truth will triumph.

4. **Command**

When your consciousness is elevated to this level, the conquest of limbic brain is not far off. You have gained the confidence to hold the rein, by now. The rein is in the preoptic hypothalamus, the surface projection of which is near nasion. Concentrate your 'self consciousness', your total ego in the preoptic hypothalamus. Now, you will be able to govern it easily.

ACHIEVEMENTS

If you can concentrate your total consciousness in the preoptic hypothalamus correctly, you will be surprised to see the tranquility you have achieved. All autonomic discharges are under your control. Amidst all sorts of external provocations or internal turmoil, your external genitalia are quite. The heart beats a normal rhythm. The apneustic-pneumotaxic discharges are calm. The cortex is unperturbed. You have stemmed the adverse tides. The world is wonderful!

With repeated and prolonged concentration of 'self-consciousness on the preoptic hypothalamus, brand new cortico-hypothalamic pathways will evolve. The right you are earning by this challenging endeavor, will pass to the next generation by mere inheritance, It will be utterly inconceivable to them of not possessing a command on sex.

C. Cortical Wiping Out:

Now you have to wipe out the internal cortical ocean of sex. Evacuate it to the lees. Never think of it. Never aspire for it.

Replace it with a consciousness for sacrifice for others. Percolate this altruistic thought up, through paraventricular hypothalamus, intralaminar nuclei of thalamus, cingulated gyres, to paracentral lobules of the cortex. Call for 'DIVINITY' now. When all obstacles are thrown away, 'Love' will fill in the vacuum.

D. Supracortical Transformation:

How long one can keep one's ego so high? How long will one hold the rein in preoptic hypothalamus with profound self-consciousness? Is there any easier way? If one rides on lion's back, one can not afford to dismount. What is the way to bring equilibrium?

This quest had found its answer from the possibility of ‘supracortical’ transformation of the whole psyche (2). From the inner warrior, who was ascending through innumerable obscurities in the lower brain centres, is now demanded a surrender, a submission, a self-opening – glad and strong, free and active, self-made and complete. Hand over the rein to ‘supracortical-consciousness’.

Surrender is the central secret of success. Surrender yourself to the immortal, eternal and infinite pleasure in the external cosmos. Stretch infinitely the apices of the neurological pleasure triangle (septal nuclei and the two amygdalii). Establish surpracortical connections in cortico-septal and cortico-amygdaloid discharges.

METHODOLOGICAL VARIATIONS

What has been said is not biblical. That all have to pass through the same way is not correct either. Different human beings are in different stages of evolution. So are their brains and ‘psyche’. One may find it easier to start from phase four and just overlook the earlier ones. For others, it may be felt necessary to go meticulously through every phase. A few may not even wish to get involved in a psychological warfare with sex. They want to face it as it comes in life. Others may reject the whole work up, thinking it a product of sex-obsessed mentality. A few may borrow light from this methodology to go out of sex-obsession. The approach will be different for different persons and in different phases of life. The scientist will always quest for the right way in evolution.

CONCLUSIONS

Life is short. There is definite place for the highest sensual pleasure in it. Reproduction is a moral responsibility of life. But one should not spend whole life in slavery of sex or in wrestling with it. It is not impossible to reset the physiological homeostat to a higher and finer level. The earlier one does it, the better.

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Genetic Basis of Love

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ABSTRACT

Love has not been defined, in biology. It is proposed to be cortical manifestation of 'supracortical consciousness' (1). The only visible sign of love is sacrifice for the beloved. Love also has a genetic basis. When genes need to be vertically transmitted, love is 'selfish'. Where no such desire is obvious, the love is really lovely. The complex interrelationship has been discussed.

THE HYPOTHESIS

Complimentary or reciprocal expression of the gene is the biological basis of love or hate between two individuals. The segment(s) of DNA, continuous or discontinuous, at a particular locus (loci) of a single or different chromosome(s), responsible for visible expression of a 'Quality' or a 'Character' may be defined as gene. If a gene, present in 'A' and not phenotypically expressed properly due to lack of internal stimuli or external thrust, happens to be manifested in 'B', in a dynamic equilibrium of environment, interaction begins between these two individuals. This force may be a compulsive attraction (LOVE) or a repulsion (HATE). One can not love music or flower, unless one possesses genes for it. In other words, if genes are there, in a stimulating environment, love will automatically manifest.

The genes exist in either of the two structural forms, active and inactive. Most of the genes are inactive unless they are turned on. Love does the miracle at molecular level. It 'turns on' the gene. The biochemical changes in love run parallel to the biochemical machinery of gene expression.

An affair of love is an expression of the desire of the genes to bloom. In hatred, one wants to keep that particular gene buried permanently. Indifferent relationships between two individuals are really so, when either they are lacking reciprocal expression of genes or in them, the genes are equally expressed. Study of the interpersonal relationship between syngenic twins will further clarify this aspect.

GENE BRAIN INTERRELATIONSHIP: TWO TYPE OF LOVE IN BIOLOGY

Genes and the nervous system have been playing an almost conjugate role in biology of evolution (2). The genes produce a nervous system to create an internal milieu and to seek an external environment for their survival and expression (3). The nervous system finds at the proper time, a proper person for vertical transmission of those genes. This is

the biological basis of attraction between a male and female. Love plays a crucial role in selecting the reproductive partner. One can donate one's genes (qualities) only to a person one loves and who, in turn, is attracted to those qualities (genes). In such a situation, for vertical transmission of genes, both the nervous system and the genetic machinery seem to be very selfish (2,3). There are situations when this vertical transmission is not wished or needed, as for example when one loves Tolstoy's philosophy or Karl Gauss' geometry, his genes find a faint identity with those of such historical figures. The dawn of phenotypical expression of these unmanifested genes is ushered. In a sustained and unsuitable love, the expression continues upto the brim. This is a kind of love, which is without any obvious selfishness.

LOVE WITHOUT SELFISHNESS

1. Regard and Love for Parents:

Half of the genes in any cell of the body have come from mother and the other half from father. In an interaction of love between a child and his parents, the quality genes expressed in parents, carry more probability of full expression in the next generation.

2. Regard and Love for the Teacher:

Once one chooses a subject to learn, he starts searching for a good teacher in whom the genes responsible for his expertise in subject are fully expressed. In other words, love automatically evolves for a good teacher, in an aspirant.

SELFISH LOVE

1. The Biological Basis of Choosing a Reproductive Partner:

People want to transmit his/her qualities to the offspring. This is the reflection of the desire of Nature to propagate the desirable genes. The biological basis of choosing a reproductive partner is two:

- (a) Presence of reciprocal and complementary expression of genes in each. One's genotype is expressed phenotypically in the other.
- (b) A soil-seed relationship i.e. acceptance of each by other, surrender of own self to the other against all odds. Renouncement of all other pleasures, keeps the partners glued together in all circumstances. Sacrifice is the sign of love. This sacrifice, however is not entirely altruistic.

Here, we are reminded of the proposal of Elen Terry to Bernard Shaw, to have a child out of their wedlock, with her beauty and Shaw's genius. Shaw feared the opposite. Terry was partly right because she loved Shaw's genius. Shaw was only partly wrong because he never had felt love for her. Her love, too, had not stood the test of survival.

2. Genetic Re-assortment in Prolonged Love Affair:

When two persons in love are separated and tossed in circumstances abounding in greed and lust or are threatened by stress, the genes responsible for attraction, pass through the test of love. Other genes are either temporarily ignored (repressed) or they are called to the rescue of those attractive genes.

In this re-assortment, unwanted ones are 'rejected', some are 'sublimated' and genes responsible for attraction are 'reinforced'. These three words are to be translated in language of genetics. Does the 'penetrance' of genes change in such situation? Or recessive character is modulated in either way? In acute psychological stress, mutation is not impossibility. After successful warfare, when peace is established the momentum for expression of the attracting genes in the next generation is high.

PROBABLE MECHANISMS

Recognition of a quality is a cortical phenomenon. Manifestation of a quality is a genetic event.

The Afferent Limbs:

How does the brain recognize qualities in other? This is not clearly and totally understood. It is a complex outcome of learning and behavior from the cortex. Whether genetic codes of cortical neurons play any role is a matter of speculation. Genetics of neuron has yet to be explored. Is 'Supracortical consciousness' also involved in this afferent input? One can only guess!

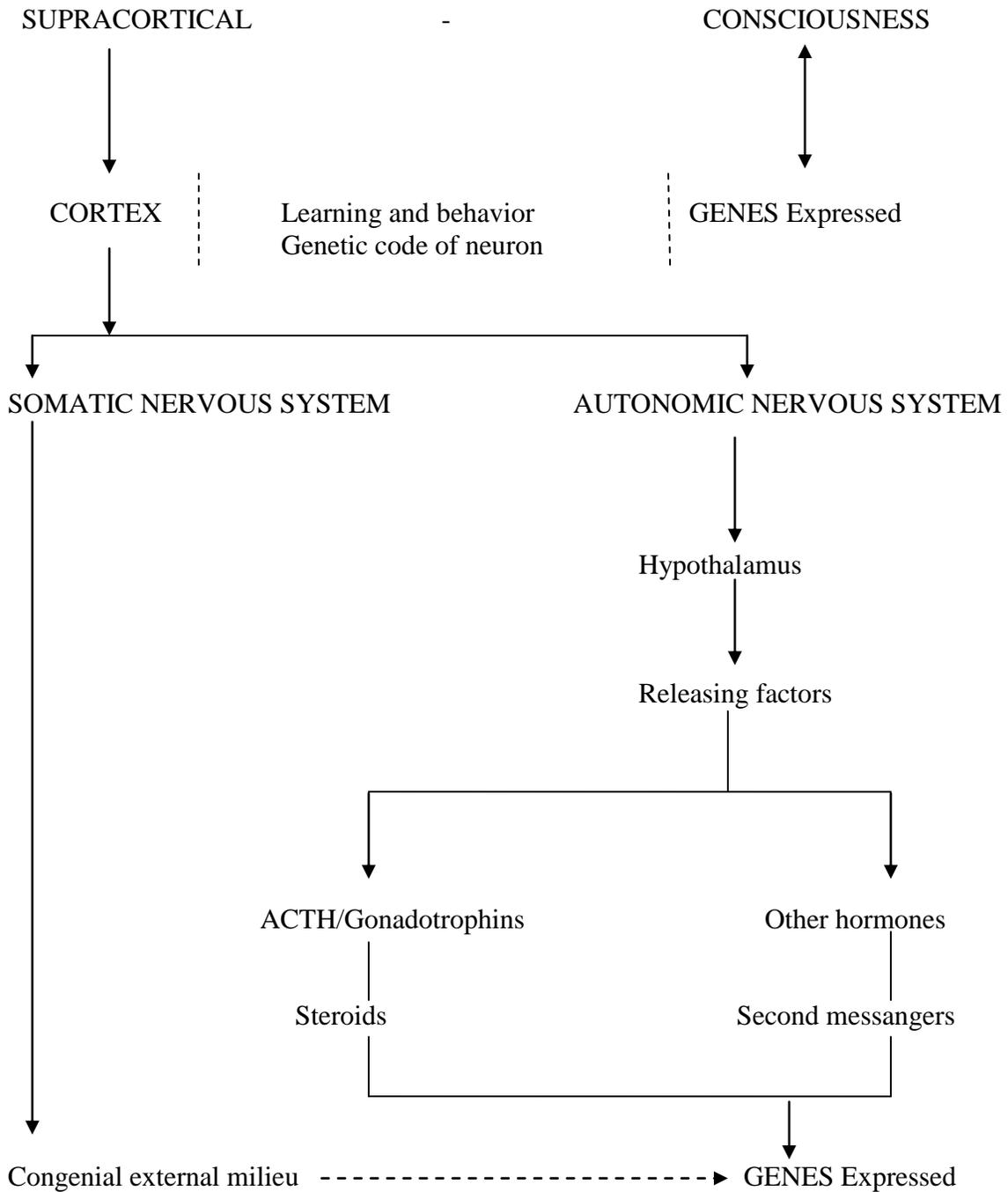
The Efferent Axes:

How a quality does get expressed after recognition? Once, the brain recognizes and cherishes a lovable quality, the consciousness is directed accordingly with appropriate modulation of the somatic and autonomic limbs of the nervous system. Internal milieu is made conducive, through the cortico-hypothalamo-pituitary-adrenal cortex/gonad-steroid hormones-gene, pathway. External environment is made congenial by the activities of somatic nervous system. Constant repercussion of the same consciousness results in storage of RNA-memory granules in the neurons, which eventually leads to successful phenotypic expression of the genes in the somatic cells.

THE CRUX OF THE PROBLEM

Love is sustained attraction for a desirable quality, manifested as 'sacrifice' to achieve oneness with the beloved. The biochemistry of the whole body is geared up to a new homeostatic level during prolonged consciousness of love. How this altered biochemical machinery comes forward in gene expression, is to be investigated. The chemicals (4, 5) known to be involved in (a) activation of genes from inactive state (steroids, inositoltriphosphate, diacyl glycerol, for example), (b) initiation of transcription (cyclic

AMP-CAP-DNA mechanism and promoter-RNA polymerase interaction) of Hn RNA, (c) processing of mRNA (capping, polyadenylation, splicing of introns and extra nuclear transport) and (d) regulation of translation of mRNA (blocking of initiation of translation by some protein factors) are to be critically evaluated in people in love. This links between biochemistry of love and mechanism of gene expression are to be discovered.



CONCLUSIONS

Gene is the primitive code of life. Love is a cortical manifestation of ‘Supracortical consciousness’. Genetic basis of love has been discussed. That love helps in phenotypic expression of genes has been proposed. Role of “Supracortical consciousness” in the gene-brain-interrelationship, in this stage, is a matter of speculation. The solution of the problem is to find out a correlation between biochemistry of gene expression with biochemical changes in prolonged love-consciousness.

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How to Produce A Better Child than you Think you can

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ABSTRACT

Reproduction is visualised as one of the essential responsibilities of life. To reproduce means to bring out exactly what the parents are, if not better! Unification of consciousness of the reproductive partners is essential for an unsplit 'psyche' in the newborn. To get the maximum out of a given quota of genes is an art. This art and the mechanism of unification of consciousness ought to be learnt. Love is life. Love also helps in the phenotypic expression of a quality or a character. Love has to be infused from the time of the inception of the zygote. Life begins there.

INTRODUCTION

Up till now, most scientific thought and effort have been directed towards the betterment of the physical health of the newborn. Marriages, genetic and disease-counselling are examples of such endeavour. Little attention has been paid towards the 'psyche' of the zygote and to enhance the probability of expression of desirable genes in it. The role of love in gene expression and re-assortment has been discussed in the previous paper (1). Love is also visualised as 'life' by leading spiritualists. This complex interrelationship of love, genes and consciousness has to be made simpler for future exploration.

THE ESSENTIAL THREE

When all medical counseling's, available at present, are done and the reproductive partners are selected out, then THE ESSENTIAL THREE are to be looked into:

1. Unification of 'Consciousness':

The 'psyche' of the total being is reflected in the 'psyche' of every individual cell and the gametes are no exception to this. Union of two gametes with almost identical 'consciousness' will bring out a nearly unified 'consciousness' in the zygote and will abolish the innumerable hazards of the 'split psyche'. The physical being is nothing but what a person is in his/her consciousness-ocean. A prolonged consciousness towards a particular direction transforms the body as a whole and the cell as a unit towards that direction. Spermatozoa take about ten weeks for maturation and one ovum ripens every month. Unification of consciousness of the husband and wife throughout this period and continuation of the same consciousness during fertilization and the period of gestation is essential for development of an unsplit 'psyche' in the newborn.

2. Learn the Technique of Getting the Maximum out of a given Gene Quota:

A. Increase the potentiality of expression of the desirable genes:

The genes which are expressed in the parents have more chance of being expressed in their children. Love between husband and wife opens up many new avenues to bring 'perfection' and 'completeness' in their character, respectively. The genes get re-assorted in sustained love. All possible expression of desirable characters is to be achieved before a person starts his/her reproductive life.

A lovable environment in the family will help in phenotypical expression of the desirable genes.

B. Major manipulation:

The genotypes of all the spermatozoa of an individual are not identical. This is also true of the secondary oocytes of a woman. The mechanism responsible for this difference is meiosis.

(i). In meiosis, chromosomal homologues of maternal and paternal origin are separated and each of the pair passes into a separate cell. All the twenty-three chromosomes in a gamete may, by chance, acquire either only maternal or only paternal homologues. Most of the cases show a mixed pattern. Does such variability in assembly affect the motility and fertility of the spermatozoa? Or does it have any say in the genesis of secondary oocyte from the oogonium? The way the chromosomal homologues, bearing the desirable characters from the maternal and paternal sides could be assembled in the spermatozoa, which are perfect in motility and fertility, needs extensive research. The same holds true for secondary oocyte.

The genes in eukaryotic cells exist in either of two states, active and inactive. The control of activation of gene is a positive one (2). Is it true that this 'turning on' of genes to active state is easier in gametes than in somatic cell? Gene expression (transcription) does not occur in the gamete. It is not desirable either. It is to be expressed in the sub-population of the zygote, during embryogenesis and during extra uterine growth. We must enquire of the way to thrust potential in the desirable genes of the gametes for expression in the future. The initiating mechanism must act during gametogenesis.

Here is a suggestion. If individual's natural love is more for certain characters expressed in his father, the spermatozoa carrying maximum number of paternal homologues, are likely to be more 'active' than those representing maternal pedigree. The same may hold true in genesis of a characteristic secondary oocyte.

If this suggestion is found to be correct, then by sincere and conscious 'alignment' towards desirable maternal or paternal characters, for a few consecutive cycles of gametogenesis (one cycle is extended for 10 weeks in male and one month in female), one can manipulate for the desirable character traits in the offspring.

(ii) During meiosis, another interesting phenomenon is ‘crossing over’ of genes between homologous chromosomes. The genes which cross over seem to be more ‘active’ than those which do not. Determinants of this mechanism await exploration.

3. Infusion of Love:

Love is life. Hundred percent love means hundred percent life. It is love which flows as life through sex from generation to generation. As much love is infused in the sex act, so much ‘life-full’ will be the children.

The possible cause of early abortion of unknown etiology in a normal anatomical and physiological milieu is the absence of love in that sex act of conception. Modern obstetrics speaks of chromosomal or genetic defects in the zygote as an explanation for this early demise. That love cause’s genetic re-assortment has been proposed.

The problem of distinguishing ‘love’ from ‘sex’ during the sex act for conception is not very difficult to resolve. In love, the pleasure is for the partner. In sex, it is an enjoyment for the self. To empty one’s everything for the partner is love. To rob the partner of everything is sex. To accept with grace that has been offered, is love. To revolt for what has not been given, is sex. To give is love. To take is sex.

CONCLUSIONS

This article is an attempt to evaluate the role of love, genes, consciousness and sex in building up the future of mankind. Expression of all desirable characters in the parents before procreation, unification of consciousness of the partners and the infusion of love in the whole process of reproduction have been suggested to get the maximum out of a given gene quota, to bring harmony in the ‘psyche’ of the newborn and to make the future generation ‘full of life’.

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Life, Death and Rebirth

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LIFE AND DEATH

In philosophy, life, death and rebirth have been discussed in length. Indiscriminate use of philosophical terms like 'supermind', 'atman', 'god' has confused and baffled the scientists. Following is an attempt to establish a link between the unknown and what is known as science today.

LIFE

The organism's 'consciousness' is somehow 'linked' with the 'cosmic consciousness'. In a unicellular organism, the link is through the plasma membrane, the boundary membrane of the unit of life. In the human being, it is established through the cerebral cortex. The cerebral cortex sends this 'supracortical consciousness' down to the pacemaker neurons of the vital centres in the brainstem. When the cardiac centre is impulse less, when the apneustic-pneumotaxic pacemaker neurons cease to function and when the pupils are dilated and fixed, but the cerebral cortex continues to show activity, death cannot be declared. Brain death means persistent flat EEG.

DEATH

The link between 'phase-specific consciousness' and 'cosmic consciousness' keeps the former alive as individual. When this link is severed, individual existence vanishes. We call this death. In death of a human being, the cerebral cortex is disconnected from the 'supracortical consciousness'. Persistent EEG, in presence of nonfunctioning vital centres of the brainstem indicates that cortical neurons are still alive and active and that they may start transmitting supracortical impulses to the vital centres in the brainstem. Use of heart- lung machine is absolutely justified till cortical neurons are alive.

THE HIGHEST CENTRE

That the cerebral cortex is the highest centre of life, is a fact. But the interpretations of this are different. Most of us interpret it as, when some of the brain cells in the cortex are still active, no one can declare the person as dead. Other way of interpreting it is, that the sun is not yet set. There is an immense probability that the cortex may pick up the thread again and start transmitting the 'supracortical consciousness' to the brainstem, provided that the later can respond to it.

IMPORTANT QUESTIONS

This concept poses a number of questions:

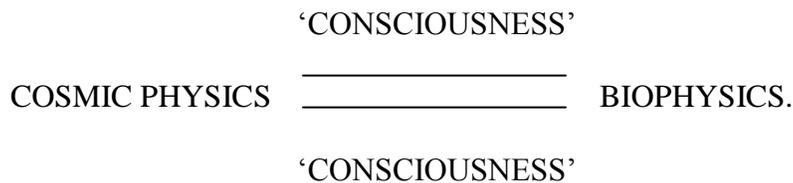
1. Why and how does the decorticated animal survive? Is decortication always complete in such case? What is meant by complete decortication?
2. How much of the functional cortex is necessary to keep the 'link' with 'supracortical' consciousness?
3. Are there specific areas of the cerebral cortex which are essential for establishing such a link?
4. Can this hypothesis explain variable life expectancy in diffuse damage of the cerebral cortex, for example in encephalitis or metabolic/toxic encephalopathy?
5. What are the cortico-reticular pathways from the cortex to vital centres in the brainstem? Is the hypothalamus or other diencephalic structure interposed in between?
6. The animal experiment will not solve the problem in human being. The human being possesses 'self-consciousness (The power of recognition of one's own image in the mirror). The animal cannot. Role of 'self-consciousness' in transmission of 'supracortical consciousness' of lower vital centres is thought to be critical. Is it helpful or a hindrance? Is it cordial or indifferent?

REBIRTH

There is no rebirth for the individual. There is cycling of 'consciousness'. When an individual, as a person, dies his total consciousness vanishes into 'cosmic' consciousness. It may take 'form' again when its frequency/vibration/energy/(?) happens to be in equilibrium with that of the 'cloud' of consciousness of an ovum during fertilization. The person is not reborn but his total consciousness takes a new biological 'form' to evolve in another cycle.

CYCLING OF 'CONSCIOUSNESS'

The 'consciousness' percolates through the boundary of physics to invade the boundary of biology. The human/animal physique consists of certain anatomical organs. These organs are made up of certain chemicals, coordinated by chemical laws. The biochemistry to the organism is governed by biophysics. The biophysics is in link with cosmic physics through this 'consciousness'. The consciousness is beyond matter and energy and so beyond physics, chemistry and mathematics. It is also beyond the scope and law of biology. In biology, it is conceived as 'life'. In its biologically nonperceivable state, unified oneness is the reality.



NOT THE END

Having gone through the manuscript, My Friends said, “Hello! Mr. Consciousness! What do you mean by this word? ” “The meaning everybody knows”, I replied. “I can only say that it is not a synonym for ‘Life’, ‘Mind’, ‘Psyche’ or ‘total thought of the being’. In fact, there is no synonym of it. Dictionaries give only a description of this state. In the Sanskrit language, it is called ‘CHETANA’. I am grateful to him who first introduced this term to Medical vocabulary”. They all swallowed, what I said. I smiled and then whispered, “In the world of evolving consciousness, please, remain conscious. You will evolve”.