

THE EMERGING CONSCIOUSNESS:
*A Philosophical Exposition of the Neurophysiological Evolution
of Human Consciousness*

*Dissertation submitted to Jawaharlal Nehru University
in partial fulfillment of the requirements
for the award of the degree of*

MASTER OF PHILOSOPHY

BINS SEBASTIAN



**CENTRE FOR PHILOSOPHY
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI, 110067**

2011

Dedicated

to

Vilayanur S. Ramachandran,

'The Marco Polo of Neuroscience,

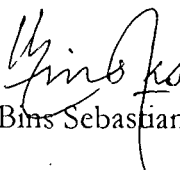
Journeying the Silk Road of Science to Strange and Exotic Cathays of the Mind',

A Scientist who finds Strands of Poetry in the Wisps of Protoplasm and

One who inspired me to the Marvels of the Human Brain.

DECLARATION

I, BINS SEBASTIAN, do hereby declare that the dissertation entitled **THE EMERGING CONSCIOUSNESS: A Philosophical Exposition of the Neurophysiological Evolution of Human Consciousness** submitted by me for the award of the degree of Master of Philosophy is an authentic work and has not been submitted for any other degree or diploma of this or any other institution or University to the best of my knowledge.



Bins Sebastian

Centre for Philosophy,
School of Social Sciences
Jawaharlal Nehru University
New Delhi 110067
July 2011



Centre for Philosophy
School of Social Sciences
Jawaharlal Nehru university
New Delhi - 110067

Dated: July 22, 2011

CERTIFICATE

This is to certify that the dissertation entitled, **THE EMERGING CONSCIOUSNESS: A Philosophical Exposition of the Neurophysiological Evolution of Human Consciousness**, submitted by Bins Sebastian, in partial fulfillment of the requirements for the degree of Master of Philosophy, is his original work. It has not been submitted, in part or full, for any degree or diploma of this or any other university, to the best of our knowledge.

We recommend that the dissertation be placed before the examiners for evaluation.


KPP 22-7-11
Prof. R. P. Singh

CHAIRPERSON

Centre for Philosophy
School of Social Sciences
Jawaharlal Nehru University
New Delhi - 110067

Manidipa Sen
Dr. Manidipa Sen

SUPERVISOR

 SUPERVISOR
Centre for Philosophy
School of Social Sciences
Jawaharlal Nehru University
New Delhi - 110067

Acknowledgement...

Thanks... To those

*Who set stage for the drama of my existence,
Who got ready the path for my ingress,
Who sowed words into my mouth,
Who heartened the motion,
Who directed the play.*

Thanks specially to...

*Those who taught me to exist beyond the prospects of the audience
Those hands that aided me to soar out of the author's fancies
Those books which plunged me into the fire of existence
Those ears which listened to my fears and qualms*

Thanks with love to...

*Professors who facilitated my switch from a character to being,
Friends who supported, criticized, and rectified my rejoins,
Dr. Manidipa Sen who guided this particular journey
My parents who are brainwaves for me to think
& to rethink of fitting this torn off leaf
back into the great manuscript
of the existential drama.*

T... H... A... N... K... S...

TABLE OF CONTENTS

Acknowledgement	i
INTRODUCTION	1 -14
Chapter One:	
CONSCIOUSNESS: BEING AWARE OF AWARENESS	15 - 40
Introduction • Consciousness: Concerns of a Possible Definition • The Explanatory Gap • Reductive or Non-reductive Explanation? • Features of Consciousness • Theories of Consciousness • Problems of Consciousness Study • Conclusion	
Chapter Two:	
THE EMERGING CONSCIOUSNESS	41-74
Introduction • Consciousness as Relatedness • Mirror Neurons – Matter’s Way of Feeling the World • Consciousness as a Phenomenological Model Making • Why should Consciousness be? – An Evolutionary Approach • Survival: Making Maximum from the Given • Blind-sight: A Proof for the Evolution of Consciousness • Brain – the ‘Where’ of Consciousness • A New Brain for Consciousness? • Neural Correlates of Consciousness – Matter to Mind • The Emotional Brain – from Biology to Self through Emotion • Brain Disorders and the Loss of Consciousness • The Sleeping Brain and the Missing Consciousness • Incarnating the Ghost in the Machine: the Mind of the Brain • and Conclusion- A Neurophysiological and Evolutionary Account of Consciousness	
Chapter Three:	
SELF-CONSCIOUSNESS: IN THE MIND OF THE BRAIN	75-103
Introduction: the Ghost of Cartesian Dualism • Is Defining Consciousness still a Need? • Shared Subjectivity: Possibility of Objectivity • The problem of Qualia: the Way the World is • The Softness of the Hard Problem • Homunculus Fallacy: Brain - Author or Apparatus? • The Vegetative Soul • Fusion of the Knower and the Known: Self-Consciousness • Conclusion	
CONCLUSION	104-110
BIBLIOGRAPHY	111-117

INTRODUCTION

The present work, *THE EMERGING CONSCIOUSNESS: A Philosophical Exposition of the Neuro-physiological Evolution of Human Consciousness*, is an effort at understanding recent developments in science in the study of consciousness and their implications to the larger philosophical debates on consciousness. With the advances of science, the attempts at explaining consciousness by proposing an ontological and mysterious existential status to a being other than the material body, beginning with the great Platonic tradition through the times of Descartes, has lost its relevance. The empirical sciences today try explaining the immaterial properties of consciousness by tracing its neural correlates, or the chemical reactions happening in the billions of neurons in the brain, corresponding to the various states of awareness that we experience. The findings in these scientific studies have led to further research in philosophy of mind, psychology, cognitive sciences and artificial intelligence.

The attempt in the present work is not to analyse the ontologically mysterious consciousness but one that is in action, emerging through the process of evolution. The study looks at how philosophers and present day neuroscientists have interacted to provide an account of consciousness. Theories of consciousness proposed by two of today's leading neuroscientists, Antonio Damasio and V. S. Ramachandran and the philosophical responses to their findings are the focal points of the study. An attempt is made to get familiar with the various studies that have come up recently in the world of neuroscience, psychology and evolutionary biology related to consciousness, to analyze and submit them to critical thinking in the light of larger philosophical concepts. Analyzing the philosophical responses posited by philosophers like, David Chalmers, Thomas Nagel, and Daniel Dennett to such scientific exposition is given due importance as well.

The present work has followed the critical and analytical methods of reasoning. The findings made and the ideas proposed by the present day neuroscientists are subjected to critical analysis to verify their logical possibility and sustainability. The books by both

Antonio Damasio and V. S. Ramachandran have been heavily depended on for the progress of this research work. Thorough critical reading of the responses proposed by contemporary philosophers to these ideas is also given equal importance.

Problems in Consciousness Studies

Consciousness has long been considered a mysterious thing of which we know not much. But today we dare to speak of consciousness in the physicalist terms. This paradigm shift in our thought pattern about consciousness is bound to bring in problems. Bringing consciousness out of the speculative and mysterious shroud using scientific tools is supposed to be a tedious work. There are a few of those problems attended to in this work as well.

The very first problem enquired into in this study is the very possibility of attempting a scientific exposition of human consciousness. Can consciousness be located in the body itself rather than considering it to be a property of an immaterial ontological being occupying the body? Here even if there is a possibility, we are faced with the problem of subjective experience. How are we to account for the subjective first person experience? If we can know nothing about this, how are we going to frame an objective model of consciousness? Thus, the problem of subjective experience and therein the problem of qualia become prominent when a third person/objective/neurophysiological account of consciousness is to be worked upon. Another problem is that of identifying consciousness as a property of the body and understanding its functioning. This leads to what David Chalmers calls the hard problem of consciousness. "Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does."¹ How can our subjective experiences be explained in terms of certain scientific and objective processes? The task is to learn how billions of neurons in the brain interact and communicate with each other in orchestrating the rise of consciousness.

¹ David J. Chalmers, "Facing Up to the Problem of Consciousness," *Journal of Consciousness Studies* 2, 3 (1995): 200-19.

As the nature of consciousness is proposed to be studied, the purpose of consciousness suddenly pops up as an inevitable factor to be researched upon. With an answer to this question in hand, many of the problems related to its study would be dissolved. Thus the emergence of consciousness as a logical necessity for the survival of man has been looked upon from an evolutionary view point and has been used throughout this work in order to propose possible solutions to some of the problems involved in consciousness studies. With philosophers being both skeptical and interested in the new scheme of consciousness, the responses molded in the light of larger philosophical concepts are to be considered for a critical analysis to see if they are sufficient enough to refute the claims of science. Will the philosophers end up accepting the propositions of science or be able to defend their stand?

Consciousness as Given

Reason for being different tormented the speculative mind from the time s/he realized that s/he was not like the other animal species. The perplexity of all those distinguishing features such as intelligence, will and reflexivity were sheltered under the umbrella term 'soul'. It was so in the great philosophical traditions including that of Plato who, drawing on the words of his teacher Socrates, considered the soul as the essence of a person, that which decides how we behave and the body like a prison or vehicle of the soul.² He considered this essence as an incorporeal, eternal occupant of our being, comprising mainly of three features: mind, emotion and desire. Soul continued enjoying the divine heights at the behest of the scholastic and religious philosophical traditions that followed Platonism. Coming to the modern world, at its very beginning, in the dualistic stand of Rene Descartes, the incorporeal and eternal being continued its survival in differing terminologies, as the seat of consciousness and reflection.

But this journey was not without the thorns of imperfection and explanatory gaps and was held by many to be more inconsistent³ than absolutistic monism. As the question of the

² Dario Composta, *History of Ancient Philosophy*, Myroslaw A. Cizdyn, trans., (Bangalore: Theological Publications in India, 1990), 210.

³ Other than the materialists of the ancient past, in the 20th century, we may consider, for the refutation of the dualistic stand, the rejection of Descartes's mind-body dualism by Gilbert Ryle's as ghost in the machine argument, the tenuous unassailability of Richard Swinburne's argument for the soul, the importance of

dualistic appearance of the features of human faculties still baffles us, can we look at Aristotle as a source of redemption in this body-soul debate? Aristotle defined the soul as the core or 'essence' of a living being, but argued against its having a separate existence in its entirety. In Aristotle's view, a living thing's soul is its activity, that is, its 'life'. Unlike Plato, Aristotle did not consider the soul in its entirety as a separate, ghostly occupant of the body just as we cannot separate the activity of 'cutting' from the knife. As for Aristotle, soul is an *actuality* of a living body, it cannot be immortal.⁴ The rational activity of the soul's intellectual part, along with that of the soul's two other parts—its vegetative and animal parts, which it has in common with other animals - thus in Aristotle's view, constitute the essence of a human soul.⁵ Precisely here is our concern: how/why does something other than the animal 'soul' be there in the essence of the humans? Is it a step ahead in the race of evolution? If it is 'this intellectual part' that we do not share with the other animals that compelled for the invention of a divine soul, is there a way of demystifying this special faculty, the seat of consciousness and locating it within our organism?

The other Alternative Philosophical Approaches

If such an ontological and separate being is no more available as a platform to explain the mysterious mental features, what are the other alternatives? Are we to look for the roots of our immaterial faculties of thought and reflection in the body with all its complexity? Can the mind be reduced to the billions of neurons and the chemicals in the brain and will there be satisfactory corresponding models of so called mental functions in the brain? As far as the formulation of a philosophical stance is concerned, are we in for reductionism, functionalism or emergentism? Irrespective of the fact that we know more impressive facts about the brain today than ever before, the challenges of looking at brain with an intention of locating the faculties that belonged previously to the soul itself, is daunting. Bracketing the eastern ways of speculation and traveling the empiricists' way and taking the assistance of science to know more of the mind-brain identity hypothesis, and the extent of the correlation between mental states and physical brain-states may result in

behaviorism in Psychology, and the advances made in Neuroscience which are steadily uncovering the truth/falsity of the concept of an independent soul/mind.

⁴ Composta, 278.

⁵ Aristotle, *De Anima*, Hugh Lawson-Tancred, trans., (London: Penguin Books Ltd. 1986), 43.

more empirical explanations for the immaterial properties that we have, by involving observable and locatable elements of the brain.

But these approaches are not without challenges in any way. The path of the scientists are filled with more of philosophical problems than their own at least in this endeavor, as consciousness with all its surrounding mystery was the subject matter of philosophy. Prominent among them is the very possibility of such an attempt at explaining consciousness. It is an accepted fact that having conscious experiences, like feeling a pain, or being in love, has subjective dimensions to them. The subject alone has a view of what he is aware. Philosophers such as Thomas Nagel, in his famous article, 'what is it like to be a bat?' and David Chalmers in his extensive dealings in consciousness have argued in effect that correlation between physical brain states and mental states is not strong enough to support identity theory. Nagel argues that no amount of physical data is sufficient to provide the "what it is like" of first-person experience, and Chalmers argues for an "explanatory gap" between functions of the brain and phenomenal experience.⁶ These critical debates however clarify one's position as to what to look for and what not in science.

An Objective Model of Subjective Experience – the Biology of Consciousness

Francis Crick, the Nobel laureate who laid bare the structure of DNA, calls 'the astonishing hypothesis', the idea that our thoughts, sensations, joys and aches consist entirely of physiological activity in the tissues of the brain.⁷ Consciousness does not reside in an ethereal soul that uses the brain like a PDA (Personal Digital Assistant); consciousness is the activity of the brain⁸. A correlation with the concept of soul/intellect as the first act of body by Aristotle, the forerunner of scientists, cannot be forgotten here. Also what comes to mind is the idea of Gilbert Ryle, that mind is nothing but operation of the brain.⁹ But what about the brain itself? Even thinking of finding out the seat of

⁶ Preben Bertelsen, *Free Will, Consciousness and Self: Anthropological Perspectives on Psychology* (New York: Berghahn Books, 2005), 153.

⁷ Francis Crick, *The Astonishing Hypothesis: The Scientific Search for the Soul* (New York: Scribner, 1994), ii.

⁸ Steven Pinker, "The Brain: The Mystery of Consciousness," *Time*, 19 January 2007, <<http://www.time.com/time/magazine/article/0,9171,1580394-7,00.html>> (11 March 2011).

⁹ Gilbert Ryle, "Self Knowledge", in *Self Knowledge*, Quassim Cassam, ed., (New York: Oxford University Press, 1994), 19.

awareness in the cacophony of a hundred billion jabbering neurons itself is demanding. A possible way out will be to see what parts of the brain change when a person's consciousness flips from one experience to another.

Antonio Damasio and V. Ramachandran may have some good say as to the 'how' in the making of consciousness based on their advanced studies in mapping the physiological and conscious stages of the brain. Different levels or states of consciousness are associated with different kinds of conscious experiences. The 'awake' state is quite different from the 'dreaming' state and from the state of 'deep sleep'. In all three cases the basic physiology of the brain is affected, as it is also in *altered states of consciousness*, for instance after taking drugs or during meditation when conscious perception and insight may be enhanced compared to the normal waking state. 'State' may refer to different 'amounts' of external/physical consciousness, from a total absence in coma, persistent vegetative state and general anesthesia, to a fluctuating and limited form of conscious sensation in a minimally conscious state such as sleep walking or during a complex partial epileptic seizure¹⁰. Dysfunction in a widespread cortical network including medial and lateral prefrontal and parietal associative areas is associated with a global loss of awareness.¹¹ Impaired consciousness in epileptic seizures of the temporal lobe was likewise accompanied by a decrease in cerebral blood flow in frontal and parietal association cortex and an increase in midline structures such as the mediodorsal thalamus.¹² After such trauma, however, eventually the excitability of the thalamus and forebrain can recover and consciousness can return.¹³ Many nuclei with distinct chemical signatures in the thalamus, midbrain and pons must function properly for a subject to be in a sufficient state of brain arousal to experience anything at all.

The rigorous studies conducted by V. Ramachandran in areas like *synesthesia*, the color-number-mix-up disorder, and the illustrative theories of the existence of phantom limbs

¹⁰ Nicholas D. Schiff, "The neurology of impaired consciousness: Challenges for cognitive neuroscience," in Michael S. Gazzaniga, ed., *The Cognitive Neurosciences* (Cambridge: MIT Press, 2004), 68.

¹¹ Vilayannur Ramachandran, *The Emerging Mind: the Reith Lectures 2003*, (London: Profile Books, 2004), 43.

¹² Antonio Damasio, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (New York: Harcourt Inc.1999), 147.

¹³ Ramachandran, 79.

in one or the other way alert us as to why these strange things happen at all and what irregularities in the brain of the affected cause all these.¹⁴ The discovery of mirror neurons – by which we perceive and appreciate the feelings of others and feel empathy for them, is equally important in knowing our own feelings as well as those of the other.¹⁵ Ramachandran, by analyzing brain anomalies like Capgras Delusion - where due to the emotional centre in the brain being severed from the perception centre, people are not able to react socially to their loved ones – shows the importance of different parts of the brain interacting to give us conscious experiences.¹⁶ In the problem of phantom limbs - where people suffer pain on a severed limb of their body – he again demonstrates how the emotional and perception centres interact with each other in the treatment of abnormal but true conscious experiences.¹⁷ The importance of emotion in the making of consciousness is discussed by Antonio Damasio in *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* where he emphasizes the holistic approach toward a brain mechanism than trying to trace consciousness to a particular location in the brain.

These scientists are of the opinion that by tracing the changes in the physiology of brain when there seems to be a loss of consciousness, we may be able to really tell the biology of consciousness and learn more of it. Thus, it seems that we are now poised better to know more of our own mind and it may well lead to the demystification of consciousness even if neuroscience at its infant stages is not able to tell us all about consciousness with infallible authority.

The Emerging Consciousness

Now looking at the purpose of consciousness or trying to understand the question ‘why there be consciousness?’ may tell us more about its nature and function. We see a gradual progress of awareness in the chain of evolution to the origin of sophisticated forms of

¹⁴ Ibid., 24.

¹⁵ Vilayannur Ramachandran and Sandra Blakeslee, *Phantoms in the Brain* (London: vintage, 2005), 66.

¹⁶ Vilayannur Ramachandran and William Hirstein, “Capgras Syndrome: a Novel Probe for Understanding the Neural Representation of the Identity and Familiarity of Persons”, *Biological Sciences* 264, 1380 (March 1997): 437-444.

¹⁷ Ramachandran and Blakeslee, 36-37.

reflexive awareness. By the term, proto consciousness, we mean the crude being-ness or the qualia of a thing emanated and minimal intentionality or the care given to other beings around.¹⁸ But now the question is as to why there should be even this proto consciousness and how language and society work together to make us what we are now.

To have a wider perspective on this, we should look at the need of consciousness to make us fitter for survival. A feature that distinguishes humans from most animals is what is called a 'physiological pre-maturity', the fact that we are not born with an extensive quiver of behavioral programs that would enable us to survive on our own. To compensate for this, we have an unmatched ability to learn, i.e., to consciously acquire such programs by imitation or exploration. In this scenario, Consciousness can be viewed from the standpoints of Evolutionary Psychology or Evolutionary Biology approach as an adaptation, as an emerging property because it is a trait that increases fitness.¹⁹

Information overload might be a reason as to why there should be consciousness at all. Being choosy and deliberating on the most important of all the sensory inputs may be what has propelled our growth in the animal kingdom. The decision circuits inside the brain would be swamped if every curlicue and muscle twitch that was registered somewhere in the brain were constantly being delivered to them. Instead, our working memory and spotlight of attention receive executive summaries of the events and states that are most relevant to updating an understanding of the world and figuring out what to do next.²⁰

Many actions in response to sensory inputs are rapid, transient, stereotyped, and unconscious.²¹ These automated responses, sometimes called *zombie behaviors*, could be contrasted by a slower, all-purpose conscious mode that deals more slowly with broader, less stereotyped aspects of the sensory inputs (or a reflection of these, as in imagery) and takes time to decide on appropriate thoughts and responses. Without such a

¹⁸ Bertelsen, 155.

¹⁹ Ibid., 100.

²⁰ Pinker, "The Brain: The Mystery of Consciousness."

²¹ Bertelsen, 3.

consciousness mode, a vast number of different zombie modes would be required to react to unusual events. From an evolutionary standpoint, it clearly makes sense to have both automated behavioral programs that can be executed rapidly in a stereotyped and automated manner, and a slightly slower system that allows time for thinking and planning more complex behavior. This latter aspect may be one of the principal functions of consciousness.

There is an argument that special anatomical and physical properties of the mammalian cerebral cortex gave rise to consciousness.²² It has been argued that the recursive circuitry underwriting consciousness is much more primitive, having evolved initially in premammalian species because it improves the capacity for interaction with both social *and* natural environments by providing an energy-saving 'neutral' gear in an otherwise energy-expensive motor output machine. This is also clear from the fact that those areas in the brain that command consciousness is of much later origin than the more primitive form of human brain.²³ It should have been a gradual development. Once the process began, this recursive circuitry may well have provided a basis for the subsequent development of many of the functions that consciousness facilitates in higher organisms.

As and when the evolution of brain as an organ of consciousness is scientifically established, proving the falsity of the existence of a separate ontological being as an explanation for consciousness will become redundant. This may also assist us in looking for a functional emergentism of consciousness than a redundant mechanical reductionism of mind to brain. It is also important to see other than science, how language and society have assisted the formation of the human consciousness as it cannot be independent of these two factors.

Challenges and Prospects: Science and Philosophy in Search of Truth

The most influential modern physical theories of consciousness are based on psychology and neuroscience. Theories proposed by neuroscientists such as Antonio Damasio, and V. Ramachandran seek to explain access consciousness and phenomenal consciousness in

²² V. S. Ramachandran, "In the Mind of the Brain," interview by Sashi Kumar, *Frontline*, 7 April 2006, 14.

²³ Ramachandran, 84.

terms of neural events occurring within the brain. At the same time, computer scientists working in the field of Artificial Intelligence have pursued the goal of creating digital computer programs that can simulate or embody consciousness.²⁴ And coming to pure science, if we try to understand consciousness scientifically as something emerging from the brain, which is considered to be just another object obeying the laws of classical physics, it will leave serious issues for science to remain interested in. According to Ramachandran, consciousness can be traced not in what happens to your brain while you are conscious but in the changed physiological states of the brain when you lose it, in the anomalies of consciousness.

Philosophers with new vigorous speculative reasoning and unwilling to let consciousness go of its mysterious nature may be the theoretical enemies to these new scientific advances. Identifying neural correlates may not offer a theory of consciousness that can explain why particular systems experience anything at all, why they are associated with consciousness and why other systems of equal complexity are not. But understanding the Neural Correlates of Consciousness is a step toward such a theory. The efforts of the philosophers of mind like David Chalmers, and Daniel Dennett in keeping up with the scientific advances made in the field of consciousness and at the same time without losing the philosophical and critical grip on the concept of consciousness needs to be considered in this context.

Thus, this new way of looking at consciousness is full of challenges and therefore of hope to philosophy and cognitive sciences. The prospects are truly interesting. We may hope to have a new perspective with a fruitful dialogue between these two groups. It may also be a defending strategy against the dismay of scientists for the philosophers as evidenced in the war cry of Stephen Hawkins,

“...up to now, most scientists have been too occupied with the development of new theories that describe *what* the universe is to ask the question *why*. On the other hand, the people whose business is to ask *why*, the philosophers, have not been able to keep up with the advances of scientific theories.....however, in the nineteenth and twentieth centuries, science became too technical and mathematical for the philosophers, or anyone except a few specialists. Philosophers reduced the scope of their enquiries so much that

²⁴ Carl Zimmer. “Sizing up Consciousness by Its Bits,” *New York Times on the web*, 20 September 2010, <<http://www.nytimes.com/2010/09/21/science/21consciousness.html>> (22 March 2011).

Wittgenstein, the most famous philosopher of this century, said, 'the sole remaining task of philosophy is the analysis of language'. What a comedown from the great tradition of philosophy from Aristotle to Kant."²⁵

It is hoped that Philosophy and science at the best of their efforts be able to bring consciousness to the mundane world from the royal majesty of mysterious divinity that consciousness was covered in until recently and subject it to the critical thinking of the conscious man.

Through the Chapters

The present work has been divided into three chapters. The first one being one on the general nature of consciousness and the various problems faced in its study and theories proposed as solutions. The second chapter is an attempt at understanding consciousness from a scientific perspective as an emergent feature. In the third chapter a philosophical analysis is made of the various claims made by science with regard to consciousness.

The first chapter, 'Consciousness: Being Aware of Awareness', is more of a descriptive note on the issue of consciousness. An attempt at understanding the problem of consciousness has been made. A possible definition of consciousness might still be too early to be expected as we know very little about this phenomenon. Consciousness being a complicated topic of study in itself, the possibility of explaining it in objective terms would be a difficult task. To understand the topic better and to have a comprehensive view about what consciousness is, the different features of consciousness are looked at. Each characteristic, without which there may not be consciousness as we understand it today, is looked into. The study of consciousness has long been one seriously dealt with and there are many philosophers, scientists and religious men who have tried explaining what it is. A few of the major theories are discussed briefly to get a general notion of the different approaches that possibly be there while one is involved with consciousness studies. Then, after looking at the different features and theories of consciousness, it becomes clear that there are certain problems generally associated with the study of consciousness. Subjectivity and transparency cause the problem of shareability; attempts

²⁵ Stephen Hawkins, *A Brief History of Time: from the Big Bang to the Black Holes* (London: Bantam Books, 1988), 184-85.

at scientifically explaining consciousness may lead to the problem of reductionism; and the ultimate problem of consciousness – how does the physical features give rise to mental events? Thus, in the first chapter, there is an attempt at understanding consciousness and the different issues related to its study.

The purpose of this dissertation has been to make an objective study of consciousness, to understand consciousness as understood by the scientists and to analyze it in the light of the suggestions and objections made by different philosophers. Though different branches of science are interested today in the study of consciousness, the nearest to the topic seems to be the studies done in neuroscience. There are philosophers and scientists closely observing various studies being conducted in this branch of science. There are scientists who are involved in the study suggesting answers to many deep rooted consciousness problems that kept the philosophers preoccupied for so long. Thus, it is apt that we take a serious look at their hypothesis and analyze it in the light of philosophical discussions. In the second chapter, ‘the emerging consciousness’, an attempt is made at understanding consciousness as a neuroscientist would take it.

Starting with consciousness as a way of relating to the world and as a phenomenological model making apparatus, we looked at a particular type of neurons, called mirror neurons – nicknamed as the ‘*Empathy Neurons*’ or ‘*Dalai Lama Neurons*’, the secret of empathy and compassion. This must have given us a great jump towards our humanness, as it helps us in learning by imitation and in interpreting the intentions of the other. Then the purpose of there being any consciousness is looked into. This might go a long way in resolving the issue of consciousness. The question ‘why’ seems more important when we try understanding the ‘what’ and ‘how’ of something. From an evolutionary view point, it is looked at as something that has assisted us hugely in our struggle of survival to take us above the other species in the nature. As our physical capacities are limited in many a way in comparison with the other animals, there was a need for us to develop something new and unique. Thus, our ability to filter through the information, to abstract from and apply it to situations, to deliberate upon serious issues - that is asking questions to

ourselves, and to understand the world as it fits us best are all features of this new technique we developed.

We also look at if we can understand which are the parts of the brain involved more than the others in the development of consciousness and how much. Those parts of the brain, which are of rather recent origin seems to be more involved in the process than the older one. This is well evidenced in different mental anomalies that keep a part of consciousness or sense of self away from the life of such patients. Though brain is the place that one should look in for consciousness, it is not that the brain functions like a director or as a traffic cop. It is an apparatus of integrating information received and processed from all over the body. This is evidenced as seen in the brain of a sleeping person – there is no communication and hence no consciousness. Consciousness is not a property that could be found in a cell or two in the brain. It is a new feature, for the emergence of which, some parts of the brain are involved more than the others. It emerges as a new feature when the brain in particular and whole of body in general works as an integrated machine.

Understanding consciousness as an emergent feature is not without its own challenges and risks. Consciousness has long been understood as a given property. Also there are certain issues to be solved before such an understanding could be raised. In the third chapter, 'Self-consciousness: the Mind of the Brain', we discuss various philosophical and technical issues related to understanding consciousness as an emerging phenomenon. The problem of sharing subjective first person experience has to be resolved if any scientific study of consciousness is to be made possible. Also the problem of qualia is another important one demanding attention. It seems there is something more to qualia than what there is in the physical. The redness of the rose may not be something that could be explained by the wavelength of light. These issues have been looked into with due importance. Once these issues are looked at from a different perspective, leaving aside the Cartesian influence on our language and thinking, it seems that the answers may not be that elusive as we are made to believe. These are not hopelessly non-physical. And then the hard problem of consciousness may also wither away slowly in this new light.

But explaining consciousness in the scientific terms is not to explain it away, rather, it leads us closer to an understanding of the reality. We come to know that we are a part of this great mystery.

To sum up, there are a few basic issues on consciousness being explored in this work. It begins by analyzing the very possibility of an objective rendering of the subjective conscious experience. The journey has been long since the times of 'a divine soul as the custodian of consciousness' to consciousness as something that we can hope to understand. Secondly, the 'why' of consciousness or as to the reason of there being conscious beings is looked at as well, from an emergent point of view as a necessary advancement to make these beings fitter in the evolutionary struggle for survival. Next, we look at a scientific approach to the action and working of consciousness by going briefly through the explanations of different brain stages and physiological changes in it corresponding to the varying levels of consciousness. Finally, we see the philosophical approaches to this new way of looking at consciousness, both skeptical and interesting at the same time, as clearly seen in the different views of present day philosophers of mind. Thus, through a detailed study of the concepts and ideas as envisioned in this project, I hope to understand better and respond philosophically to a problem that both science and philosophy are equally interested in today.

Chapter One

CONSCIOUSNESS: BEING AWARE OF AWARENESS

Introduction

There is nothing more puzzling than how and why we know that we know. The process of being consciously aware of the self and the world has always surprised us with its intricacies and mysteries. Though today science has taken up the issue of consciousness seriously, there is a feeling that it should still be dealt with by the philosophers. Science may be able to elucidate the process of being conscious, leaving to philosophers the task of defining it. Some still think that there is something beyond science to consciousness. In this chapter, we will deal with the definition of and problems associated with such definition of human consciousness. The possibility of rationally understanding the subjective experience of consciousness will also be spoken of here. The main features that define what consciousness is, varying theories of consciousness and the problems that philosophers or scientists face in dealing with consciousness will all be dealt with, in this chapter.

Consciousness: Concerns of a Possible Definition

Though everyone thinks that one knows what consciousness is, there is difficulty when it comes to stating what it is. Although man realizes what everyday experiences are, consciousness refuses to be defined, philosophers like John Searle notes.¹ To say that one knows what something is, he/she should be able to state clearly and in simple terms what it is. Due to this problem of a current unfeasibility of penning down the subjectivity of conscious experience in the language of science, even people who are occupied with the problem of consciousness safely avoid framing a precise definition of consciousness. It is also with the view of avoiding the dangers of premature definition. In the words of Nobel laureate Francis Crick,

“Until the problem is understood much better, any attempt at a formal definition is likely to be either misleading or overly restrictive, or both. If this seems evasive, try defining the word ‘gene’. So much is now known about genes that any simple

¹ *The Oxford Companion to Philosophy*, 2nd ed., s. v. “Consciousness.”

definition is likely to be inadequate. How much more difficult, then, to define a biological term when rather little is known about it."²

It is a matter of debate if our cognitive faculties are presently equipped enough to understand consciousness and to define it. Whatever may be the effort, an explanatory gap is experienced when it is a question of explaining something immaterial, more precisely - the subjective experience of consciousness, in the exacting constraints of our present language. The only agreeable thing about the problem of consciousness is that there is not a single agreed philosophical answer to it.

The Explanatory Gap

The psychophysical link between consciousness and body has ever baffled the thinking minds. The ability of human thinking and scientific projects, which are definitely spatial in nature, to know the non-spatial psychological aspects has come under serious apprehensiveness. There are theories as to the possible existence of an explanatory gap that keeps the whole project of understanding complex psychological states aloof. Explanatory gap is a claim that consciousness and human experiences such as qualia cannot be fully explained just by identifying the corresponding physical or neural processes.³ There seems to be something beyond the physical states to having those corresponding mental states. It is a matter of speculation if this could be filled in by physical properties or we need to look for metaphysical gap fillers. It could well be a practical limit of our present day explanatory abilities as well. Given our current theories and models, we may not be able to draw an intelligible link between the two states for now. If this is a soft version of the explanatory gap, there is a stronger version of this theory as well, which makes an *in principle* claim about our *human capacities* and asserts that given our human cognitive limits we will never be able to bridge the gap.⁴

However philosophers like Joseph Levine who has written on this issue of explanatory gap does not believe that there is in fact a gap in the nature so that we feel a gap in our

² Francis Crick and Christof Koch, "Consciousness and Neuroscience," *Cerebral Cortex* 8 (1998): 99.

³ Joseph Levine, "Materialism and Qualia: the Explanatory Gap," *Pacific Philosophical Quarterly* 64 (1983): 354-361.

⁴ Robert Van Gulick, "Consciousness," in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (summer 2011 Edition), <<http://plato.stanford.edu/entries/consciousness/>> (12 January 2011).

understanding too. He firmly states that the gap in understanding the relation between the mental states and the body lies in our understandings and not in the nature.

“The explanatory gap argument doesn't demonstrate a gap in nature, but a gap in our understanding of nature. Of course, a plausible explanation for there being a gap in our understanding of nature is that there is a genuine gap in nature. But so long as we have countervailing reasons for doubting the latter, we have to look elsewhere for an explanation of the former.”⁵

The neuronal processes in the brain might be the answer to the whole matter of awareness that we talk about. The recent researches done in neuroscience may even provide us with a detailed correspondence between specific processes in the brain and related components of experience. But philosophers like David Chalmers claims that until we know why these processes give rise to conscious experience at all, we will not have crossed the explanatory gap between physical processes and consciousness.⁶ According to Levine, the chasm between what is going on at the neural level and what we are acquainted with in our experience is the explanatory gap⁷ that has to be traversed.

Maybe the psychological features could never be well explained in the physicalist terms. Our language and understanding seems to be suffering from some deficiency when it comes to making clear descriptions about consciousness as such. But at the same time it is also proposed that it may be a question of time. We may not be equipped currently to understand the causal relation between the physical and the mental; and our language may be in its infancy. Time might chisel out an epoch for us, revealing the mystery. It may not be a question of impossibility but a matter of patient persistence, until the human faculty is sufficiently equipped. It may be a matter of developing an adequate communication system that will enable the smooth ordering of the mental in terms of matter and that may possibly lay to rest the entire problem of psychophysical dilemmas.

⁵ Joseph Levine, “Conceivability, Identity, and the Explanatory Gap,” 1 October 2002, <<http://cognet.mit.edu/posters/tucson3/Levine.html>> (15 January 2011).

⁶ David J. Chalmers, “The puzzle of conscious experience,” *Scientific American* (December 1995): 62-68. conscious experience,” *Scientific American* (December 1995): 62-68.

⁷ Joseph Levine, “The Explanatory Gap,” in Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 282-83.

Reductive or Non-reductive Explanation?

How far will we be successful in defining our conscious experiences in terms of the body that we are? Is a materialistic explanation viable? Materialism or physicalism is the thesis that the physical facts metaphysically determine, or constitute, all the facts in the natural world. Whatever happens in the natural world is ultimately a matter of how certain physical objects and properties are distributed in space-time.⁸ The necessity and possibility of framing an explanation of consciousness as being part of the natural world, from such a physicalist point of view is a much debated topic. As there is an inherent difference in our subjective and objective experiences, there is a strong argument against any physicalist understanding of the non-material consciousness. Thomas Nagel famously argued⁹ that there are unavoidable limits placed on our ability to understand the phenomenology of subjective experience by our inability to empathetically take on a similar experiential perspective, given the specific and intimate conditions where the experience was personalized by the subject. Given this inability to undergo similar experience, we can only imagine about the nature of such experiences internalized by the experiencing organism.

But at the same time, our inability to have a satisfactory explanation of consciousness as derived from non-conscious matter should not be a valid proof for the non-existence of a relation between them or for the existence of a non-physical being as the cause of it.

To settle the issue better, it may be easier to analyze consciousness as such and to see if it is affordable to explain each of its constituent element in scientific terms as claimed by science. Consciousness is not a single experience that happens within us but the productive awareness of the unification of many features that we associate with our very being. Thus, it looks better to understand consciousness as a grand model incorporating in it different aspects that, though well knit into a unified experience, arise from and function with different purposes.

⁸ Ibid.

⁹ Thomas Nagel, "What is it like to be a Bat?" *Philosophical Review* 83, 4 (October 1974): 435-56.

Features of Consciousness:

To lighten the mysterious nature surrounding consciousness and to understand what we really mean by it, it may be reasonable to look at the different features that constitute conscious experience. Here we will focus on a few of such features that necessarily make an event something identical with conscious experience and thus assisting one to be consciously aware of his/her world and self, or at least to be on a point where it could be differentiated from a non-conscious being.

a) Qualitative Nature

Consciousness is signaled by the ability to be in a world and to respond to its impressions meaningfully. It is through qualitative experience that one comes to know the world, as through the redness of a ripe tomato. Qualitative character is often equated with so called 'raw feels' and illustrated by the redness one experiences when one looks at a red rose. This is how we relate to the world and the impressions that we gain are but just the qualities of things, what in philosophical terms, we call qualia.

"Central to the particular nature of our consciousness, then, are its basic phenomenological qualities, such as the 'redness' we experience in looking at a tomato. Our experience of qualities, such as the color red, is described by the concept of qualia. ... Qualia represent, so to speak, the phenomenological element of our presentative consciousness: the phenomenal qualities that absorb us when we are in a state of consciousness as opposed to unconsciousness."¹⁰

Thus, insofar as we are conscious of the world within and around us, a conscious experience without the involvement of qualia is impossible as the world as we know is not what it is but what is experienced by us. The ability to perceive well and to respond meaningfully to the world of qualities, and the aptness of using methods and techniques to the said purpose marks consciousness of the organism. This world of qualitative experience refers not to the world of sense impressions alone but to our experienced thoughts and desires too.

¹⁰ Preben Bertelsen, *Free Will, Consciousness and Self: Anthropological Perspectives on Psychology* (New York: Berghahn Books, 2005), 146.

b) Subjectivity

The notion of qualia existing without an appreciator is an impossibility. Every experience has to be of someone. “The question of subjectivity points to ‘someone’ who is conscious in a particular way...there is *someone* who is a recipient of impressions made by the world.”¹¹ The inaccessibility of personal experiences to any external mind makes conscious experiences notoriously mysterious. Subjectivity defines clear limitations on the third person knowability of subjective conscious experience. Looking from the Nagelian point of view, conscious experience is a particular way of being someone that is experiential only by being that particular subject. “To the extent that I could look and behave like a wasp or a bat without changing my fundamental structure, my experiences would not be anything like the experiences of those animals.”¹² The notion of pre-reflective self-awareness is related to the idea that experiences have a subjective ‘feel’ to them, a certain (phenomenal) quality of ‘what it is like’ or what it ‘feels’ like to have them. As it is usually expressed outside of phenomenological texts, to undergo a conscious experience necessarily means that there is something it is like for the subject to have that experience.¹³

The experience of a subject has a ‘mine’ aspect associated with it. There is even immediacy in it when it comes to the knowledge of the same, unlike when one reflects about the actions or feelings of another.

“Experience happens for the experiencing subject in an immediate way and as part of this immediacy, it is implicitly marked as *my* experience. For the phenomenologists, this immediate and first-personal givenness of experiential phenomena must be accounted for in terms of a pre-reflective self-consciousness.”¹⁴

There is an easily imaginable clear-cut distinction among the subjective experiences of animals belonging to various species but this subjectivity is taken to a further level of complexity when it is distinguishable even between

¹¹ Ibid., 145.

¹² Nagel, 437.

¹³ Ibid., 435-50.

¹⁴ Shaun Gallagher and Dan Zahavi, “Phenomenological Approaches to Self-Consciousness,” in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy (winter 2010 Edition)*, <<http://plato.stanford.edu/archives/win2010/entries/self-consciousness-phenomenological/>> (12 May 2011).

individuals of the same species. Unlike in the objective sciences, the conscious experience of a subject is most unlikely to be known from a third person point of view. It is given in an immediate way to him alone as part of the very private experience of the subject and for a third person it becomes almost an impossibility to peep into his/her mental states.

c) Coherence and Continuity

Conscious experiences do not exist as independent mental atoms but as states of an experiencing self. Meaning and intelligibility is provided to our spatial and temporal perspectives by the features of coherence and continuity. For an experience to be possible across time there should be necessary continuity and coherence within the related impressions that one receives. “Even a seemingly simple, current experience is in fact a continuous experience of more than one instant, and must be if one is to hear a sound or *perceive* (as opposed to remember) any temporally stretched phenomenon at all.”¹⁵

Consciousness is, in a way, a model that facilitates our relatedness to the world that we are in. We are interconnected through the experienced qualia and that cannot be independent and incoherent phases or happenings of impressions. For an experience to be meaningful and purposive there should be sufficiency of duration and internal cohesion.

“Since we are conscious of things in this directed- and qualia-based way, the world is presented and represented to us as a phenomenologically coherent unit. We do not apprehend the world, through consciousness, as a formless bundle of desperate and unconnected phenomena – on the contrary, we are conscious of the world as a coherent entity in which we involve ourselves through our thoughts and feelings, and our active, willed endeavour to establish connection with it.”¹⁶

Unified consciousness of contents and experiencing requires some kind of phenomenally evident relation among the contents of unified conscious state in addition to the contents being aspects of a single unified act of consciousness. Thus, for any experience to become conscious awareness, there should be at least minimal level of coherence and continuity.

¹⁵ Andrew Brook and Paul Raymont, “The Unity of Consciousness,” in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy (fall 2010 Edition)*,

<<http://plato.stanford.edu/archives/fall2010/entries/consciousness-unity/>> (14 April 2011).

¹⁶ Bertelsen, 161.

d) Unity

The main purpose of consciousness may be one of presenting a unified picture to the subject of the world around him. It could presumably be a local unity like the perception of a red ball moving against a yellow background. The movement and the ball are all perceived as a perceptual whole. "It is difficult or impossible to imagine a subject having two phenomenal states simultaneously, without there being a conjoint phenomenology for both states."¹⁷ There cannot be simultaneous dissimilar and unrelated stages of experiences, as meaningful experiencing of an event demands a thread of similarity linking the different stages of the whole episode. Every individual experience is thus made possible by experiencing it as a unified whole in a larger spectrum.

Human consciousness usually displays a striking unity. When one experiences a noise and, say, a pain, one is not conscious of the noise and, separately, of the pain. One is conscious of the noise and pain together, as aspects of a single conscious experience.¹⁸ Though the question of unity of consciousness itself is debated upon, like in the case of Hume, consciousness just being 'a bundle of different perceptions,'¹⁹ it is taken to be unified for at least practical reasons. Now seemingly a bigger problem takes the centre stage – that of the binding problem.

"It is a scientific problem in itself (one referred to the 'binding problem') to understand how all these processes join together to produce a single, coherent experience of a bouncing, blue ball. But it is a matter of psychological fact that we do experience all these different aspects of reality as a whole rather than separately".²⁰

Though the binding problem is another discussable topic in itself, it is clear that unity is an unavoidable feature of conscious experience.

¹⁷ Tim Bayne and David J. Chalmers, "What is the unity of consciousness?," in Axel Cleeremans, ed., *The Unity of Consciousness: Binding, Integration and Dissociation* (Oxford: Oxford University Press, 2003), 37.

¹⁸ Brook and Raymont, "The Unity of Consciousness."

¹⁹ David Hume, *A Treatise of Human Nature*, D. G. C. Magnabb, ed., (Glasgow: William Collins sons & Co. Ltd., 1962), Book i. Part. iv. Sec. vi.

²⁰ Bertelsen, 161.

e) Intentionality

Consciousness is not something that is capable of existing independently of any experiencing subject or the experienced object. It has to be about the relatedness – both by the world and to the world. Conscious mental states typically possess a representational or intentional aspect as they are always about something, that is to say, it is always intentionally directed at/by something.²¹ Conscious experiences emerge from one's relation with the world around and this relation becomes meaningful as the subject approaches the world and interprets it with a definite intention. The word 'intentionality' is a technical word for the feature of a mental state in virtue of which it is directed at or is about or represents something other than itself.²² It is something wherein the similar nature of the world and the agent comes to play as in being attracted by the resonance of the world and attracting the world through the resonance of the agent himself, demarked by a deeper first person perspective.

"To be conscious means to be directed at/by something in a resonant way, or, conversely, to resonate with the world on the basis of one's first-person perspective."²³

Intentional nature of consciousness implies that there should be a being on whom the impressions keep hitting and who derives meaning out of these chaotic receptors and responds to them in the most fitting way. There cannot be impressions existing anywhere without a receptor. This also says that if this is what happens, then that should be with some purpose. The interaction of the particular agent with the world should be purposive; it should be directed by the world around or should be directed at the world. This is what intentional consciousness is all about.

Though the potentiality of extending intentionality to non-conscious mental states is also debated upon, intentional bondage between the world and the self has been considered as a vital factor in describing the subject as conscious. Though it may be true that certain degrees of intentionality is to be involved in any sort of action/experience, whether

²¹ Ibid., 6.

²² George Graham, Terence Horgan and John Tienson, "Phenomenology, Intentionality, and the Unity of the Mind," in Brian P. McLaughlin, Ansgar Beckermann, Sven Walter, eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 513.

²³ Bertelsen, 160.

conscious or non-conscious, we are not very sure about how much of intentionality could be attributed to acts directed by mere impulse or reflexive acts.

f) Transparency

Another interesting feature of consciousness is transparency, its way of knowing itself. There is a peculiar way for the subject to know that he knows. Some sort of transparency underlies the person's immediate awareness about his own thoughts, emotions, sensations and feelings. It seems, one is conscious not only when one actively reflects upon his own experiences or thoughts. Before some sort of a metarepresentation is produced, the subject may become conscious of certain experiences.

“In the most basic sense of the term, self-consciousness is not something that comes about the moment one attentively inspects or reflectively introspects one's experiences, or in the instant of self-recognition of one's image in the mirror, or in the proper use of the first-person pronoun, or in the construction of a self-narrative. Rather, these different kinds of self-consciousness are to be distinguished from the pre-reflective self-consciousness which is present whenever I am living through or undergoing an experience, i.e., whenever I am consciously perceiving the world, whenever I am thinking an occurrent thought, whenever I am feeling sad or happy, thirsty or in pain, and so forth.”²⁴

We do not employ a certain methodology to know our own experiences; rather, there is an immediate way of knowing something that happens to us. Unlike knowing other things or decoding the experience of others, we need no model of interpretation or understanding when it comes to the question of knowing our own phenomenological experience. And this is a peculiar feature that marks our conscious experience that it is immediately given to us.

“Although to be conscious of a situation means, by definition, to form a phenomenological model of it, we are not conscious of or attentive to the model as such; rather, we are conscious because of this model. Such is the transparency of our phenomenological experience, that we have a sense of complete realism. When we experience something, we experience it directly; we are conscious of this reality, this slice of life.”²⁵

²⁴ Gallagher and Zahavi, “Phenomenological Approaches to Self-Consciousness.”

²⁵ Bertelsen, 162.

Transparency has been counted as an undisputable feature of consciousness, making possible the mysterious nature of consciousness of first person perspective and subjectivity.

Consciousness is a dynamic process, being a self transforming flow of imagination, planning and mentally executing actions before and after their happening. And thus, an adequate descriptive answer to the 'What' question of consciousness begs for more than just its static or momentary properties. Still, to deal with a larger factor like consciousness of which we know very little, it is easier to crack it into finer features and try understanding it. Having looked at different features of consciousness, we will now look at different types of theories that are proposed as possible solutions to the problem of consciousness.

Theories of Consciousness

Being a mystery of baffling nature, consciousness has attracted attention of intellectuals from varying backgrounds. The attempt to bring out an all encompassing theory of consciousness, enabling us to say that this is consciousness, this is how it functions and this is why it is there, has been a project taken up by various branches of systematic study. Finally, it seems that an inter-theoretical approach may be the best solution possible to understand what consciousness basically is and how and why it functions. Here we will analyze some of the theories proposed as solution to the problem of consciousness and the arguments placed against them.

a) First Order and Higher Order Theories

There are two sets of theories of consciousness in regard to the access that the subject has towards his/her experience. There are experts who hold the view that conscious experiences are immediately given to us while others hold that there needs to be effort at having a conscious awareness that we have an experience; and until then it remains another unconscious happening. Unconscious mental states are unconscious precisely in that we lack the relevant higher-order states about them. Their being unconscious consists

in the fact that we are not reflexively and directly aware of being in them.²⁶ Arguably the most pressing and challenging problem about consciousness is to explain what the difference between mental states that are conscious and those that are not. It is this question that higher order theories of consciousness address.²⁷ Here, by unconscious mental states, we mean having a mental state but not being aware of having such a mental state. For example, the child may desire a chocolate – she has a mental state of a desire but more than having that desire she can also be aware that currently she has a desire. There are theorists who say that We could be functionally conscious if our behavior is appropriate to a property of the world.

“First-order representationalist accounts hold that if a particular state of the visual system of an organism represents some property of the world in a way that is functionally appropriate (e.g., not conceptually mediated, and operating as part of a sensory system), then the organism is said to be phenomenally conscious of that property.”²⁸

There could be thus two possible states of mind: having a particular mental state; and having a reflexive awareness of the same. This second order consciousness we call higher order consciousness. Whenever a qualitative state becomes conscious we seem automatically to recognize its mental qualities. This suggests that a sensation’s being conscious involves purely recognitional concepts, which apply to the sensation solely in virtue of some ability to recognize that type of sensation, rather than by way of ties that concept has with other concepts.²⁹ The most familiar form of higher-order theory postulate the existence of a pair of distinct mental states: a first-order perceptual or quasi-perceptual state with a given content, and a higher-order thought or perception representing the presence of that first-order state, thereby rendering it conscious. Either one of these states can occur without the other, although there may be a reliable causal relation between them, such that certain types of first-order perception (e.g. attended outputs of the temporal-lobe visual system) regularly cause higher-order representations

²⁶ Van Gulick, “Consciousness.”

²⁷ David M. Rosenthal, “Higher Order Theories of Consciousness,” in Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 240.

²⁸ Colin Allen, “Animal Consciousness,” Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (summer 2011 Edition), <<http://plato.stanford.edu/entries/consciousness-animal/>> (12 May 2011).

²⁹ Rosenthal, “Higher Order Theories of Consciousness.”

of themselves to be formed.³⁰ Thus, it could be ordered even in a causal chain of happening as the higher order is necessarily caused by the first order mental states.

Being conscious in the strictest sense involves both these states: having of a mental state and its reflexive meta-mental state. Higher-order theories analyze the notion of a conscious mental state in terms of this very reflexive meta-mental self-awareness.

“The core idea is that what makes a mental state M a conscious mental state is the fact that it is accompanied by a simultaneous and non-inferential higher-order (i.e., meta-mental) state whose content is that one is now in M. Having a conscious desire for some chocolate involves being in two mental states; one must have both a desire for some chocolate and also a higher-order state whose content is that one is now having just such a desire.”³¹

Two variants of these theories are: the Higher Order Thought (HOT), having meta – mental states or meta thoughts and Higher Order Perception (HOP), having some intra mental monitoring system. In the first one it is having thoughts about the mental states or reflexively thinking about the mental state that one is in. In the second, it is a perception of the mental states happening. Higher order theories of consciousness capture the compelling folk psychological idea that conscious states are those we are conscious of in some suitable way, and they fit well with results in experimental psychology. Rosenthal is of the view that it is likely that some version of a higher order theory will prove to be correct.³²

b) Representational Theories

According to thinkers who propose this view, conscious states are just the ordering of mere representational properties. The theory goes on to argue that two conscious mental states produced by the same representational properties are bound to be the same. According to the representationalists, conscious mental states have no mental properties other than their representational properties. “Thus two conscious or experiential states

³⁰ Peter Carruthers, “Higher-Order Theories of Consciousness,” in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy (fall 2009 Edition)*,

<<http://plato.stanford.edu/archives/fall2009/entries/consciousness-higher/>> (12 May 2011).

³¹ Van Gulick, “Consciousness.”

³² Rosenthal, “Higher Order Theories of Consciousness.”

that share all their representational properties will not differ in any mental respect.”³³ The representationists deny any peculiar mental states to consciousness that was traditionally bestowed upon it. They believe that conscious experiences could be explained without taking recourse to any non-representational mental states.

“Change any of the qualities that are the various ways things look, smell, sound, etc. and necessarily the phenomenal character of the experience changes. Why should this be? The answer the strong representationalist proposes is that phenomenal character is identical with a certain sort of representational content into which the relevant qualities enter.”³⁴

Representational theories of consciousness link phenomenal consciousness with the representational content of mental states, subject to some further functional criteria.³⁵ For them, the mental state and the mental content should both be similar. But at the same time these theorists are unable to give a clear answer to the phenomena where there may be representational features that satisfy the truth conditions and be the same but differ in their mental effect.

c) Cognitive Theories

Philosophers and psychologists have with equal conviction proposed theories that try explaining consciousness in terms of cognitive processes. Multiple Drafts Model of Daniel Dennett is prominent among them, combining features of both representationism and higher order theories.

At any given moment, there are thousands of content fluctuations happening within the brain and just a few of them get to be conscious. The reason why they get reflected is not that they occur in a privileged spatial or functional location, nor in any special mode or format. According to Dennett there is nothing like a Cartesian theatre. Rather it is a matter of what he calls ‘cerebral celebrity’, i.e., the degree to which a given content influences the future development of other contents throughout the brain, especially with regard to how those effects are manifest in the reports and behaviors that the person

³³ Van Gulick, “Consciousness.”

³⁴ Michael Tye, “Representationalism about Consciousness,” in Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 262.

³⁵ Allen, “Animal Consciousness.”

makes in response to various probes that might indicate his/her conscious state.³⁶ He also proposes that there may not be a single conscious state in a person at a given time, but many. It might depend on what kind of probing methods we apply. Even the virtual self that is permitted within this theory may be something emergent from the experiencing of the internally coherent and unified experiences.

Another major theory under the cognitive approach to consciousness is the Global Workspace Theory of Bernard Baars, offering a largely psychological and functional consciousness dealing with its access notion. This theory considers consciousness as a limited resource capacity that allows the broadcasting of information throughout the system and allows far more sophisticated processing of the same. It has as its main idea that consciousness is a limited resource capacity or module that enables information to be 'broadcast' widely throughout the system and allows for more flexible sophisticated processing.³⁷ The branch of psychology that deals with attention and working memory frame many cognitive models that are closely related to this sort of an understanding.

Giulio Tononi, a scientist who attempts to make an account of consciousness in the light of Information Technology gives us a bird's eye-view of what cognitive approaches can do to consciousness studies. Consciousness here has been compared with what happens within a micro chip as a processor of information and is counted as a possibly measurable item in bits. Consciousness, Tononi says, is nothing more than integrated information. Information theorists measure the amount of information in a computer file or a cell phone call in bits. And Tononi argues that when we are wide awake our consciousness contains more bits than when we are asleep,³⁸ and, we could, in theory, measure consciousness in bits as well.

³⁶ Van Gulick, "Consciousness."

³⁷ Ibid.

³⁸ Carl Zimmer, "Sizing up Consciousness by Its Bits," *The New York Times on the web*, 20 September 2010, <<http://www.nytimes.com/2010/09/21/science/21consciousness.html>> (12 June 2011).

d) Neural Theories

The modern physical theories of consciousness based on psychology and neuroscience are the most prominent and influential. Theories proposed by present day neuroscientists like V. S. Ramachandran, Antonio Damasio and Gerald Edelman and by philosophers like Daniel Dennett seek to explain consciousness in the light of the neural events occurring within the brain. The conscious experiences that we have are based entirely on the chemical reactions within the billions of neurons embedded in the brain, the most complex formation of matter that we know today. According to Francis Crick and Christof Koch, it is possible that by locating the neurons in the cerebral cortex that correlate best with consciousness, and figuring out how they link to neurons elsewhere in the brain, we may come across key insights into what David J. Chalmers calls the hard problem: a full accounting of the manner in which subjective experience arises from these cerebral processes.³⁹ The neural basis of consciousness has been a serious matter of study to many psychologists, scientists and philosophers alike.

The neural correlates of consciousness try to explain why or how should there exist neural correlations corresponding to the conscious experiences. The different theories of this nature proposed as a possible solution to the problem of consciousness try to explain how organization and activity at the relevant neural level could underlie one or another major type of or feature of consciousness. The brain with all its complex structure and functions, might reveal the secrets of its own function – consciousness. Hopefully, various neural theories, by complementing and sharing information might lead to a possible understanding of the mysterious nature of consciousness.

There are also prominent philosophers who have tried making a solid foundation for their theory of consciousness in the findings made by the neuroscientists. They have tried interpreting the neural basis of consciousness using the tentative functional characterizations of phenomenal and access consciousness.⁴⁰ Philosophers like Ned

³⁹ Francis Crick and Christof Koch, "Why Neuroscience may be Able to Explain Consciousness," *Scientific American* 273 (1995): 84-85.

⁴⁰ According to Ned Block, Phenomenal consciousness is experience; the phenomenally conscious aspect of a state is what it is like to be in that state. The mark of access-consciousness, by contrast, is its

Block argues, on the basis of evidence from studies on both humans and monkeys, that recurrent feedback activity in sensory cortex is the most plausible candidate for being the neural correlate of phenomenal consciousness in these species.⁴¹ Neuroscientists who are occupied with serious research of the parts and functions of the brain come across patients who lack or are deficient on consciousness and then theorize as to what are the necessary requirements that help a man to be normally conscious.

e) Quantum Theories

It is interesting that consciousness studies have attracted not only philosophers and the psychologists but intellectuals from the pure scientific field as well. The investigation for a seat of consciousness thus has entered much deeper into the micro-physical levels of quantum physics. The theorists who argue for a model of consciousness based on the principles of quantum physics believe that if no theory of consciousness based on classical Physics is satisfactory in explaining how consciousness emerges from the electrochemical activity of the brain, then maybe the problem lies with classical understanding of matter.

“Loosely speaking, the point is that consciousness is unlikely to arise from classical properties of matter....But, for example, Quantum Theory allows for a new concept of matter altogether, which may well leave cracks for consciousness, for something that is not purely material or purely extra-material.”⁴²

The view is that the principles of consciousness may not be found within the systems of classical physics but in the more dynamic picture of reality as revealed by quantum physics. The quantum theories show how certain structural features of ion conductance channels critical to synaptic function *entail* that the classical approximation fails in principle to cover the dynamics of a human brain⁴³ and why Quantum dynamics must be used in principle. The success of this sort of a theory might lie in the fact that the principles of quantum physics might be able to give a non-localized universal theory of

availability for use in reasoning and rationally guiding speech and action. Ned Block, “On a Confusion about a Function of Consciousness,” *Behavioral and Brain Sciences* 18, 2 (1995): 227-287.

⁴¹ Van Gulick, “Consciousness.”

⁴² Piero Scaruffi, “*Quantum Consciousness*,” 1 February 2011, <<http://www.scaruffi.com/science/qc.html>> (16 February 2011).

⁴³ Jeffrey M. Schwartz, Henry P. Stapp and Mario Beauregard, “Quantum Physics in Neuroscience and Psychology: A Neurophysical Model of Mind / Brain Interaction,” 13 August 2004, <<http://www-physics.lbl.gov/~stapp/PTB6.pdf>> (22 February 2011).

consciousness that is more in line with philosophical views rather than the other approaches to consciousness might be able to.

“The advantage of Quantum Theory, though, is that it allows for ‘non-local’ properties and provides a framework to explain how entities get ‘entangled’, precisely the phenomena that electrochemical brain processes are not enough to explain.”⁴⁴

There are various theories and alternative pictures offered under this banner and finally it has to be doubted if consciousness might be found as a basic property of the fundamental forms of matter – if something of that nature exists.

The drawback with this kind of an attempt is that quantum physics presently is equally mysterious as anything related to consciousness. There is a danger in approaching consciousness in the light of quantum physics, as they are both poorly understood: what they have in common is a degree of ‘fuzziness’ that allows us to tinker with definitions.⁴⁵ It might lead to the fallacy of explaining something in terms of something else which is equally or more bizarre and ambiguous.

f) Non-physical Theories

While the theories mentioned above try explaining consciousness as a feature quite natural to beings, there are also theories that through a mystical approach might give consciousness an ontological status that differ substantially from the physical nature of beings.

The easiest and the most ancient way of understanding consciousness had been to appoint a non-material entity as its cause and owner. For long, the unintelligible problems of consciousness had been thrown into the hands of a larger mysterious being. Plato considered the soul as the essence of a person, being, that which decides how we behave. He considered this essence as an incorporeal, eternal occupant of our being⁴⁶, responsible for all our finer qualities of thought and imagination. Again the religious philosophers

⁴⁴ Piero Scaruffi, “The Physics of Consciousness: A Critique of Neuroscience,” 25 June 2005, <<http://www.scaruffi.com/tat/consc3.html>> (14 June 2011).

⁴⁵ Ibid.

⁴⁶ Dario Composta, *History of ancient philosophy*, (Vatican: Pontifical Urban University, 1990), 178.

were eager to grant all subtleties of human existence that were probably hard as ever to understand into the mercy of incorporeal beings that were metaphysically conducive in explaining the finer tones of human existence. As for example, the epistemological theory of Aquinas required that, since the intellectual soul is capable of knowing all material things, and since in order to know a material thing there must be no material thing within it, the soul was definitely not corporeal. Therefore, the soul had an operation separate from the body and therefore could subsist without the body.⁴⁷

There were also attempts to grant ontological status to consciousness itself, considering consciousness as something different from the body, leaving from and coming back to the body at its will as, they believed, happens during sleep or anesthesia.

Problems of Consciousness Study

Having noted possible major theories of consciousness, we now come to some general issues that are faced by the philosophers who are involved in the study of consciousness. Consciousness study is so baffling, many issues in it genuinely demanding real application of human mind. The issues are so significant and puzzling that theories have been proposed doubting even the very possibility of man being capable of knowing it. Both philosophical and technical problems underlie the very possibility of drawing a fool-proof model of consciousness with the resources that we have today. Here are a few fundamental problems that are faced by the theorists trying to crack the mystery of consciousness.

a) First-person and Third – person Perspective

Consciousness is nevertheless associated with a deep personal and subjective perspective. The cause and effect relation seems to take a back seat when it comes to the same worldly impressions producing different experiential states for each individual. To be conscious means to be in a particular way, to experience the world in that particular mode. According to Nagel, without some idea, of what the subjective character of

⁴⁷ Battista Mondin, *A History of Mediaeval Philosophy* (Vatican: Pontifical Urbaniana University, 1991), 315.

experience is,⁴⁸ we will not even know what is required to look for an objective theory of the same.

Now making an objective study of the subjective experience of consciousness is difficult. The very possibility of making such an effort may be under doubt. How can one know about what the other feels and how the impressions are processed in him or her? Moreover, it makes generalized theories of the experience of different persons makes it much difficult a project. The subjective conscious experiences are as complex as the persons themselves and as secluded as their inner thoughts and intentions.

The possibility of our knowing what goes on even within oneself is doubtful. The successful application of introspection in knowing one's own mental states is debated upon mainly for three reasons: there might be real unconscious mental states, inaccessible to us as pointed out by Sigmund Freud; the very possibility of introspection or forms of privileged access is subject to doubt; and if externalism were to be true, then the possibility of having a first person perspective may be questionable. Mere introspection do not save us in knowing what all is happening in there and for the same reason it is unintelligible also to think that we will easily know what is happening in the closed minds of others to which we have least access when it comes to question of directly knowing about the thoughts and mental states in there.

“...pure introspection gives us no access to what might be called the undercurrents or underpinnings of consciousness. Much empirical evidence has been gathered to show, for example, that we ourselves have not the slightest idea as to how we in fact process information, and that our subjective reports of the way in which we function mentally and emotionally will frequently turn out to be wrong. Often we will be in a quite different state, seen from an objective psychological perspective, from the one we suppose ourselves to be in.”⁴⁹

Going a step further to think of knowing what happens in the mind of another being other than from our own species, an objective third person study becomes almost impossible. We might know as time goes on how the being comes to know or if it has a metarepresentation of its own states, but we will never know what it really feels unless

⁴⁸ Nagel, 436.

⁴⁹ Bertelsen, 152.

we design a communication system that will directly take us along the experiences of that being.

“No amount of knowledge gleaned from the external objective third-person perspective of the natural sciences will supposedly suffice to allow us to understand what the bat can understand of its own experience from its internal first-person subjective point of view.”⁵⁰

Thus, knowing what the other person or another being feels like and then making a theory of it should really pester the philosophical minds. It is not a matter of knowing more/less to make the theory stronger but having no access to know anything at all as it is too much of a subjective experience for science to make any advancement.

There is something very personal about one’s conscious experience. There is a mine-ness given to it which is probably beyond the reach of my possible language when it comes to sharing it with someone else. And for the same reason an objective study of the same, becomes difficult.

“As I live through these differences, there is something experiential that is, in some sense, the same, namely, their distinct first-personal givenness. All the experiences are characterized by a quality of *mineness*. All the experiences are given (at least tacitly) as *my* experiences, as experiences *I* am undergoing or living through. All of this suggests that first-person experience presents me with an immediate and non-observational access to myself, and that (phenomenal) consciousness consequently entails a (minimal) form of self-consciousness. To put it differently, unless a mental process is self-conscious there will be nothing it is like to undergo the process, and it therefore cannot be a phenomenally conscious process.”⁵¹

Also the features of a first person and third person perspectives differ. No description of the third-person, objective, physiological facts would convey the subjective, first-person character of the pain, simply because the first-person features are different from the third-person features.⁵² Here we might also think of Nagel’s ‘what it is to be like something’, that directly speaks of the impossibility of a third person objective study of the subjective experience. Nagel disputes our capacity to know, imagine, or describe in scientific terms *what* it is like to be a bat, but he assumes that there *is* something it is like. There are

⁵⁰ Van Gulick, “Consciousness.”

⁵¹ Gallagher and Zahavi, “Phenomenological Approaches to Self-Consciousness.”

⁵² John Searle, “*Reductionism and the Irreducibility of Consciousness*,”

<[http://faculty.fullerton.edu/jeelooliu/397%20folder/\(397\)%20handout%2015%20\(Searle\).pdf](http://faculty.fullerton.edu/jeelooliu/397%20folder/(397)%20handout%2015%20(Searle).pdf)> (13 June 2011).

those, however, who would challenge this assumption directly. Others would less directly challenge the possibility of scientifically investigating its truth.⁵³ Whether there is a way of being like something else or knowing what the other feels like, it is for sure that framing an objective view of the subjective experiences of a person presents an insurmountable task to persons engaged in such a project.

b) Dualist or Physicalist Approach? - Challenges of Reductionism

Reductionism has been one great triumph of the human understanding of the objective universe in the last few centuries. Its belief that essentially everything can be explained in terms of certain fundamental physical events or laws has been greatly encouraged by the vigorous development in various fields of natural sciences. The modern quantum physics, for example, is extraordinarily successful in explaining many microscopic phenomena, giving extraordinarily accurate predictions of microscopic systems, and hence enhancing the development of numerous applications such as computer and nanotechnology.⁵⁴ But how far shall the study of consciousness focus on the body and its physical phenomena? Is it a product of the body and its physical factors in operation or is it something that is nothing different and something that could be explained purely in the physical terms? How far can physical states explain the mental features of consciousness and is it all that one needs to look at to have a clear understanding of the conscious mental states? The idea of a physicalist theory of consciousness-as-such certainly makes initial sense. It is perfectly normal for a scientific theory to identify the physical property which constitutes the real nature of some everyday kind. Thus science has shown us that water is H₂O, and that genes are sequences of DNA, and many other such things. So why shouldn't it show us which physical property constitutes the real nature of consciousness?⁵⁵

The physicalists are on look out for a theory that will comprehensively explain the underlying physical property common to all cases of consciousness and hence explaining to us what the whole mystery about consciousness is. Is there room for theories of

⁵³ Allen, "Animal Consciousness."

⁵⁴Thomas Tsoi Wai Chuen, "The Reductionism of Consciousness," 21 March 2010, <<http://www.thomastsoi.com/2010/03/the-reductionism-of-consciousness/>> (12 April 2011).

⁵⁵ David Papineau, "Theories of Consciousness," 1 February 2001, <<http://www.kcl.ac.uk/ip/davidpapineau/Staff/Papineau/OnlinePapers/theoriescon.html>> (13 April 2011).

consciousness within a serious physicalism which identifies determinate conscious properties with physical properties, and does not slip back into thinking of the physical properties as 'giving rise' to the conscious ones? Certainly there are plenty of serious physicalists who defend this possibility. They are quite clear that conscious properties are one and the same as physical properties, yet still want a theory that will tell us what is common to all cases of consciousness.⁵⁶ The project is still strong and hopeful in looking out for a physicalist account for consciousness though it does not go without serious arguments having placed against it.

Philosophers like John Searle have come out in strong opposition against any prospect of explaining consciousness purely in physicalist terms.

"The existence of consciousness can be explained by the causal interaction between elements of the brain at the micro level, but consciousness cannot itself be deduced or calculated from the sheer physical structure of the neurons without some additional account of the causal relations between them."⁵⁷

The traditional dualists also have strong opposition towards any possible reduction of consciousness to the physical. According to them, consciousness is still an undescribed constituent element of the universe.

"Traditional dualists may argue that the reduction of consciousness to physically describable mechanisms is impossible on any concept of the physical. Others may hold that consciousness is an as-yet-undescribed fundamental constituent of the physical universe, not reducible to any known physical principles."⁵⁸

Consciousness could be explained as an emergent property of the causal relation of the physical properties as something different from the constituting elements itself as John Searle opines, and for the same reason, it cannot be completely accounted for in pure physical terms. The problems of relating consciousness to physicality and the extent to which consciousness has to be restricted to physicality has great impacts in the entire project. Reducing the mental to the physical is more of susceptibility than a possibility. This task will be faced by different fields of studies that lately show interest in human

⁵⁶ Ibid.

⁵⁷ Searle, "Reductionism and the Irreducibility of Consciousness."

⁵⁸ Allen, "Animal Consciousness."

mind, be it psychology or physics. The whole of mind-body problem seems not in a mood to let us have our day.

c) The Soft and Hard Problems of Consciousness

It seems that the single deepest problem that all of consciousness study has is that of its origin. How do physical states give rise to mental states with just the contradictory features? We may learn completely of the brain, its every function and how the person becomes consciously aware of his own mental states; but the question of subjective experience remains unsolved. It is undeniable that some organisms are subjects of experience. But how these systems are subjects of experience is perplexing, as David Chalmers states. Why is it that when our cognitive systems engage in visual and auditory information-processing, we have visual or auditory experience: the quality of deep blue, the sensation of middle C?⁵⁹ He would categorize different problems related to consciousness into the 'easy' and the 'hard' problems of consciousness.

In his own words, the easy problems are susceptible to standard methods of enquiry. He will include a set of functions that we attribute to consciousness in the easy problems.

“The easy problems of consciousness include the following: How can a human subject discriminate sensory stimuli and react to them appropriately? How does the brain integrate information from many different sources and use this information to control behavior? How is it that subjects can verbalize their internal states? Although all these questions are associated with consciousness, they all concern the objective mechanisms of the cognitive system. Consequently, we have every reason to expect that continued work in cognitive psychology and neuroscience will answer them.”⁶⁰

Chalmers is hopeful that the easy problems of consciousness would one day be explained clearly using our methods of inquiry though it might demand rather a prolonged period of research. “The easy problems of consciousness are those that seem directly susceptible to the standard methods of cognitive science, whereby a phenomenon is explained in terms of computational or neural mechanisms.”⁶¹

⁵⁹ David J. Chalmers, “Facing up to the Problem of Consciousness,” *Journal of Consciousness Studies*, 2 (1995): 3, 200-19.

⁶⁰ Chalmers, “The puzzle of conscious experience,” 63.

⁶¹ Chalmers, “Facing Up to the Problem of Consciousness,” 201.

"It's the one that Freud made famous, the difference between conscious and unconscious thoughts. Some kinds of information in the brain--such as the surfaces in front of you, your daydreams, your plans for the day, your pleasures and peeves--are conscious. You can ponder them, discuss them and let them guide your behavior. ... The Easy Problem, then, is to distinguish conscious from unconscious mental computation, identify its correlates in the brain and explain why it evolved."⁶²

The hard problem, in contrast, is the question of how physical processes in the brain give rise to subjective experience. This puzzle involves the inner aspect of thought and perception: the way things feel for the subject.⁶³ And it is called so because of the relatively hard ways of explaining the very origin of conscious experience and it seems that it is beyond a possible solution. The Hard Problem is explaining how subjective experience arises from neural computation. The problem is hard because no one knows what a solution might look like or even whether it is a genuine scientific problem in the first place. And not surprisingly, everyone agrees that the hard problem (if it is a problem) remains a mystery.⁶⁴ But Chalmers has some valid questions to ask about the problem of consciousness.

"How can we explain why there is something it is like to entertain a mental image, or to experience an emotion? It is widely agreed that experience arises from a physical basis, but we have no good explanation of why and how it so arises. Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does."⁶⁵

It may also be considered as a matter of time before we settle the issue for sure. The most popular attitude to the Hard Problem among neuroscientists is that it remains unsolved for now but will eventually succumb to research that chips away at the Easy Problem. Others are skeptical about this cheery optimism because none of the inroads into the Easy Problem brings a solution to the Hard Problem even a bit closer.⁶⁶ This tiny optimism keeps us going in search of a solution to the hard problem. But another fact to be considered here is that there are philosophers who consider there to be no problem at all. They altogether deny the hard problem of consciousness as such.

⁶² Steven Pinker, "The Brain: The Mystery of Consciousness," *Time*, 19 January 2007, <<http://www.time.com/time/magazine/article/0,9171,1580394-7,00.html>> (12 February 2011).

⁶³ Chalmers, "The puzzle of conscious experience," 63.

⁶⁴ Pinker, "The Brain: The Mystery of Consciousness."

⁶⁵ Chalmers, "Facing Up to the Problem of Consciousness," 202.

⁶⁶ Pinker, "The Brain: The Mystery of Consciousness."

There are at the same time oppositions also to the distinction between the easy and hard problem of consciousness, or towards its very possibility of knowing. There are philosophers like Daniel Dennett who reject the problem of consciousness as such, stating that going into the intricacies of the hard problem is a wastage of time as this problem will ultimately boil down to the easy problem.

“Anything you could do to understand consciousness-like finding out what wavelengths make people see green or how similar they say it is to blue, or what emotions they associate with it-boils down to information processing in the brain and thus gets sucked back into the Easy Problem, leaving nothing else to explain. Most people react to this argument with incredulity because it seems to deny the ultimate undeniable fact: our own experience.”⁶⁷

The link that joins the two poles of matter and mind stands elusive. Man has not a way today to skip out of this problem and to explain why one causes the other or how the two planes are related in their origin and functions. The age old problem pestering philosophical minds ever since the days of Descartes still keeps haunting us.

Conclusion

The entire project of learning about consciousness is both charming and challenging with its diverse facets and complexities. But it being a way of looking at reality in a more meaningful way or being the reason that we are capable of looking at itself is interesting. In this chapter, we have looked at different features of consciousness and the theories offering various possible explanations to the same. The basic problems that one who is immersed in the study of consciousness has to face while dealing with the topic were discussed as well. In the next chapter we will be looking in detail about one of the possible theories offered here and how it tries tackling the whole concept of consciousness.

⁶⁷ Ibid.

Chapter Two

THE EMERGING CONSCIOUSNESS

Introduction

The human brain has been considered as the most wonderful formation of matter known to man today. The most intriguing feature of brain is that it can think about itself and question how it learns about itself. Thus, it is quite natural that we look for the secrets of consciousness in its chambers. The neural correlates of consciousness have been a serious domain of enquiry deserving adequate attention of one who is seriously involved in consciousness studies. Here in this chapter, we will be asking as to why there should be consciousness at all and will be dealing with this question from an evolutionary point of view. We come to know consciousness as a factor emerging from the evolution of body as a necessary condition for bettering our chances of survival. Also, we will be taking up the relation between different parts and functions of the brain and consciousness. We will also be looking at various mental anomalies wherein damage or malfunctioning of certain areas of the brain cause loss of consciousness. Thus we will be seeking to know what brain functions we really need in order to be conscious.

Consciousness had been treated as a divinely endowed faculty and been a topic of serious speculation among philosophers. Now with the advancement of science in the domains of such a topic, it would be apt for philosophers to join the debate with original vigor. The new questions framed in scientific terminologies might give a lead in bringing topics like consciousness out of the mysterious shrines of divinity and speculation. As Thomas Nagel opined, without consciousness the mind-body problem would be much less interesting and with consciousness, it seems hopeless,¹ too complex. The most important and characteristic feature of conscious mental phenomena is very poorly understood and this makes the whole of mind-body problem with which philosophers struggled for long, more challenging even today.

¹ Thomas Nagel, "What is it like to be a bat?" *Philosophical Review* 83, 4 (October 1974): 435.

Consciousness as Relatedness

Consciousness could be understood as our way of intentionally relating to the world around us. A meaningful comprehension of the world and a purposive interaction with it is made possible through conscious awareness of the environment. Taking clue from this constant interaction of consciousness with environment that nurtures it, one can try and argue that consciousness emerged mainly due to this interconnection.

“...consciousness emerges not only through the vertical connection between the low-level processes of the brain and the higher organizing processes of the psyche. It emerges, in addition, through the horizontal connectedness between an organism and its surroundings. Consciousness is not just something within us, but a phenomenon that arises from the way in which we are connected, and relate, to the world that surrounds us.”²

Looking at consciousness as a way of interconnectedness, it goes on to say that the conscious states we are endowed with are nothing mystical or divine. Having no need to veil it in metaphysical shrouds, we may have enough evidence to explain it as an emergent faculty, making our living more meaningful. Consciousness is nothing divine but our everyday way of connecting with the world that we are in.

We clearly perceive, interpret and respond to the world around us in a way that best suits us. Thus, being conscious is purely purposive and intentional, framing a model of the world that we find ourselves to be comfortable in. We interpret the world, our lives, the situations we are in, and other people according to our own projects.

Consciousness could also be understood as a feature emerging somewhere in the line of evolution as a way of incorporating the world into our scheme of things. It directs us as to what our responses to the environment and other species of life should be, giving us better chances of survival. Thus understood, consciousness is a way of relating to the world, to the surroundings and behaving in a purposive manner. Now the question is what assists us in developing such a capability of meaningfully relating to others and to the situations. Here we may propose the presence of something called mirror-neurons that assist us in feeling the world as others do and also to make a subjective and personalized

² Preben Bertelsen, *Free Will, Consciousness and Self: Anthropological Perspectives on Psychology* (New York: Berghahn Books, 2005), 153.

view of the world. In the next section, we will look at mirror neurons as our way of feeling the world and its importance in our being conscious.

Mirror Neurons – Matter’s Way of Feeling the World

How do we feel the world and relate ourselves to others and situations, giving a meaning to our own very subjective existence? The discovery of mirror-neurons³ might be a possible answer to how we feel the world. Mirror neurons are a sort of motor neurons that fire not only when we do something but also when we see someone else doing the same. For example, the neurons fire when a monkey reaches for an object or merely watches another monkey start to do the same thing, thereby reading the other monkey’s mind and simulating its intentions.⁴ Thus, mirror neurons help us in interpreting the intention and feeling of the other and hence in forming a relation to the world.

These neurons, which were initially found in the Frontal Lobes and then in the *Cingulate* and *Insular Cortices* of the brain, are actively involved in our empathetic emotional responses. “While studying the Anterior Cingulate Cortex of wake human subjects, investigators found that certain neurons that typically fire in response to pain also fired when the person saw someone else in pain.”⁵ They cause in us a concerned feel for the other.

These neurons go a long way in enabling us to judge the intentions of a friend or foe and in simulating their actions. It’s as if anytime you want to make a judgement about someone else’s movements, you have to run a virtual-reality simulation of the corresponding movements in your own brain. And without mirror neurons you cannot do this.⁶ The mirror neurons not only send motor commands but also enable us to interpret

³ Mirror neurons are those that fire both when an animal acts and when the animal observes the same action performed by another. They were discovered in the early 90’s while conducting studies on macaque monkeys by researchers namely, Giacomo Rizzolatti, and his colleagues, Guisepppe Di Pellegrino, Luciano Fadiga, and Vittorio Gallese, in the University of Parma, Italy.

⁴ V. S. Ramachandran, *The Tell-tale Brain: Unlocking the Mystery of Human Nature* (Noida: Random House India, 2010), 300.

⁵ Vilayanur S. Ramachandran and Lindsay M. Oberman, “Broken Mirrors: a Theory of Autism,” *Scientific American* (November, 2006): 65.

⁶ Ramachandran, *The Tell-tale Brain*, 123.

the intentions of the other individuals by mentally simulating their actions. In humans, the mirror neuron system has evolved the ability to interpret much complex intentions whereas in monkeys these neurons are limited to predicting simple goal-directed actions. Now another significance of the mirror neurons is in the development of the concept of a self that we derive from this understanding of others' judgments about us. More than merely seeing the world from the others' viewpoint, it guides us ahead in seeing the advantages of it. Mirror neurons must have evolved further to figure out an awareness of the self as the one who is the subject of this awareness and also as the one seen by the other. It goes a long way in chiseling out a concept of the self. "Mirror neurons may enable humans to see themselves as others see them, which may be an essential ability for self-awareness and introspection."⁷

For a coherent picture of the world - of the self and of others, we are indeed indebted to mirror neurons; in interaction with the other functional parts of the brain, it leads us to framing a meaningful understanding of the world. In the normal brain, a dynamic interplay of three sets of signals (mirror neurons, frontal lobes, and sensory receptors) is responsible for preserving both the individuality of our own mind and body, and our mind's reciprocity with others. Disturbances in this system would lead to dissolution of interpersonal boundaries, personal identity, and body image.⁸ The dysfunctions of these neurons can have serious implications in our relatedness. As we see in autistic children, there is a lack of empathy – they fail to be in a world, interacting meaningfully with others. They have a deficient mirror-neuron system and are incapable of constructing a theory of other minds and lack empathy, but engage in self-stimulation to enhance their sense of being a self anchored in a body.⁹ They have therefore difficulty in relating to the world appropriately and hence end up framing a distorted concept of self.

Serious research has been done about mirror neurons ever since their significance to our cultural evolution was proposed. They are considered today to be the greatest agents in the development of our language and culture. It is suggested that man's ability to imitate

⁷ Ramachandran and Oberman, "Broken Mirrors: a Theory of Autism," 65.

⁸ Ramachandran, *The Tell-tale Brain*, 260-61.

⁹ V. S. Ramachandran, *The Emerging Mind: the Reith Lectures 2003* (London: Profile Books, 2011), 125.

and learn was the biggest advantage that he had over the other animal species as with this ability, he could easily transmit knowledge to the next generation and keep improving upon. The development that followed in aspects of our language and culture was in an unprecedented fast paced manner.

“We would say mirror neurons served the same role as in early hominin evolution as the internet, wikipedia, and blogging do today. Once the cascade was set in motion, there was no turning back from the path to humanity.”¹⁰

Thus, the role of mirror neurons in framing a way of feeling the world and making us conscious of it has to be seriously taken up. In the process of feeling, we do develop concepts of the world and self and also, in a larger spectrum, the ability to communicate what we feel. Thus mirror neurons might be the reason as to why we are able today as individual and social beings to have a phenomenological understanding of the world.

Consciousness as a Phenomenological Model Making

As we mentioned earlier, consciousness is a factor that assists us in meaningfully relating to the world around us. There are thousands of impressions falling into our sensory organs every moment; but we are aware of a select few of them. This is how consciousness forms a perfect platform for us to be aware of what is of value by screening off the others.

We are presented with only a judicious choice of impressions from the thousands hitting our sensory receptors every second. Thus, the world is presented to me individually as a personal affair, having a meaning that is relevant to me. As a conscious self, what I have is a model of the world that I feel and is conducive to my very beingness in it. While being in the world we form a phenomenological model of it by repressing the irrelevant impressions and by interpreting and deliberating upon the relevant ones to make a beautiful and coherent world around us. Thus, I feel and become consciously aware of the world as a unified whole as developed through a phenomenological model formation. Models work by presenting, in a tangible or transparent form, selected salient features of an object. In other words, they neither can nor should present every aspect of the object

¹⁰ Ramachandran, *The Tell-tale Brain*, 135.

or situation in question, but only a judicious choice of those features that are relevant for the purpose. In addition to this process of selection and abstraction, an attempt is made to reveal the interrelatedness of the different elements within the model and the coherence of the whole.¹¹

Modeling is always a schematizing of things as it is about emphasizing the useful and relevant information and rejecting those that do not fit into the idea. Models present objects or situations in terms that enable us to systematically identify and conceptualize them on the basis of what we need from them and do with them. In its formation of phenomenological models, consciousness operates in a similar way.

“what we experience is an abstract ‘model’ of the situation we are in or that object we are confronted with, including only those features of it which are of use or interest to us: a model based, in other words, on our particular involvement in, commitment to, the situation or object, and the way we are directed at/by it.”¹²

Thus, consciousness works as an intentionally constituted model that makes the environment conducive to our survival. Here one is directly presented by the world, and his/her response is formulated in values that are helpful for survival and hence makes a subjective yet social frame of living is formulated. If consciousness is something that is produced as a means of interacting with the world, making our existence meaningful, then looking at consciousness from an evolutionary standpoint becomes equally significant. Here we may seek to know the very purpose of there being any consciousness, in relation to evolution.

Why should Consciousness be? – An Evolutionary Approach

Now another important aspect of understanding the emergence of consciousness is the very purpose of there being any consciousness at all. It might help in explaining why the nervous system, through a whole procedure of evolution, has become a channel of consciousness. The process also might be helpful in understanding the structure and function of human brain with regard to consciousness.

¹¹ Bertelsen, 161.

¹² Ibid., 162.

Though it is immature now to make a clear answer to the purpose of there being consciousness, today we understand that it works rather as a filter, sweeping through the burdening amount of sensations that the individual is faced with at any given point of time. It may be a way of filtering and deciding upon what the actions that could be performed reflexively are and those that need serious deliberation. It now seems well established that I can 'take in' via the senses much more than I am aware of at a time, and act accordingly without my mind being involved at the level of consciousness at all.¹³ What in fact we get now to deal with are the most useful of them. Just as a person can be overwhelmed today by the gusher of data coming in from the electronic media, decision circuits inside the brain would be swamped if every curlicue and muscle twitch that was registered somewhere in the brain were constantly being delivered to them. Instead, our working memory and spotlight of attention receive executive summaries of the events and states that are most relevant to updating an understanding of the world and figuring out what to do next.¹⁴

There could also be another important strategic reason as to why there should be consciousness. The whole project of consciousness could be a way of presenting a coherent and meaningful picture of the world and of the self. It seems that consciousness is a part of self deceit, wherein coherence to the picture of self is brought in by forcibly suppressing contradictory information, no matter how true they may be. By suppressing irrelevant information and impulses, consciousness might give the much needed coherence to the picture that one wants to present of himself in a group. It regresses whatever is contradictory and avoidable to present a coherent and logical picture of oneself.

"At any moment in our waking lives, our brains are flooded with a bewildering array of sensory inputs, all of which must be incorporated into a coherent perspective that is based on what stored memories already tell us is true about ourselves and the world. In order to generate coherent actions, the brain must have some way of sifting through this superabundance of detail and of ordering it into a stable and internally consistent 'belief

¹³ Roy Harris, *Mindboggling: Preliminaries to a Science of the Mind* (Luton: The Panteneto Press, 2008), 83.

¹⁴ Steven Pinker, "The Brain: The Mystery of Consciousness," *Time*, 19 January 2007, <<http://www.time.com/time/magazine/article/0,9171,1580394-7,00.html>> (11 March 2011).

system' – a story that makes sense of the available evidence. Each time a new information comes in we fold it seamlessly into our preexisting world view."¹⁵

Evolutionary biologist Robert Trivers has noted that people have a motive to sell themselves as beneficent, rational, competent agents. The best propagandist is the one who believes his own lies, ensuring that he can't leak his deceit through nervous twitches or self-contradictions. So the brain might have been shaped to keep compromising data away from the conscious processes that govern our interaction with other people. At the same time, it keeps the data around in unconscious processes to prevent the person from getting too far out of touch with reality.¹⁶ Even the neuroscientists hold on to this view that consciousness is there for us to make a coherent view of the world, pruning out those impressions that are least useful to us or rather are contradictory to our world view. Thus, brain through a sweeping process makes the world beautiful and meaningful to us.

May be, the biggest reason for the presence of consciousness lies in evolution. The concept of consciousness as a source or means of engagement with the world through a process of phenomenological modeling is in accordance with the evolutionary view of psychology as well. This aspect of consciousness surely has a survival value, as the emergence of consciousness and a new way of understanding the environment might have assisted man's gaining of dominion over the other animal species. A deep processing of given data arms us with a better idea of how to react to the present scenario also in the light of our past experiences. Thus, herein we are given not only the *presentness* but an access also to the way we have dealt with the world so far.

"The biological usefulness of visual consciousness in humans is to produce the best current interpretation of the visual scene in the light of past experience, either of ourselves or of our ancestors (embodied in our genes), and to make this interpretation directly available, for a sufficient time, to the parts of the brain that contemplate and plan voluntary motor output, of one sort or another, including speech."¹⁷

¹⁵ V. S. Ramachandran and Sandra Blakeslee, *Phantoms in the Brain: Human Nature and the Architecture of the Mind* (London: Happer Collins, 2009), 134.

¹⁶ Pinker, "The Brain: The Mystery of Consciousness."

¹⁷ Francis Crick and Christof Koch, "Consciousness and Neuroscience," *Cerebral Cortex* 8 (1998): 98.

Consciousness of course has an evolutionary background and could be understood in the light of evolutionary psychology or evolutionary biology as an adaptation because consciousness is a biological trait that increases the organism's chances of survival or fitness. When we look from an evolutionary standpoint, it makes sense to have two sets of behaviour: one done reflexively in a stereotyped or automated manner without much effort and not wasting energy; and the other where conscious deliberation is applied, and thereby becoming slower and more complex than the former. The second aspect mentioned here may be the biggest reason for the emergence of consciousness. Many mammalian brain systems perform complex yet routine tasks without direct conscious input. These we might label as zombie behavior of which we may be aware but only in retro effect. There are at the same time, a few functions that we have selected to be deliberated upon so that we excel over the other species in the nature.

Survival: Making Maximum from the Given

Man, in comparison with many other animals, is weak in his physical abilities. Hence, we might conclude that the origin of consciousness might have been an ability that s/he naturally developed to overcome this weakness of the senses. Humans are distinguished from other animal species by the fact that given our physical nature, we are not endowed with a classic set of extensive behavioural programmes that might assist us survive on our own. But in order to compensate for this lack, our feeble nature, we have an unparalleled ability to consciously gain these behavioural patterns by imitation or exploration. Here, man would selectively know what is important to him and process information as per his needs. And this helps him save energy by avoiding to spend time on irrelevant and insignificant matters. The deliberation and preplanning took him ahead of many other species in aspects of survival. Being aware of only such information, having gained through a seamless selective filtering, is what we call consciousness today.

It is of course known today that there are certain activities that we perform without being conscious at all. As seen in the previous section, there are two systems in humans that direct our actions: one – that is primitive and common to all primates telling us 'how to'

deal with a situation, which is of course unconscious; and the other – a system of intense analysis and reflection, which tells us ‘what’ a situation is.

“In primates there are two systems, which we shall call the on-line system and the seeing system. The latter is conscious, while the former, acting more rapidly, is not. ... There is anecdotal evidence from sports. It is often stated that a trained tennis player reacting to a fast serve has no time to see the ball; the seeing comes afterwards. In a similar way, a sprinter is believed to start to run before he consciously hears the starting pistol.”¹⁸

What we have naturally is the first sort of an unconscious on-line system that makes things happen without our being aware of it as is proved in the case of blind-sight, which would be discussed in the next section. Now from this sort of an already existing way of dealing with the world, we have developed to manage our reactions and to preplan our actions, rather than being influenced by impulses. Here more than just reacting to the stimuli, we also have developed a way of interpreting the world and thus equipping us with better results and hence better chances of survival. Much of the brain activity that goes into the construction of representation is unconscious. This unconscious activity at the same time might be considered to be possible computations needed to find the best interpretation possible. While the interpretation itself may be a result of this computation, of which we may be aware but only of a few.¹⁹ Looking at how we developed a way of having conscious interpretation of the world through unconscious calculations, we might arrive at the reason of there being any consciousness.

Now developing finer forms of our mental abilities might be a continuation of this development. The parts of the brain that were involved in making judicious choices of everyday life such as in the positioning of the arm and the angles while jumping from branch to branch, which were horizontally positioned, also seemed to help in developing finer qualities of abstraction. This may be validated from the enlargement of the Angular Gyrus, a part of the brain involved in cross- model abstraction. Once the ability of abstraction was developed, then it was a matter of extending it to other aspects of abstraction that we humans excel in, be it metaphor or any other type of abstraction.²⁰

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ramachandran, *The Emerging Mind*, 86-87.

Here, V.S. Ramachandran, an eminent neuroscientist, makes clear how the finer faculties of human nature like abstraction and language developed from purely survival needs. Thus, we may conclude that consciousness and its ways of interpretation of the world were all the way getting evolved along with the brain in the great story of evolution.

Blind-sight: A Proof for the Evolution of Consciousness

The phenomenon of blind-sight might help us in explaining how the process of vision has evolved and has given us conscious awareness of what we see. It might be the ultimate litmus test for exploring conscious perception, allowing us to cross the Rubicon and investigate the mystery of consciousness as stated by Greenfield.²¹ In this bizarre symptom called blind-sight, it seems that though people are not able to see or be aware of the fact that they 'see', yet they can correctly predict the motion of objects. Patients, unfortunate to have lost their entire prefrontal cortex on both sides (including Broca's area) would not be visually conscious, although they might still have well-preserved, but unconscious, visual-motor abilities.²² This occurs in cases where damage to the brain prevents person from 'seeing' what is visible to the eye, but nevertheless does not apparently interfere with identifying the location of the objects in the visual field. Thus, although the patient claims to be able to see nothing, it seems that the eye must be functioning effectively at some level below the threshold of consciousness.²³ From this, it may be concluded that there was a time when we used to see without really being aware of what we saw. The new visual pathways that enable us to interpret what we see might of course be a new development all together. From this knowledge, we might infer that consciousness has evolved to assist us better our sensory faculties.

Blind sight might have been a primitive form of vision belonging to an earlier stage of our evolution. It is scientifically proved that to have a sense of vision other than seeing, we need the involvement of particular regions of the brain; it has to be well connected to the visual cortex that are rather of recent origin.

²¹ Harris, 83.

²² Crick and Koch, "Consciousness and Neuroscience," 103.

²³ Harris, 83.

“... I would argue that the patient (*with blind-sight* - added) has a representation of the light spot in his spared pathway, but without his visual cortex he has no representation of the representation – and hence no qualia to ‘speak of.’²⁴

This goes on to tell us that not all pathways but the new pathway of vision is capable of conscious awareness, giving us data to make a statement like – ‘I see this’. At the same time the older pathway can use vision for all kinds of other motor activities though the ‘subject’ may be completely unaware of what is going on in him. Ramachandran claims from this postulate that consciousness is a special property of the evolutionarily more recent cerebral cortex pathway.²⁵ The question that naturally arises now for a philosopher is: is there a particular pathway which has privileged access to the mind?

In blind-sight, the patient sees and does something, in the strictest sense, being unconscious of what he is doing, whereas an elaborate presentation of the world and an interpretation of the same in normal vision involves much more than that. From people who are suffering from this problem, we come to know that certain parts of the brain, when damaged, lead to loss of conscious awareness though they are capable of performing more basic motor activities without much hustle, reminding us of a time when there would have been seeing yet no ‘seeing’. Thus, by analyzing a single mode of sensation, we come to know the evolutionary importance of brain in the formation of consciousness; and in the next section, we will look at the brain as a possible location of consciousness.

Brain – the ‘Where’ of Consciousness

It is now almost a part of scientific knowledge that how the brain processes impressions and produce sensations. But, in consciousness studies, more than the perceptions made possible, we are concerned with the second order awareness of that perception: the knowledge we have of that knowledge - the reflexive character of consciousness. How do complex meta-thoughts happen? How is brain responsible for consciousness? There may be different parts of the brain dealing with different functions; and we are yet to find the unifier, the director who makes a complete picture of our experiences. Who unifies

²⁴ Ramachandran, *The Emerging Mind*, 128.

²⁵ Ramachandran and Blakeslee, 76.

the varying impressions, giving us a meaningful picture? And also how is it that the brain asks itself as to how it knows itself.

One might wonder how scientists could even begin to find the seat of awareness in the cacophony of a hundred billion jabbering neurons. The solution might lie in finding the changes that happen in different parts of the brain when a person slips from one state of consciousness to another. Though we are yet to scientifically prove the existence of complex brain functions in the emergence of consciousness, we have to appreciate our ability to use special brain circuits to create meta-representations, both of sensory and motor representations. Using functional MRI, cognitive neuroscientists can almost read people's thoughts from the blood flow in their brains. They can tell, for instance, whether a person is thinking about a face or a place.²⁶ The close relation between brain and consciousness should be studied in detail to see if a strong causal relation could be produced between the two or not.

Brain with all its complexities, should be the best place to look for an answer to consciousness. It is assumed that our brain, a piece of which in the size of a grain contains one hundred thousand neurons, two million axons and one billion synapses all 'talking to' each other,²⁷ could naturally be expected to give us an answer to an equally complex and mysterious thing as consciousness. But is it that the mind is something similar as the brain or a part of the brain? It does not seem so. There is strong opposition to such an understanding of looking for the seat of consciousness somewhere in the deep chambers of the brain. "...what makes an experience real for someone is not a question that can be answered by peering into the cerebral cortex, any more than what 'explains' an Olympic record-breaking performance can be answered by inspecting the anatomy of the athlete's muscles."²⁸

Ramachandran proposes a solution to locating consciousness in brain by taking a rather moderate way of neither asserting it is 'here' nor by claiming it is absolutely wrong to

²⁶ Pinker, "The Brain: The Mystery of Consciousness."

²⁷ Ramachandran and Blakeslee, 8.

²⁸ Harris, 99.

look for consciousness in the brain. He rather takes on a view that it must be the result of some very complex neural connections in certain parts of the brain.

“The conscious self is not some sort of ‘kernel’ or concentrated essence that inhabits a special throne at the center of the neural labyrinth, but neither is it a property of the whole brain. Instead, the self seems to emerge from a relatively small cluster of brain areas that are linked into an amazingly powerful network.”²⁹

Locating consciousness in the brain remains still a problem for many. There is difficulty with accepting the ‘all’ or ‘nothing’ views of locating consciousness in the brain. The problem might lie in thinking that consciousness could be traced to any particular part of the brain or conversely that mind has nothing to do with the physiology of the brain. This problem has been clearly explained through an analogy of a game of football.

“The mistake of those who insist on a location for the mind is on a par with supposing that it ought to be possible to find the exact place on (or off) the football pitch where the match was won. The mistake of those who deny that the mind has any location is on a par with supposing that winning the match had nothing to do with what happened on the pitch at all.”³⁰

The solution lies somewhere in the middle. We know that certain parts of the brain do behave like zombies and certain other parts of the brain are largely involved in the process of consciousness. And from this knowledge, Ramachandran claims that consciousness should be dealt with in certain parts of the brain rather than the whole of it.

“But I will narrow the scope of enquiry even further and suggest that consciousness arises not from the whole brain but rather from certain specialized brain circuits that carry out a particular style of computation.”³¹

And he goes on to specifically state as to what are the parts that are directly involved in the case of consciousness. From studies conducted on patients who lack certain features of consciousness due to damage to particular parts of the brain he opines,

“the circuitry that embodies the vivid subjective quality of consciousness resides mainly in parts of the temporal lobes (such as *Amygdala*, *Septum*, *Hypothalamus* and *Insular Cortex*) and a single projection zone in the frontal lobes – the *Cingulate Gyrus*.”³²

²⁹ Ramachandran, *The Tell-tale Brain*, 249.

³⁰ Harris, 65.

³¹ Ramachandran and Blakeslee, 228.

³² *Ibid.*, 228.

Francis Crick, a Nobel Laureate in science, is also of the opinion that consciousness should be a property of certain parts of the brain rather than the whole of it.

“Consciousness depends crucially on thalamic connections with the cortex. It exists only if certain cortical areas have reverberatory circuits (involving cortical layers 4 and 6) that project strongly enough to produce significant reverberations.”³³

Many nuclei with distinct chemical signatures in the *Thalamus*, *Midbrain* and *Pons* should all function as a unit for a subject to be in a state of minimum brain arousal to perceive anything and be aware of that. In that line, we might conclude that these nuclei involved in it should be the agents that enable any conscious experience. It is almost certain that any specific content of a particular conscious awareness is mediated by neurons in the appropriate regions in the cortex and the associated brain structures.

It is not without any caution that Ramachandran makes his statement though. He is doubtful about the methods used by and the attitude with which today many neuroscientists approach the problem of finding consciousness.

“For understanding consciousness and qualia, there would not be much point in looking at ion channels that conduct nerve impulses, at the brain stem reflex that mediates sneezing or at the spinal cord reflex arc that controls the bladder, even though these are interesting problems in themselves. They would be no more useful in understanding higher brain functions like qualia than looking at silicon chips in a microscope in an attempt to understand the logic of a computer program. And yet this is precisely the strategy most neuroscientists use in trying to understand the higher functions of the brain.”³⁴

We should not expect consciousness to be located in any particular part of the brain; it should rather be a product of the complex interplay of the various parts of the brain – in the unified functioning of brain. From a functionalist perspective, minds differ from non-minds not in any distinctive substance or fundamental substrate, but in their systematic organization and the roles played by their parts and sub-parts within it. A minded system is simply one that is organized in the right sort of way, though just which ways those are is a difficult and disputed matter.³⁵ “The brain’s operating system is probably not cleanly

³³ Francis Crick, *The Astonishing Hypothesis: the Scientific Search for the Soul* (New York: Touchstone, 1995), 252.

³⁴ Ramachandran and Blakeslee, 234.

³⁵ Robert Van Gulick, “Functionalism,” in Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 128.

located in one special place. It is more likely to be distributed, in two senses: it may involve separate parts of the brain interacting together, and the active information in one of these parts, may be distributed over many neurons.”³⁶ Ramachandran also clearly states that it is not all about the parts or the functions of the brain alone but about their interaction and unification.

“As it stands, a wealth of empirical evidence supports the idea that there are indeed specialized parts or modules of the brain for various mental capacities. But the real secret to understanding the brain lies not only in unraveling the structure and function of each module but in discovering how they interact with each other to generate the whole spectrum of abilities that we call human nature.”³⁷

It is further strengthened by studies conducted by scientists who deal in information technology and consciousness. Researches show that a fragmented brain loses some of its integrated information and thus some of its consciousness.³⁸ The real secret might lie in different parts of the brain specializing minutely in their expertise and then sharing information with other such parts of the brain to produce a unified picture of the world, and similarly of the brain itself.

A New Brain for Consciousness?

Considering the two points discussed above: that consciousness is a result of evolution; and brain is the place where consciousness has to be looked for, we are now at a stage where we can ask: If there was any physical evolution in brain causing it to produce consciousness. Is there a new mode of brain other than what we share with other animals that is responsible for consciousness? It seems that there is a new formation of complex structure in our brain that assists the emergence of consciousness. There are two parts of the brain conveniently called the new and the old brain, based on the time of their origin. Now it is becoming clearer that the functions of the brain that belongs to the new area are more involved in the process of conscious awareness whereas the older regions are basically concerned about the primitive sensations and movements. Thus, it goes on to

³⁶ Crick, 205.

³⁷ Ramachandran and Blakeslee, 11.

³⁸ Carl Zimmer, “Sizing up Consciousness by Its Bits,” *New York Times on the web*, 20 September 2010, <<http://www.nytimes.com/2010/09/21/science/21consciousness.html>> (22 March 2011).

say that the whole phenomena of consciousness might be of a later origin produced by a need for it.

There are clear proofs that many of the acts that we perform are unconscious, let us say, just like some other unconscious animals. Spectacular cases of zombie behavior can occur in sleepwalkers and in patients with complex partial seizures. Both involve complex yet relatively stereotypical motor patterns: wandering around, moving furniture and even driving cars.³⁹ But there are more subtle and complex conscious behaviors that we execute. Now in some states, if we can, like the other primates, function unconsciously, there should be something new in us that produce stranger implications to our lives other than what we share with other primates. There seems to be a link between the stage of mere motor action and the later development of brain as a necessary condition for the emergence of consciously deliberated functioning. It may not be all of a genetic evolution but more of a fast faced cultural transition as suggested by Ramachandran. He calculates that about a hundred and fifty thousand years ago there was a revolutionary development of certain key structures and functions of the brain, the fortuitous combinations of which resulted in the mental abilities that make us special.

"Then sometimes a hundred and fifty thousand years ago there was an explosive development of certain key brain structures and functions, whose fortuitous combinations resulted in the mental abilities that make us special in the sense that I am arguing for. We went through a *mental* phase transition. All the same old parts were there, but they started working together in new ways that were far more than the sum of their parts. This transition brought us things like full fledged human language, artistic and religious sensibilities, and consciousness and self awareness. Within the space of perhaps thirty thousand years we began to build our own shelters, stitch hides and furs into garments, create shell jewelry and rock paintings, and carve flutes out of bones. We were more or less finished with genetic evolution, but had embarked on a much (much!) faster-paced form of evolution that acted not on genes but on culture."⁴⁰

Francis Crick equally is a strong proponent of the evolution of human brain by natural selection over many generations of animals.⁴¹ There are also philosophers like Greenfield, who claim the difference from the other animal species to be a handiwork of

³⁹ Christof Koch and Francis Crick, "On the zombie within," 19 November 2003, <<http://www.klab.caltech.edu/news/laweekly-2003.pdf>> (12 May 2011).

⁴⁰ Ramachandran, *The Tell-tale Brain*, 13.

⁴¹ Crick, 179.

the brain and its sophisticated and complex network that evolved in the course of time. He states how rarely self-awareness could be found in the animal kingdom; only the apes have the ability to recognize themselves in the mirror. But even they do not exhibit any signs of insight or introspection. Neither do they have the sufficient ability to deliberate on their future. He goes on to say that this particular feature that we have may be a result of the complex nature of our brains unlike that of the other animal species.

“Perhaps self-consciousness is an intense form of consciousness, requiring exceptionally large neuron assemblies and sophisticated brains.”⁴²

This complexity itself is not something that was there before. We definitely find the finer qualities of the mind being associated with the evolutionally new parts of the brain. It is a newly evolved factor. The thalamus that we consider to be rather of ancient origins⁴³ is not directly involved in the process of being conscious but functions rather as a relay station for the sensory impulses. Whereas the cortex region of the brain are of recent origin and are highly involved in conscious awareness. It is evidenced by states as seen in people who have damaged cortex and hence lack conscious awareness to a great extent.

A basic difference that separates us from the animal kingdom is our ability to create meta-representations, the ability to represent mental representations. We do not have merely different mental states but also an ability to abstract from and reflect on those presentations. Having made abstracted representations of our mental states we apply those to different situations and deliberate on different courses of actions. Thus, all our actions do not take place reflexively; we have a system of deliberating upon and then deciding how to act or react. Man is not often led by the stimuli alone but also by conscious interpretation of the stimuli in the light of past experience and anticipated results. The brain had been equipped much earlier, let us say, with the capacity of producing a first order sensory representation. It is from here that the development of a ‘new brain’ takes place. To exemplify this, we may take the representation of a cat in the brain of a rat. For a rat, the cat is always a rolling furry enemy from which it has to run away reflexively. The reaction might take place presumably at the sight of any such

⁴² Harris, 91.

⁴³ Ramachandran and Blakeslee, 10.

looking being. But as far as we are concerned, the cat is not merely a single representation but a meta-representation that could be applied differently depending on the various situations one is in. let us see how the evolution of a 'new brain' assists us in developing such conscious meta-representations.

"But as the human brain evolved further, there emerged a new brain – a set of nerve connections, to be exact- that was in a sense parasitic on the old one. This second brain create metarepresentations (representations of representations –a higher order of abstraction) by processing the information from the first brain into manageable chunks that can be used for a wider repertoire of more sophisticated responses, including language and symbolic thought. ... In short, the second brain imbues an object with meaning, creating a metarepresentaiton that allows you to be consciously aware of a cat in a way that the rat isn't."⁴⁴

Ramachandran goes on to say that these parts of the brain might also be related to the parts executing language functions. Introspective consciousness probably requires another part of the brain perhaps linked to aspects of the language to generate a representation of the earlier sensory representation - a metarepresentation.⁴⁵ The evolution of a new version of the brain of course has a survival value, the reason why it has developed the way it has. This helps us in dealing with the world in a better and meaningful way, managing and manipulating the same sensory presentation in different ways depending on the situation. The abstraction or the metarepresentation we make also helps in applying this knowledge consciously into unknown situations. Thus, whenever we see a cat we just not only thinks of it as an enemy of the rat but in manifold ways and yes, this sets us apart from other animals. Probably a new brain or a development of the brain made us what we are today.

Neural Correlates of Consciousness – Matter to Mind

It is a matter of wonder as to how the electro chemical reactions in the billions of neurons within brain give rise to conscious experience and form beings like us. This might be the greatest of wonder in the world today. It is amazing that the grandeur of our mental life, all that we are – our imaginations, creativity, emotions, our intimacy and private life, the religious experiences, even the very sense of our being are nothing but the play of the

⁴⁴ Ramachandran, *The Tell-tale Brain*, 247.

⁴⁵ Ramachandran, *The Emerging Mind*, 118.

little specks of jelly inside our skull. The greatest of the wonder should be that they enable *me* today to think about themselves.

There is seemingly a strong relation between particular neural states and the corresponding mental states. There are philosophers who strongly argue for the relation between the neurological states and the mental states. John Searle claims that mental states are totally dependent on corresponding neurophysiological states in the sense that a difference in mental states would necessarily involve a corresponding difference in neurophysiological states.⁴⁶ This relation is what is called the neural correlates of consciousness – the relation between the neural activity of the brain and the emergence of consciousness. It is probable that at any moment some active neuronal processes in our head correlate with consciousness, while others do not. The possible questions now arise are: What is the difference between them? Are the neurons involved in the creation of conscious awareness of any particular neuronal type? Is there any specialty about their connection and if so, what? Do they fire in a different way?

The neuronal correlates of consciousness are often referred to as the NCC. It constitutes the minimal set of neuronal events and mechanisms sufficient for a specific conscious percept. The set should be minimal as to determine what all components of the brain are essential to produce consciousness as the entire brain is doubtlessly considered sufficient to give rise to conscious awareness.

What one has to take care of is to learn how the relation could be causally established and why should there be such a relation between the two as all the information presented in the NCC would be represented in consciousness.⁴⁷ If such a strong correlation could be scientifically established between the two: the neuronal activity; and the mental states, we might be in a position then to describe how subtle mental states are caused by the activities in the body. The questions as to how particular sets of neurons and their

⁴⁶ John Searle, "Reductionism and the Irreducibility of Consciousness," <[http://faculty.fullerton.edu/jeelooliu/397%20folder/\(397\)%20handout%2015%20\(Searle\).pdf](http://faculty.fullerton.edu/jeelooliu/397%20folder/(397)%20handout%2015%20(Searle).pdf)> (12 April 2011).

⁴⁷ Crick and Koch, "Consciousness and Neuroscience," 97.

interactions help the subject to become self aware and what stimulates this sort of a happening are of great significance.

The various functional MRI graphs of the brain clearly show the involvement of certain parts or regions of the brain more than the others in the making of consciousness. Some researchers have proposed that consciousness is caused by the synchronization of the neurons across brain. That harmony allows the brain to bring together different perceptions into a single conscious experience.⁴⁸ Firing of certain neurons seems to cause certain conscious mental states or experiences that we call consciousness or generate a meta-thought or awareness, if we wish to call them so. But it is plausible that consciousness in some sense requires the activity of neurons. It has been proposed that consciousness may be correlated with special type of activity of some of the neurons in the cortical system.⁴⁹

Now we may come back to a question posed before - the origin of consciousness and the specialty of the neurons involved in the process. The existence of zombie (unconscious) behavior gives rise to two problems. Why can't we be big bundles of unconscious zombie agents? Why bother with consciousness, which takes hundreds of milliseconds to set in? Christof Koch answers these by stating that consciousness allows the system to plan future actions, opening up a potentially infinite behavioral repertoire and making explicit memory possible. The second question is what is the difference between the neuronal pathways that subserve zombie agents and the neural networks that give rise to specific, conscious perception? We know that both the zombie and the conscious behaviors probably involve the cerebral cortex and the thalamus. Now are they really based on activities in different subsets of neurons, segregated according to brain areas? Or is conscious behavior the faculty of certain cell types, which might interact with the other cell types in a purposeful way? Or is it a matter of the type of neural activity involved? Koch and Crick have worked extensively to suggest answers to these questions.

“For instance, we hypothesized that consciousness involves synchronized firing of neurons at the millisecond level, whereas uncorrelated firing can influence behavior

⁴⁸ Zimmer, “Sizing up Consciousness by Its Bits.”

⁴⁹ Crick, 207.

without generating that special buzz in the head. Could mutation of a single gene turn a conscious animal into a zombie? If so, what test would show that they are unconscious? Tracking down the neuronal correlates of consciousness in humans, monkeys and mice should illuminate the central mystery of how neural activity in specific feedback circuits gives rise to subjective states."⁵⁰

There have also been attempts to explain neural activity by comparing it with the electronic diodes that are used in the electronic equipments. Our neurons too function in somewhat similar way, producing and transmitting electric charges, but of course in a much complex and finer level. Our neurons, like photodiodes, produce electric bursts as a response to the incoming stimuli. But the conscious experience they produce involves more activity than in a single diode. They produce much more complex possibilities – possibilities of interpreting the impressions from the world in much more details than a photodiode.

“While a photodiode can be in one of two states, our brains can be in one of trillions of states. Not only can we tell the difference between a Chaplin movie and a potato chip, but our brains can go into a different state from one frame of the movie to the next.”⁵¹

In this line, a scientific study of consciousness seems possible. If we can measure and interpret the electronic activity that is happening within the brain, then we may be able to study consciousness like any other subject matter of science. This is further strengthened by the information that we gain from analyzing the reports of electroencephalograph (EEG). Neuroscientists who study about consciousness can differentiate different states of consciousness from the oscillations in the frequency of EEG.

“These brain waves consist of loops of activation between the cortex (the wrinkled surface of the brain) and the thalamus (the cluster of hubs at the center that serve as input-output relay stations). Large, slow, regular waves signal a coma, anesthesia or a dreamless sleep; smaller, faster, spikier ones correspond to being awake and alert. These waves are not like the useless hum from a noisy appliance but may allow consciousness to do its job in the brain. They may bind the activity in far-flung regions (one for color, another for shape, a third for motion) into a coherent conscious experience, a bit like radio transmitters and receivers tuned to the same frequency.”⁵²

Now the concern that arises is, if consciousness is like any other object of scientific study, what is all this hue and cry about its subjective nature? We do not experience brain

⁵⁰ Koch and Crick, “On the zombie within.”

⁵¹ Zimmer, “Sizing up Consciousness by Its Bits.”

⁵² Pinker, “The Brain: The Mystery of Consciousness.”

like an electronic appliance that starts and stops functioning at the snap of a switch. It is rather something intensive, personal and sublime. If all about consciousness are just chemical and electric reactions happening in the brain, how do we personalize it? Why don't the conscious experiences of two persons be similar even if the enabling factors of consciousness remain almost similar?

There are cases where people can interpret the world, recognize their loved ones or appear like very normal but lack some sort of a personalization of their world. While studying persons with such a lack, the neuroscientists stumbled upon a clue about the importance of the process of interpreting impressions of the world and then applying emotions in producing conscious awareness. It is not any brain but an emotional one that gives rise to consciousness as staunchly proposed by another renowned scientist of the day, Antonio Damasio.

The Emotional Brain – from Biology to Self through Emotion

Now our concern could be – if consciousness is all about the chemical reactions that take place within the neurons just like those that happen in the electro diodes and things of that sort, where come the subjectivity and privacy of conscious experiences? The role of emotions in making the otherwise neutral impressions quite personal cannot be forgotten. It seems that when emotions are attached to the physical reactions in the brain, the world becomes something of our own, related to our very existence, granting meaning to our relation with others. Consciousness being a model of how we relate to the world, the role of emotions in the making of consciousness has to be seriously taken upon. Even our interpersonal communication skills are developed on the basis of emotions or rather as a way of expressing them.

A chemical imbalance in the brain might cause a loss of consciousness and sense of self. When in emergency, the body produces extreme reactions. But, if these reactions are not connected to the emotional centres of the brain, there might rise problems of derealisation or depersonalization, for, the happenings do not mean anything to the person then. Similarly, when some hyper reactions are caused due to brain anomaly and one has no

personalization of it, he/she might feel either the world is not real or the subject is not real as it produces no emotional reaction in him/her.

“But what if the same mechanism is accidentally triggered by chemical imbalances or brain disease, when there is no emergency. You look at the world, you're intensely alert, hyper-vigilant, but it's completely devoid of emotional meaning because you've shut down your limbic system. And there are only two ways for you to interpret this dilemma. Either you say the world isn't real - and that's called Derealisation. Or you say, I'm not real, I feel empty - and that's called Depersonalisation.”⁵³

This sort of a loss of the sense of consciousness and self could be clearly seen in various problems of the brain. For example, in epileptic seizures, the body does not show any sense of emotions and may lead to a sense of Derealisation. The loss of emotion at this stage could be evidenced by obtaining Galvanic Skin Response; and then one may infer why the patient feels as if the world he lives in is not real.

When people fail to personalize the sensory information and behave meaningfully in accordance with them, we say they are mentally sick. We might assume that many mental disorders are, to an extent, due to lack of emotions. Failure to own a situation, to personalize it and to live meaningfully and realistically may set mental patients apart from the normal populace. Mental illness might be thought of as disturbance of consciousness and of self, two words that conceal great depths of ignorance.⁵⁴ Now we will look at certain abnormalities of the human mind either caused by malfunctioning of certain parts of the brain or by damages to them and try to understand how brain and emotion are involved in the process of consciousness.

Brain Disorders and the Loss of Consciousness

There are certain abnormalities experienced by the human mind and their strangeness really perturb a normal mind. At times people lose their very sense of a person, though otherwise they look quite normal a human being. There are issues where people feel nothing though they look and act quite normal. Here we will be dealing with a few of such psychological disorders that might take us a long way in understanding what we

⁵³ Ramachandran, *The Emerging Mind*, 110.

⁵⁴ *Ibid.*, 113.

really need, to be conscious. It may be difficult to understand what causes consciousness but it may be easier for us to know in the absence of what we might lose consciousness. Also while dealing with these cases, we might know exactly what parts of the brain are directly engaged in producing true conscious experiences.

A) Capgras Syndrome- ‘She looks like my Mother, but is an Imposter’

In this bizarre symptom, persons lack emotions attached to the sensory inputs of vision and therefore fail to make any personalization on seeing someone dear. They fail to recognize faces of even people who are very close to them and are incapable of having a meaningful social existence. In normal vision, information from the visual areas of the brain, *Fusiform Gyrus* (that deals with discriminating information) is relayed after interpreting the sensation via pathway 3 to the amygdala, which performs an emotional surveillance, the emotional centre of the brain.⁵⁵ It is this way that we get emotionally attached to the people we see and become consciously aware of their relatedness to us. This disorder is supposed to be caused by damage to this particular pathway from vision to emotion. This fact helps us in understanding the importance of emotion and the relation between different parts of the brain in the emergence of conscious awareness.

B) Cotard’s Syndrome - ‘I don’t Exist’

Here the situation becomes more deplorable. Unlike in the Capgras syndrome, the absence of emotion is felt not only in relation to vision but towards all sensations, may be due to damages to all pathways to the emotional centres in the brain. In this case all or most sensory pathways to the Amygdala are totally severed. They do not feel anything even after having proper impressions interpreted by the brain. Ultimately they reach the conclusion that they might be dead as they do not feel that they live in a dynamic world.⁵⁶ It clearly shows the importance of emotions in the making of consciousness and in the absence of this how people can fall into states of depersonalization.

⁵⁵ Ramachandran, *The Tell-tale Brain*, 69.

⁵⁶ Ramachandran, *The Emerging Mind*, 106-07.

C) Phantom Limbs

People interestingly do have strange experiences of things that they really do not have. In the previous cases, if it was a matter of having no emotions attached to sensations and therefore no awareness of the same, here it is a matter of having unreal awareness. The limbs that have long been amputated from the body cause impressions and sensations in the human brain. This has been justified with an explanation of cross wiring between the different locations in the brain that process information from different sense organs. Here the absence of sensation from a particular region of the brain is overtaken by impressions from some other nearby regions and are mimicked for real.⁵⁷ It shows the clear sensory pathways in the brain and their structure as related to the whole body and how they help produce sense of embodiment.

D) Epileptic Seizures

Epilepsy has been understood as having a purely physical base. Herein, the person loses sense of himself and of the world around him. An Amazing thing about epilepsy is that the conscious awareness returns after a while. During the seizures, galvanic skin responses do not produce any emotions and the affected takes the world for unreal. It also shows us the significance of emotion centres of the brain to consciousness. Ramachandran has noted another interesting factor about epilepsy. As the emotional pathway 3 (as well as links from pathway 2 to Amygdala) of the patient is strengthened in epilepsy, the patient may claim that all people seem to resemble a prototype person he knows.⁵⁸ Here we may also note that Giulio Tononi takes a similar note regarding the state of consciousness in epileptic seizures. He claims that when people lose consciousness from epileptic seizures their brain waves become more synchronized. And he wonders if synchronization were the key to consciousness, one would expect the seizures to make people hyperconscious instead of unconscious,⁵⁹ a point noted by Ramachandran. Here we may remember another point mentioned in a previous section that synchronization of the brain activity may be a possible cause of consciousness.

⁵⁷ Ramachandran and Blakeslee, 36-37.

⁵⁸ Ramachandran, *The Tell-tale Brain*, 278.

⁵⁹ Zimmer, "Sizing Up Consciousness by Its Bits."

E) Bisection of Brain and Dual Self

After severing the two portions of the brain by removing the *Corpus Colossum*, a large strand of about 200,000,000 neurons running from one hemisphere to the other, a strange thing occurs. The unity of consciousness ceases to be and the person starts showing symptoms of dual personalities, or as two centres of consciousness.⁶⁰ In severe cases, the same body starts behaving as two different persons having two different nature and temperament. This also goes on to show the importance of having a unified brain functioning for having a unified conscious experience.

F) Hemi-neglect and Anosognosia

Damage to the right parietal lobe produces another interesting sickness called neglect, wherein the patient loses care of the left side of his body. He just fails to scan and be aware of a side of the world – it just does not exist for him. He is blind to the events on this particular side unless someone else draws his/her attention consciously to events there, which the patient has no trouble seeing then.

In another disorder like Anosognosia, an extreme form of neglect, the patient denies the damage that has occurred to a part of his body. A patient with such a trouble might think and sincerely believe that the paralyzed side of his body is absolutely fine and functions as though there was nothing wrong about it. This results from right hemisphere lesions in the brain. In yet another bizarre syndrome called Anton's syndrome, a patient is blind owing to cortical damage but *denies* that he is blind.⁶¹ These disorders also go on to show how the whole of brain is to be involved in giving us a normal and complete awareness of the world and how particular area of the brain are involved in particular aspects of consciousness.

⁶⁰ Andrew Brook and Paul Raymont, "The Unity of Consciousness," in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy (fall 2010 Edition)*,

<<http://plato.stanford.edu/archives/fall2010/entries/consciousness-unity/>> (14 April 2011).

⁶¹ Crick, 271.

G) Dissociative Identity Disorder - “Many in One”

In this disorder, which is more commonly known as Multiple Personality Disorder, there exists a split of consciousness. There may be two or more persons or personalities as inhabitants of the same body, unknown to each other. They take turn in ‘living’ while the rest remain dormant. They have complete amnesia or loss of memory regarding episodic appearance of the other personalities. They are no way unified in one consciousness. In fact, sometimes the dissociation in Dissociative Identity Disorder is behaviorally as complete as it is in brain bisection patients in the lab.⁶² Though the exact physiological location of the problem is not yet known, it is clear as to how the brain gives us a sense of a unified self and makes our very being-ness possible.

H) Schizophrenia: Lack of Consciousness?

In the most severe of psychological disorders the patients seems to miss a point that gives them realization of what is happening within them. They fail to listen to the inner commands that they themselves give. This seemingly says of their inability to have a reflexive thought or the lack of transparency regarding their inner thoughts. They may not receive the inner commands that they give such as to imagine as the President of India, and start believing that they are in fact the President of India. The transparency of the conscious experience is lost. Thus, patients with schizophrenia take imagination to be real. In some particularly severe forms of schizophrenia, the victim seems to lose the ability to have an integrated, interrelated experience of his or her world and self altogether. Here the unity of consciousness has shattered rather than split.⁶³

I) Dysexecutive Syndrome

Here patients fail to make associations between two things even though they are related to each other in a very strong relation. What indicates breakdown in the unity of consciousness is that these subjects are unable to consider two things together, even things directly related to one another. For example, such people cannot figure out whether a piece of a puzzle fits into a certain place even when the piece and the puzzle

⁶² Brook and Raymont, “The Unity of Consciousness.”

⁶³ Ibid.

are both clearly visible and the piece obviously fits.⁶⁴ This may be possibly associated with another trouble where people are not able to create continuity of experience such as relating different episodes of meeting the same person; they cannot draw a link between the three different occasions of meeting the same person. For them the three occasions may be true but of meeting three different persons.⁶⁵ There may not be a coherence but separate incidents or events. This shows how far the brain and the neural pathways function as a single unit to make unified conscious experiences possible.

These disorders go on to show how different parts of the brain, the correct neural communications and the chemical reactions in the brain help us be unified single beings who function as a unified self. The lesions in minute areas of the brain cause serious troubles to our normal conscious experience of the world and of our self as a unified person. Thus, it clearly shows that for the existence of normal conscious experience one has to look into the brain more than anywhere else.

If the cooperated functioning of the brain causes consciousness, then the opposite should cause unconsciousness. If there is something so special happening when the brain is integrated in the proper way, there should also be something not happening when this integrated communication is broken. The missing of this integration may be a reason for the loss of consciousness as normally experienced by us during sleep. What might really be happening with our brain while we sleep or are under anesthesia and lack consciousness?

The Sleeping Brain and the Missing Consciousness

The most familiar thing we may know about consciousness is that it is not just there while we are asleep or when anesthetized. We fall into a different terrain altogether during these stages. It is controversial if we exist as the same person during these stages or not. But one thing is again clear that we *come back* quite easily from a sleeping state and not that easily from an anesthetic state. Also we have perfect memory of what

⁶⁴ Ibid.

⁶⁵ Ramachandran, *The Tell-tale Brain*, 277.

happened to us before going to bed. Thus, in no way it is possible to claim that before sleep there was a person and after sleep it is someone else. Now one possible explanation may be that consciousness is not the essential property of the body but something that it gets externally, one that comes to him and leaves him at will. But we will look at what happens to our brain during a period of sleep or anesthesia.

Giulio Tononi is a scientist who has done a lot of research on consciousness and its properties that could be measured like any other physical object of study. He suggests that there is nothing mystifying about consciousness but it depends on the brain's ability to integrate information.⁶⁶ What happens when we lose consciousness? It seems that when the brain stops talking to itself⁶⁷ and loses integrated communication there does not arise consciousness anymore. Consciousness itself is a product of these integrated functions within the brain as we saw at many a place in this chapter. There is a clear change in the activities of the brain when it loses consciousness.

"Losing consciousness involves a change in electrical activity deep within the brain, changing the activity of certain groups of nerve cells (neurons) and hindering communication between different parts of the brain."⁶⁸

Thus, learning about the stages of non-conscious existence and the condition of the brain during these states, we come to know more about consciousness and the involvement of the brain in the whole process.

The studies conducted on people who are anesthetized have gone on to prove our hypothesis that consciousness is nothing mysterious, belonging to some external source but an emergent feature that comes about only when a proper integration between different functions is worked out by the brain. Brain is our organ for consciousness just as the lungs are for breathing. Consciousness is just another emergent property of the body

⁶⁶ Robert Roy Britt, "Brain Areas Disconnect During Deep Sleep: Experiments Shed Light on what Happens to Consciousness," 29 September 2005, <http://www.msnbc.msn.com/id/9535945/ns/technology_and_science-science/t/brain-areas-disconnect-during-deep-sleep/> (13 April 2011).

⁶⁷ Ibid.

⁶⁸ European Society of Anesthesiology, "What happens in the brain as it loses consciousness," 11 June 2011, <http://www.sciencecodex.com/3d_movie_shows_for_the_first_time_what_happens_in_the_brain_as_it_loses_consciousness> (8 July, 2011).

produced through complex interactions and manipulations and it functions just like any machine.

“When we're awake, different parts of the brain use chemicals and nerve cells to communicate constantly across the entire network, similar to the perpetual flow of data between all the different computers, routers and servers that make up the Internet. ... In the deepest part of sleep, however, the various nodes of your cranial Internet all lose their connections.”⁶⁹

“The brain breaks down into little islands that can't talk to one another”,⁷⁰ says Tononi, leader of a team of the University of Wisconsin-Madison that conducted a study on loss of consciousness.

Now what are these studies going to tell us about the very nature of consciousness itself. The easiest way to learn about consciousness would be to differentiate the happenings in the brain while it is conscious and not. The differences will tell us as to what consciousness really is. More than helping the medics who specialize in anesthetics, it will surely tell us about consciousness too. The different studies being conducted in this field goes on to prove that consciousness is the result of an integration of the happenings within the body; when it is on, body is conscious and when it is off, consciousness is off too. These all go on to support a hypothesis put forward by Professor Susan Greenfield, of the University of Oxford, about the nature of consciousness itself. Prof. Greenfield suggests,

“Consciousness is formed by different groups of brain cells (neural assemblies), which work efficiently together, or not, depending on the available sensory stimulations, and that consciousness is not an all-or-none state but more like a dimmer switch, changing according to growth, mood or drugs. When someone is anaesthetized it appears that small neural assemblies either work less well together or inhibit communication with other neural assemblies.”⁷¹

Thus from the studies conducted on consciousness and its lack, we come to know consciousness as a formed feature of the body, needing no external or internal authority to warrant for this rather mysterious happening. These findings suggest that consciousness may be the increase of inhibitory assemblies across the brain's cortex.

⁶⁹ Britt, “Brain Areas Disconnect During Deep Sleep.”

⁷⁰ Ibid.

⁷¹ European Society of Anesthesiology, “What happens in the brain as it loses consciousness.”

They lend support to Greenfield's hypothesis of neural assemblies forming consciousness.⁷²

If consciousness is a result of this integrated functioning, then does it behave like a clock showing the right time when assembled properly? Is there a ghost really inside that knows the time well? May be consciousness is the work of a ghost that gets incarnated when the brain is set fine and disappears when it is in disarray or itself may be a ghost.

Incarnating the Ghost in the Machine: the Mind of the Brain

It is a matter of serious dispute as to how we know that we know. Is there a small being inside the brain that gets to know what is happening in there? Such a view might lead to the homunculus fallacy, which demands for another being inside the small man in the brain, to know that he knows, and hence falling into infinite regress. But is the mind something of this sort, housed inside the brain just as Descartes seemed to believe?

The Cartesian position, according to its leading modern critic Gilbert Ryle, rests on one huge mistake. It is the mistake of supposing that the mind is a kind of ghost housed inside a machine. Descartes also thought, according to Ryle, that 'minds are not merely ghosts harnessed to machines they are themselves just spectral machines'.⁷³ Is it something like the homunculus fallacy that there is a mind inside the brain which knows everything that goes on inside?

Now taking the analogy of a clock we might imagine that there is a being inside the clock that knows the time better than us; otherwise how could the bits and piece of metal could give us right time? But the different parts of the clock once disassembled, do not produce correct time. It seems that we have lost its soul in the process of dissecting it. But when the different parts are assembled in the proper way, we find that it starts working again as before. It seems that the ghost is reincarnated in the machine.

"If the parts were disassembled, lying around in a box, there would be no time-keeping and no clock but bits and pieces that could be assembled as a clock...this is as though,

⁷² Ibid.

⁷³ Harris, 9.

in Gilbert Ryle's famous phrase again, there is a ghost in the machine, which lurks among the pieces that we can see, which is incarnated when the pieces are assembled as a clock."⁷⁴

But the fact might be that the parts which are individually incapable of producing time, might start showing something genuinely different when they are set together and activated. That may be a function that the individual pieces may not be able to produce. The coordinated functioning of the individual parts might give rise to some faculty, so unique.

This is an analogy that might well apply to the study of brain and consciousness as well. How can a bundle of matter be self-aware and produce something that is entirely different in structure and function? The answer may not lie in individual parts or functions of the brain but in the unified single performance of brain as a unit. The complex nature of brain with all its complex structure and function might be the answer to some equally complex phenomena like consciousness. The human brain is structurally far more complex than a clock, a piece of it in the size of a grain of sand containing more than one hundred thousand neurons, two million axons and one billion synapses, all 'talking to' each other – as seen before. So as a result, we may believe that human consciousness is a product of that complexity. There may not be a need to either go on ghost hunting with Ryle or postulate a thinking substance with Descartes. Rather than there being anyone from the beginning who sees and becomes aware that it sees, it may be an emerging new phenomena that acts as a different item altogether – a ghost emerging in fact.

Conclusion - A Neurophysiological and Evolutionary Account of Consciousness

Thus going through the specific functional areas of the brain that are involved in making us conscious beings, we might say that the brain is very much involved or is basically the very foundation of our conscious experience. This is further proved by studies conducted on people with various brain anomalies or damages and who therefore lack conscious awareness. Looking at consciousness as a much needed apparatus for survival in the long history of evolution also makes sense and further cements the position that consciousness

⁷⁴ Ibid., 10.

is a natural phenomena very well arising from the brain just like any other faculty of ours. But at the same time explaining consciousness in the language of the lab does not do away with its grandeur. Many social scientists feel rather deflated, as suggested by Ramachandran, when informed that beauty, charity, piety and love are the result of the activity of neurons in the brain, but their disappointment is based on the false assumption that to explain a complex phenomenon in terms of its component parts is to explain it away. It may be for a better understanding of the problem of consciousness and not for a denial of the same.

Chapter Three

SELF-CONSCIOUSNESS: IN THE MIND OF THE BRAIN

Introduction: the Ghost of Cartesian Dualism

In the first chapter, we dealt with the concept of consciousness: its features; various problems involved in its study; and diverse theories proposed as possible solution to the mystery of consciousness. In the second chapter, consciousness was looked upon as an emergent faculty in the chain of evolution arising from purely physical features. Here in this chapter, we will be trying to look at some philosophical issues involved in the study of consciousness and how far a neuro-physiological approach is successful in dealing with them.

The Neurobiological investigation of consciousness still being in its infancy, there are a few serious issues that such an attempt may have to confront. If consciousness and mental states are purely subjective, the very possibility of such an attempt looks dubious; if brain is understood to be the place where one has to look for consciousness, then the question of an agent, the problem of self rises instantly. One immediately faces the question: who becomes conscious through the brain? Is brain used only as an instrument for knowing the world or is it the body with the help of brain becoming conscious of itself in a complex set of interactions and processes?

Also looking from a physicalist point of view, why should disturbance in the neural tissues cause something abstract as the experience of redness or experience of pain? - Hence the hard problem of consciousness. There seems to be something beyond matter to conscious experience. The subject's personal experience may not be susceptible to possible scientific explanation. We do not know if certain neural firings are capable of producing such an ineffable experience. Though it is almost certain that there are no more Cartesian dualists, still, we might sense the ghost of Cartesian dualism lurking in our language and thinking. Some of these problems may dissolve as we exorcise the ghost and stop taking subjective experiences to be hopelessly non-physical as far as their causes are concerned. However, such a renewed outlook may not explain away the richness of

our personal experiences, but might enrich our already existing understanding of reality. No doubt, lot of vigorous research is called for before science finally posits any claim that consciousness is nothing mysterious or divinely endowed but something that could be well understood as an emergent feature.

Is Defining Consciousness still a Need?

To speak of something meaningfully, it is presumed that the subject should have a basic idea of the topic of discussion. To say 'I do not know 'x'', one has to have at least a bare idea about 'x', if the talk has to make some sense. When we say we understand what consciousness is, we state that we have a working idea of what it is and what its functions are. But defining consciousness may still be a difficult job; putting it into words might be taxing as it is a term that is used in multiple contexts. Consciousness, as dealt with here, may mean to be more than mere awareness that we share with other animal species. It may be a step ahead i.e. a reflexive awareness of that awareness itself. We not only have mental states but also are capable of subjecting them to serious deliberation while being aware of what we are doing. The grades of consciousness may be easily seen in the natural world: starting from the lower grade animals to the self-conscious human beings. In the strictest terms, we might say consciousness is the sum total of mental processes which actively participate in man's understanding of the objective world and of his own personal being.¹ Now even if there is a difficulty in defining the term as was discussed in the first chapter, for all practical purposes, we may know what consciousness is. Our basic attempt is to understand how it works and why it should be there.

Man was once equally puzzled thinking about life as s/he is today about consciousness. But once DNA was laid bare and its functions were known, no one asked any more what life was. This might apply to consciousness as well. If we know how it works and what it is for, there may not be a need to ask what consciousness is. After all, consciousness is not something within us² that we could locate and define; rather we just become conscious beings. Scientists and philosophers alike have avoided defining consciousness

¹ I Frolov, ed., "Consciousness," *Dictionary of Philosophy* (Moscow: Progress publishers, 1980), 81-82.

² Gilbert Ryle, "Self Knowledge," in Quassim Cassam, ed., *Self Knowledge* (New York: Oxford University Press, 1994), 19.

thinking it is too premature an effort as discussed in detail in the first chapter under the section, 'Consciousness: Concerns of a Possible Definition'. Focus should be on knowing how it works and what functions it performs; the various issues related to its nature have to be sorted out before jumping into the task of defining it. To make a systematic and objective study of consciousness, we should be able to understand and appreciate what people mean by saying 'they are conscious'. This is the first problem one bumps on to in the study of consciousness, the question of subjectivity. Conscious experiences are notoriously subjective. In the next section, we will look at the possibility of shared subjectivity.

Shared Subjectivity: Possibility of Objectivity

We begin with the very problem of the possibility of knowing what one means by a conscious state. If, as we have seen in the previous chapter, consciousness is a product of the intricate neural network in the body aptly coordinated in the brain, the best of its secrets and feelings are bound to be reserved inside the bony case of the brain. It may further add to the stock of mystery related to the subjectivity of consciousness. Even though the impact of language and culture is bound to be there in the formation of the being that I am, there is still a 'way of being me' that I may share with none. My sense of a self also differs considerably from that of others as it is formed by 'my' way of relating to and interpreting the world, in line with the models that I am presented within my culture. Thus, my being and my way of feeling the world are unique; I do not know if you experience a red rose the same way as I do. There is no designed way for me to tell you what I experience – the puzzle of what philosophers call qualia. Qualia, what Daniel Dennett terms, an unfamiliar term for something that could not be more familiar to each of us: the *ways things seem to us*,³ become important to philosophers largely from the fact that they are seen as posing a fundamental problem for materialist explanations of the mind-body problem.

³ Daniel Dennett, "Quining Qualia," in A. Marcel and E. Bisiach, eds., *Consciousness in Modern Science* (Oxford: Oxford University Press, 1988), 381.

Is there a way of knowing what is going on within the secret chambers of another person's head? As far as our recognized methods of communication are considered there is none, making the question of consciousness more mysterious. Untested methods like telepathy and extra sensory perception (ESP) might assist one in knowing the mind of the other but their authenticity is yet to be established. If there is no way to share the subjective experience that one has with another, for example, if we cannot share our knowledge of red and make Mary realize it,⁴ and if there is still something more to experience than all the available and sharable knowledge of what red is, how can we be sure about what science says about consciousness? This may well be like any other philosophical speculation to be reserved into the category of hypotheses wanting adequate proof.

If that is the situation, how far will we be successful in framing an objective view of consciousness? From the view of Thomas Nagel, any attempt at a scientific understanding of consciousness would pose a problem. In what some might regard as a short cut to mysticism, Nagel argues that, if consciousness can only be understood as a first-person phenomenon, it cannot be grasped from the third person perspective that science endeavors to achieve. In Nagel's words,

"if the subjective character of experience is fully comprehensible only from one point of view, then any shift to greater objectivity—that is, less attachment to a specific viewpoint—does not take us nearer to the real nature of the phenomenon: it takes us farther away from it."⁵

Thus, in Nagel's view, we are left to be alone in a world of our own experience, at a loss when it comes to knowing what it is like to be a different being or letting others know what it is like to be myself.

We may know what an experience is or how it feels like to have an experience but we do not have enough vocabulary to share it with others or to have a science built on that vocabulary. I cannot tell of the feeling of tooth ache to a person who never had one before. If so, is the problem of not being able to share our subjective experience anything

⁴ Frank Jackson, "What Mary did not Know," *The Journal of Philosophy* 83, 5 (May 1986): 291-295.

⁵ Thomas Nagel, "What is it like to be a bat?" *Philosophical Review* 83, 4 (October 1974): 439.

resulting from the practical limitation of our language capabilities? Suppose, if we could share our experiences and feelings without the medium of language, the problem of unshared subjectivity could be done away with. Ramachandran suggests that if we could make a connection between the color processing regions of the brains of a person with normal vision and those of a blind person, the blind might finally know what is meant by red.⁶ That may be a possible picture of shared consciousness. But there is a concern to be noted here. Shared consciousness means, I share *my* subjective experience with another person. Let us remember a point discussed before. While discussing about the unity of consciousness, it was noted that if the corpus callosum, the link between the two hemispheres of the brain, was severed, there might arise the problem of split personality. There will no more be a single self but two within a body. If that is the case in splitting the brain, we can assume that in case of joining two brains, there may not be two persons existing anymore but a single one. Then, what is the point in sharing one's experience with the other? Will they be not having the same experience simultaneously?

The impossibility of scientifically knowing what it is like to be a different being is fine; but looking at from a wider perspective, the possibility of scientifically knowing what goes on within oneself is difficult as well. The experiencing and conscious beings that we are might be well beyond the reaches of a scientific enquiry, at least for the time being. So, are we to deny any possibility of an objective study of consciousness? If there is not a single adequate way of sharing the subjective experience of a person, on what basis can we have any objective say on consciousness?

It seems that sharing knowledge of the first person perspective or the subjective experience is a matter of degree. We do not live as watertight individual minds having no knowledge of the other minds. We very well read their intentions, feel what they feel and think what they might be thinking. We are members of a social species. If we have the sense of a self as an epistemological subject, then it goes on to prove that we read the other minds as well. It is our ability to read other minds and understand them that finally

⁶ V. S. Ramachandran and Sandra Blakeslee, *Phantoms in the Brain: Human Nature and the Architecture of the Mind* (London: Happer Collins, 2009), 232.

cuts into shape a concept of self for us too, as a person who knows others. Persons who are in close intimacy seem to have a better understanding of each others' intentions and thinking. Though there may be doubt placed on our ability to share our subjective experiences with others, we do not feel that we are all but isolated individuals. There is some sort of a sharing of the experiences. When my friend is happy, I feel happy too. When my child is in pain, I share that too. We can even empathize with people and their situations. There are occasions, when we feel that we are really in the shoes of the other person.

“To a great extent, we are able to recognize and understand the subjective experience of other human beings, simply as members of our own species, even when the perspective distance between us is large. It is, of course, a rare and a significant experience to assume an identical – or close to identical first person perspective with another human being. Yet despite the rarity of this experience, we are neither doomed to loneliness nor to solipsism.”⁷

There may be occasions when we really imagine if we were in the position of the other person. Nagel might say it could end up an imagination at the maximum. But neuroscience would go a step further to prove that this is not just imaginations. It is a matter of sincerely feeling the state that the other is in. It is not only when we are in pain but when we see others in pain, we feel it.⁸ If we sometimes think ‘If I were you’, it is not without any neural base. Here we might refer back to the section on ‘Mirror Neurons – Matter’s Way of Feeling the World’ in the second chapter. Our feeling empathy for others is not a process of imagination but a real phenomenon, involving neurons.

“We now know that this is carried out by a specific group of neurons, in the frontal lobes, called the mirror neurons. I suspect that these neurons are at least partly involved in generating our sense of ‘embodied’ self-awareness as well as our sense of ‘empathy’ for others.”⁹

May be, the secret to our way of relating to others, feeling what others feel, and simulating their intentions lies in the functioning of mirror neurons. Your thoughts and feelings are not something that is absolutely different from that of mine or anyone in the same culture. I can experience not my feelings alone but yours as well. It may therefore

⁷ Preben Bertelsen, *Free Will, Consciousness and Self: Anthropological Perspectives on Psychology* (New York: Berghahn Books, 2005), 151.

⁸ V. S. Ramachandran, “In the Mind of the Brain,” interview by Sashi Kumar, *Frontline*, 7 April 2006, 14.

⁹ V. S. Ramachandran, *The Emerging Mind: the Reith Lectures 2003* (London: Profile Books, 2011), 25.

be possible for me to take into account even your tale of experience when I am out there trying to build a theory of human experience.

Though I would not be able to describe what the feeling of hunger is, yet by hearing that someone is hungry, I easily understand the feeling that the other person is undergoing. I have felt it and I can feel it but for sure I cannot tell you what it is. The roots for our sharing of experiences and feelings are to be looked into the brain and into our culture. Culture is equally an important feature in developing our ability to know the other. We are members of a social species. Our environment is significant to our way of living and use of techniques, what Wittgenstein terms the 'form of life'. "Depending on one's environment, one's physical needs and desires, one's emotions, one's sensory capacities, and so on, different concepts will be more natural or useful to one. This is why 'forms of life' are so important to Wittgenstein. What matters to you depends on how you live (and vice versa), and this shapes your experience."¹⁰ And we primates being intensely social creatures, need to construct useful, and virtual reality simulations of the world that we can act on. Within this simulation, we need also to construct models of other peoples' minds so that we can predict their behavior and our brains work here essentially as model-making machines.¹¹ We are bound to share in the form of life of others and can feel the state that others are in.

If we know about consciousness, how it functions in the world, and what the other means by his/her subjective experience fairly well, then what is this mystery pertaining to consciousness all about? Is there something more to be known or something seemingly beyond the grasp of science? This may be a question directed at what these experiences are all about - what are they of? This is the problem termed qualia by philosophers.

The problem of Qualia: the Way the World is

If there is anything serious that pesters the philosophical minds about consciousness, it is the question of experience. If Mary, trapped in a black and white room from birth, has

¹⁰ Duncan J. Richter, "Ludwig Wittgenstein," *Internet Encyclopedia of Philosophy*, 30 August 2004, <<http://www.iep.utm.edu/wittgens/>> (11 May 2011).

¹¹ Ramachandran, *The Emerging Mind*, 124.

every possible scientific knowledge about color,¹² what is that extra feeling she has on seeing a colored object, say a red rose for the first time? It seems there is something more to experiencing than just having knowledge. This problem of qualia gives rise to what Chalmers calls the hard problem of consciousness; how do the disturbances in the neural system give rise to the experiencing of redness of the rose? In this section, we will look if science, and neuro-scientific account of consciousness in particular, can tackle the issue of qualia. We may also take help of philosophers who have responded constructively to this problem. How do we explain the term qualia?

“Central to the particular nature of our consciousness, then, is its basic phenomenological qualities, such as the ‘redness’ we experience in looking at a tomato. Our experience of qualities, such as the color red, is described by the concept of qualia. Qualia are colours, sounds, smells, tastes, or physical sensations like pain or tickling; the term refers, in other words, to the way in which something appears to us, or the phenomenological impression it makes on us. Qualia represent, so to speak, the phenomenological element of our presentative consciousness: the phenomenal qualities that absorb us when we are in a state of consciousness as opposed to unconsciousness.”¹³

Mary may not know red, or have a rather impoverished knowledge of redness color unless she sees it. We know that sensation of the color red is made possible only when light rays of a particular wavelength are received through the cones, the color receptors, in our eyes. Suppose, the wave length of the light differs or if they happen to hit at the rods, the colorless receptors of light in the eye, we would not have the same experience.

It is also true that there should be a mechanism that is capable of recognizing the difference and interpreting it accordingly. This could very well be chemical reactions within the brain. If the problem of seeing redness is nothing specific to the object or has nothing to do with the information processing within the brain, then the experiencing of redness by a man, a color blind frog or a color supersensitive butterfly all could have been the same.

Mary may not know redness unless the proper way of its sensing is acted upon, no matter how much of data we may push into her through the other senses. But, I hypothesize, if

¹² Jackson, 291-295.

¹³ Bertelsen, 146.

the neuroscientists were given a chance, why won't they be able to activate those visual regions of the brain in the proper pitch of vibration, just as it happens in the normal perception of red, to produce such an experience? There is a possibility that even Mary comes to know of the color red sitting inside her black and white room. That might cause a sense of redness in a blind too; after all, they have gone on to prove that there could be metarepresentations without representations.¹⁴ We speak of the sensation of color here, as our knowledge about other sensations is not as developed and researched into as that of vision. If God experience or experiencing the pleasure of a thousand orgasms could be experienced by titivating the different regions of one's brain¹⁵, why can't it also give one a rather simpler sensation of redness?

Qualia are our way of relating to the world that we are in. It must necessarily be related to our basic way of connecting with the world and directing our activities at/by the objects in our surroundings, and as such they must be susceptible to explanation.¹⁶ There is a way of being me and a way of my being related to the world. Qualia are the ingredients of such a being.

“I see my surroundings, feel my physical being, sense the temperature of the surrounding air, feel the pressure of the wind, smell the wet leaves, and hear the rustling of the treetops. To describe these sensations is to say – at least partially- what it is like to be me, right now: in the presentative state of consciousness in which the elements are qualia.”¹⁷

There is a strong view that qualia and my sense of being must have been evolved like any other property in the long chain of transformations and transmutations. Ramachandran sees a good chance of the evolution of qualia and the sense of self in the process of developing a way to produce metarepresentations. His view is that, in the chain of evolution, other than having representations of the world, we went on to develop the

¹⁴ In a bizarre syndrome called, *Anton's syndrome*, a patient is blind owing to cortical damage but denies that he is blind. What he has, perhaps, is a spurious meta-representation but no primary representation. Ramachandran, *The Emerging Mind*, 128.

¹⁵ A device called '*Transcranial magnetic stimulator*', when applied to the scalp, can shoot a rapidly fluctuating and extremely powerful magnetic field onto a small patch of brain tissue, with some degree of precision and thereby activate it and provide hints about the function of such brain regions. Ramachandran and Blakeslee, 174-75.

¹⁶ Bertelsen, 154.

¹⁷ Ibid.

ability to create metarepresentations of the same and then to create abstract thinking. Thus, he thinks, qualia and self must all have been byproducts in this line of happenings.

“The ability to use special brain circuits to create metarepresentations – of sensory and motor representations – partly to facilitate language and partly facilitated by language – might have been critical for the evolution of both full-fledged qualia and a sense of self. As we noted earlier, it is impossible to have free floating qualia without a self experiencing it, nor a self existing in isolation, devoid of all feeling and sensation.”¹⁸

Impressions of the world, memory, feelings, creation of self and consciousness are all beads on the same chain, equally indebted to each other for their origins and functions. There is no king or subject; they all function together, cause each other and enjoy each other’s expertise. Antonio Damasio strongly argues that the formation of consciousness and having perceptions are intertwined and molded into a cyclic happening.

“...the occurrence of a feeling in the traditional sense of the term requires that its contents be known to the organism; i.e. consciousness is a requirement. The relation between feeling and consciousness is tricky. In plain terms, we are not able to feel if we are not conscious. But it so happens that the machinery of feeling is itself a contributor to the process of consciousness, namely to the creation of self, without which nothing can be known.”¹⁹

There is nothing supernatural about it. Qualia and the self that experiences them are all products of nature, known by nature and manipulated by nature. Qualia are nothing metaphysical. It is something that has its cause in some physio-chemical interactions and further causes some chemical and physical reactions. “If they evolved, qualia must have both physico-chemical causes and physico-chemical effects-and thus good enough entrance qualifications to be admitted to the physical world.”²⁰ If qualia are part of our world, then science should be able to explain it. Qualia would surely have the active involvement of physical properties. They are part of the physical world, because they are evolved; and they are part of the machinery of our behavior, along with ion pumps, action potentials, reflexes and so on.²¹

¹⁸ Ramachdran, *The Emerging Mind*, 122.

¹⁹ Antonio Damasio, *Looking for Spinoza: Joy, Sorrow and the Feeling Brain* (London:Vintage Books, 2003), 110.

²⁰ A. G. Cairns-Smith, “If Qualia Evolved...,” in Stuart R. Hameroff, Alfred W. Kaszniak and David J. Chalmers, eds., *Toward a Science of Consciousness III: the Third Tucson Discussions and Debates*, 1 October 2002, <<http://cognet.mit.edu/posters/TUCSON3/Cairns-Smith.html>> (13 May 2011).

²¹ *Ibid.*

Functional brain imaging shows us the distinctive alterations in locations and patterns of brain activity during tasks requiring various levels of active effort. From these imaging, we come to know what are the locations involved in special acts of the brain or how much of activity is involved for each of the mental states. The difference could easily be perceived between actions that require more attention and those that require less, as in some sort of habituated and automatic acts.

“Functional brain imaging has revealed distinctive alterations in locations and patterns of brain activity during learning tasks, and both Milner (Professor A.D. Milner of the Durham University) and Goodale (Melvyn A. Goodale, professor at the University of Western Ontario) have given us examples of cases where the brain seems to have distinct pathways for conscious and unconscious forms of the same sort of activity. It seems clear now that when a mental activity is qualia laden (highly conscious) or qualia free (unconscious) the brain is operating somewhat differently.”²²

Many of the automatic and routine works are done without the involvement of the evolutionarily newer parts of the brain as we have seen in the second chapter. The very purpose of the evolution of consciousness may be this division of labor and specialization. The routine acts like breathing or blood circulation are unconsciously done and is managed by the older parts of the brain which are not as much directly involved in the emergence of consciousness as the newer parts of the brain like the cortex. The activity in the brain is different while you ‘breathe’ and while you ‘smell’. Researches conducted on the sleeping brain or the brain under anesthetic state clearly show how the brain puts off many so called ‘qualia laden’ programs and bids good bye to consciousness and the sense of self. Susan Greenfield of the University of Oxford suggests that consciousness is formed by different groups of brain cells (neural assemblies), which work efficiently together, or not, depending on the available sensory stimulations, and that consciousness is not an all-or-none state but more like a dimmer switch, changing according to growth, mood or drugs. When someone is anaesthetized it appears that small neural assemblies either work less well together or inhibit communication with other neural assemblies.²³ Studies done on persons in deep meditation show that the temporal

²² Ibid.

²³ European Society of Anesthesiology, “What happens in the brain as it loses consciousness,” 11 June 2011, <http://www.sciencecodex.com/3d_movie_shows_for_the_first_time_what_happens_in_the_brain_as_it_loses_consciousness> (8 July, 2011).

lobes, which are usually involved in the interpretation of sensory inputs related to hearing and language go almost blank.²⁴ Here people do not perceive the particularity of the world, qualia, but do experience oneness with the cosmos. They have no sense of the world or self as they are not capable of interpreting qualia during this state – having the brain in the resting mode means registering of no qualia leading to no sensation of the world and hence no self.

It is true that qualia have some physical basis. The flower does not appear the same way to you while looking through a magnifying glass or through a colored transparent sheet. Qualia could be manipulated by changing the impressions that the object makes on the neurons involved in sensory input. If we were to look for some clue of qualia inside the body, there is skepticism regarding the success of such a project, expressed by philosophers like Joseph Levine who suggest that things don't work that naturally. There is something amiss here.

“If the experience is indeed constituted by certain neural processes taking place in certain locations of the brain, then it ought to be possible to explain why the experience is as it is – that the rose looks to us just the way it does – by appealing to the underlying neural phenomena. We ought to be able to say something like this: you see, since these neurons are firing in this way, that is why the rose looks reddish in this particular way, as opposed to greenish, say, or even no way at all. But once we put it that way, we see immediately that it does not work.”²⁵

Our current inability to point out each minute aspect of our sensory experience should not be a reason to say that ‘it does not work’ that way. We know, if the cones, the color sensitive sensory receptors are damaged, the person may see a black and white rose and not a red one. Taking cue from Dennett’s thought experiment of the ‘inverted spectrum’,²⁶ we might suggest that if the neural connections in the brain were misplaced, the person might look at a yellow rose and see a red one instead and will see nothing wrong with it. There is something for the body to do with the experiencing of qualia.

²⁴ Vince Rause, “Searching for the Divine,” *Reader’s Digest* (January 2002): 124-129.

²⁵ Joseph Levine, “The Explanatory Gap,” in Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 282.

²⁶ Dennett, “Quining Qualia,” 381-414.

If some scientists were asked to give us a cue about the role of brain in the formation of qualia, they might look into the primary sensory areas as suggested by Crick and Koch, for an answer. There may not be anything extra bodily with regard to qualia.

“Just as we know that only a tiny part of the cell, namely, the deoxyribonucleic acid (DNA) molecule, is directly involved in hereditary and other parts such as proteins are not, could it be that only some neural circuits are involved in qualia and others aren't? Francis Crick and Christof Koch have made the indigenous suggestion that qualia arise from a set of neurons in the lower layers of the primary sensory areas, because these are the ones that project to the frontal lobes where many so-called higher functions are carried out.”²⁷

It may also be possible that we know what exactly happens when the brain feels sensations or has experience. The experiences one undergoes may well be evidenced in the changes within the brain, as hypothesized below.

“Patient X claimed to have a ‘shooting pain’: Indeed, the patient has sporadic, quick bursts of nerve firings which cause split-second, intense reactions in the brain; his sensory cortex ‘spikes’, so does his motor cortex--which causes him to flinch and wince; his frontal cortex is having the thought ‘this shooting pain feels terrible’. Patient Y has a ‘dull pain’, characterized by prolonged, continuous mild-intensity bursts which cause the brain to go into an indefinite state of mild excitement of the form ‘displeasure’.”²⁸

It is also important that when we pay attention to something or get a strong sensation of the object and become aware of it, the actual patterns of nerve impulses (spikes) from widely separated brain regions become “synchronized.” In other words, it is the synchronization itself that leads to conscious awareness.²⁹ Now, why is this important? We know the world in an effortless, almost a passive manner, through qualia. But, at the same time, let us not forget that there is a complex networking happening within the body beneath the threshold of conscious awareness. But when it is a matter of knowingly paying attention to something, as differentiated from passive awareness, or as between ‘seeing’ or ‘looking’, we may assume that the task brain has is higher. This may be made clear by an example. When one smiles on seeing a familiar face, it is produced by the basal ganglia and happens in a fraction of a second without the thinking parts of the

²⁷ Daniel C. Dennett. “Review of Antonio R. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain, 1994*,” *Times Literary Supplement*, 25 August 1995, 3-4.

²⁸ Marcus Arvan, “Out with the Qualia and in with the Consciousness: why the ‘Hard Problem’ is a Myth?,” David J. Chalmers and David Bourget, comp., *Online Papers on Consciousness* 1.2d, 1 February 2001, <<http://consc.net/online/1.2d>> (14 February 2011).

²⁹ Ramachandran and Blakeslee, 234.

cortex being involved. But while posing for a photograph, the smiling involves a careful orchestration of dozens of tiny muscles, including auditory cortex and language centers and the motor cortex in front of the brain, in the appropriate sequence.³⁰ It becomes a conscious act like any other motor activity. There should be a coordinated effort between the sensory and motor neurons and it is obvious that in such an active project, there should be many more neural connections to be established.

Getting an active awareness or paying close attention to the same object for a prolonged time means that the different regions of the brain become synchronized and then it is this synchronized firing of neurons at the millisecond level is what causes consciousness too.³¹ Again a similar process is involved in developing a sense of self. A synchronization of different autonomous functional parts of the brain is what produces the sense of a unified self. These relatively autonomous sections are unable to produce a unified picture of the self independently. "The normal mind is not beautifully unified, but rather a problematically yoked together bundle of partly autonomous systems."³² And if this synchronization happens to be improper, problems with the self are bound to happen. Qualia have to be interpreted by the different areas of the brain allotted for the task, they have to send the information to the other units therein and then we have consciousness and the sense of a self as the end product.

Thus the mystery of qualia, consciousness and self should be treated as interrelated and having their base in the nature and the human brain. There is nothing metaphysical about it. Self and qualia are two sides of the same coin. You can't have free-floating sensations or qualia with no-one to experience it and you can't have a self completely devoid of sensory experiences, memories or emotions. For example as we saw in Cotard's syndrome, a disorder in which the patient asserts that he or she is dead, and which is probably caused by a complete lack of emotional contact with the world and with

³⁰ Ibid., 13-14.

³¹ Christof Koch and Francis Crick, "On the zombie within," 19 November 2003, <<http://www.klab.caltech.edu/news/laweekly-2003.pdf>> (12 May 2011).

³² Daniel Dennett, "The Self as a Center of Narrative Gravity," in F. Kessel, P. Cole, and D. Johnson, eds., *Self and Consciousness: Multiple Perspectives* (Hillsdale, NJ: Erlbaum, 1992), 282-83.

oneself,³³ sensations and perceptions lose all their significance and meaning - and this gradually leads to the dissolution of self.³⁴

In patients with cotard's syndrome, the brain is able to interpret the qualia but is not able to transmit this data to the emotional centres of the brain - personalization or the 'subjectivity' of experience goes missing here. It seems as though the patient is able to see the world, yet he does not really 'see' it, though hears, he does not 'hear' it. To him it might seem like the experience of any other person. So, the point that we make here is that, the world no more exists for him as his brain is not functioning properly. He does not know the world through qualia and hence he is not conscious of the world. And slowly the sense of a self, the experiencing/knowing subject dissolves as the impressions received by the body do not cause any emotional change in the subject. Thus, we infer that having no proper brain functioning means having no meaningful representation of the world and hence no consciousness and sense of self.

Difficulties associated with qualia could also be one of language. Now let us come back to the problem with Mary knowing red. Mary may not know redness until she sees red although she knows everything about red. It is also true that Mary may know red on physically seeing it. The problem in our hand is to make Mary know what red is without her seeing it. There is something more to experiencing red than the knowledge that she can get from others. Though I, as a normal person, know perfectly what red is, will not be able to make Mary know what redness is. The problem here seems to be that of language – I am not able to share my experiencing of redness with Mary through the language available to me today. There may not be yet a proper way to translate our experiencing of mental states into our everyday language. The mystery surrounding it may be caused by limitations in our expressing it as opined by Ramachandran. "The ineffable experience itself is lost in translation. The actual 'redness' of red will remain forever unavailable to you."³⁵ He further says that qualia may have nothing to do with the mind- body problem at all. It may all be in our language.

³³ V. S. Ramachandran, *The Tell-tale Brain: Unlocking the Mystery of Human Nature* (Noida: Random House India, 2010), 298.

³⁴ Ramachandran, *The Emerging Mind*, 113.

³⁵ Ramachandran and Blakeslee, 231.

“The key idea here is that the qualia problem is not unique to the mind body problem. It is no different in kind from problems that arise from any translation, and thus there is no need to invoke a great division in nature between the world of qualia and the material world. There is only one world with lots of translation barriers. If you can overcome them, the problem vanishes.”³⁶

It may be a problem with our inability in translating feelings or, in general, our subjective experience. Though I know the strange sensation in my stomach and call it hunger as was taught to me, yet to this day I do not know how to express the sensation of it. I know it has a name and everyone would understand what I feel by hearing the name. But my inability to tell you what it is like to have hunger, renders it a mystical appearance, something super-physical. But it should not force us to believe that qualia are something super-scientific and not susceptible to explanation. Impressions and sensations might be incommunicable through language but everyone has a fair idea of what many of them are. There is nothing demanding for the invocation of extra terrestrial nature to it.

It seems that the problems that shroud qualia pertain to our way of looking at it and our limitations in translating the experiences as such. If there is a way to dissolve the problem of qualia, there may not remain anything called the hard problem of consciousness as well. So now if we make consciousness an object of objective study, intelligible in terms of science, what else is left there to be discussed now? Can we look at the hard problem of consciousness in a different way now?

The Softness of the Hard Problem

Chalmers has rightly identified a hard problem of conscious awareness, an issue that haunts the scientific minds to this day. We will enter into this section on the hard problem of consciousness by quoting Francis Crick, a Nobel laureate scientist, just to show that we might have blown the problem out of proportion.

“We shall not describe here the various opinions of philosophers, except to say that while philosophers have, in the past, raised interesting questions and pointed to possible conceptual confusions, they have had a very poor record, historically, at arriving at valid scientific answers. For this reason, neuroscientists should listen to the questions philosophers raise but should not be intimidated by their discussions. In recent years the

³⁶ Ibid., 232.

amount of discussion about consciousness has reached absurd proportions compared to the amount of relevant experimentation.”³⁷

The problem of experiencing qualia is what Chalmers calls ‘The Hard Problem’: It is widely agreed that experience arises from a physical basis, but we have no good explanation of why and how it so arises. “Why should physical processing give rise to a rich inner life at all? It seems objectively unreasonable that it should, and yet it does.”³⁸ It is an account of the manner in which subjective experience arises from cerebral processes. There could be several problems associated with the hard problem, many questions related to it. The key one among them being our very experiencing of anything at all, the questions of subjectivity.

To the question as to why we experience at all, Crick and Koch take an evolutionary model of explanation, as explained in detail in chapter two. They have suggested that the biological usefulness of visual consciousness in humans to produce the best current interpretation of the visual scene in the light of past experience, either of ourselves or of our ancestors (embodied in our genes), and to make this interpretation directly available, for a sufficient time, to the parts of the brain that contemplate and plan voluntary motor output, of one sort or another, including speech,³⁹ may be the reason why there is conscious experience at all. Experiences come in a package, though it seems too simple a process to us; after all, the subject of experience itself is a product of this complex sensations. On seeing a chair, we become aware of not just its color and depth, but its ability to support, our memory of having sat on it before, and its softness all pop up to give us a sensation of the chair.

Impressions come intimately associated with ideas, based on previous experience; what we would ordinarily call a perception involves not just a passive component, but also the result of various activities on our part: we compare, we remember, we classify, we

³⁷ Francis Crick and Christof Koch, “Why Neuroscience may be Able to Explain Consciousness,” *Scientific American* 273 (1995): 84-85.

³⁸ David J. Chalmers, “Facing Up to the Problem of Consciousness,” *Journal of Consciousness Studies* 2, 3 (1995): 202-3.

³⁹ Christof Koch and Francis Crick, “Are we aware of neural activity in primary visual cortex?,” *Nature*, Vol. 375 (11 May 1995): 121-23.

anticipate, we predict, all of this rolled up with the having of sensation. – perceptions and sensations are associated with ideas and thoughts.⁴⁰

So it is more than interpreting the qualia, we may have to call in further information from the other centers to produce a conscious experience. Crick and Koch are also strong proponents of past experience in the generation of sensations. They say, “If the neural correlate of blue depends, in an important way, on my past experience, and if my past experience is significantly different from yours, then it may not be possible to deduce that we both see blue in exactly the same way.”⁴¹ But again, the problem of blueness remains here. Why should there be blueness when some rays of light hit my eyes?

It is the problem of qualia that puzzles philosophers. The redness of red or the painfulness of the pain might also astound the layman. How can these be experienced due to mere firing of the neurons in the brain? There is an analogy that Crick and Koch give about consciousness, relating it to life.

“...that you cannot explain the ‘livingness’ of living things (such as bacteria, for example) by the action of ‘dead’ molecules. This assertion sounds extremely hollow now, for a number of reasons. Scientists understand the enormous power of Natural Selection. They know the chemical nature of genes and that inheritance is particulate, not blending. They understand the great subtlety, sophistication and variety of protein molecules, the elaborate nature of the control mechanisms that turn genes on and off, and the complicated way that proteins interact with, and modify, other proteins. It is entirely possible that the very elaborate nature of neurons and their interactions, far more elaborate than most people imagine, is misleading us, in a similar way, about consciousness.”⁴²

There are philosophers like Searle and Dennett who have appreciated this kind of thinking. We may not be able to explain consciousness in terms of unconsciousness. The complicated neural network and functioning has to be laid bare before we can understand consciousness completely, just like what the drawing of an anatomy of DNA did towards explaining life. A similar breakthrough might be awaiting in the study of consciousness as well. The analogy remains an analogy until then. It has to be filled in with results of rigorous research. We still do not know much about consciousness as posited in the

⁴⁰ John Perry, “Subjectivity,” in Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, Eds., *The Oxford Handbook of Philosophy of Mind* (Oxford: Clarendon Press, 2011), 224.

⁴¹ Francis Crick and Christof Koch, “Consciousness and Neuroscience,” *Cerebral Cortex* 8 (1998): 104.

⁴² *Ibid.*

words of Crick and Koch. They agree that there is still a lot to be accomplished before an ‘all-of-it-theory’ of consciousness is posited.

“Neuroscientists know only a few of the basics of neuroscience, such as the nature of the action potential and the chemical nature of most synapses. Most important, there is not a comprehensive, overall theory of the activities of the brain. To be shown to be correct, the analogy must be filled out by many experimental details and powerful general ideas. Much of these are still lacking.”⁴³

But this does not go on to prove that the hard problem is that hard after all. There may be a possible solution in waiting. If the issue of qualia is agreed to be looked upon from a physicalist point of view, as discussed in the previous section, we might find solutions approaching and the hard problem itself dissolving. The confusion regarding consciousness may be due to the biasness in our thinking, stubbornly claiming that this is much beyond the realm of physics or chemistry and therefore must belong to something super-scientific.

We have seen that brain is the place to look for the traces of consciousness. We know sensations are decoded in the brain and also know what regions of the brain are involved in making these sensations personal and consciously aware. Without the involvement of certain areas of the brain we may keep doing many an activity without really being aware of them. Also in cases of sleep and anesthesia, we feel that consciousness is lost for a while and returns later. These may tempt us to think that consciousness is a property external to the body, one that keeps coming and going. A serious doubt that may possibly arise from such a view is that of the existence of a knowing agent – one that becomes conscious of the world through the body. Or else, how come that a bundle of matter that could be taken to the tables in laboratories account for mental faculties of imagination and awareness – our very humanness itself? But if the former doubt, of another being becoming conscious, is entertained, we may be taken to task to explain how that entity becomes conscious. That will, in turn, lead to the fallacy of infinite regress. The question remains: is the human brain the author of consciousness or an apparatus?

⁴³ Ibid.

Homunculus Fallacy: Brain - Author or Apparatus?

The easiest way to explain consciousness would be by assigning this quality to something other than the body – establishing a metaphysical or mystical being as custodian of consciousness. Getting such a being responsible for all that we do not understand may be a wonderful way of dissolving issues like life, consciousness and other ‘supernatural’ faculties of the sort. The existence of such a divine being inside, would keep man’s place safe in the anthropocentric picture of the cosmos. This has been debated and discussed in detail by the ancient as well as the religious philosophers. Coming to the modern era, we have philosophers like Descartes who got hold of a metaphysical entity, eternally existing.

As far as certain schools of Indian thought are concerned, the scene is not different. Here too, in order to be conscious, the mind is used only as an instrument of relating to the manifold world that one is currently in.⁴⁴ If one asks, who is this “I” who becomes conscious, we may have to traverse through to a different realm of existence. There one might find another being or the Being who is consciousness itself. But our problem is whether we can locate this being that is conscious, in the chambers of human mind itself. Herein, our intention is not to state superciliously that the whole reality is in the brain or to deprive any higher reality of its right to existence. Rather, what we are looking at here is to see if we can solve the problem of consciousness without taking recourse to something endlessly speculative. Consciousness is after all a way of relating ourselves to the world, a necessity for meaningful existence. It might demand looking at matter with less suspicion and more dignity.

A serious repercussion of proposing another being within our system who knows will be that of the homunculus fallacy. If the existence of such a being is postulated, it is our logical right to ask how that being becomes conscious and then go on postulating another being within that one. Thus, it may lead the questioning into infinite regress. And, in order to stop it, we may end up postulating a being that is self conscious at any of the

⁴⁴ Swami Bhaskarananda, *Journey from Many to One: Essentials of Advaita Vedanta* (Chennai: SRM, 2009), 79.

phases of the journey. Then why go for such a journey at all? Why can't we stop anxiously seeking to find the secrets of all these somewhere beyond and ask if the brain can become self-conscious at all? Our problem here is to know, in the absence of such a being, can the human brain become self-conscious? We stop the question here at the very body, not taking it into further realms of metaphysical confusions. We rather ask if the brain, in the place of the postulated being, can be conscious of itself.

Daniel Dennett attempts at offering a different perspective of the Cartesian model in his approach towards consciousness. He rejects a central authority that controls consciousness and makes an important contribution, helping to get rid of the mystical understanding of consciousness as something *sui generis* and distinct from everything else that exists in the world.⁴⁵ According to Dennett, there is nothing like a central authority rendering meaningful whatever happens within oneself and deciding as to what should happen next. It is purely a play of 'might is right' approach when it comes to an event being consciously thought of.

"We are not the captains of our ships; there is no conscious self that is unproblematically in command of the mind's resources. Rather, we are somewhat disunified. Our component modules have to act in opportunistic but amazingly resourceful ways to produce a modicum of behavioral unity, which is then enhanced by an illusion of greater unity."⁴⁶

consciousness consists of a system of numerous channels, numerous impulses, each having an activity of its own, and each offering, so to speak, its own draft of what is going to happen on stage/in the consciousness. The vast majorities of these drafts are short-lived and will never even get close to being 'staged': that is, becoming conscious. Only the most hard-to-kill drafts will fight for a place in our conscious awareness.⁴⁷ Saying thus, the necessity of a central commanding authority is done away with. Consciousness becomes an autonomous game of representing the world on a stage where none directs the play. Dennett, while reviewing *Descartes Error* by Antonio Damasio, strongly states that the all-too-wise Cartesian homunculus may thus be relieved of the burden of comprehending the full import of every image, and the task of directing

⁴⁵ Bertelsen, 178.

⁴⁶ Dennett, "The Self as a Center of Narrative Gravity," 286-87.

⁴⁷ Bertelsen, 178.

attention where it is needed. The benefit of ignoring the insignificant events and directing attention to the real issues and thus saving a considerable amount of time to deliberate upon the given situation must have been the reason as to why consciousness evolved at all. The creation of what Douglas Hofstadter calls "active symbols" that can compete for attention with each other, needing no boss or traffic cop to determine the marching order⁴⁸ may be noted as a matter of attention here. There seems to be no such authority deciding as to what should reach consciousness and what not; it all depends on the strength of the presentation of the world that is formed.

"Just as the Darwinian concept of evolution does not involve a superior authority that chooses which species should survive, there is no superior authority (the soul, the self, the 'I' whatever) to choose which drafts will actually pop up as the content of consciousness. In each case, the question of which draft will proceed further is decided by the relative strength and mutual dynamics of the contenders."⁴⁹

By dismissing a *small* being inside our head that knows everything, the problem does not get solved. There are still issues to be sorted out. If, it is the brain that becomes self-conscious, then, how does that happen? We know the different functions of the brain regarding perception and emotion but when it comes to stating how it becomes conscious of itself, it may be too premature to make some claims. But it is not a 'no-hope' situation. Antonio Damasio states clearly that the dispositional representation I have in mind is neither created nor perceived by a homunculus⁵⁰ and goes on to explain how the relation between the world outside and the limited body leads to having conscious awareness.

According to Damasio, more than of a homunculus, consciousness is the function of the entire body. It is in regard to the interaction between the different functions of the body that there emerges some feature as consciousness, something that none of the functions alone could have generated, just like the different parts of the clock is not able to tell time. In Damasio's vision, even the highest flights of reason are set in motion, and kept in appropriate motion, by interactions with the rest of the body.⁵¹ He goes on to make

⁴⁸ Dennett, "Review of Antonio R. Damasio," 3-4.

⁴⁹ Bertelsen, 178.

⁵⁰ Antonio Damasio, *Descartes' Error: Emotion, Reason and the Human Brain* (London: Vintage Books, 2006), 242.

⁵¹ Dennett, "Review of Antonio R. Damasio," 3-4.

claims about reasoning and creation of the concept of a self. He says that human reasoning is never a matter of rule-governed manipulation of 'pure' propositions, but rather is *always* imagistic--even in those rare cases of sophisticated deduction in which the images that are being manipulated are of logical formulae.⁵² Now if the brain knows everything through images, it may be a matter of concern still as to how it becomes conscious of them. According to Damasio, not all exploitation of map-like representations amounts to thought:

"In other words, if our brains would simply generate fine topographically organized representations and do nothing else with those representations, I doubt we would ever be conscious of them as images."⁵³

What else is demanded here for a conscious experience to be possible? It is the one who binds these images and generates meanings out of it. For a neural basis of the creation of self to be complete, the images that are received into the brain have to be correlated. Now this is accomplished with a call to the rest of the world.

"In addition to the basic images, there are 'dispositional representations', specialist agencies that set off chains of reaction that reach deep down into the body's accumulated experience, thereby calling to mind (you might say) not only further images of reliably appropriate content, but 'somatic markers,' emotional states that color everything with specific varieties of urgency and calm, rendering various further thoughts relatively unthinkable, while driving others into attention"⁵⁴

This might also go on to prove why in hypnotic states, people are able to recall much more information than what they can in conscious states. Many an event is suppressed as unthinkable chunks of data into the depth of mind so that the relevant ones get adequate attention.

If we still were to look how this conglomeration of experience, memory, emotion etc comes in to produce consciousness and a sense of self, witness of these experiences, there might be answers to be found in the brain. The frontal cortex of the brain is thought to be more complex in comparison with the other regions and is considered to be the one which sets off the entire process of generating complete comprehension and hence a concept of

⁵² Ibid.

⁵³ Damasio, *Descartes' Error*, 99.

⁵⁴ Dennett, "Review of Antonio R. Damasio," 3-4.

self. But consciousness itself is not the property of it. It is the product of the activity that it kicks start.

“The frontal cortex has long been recognized to play a marked role in motivation and control, but too often it looms up through the mists of theory as the seat of the ego itself, the ultimate arbiter, the *fons et origo* of value (e.g., in Gerald Edelman's work), instead of as an important mediating agent between ancient bases of selfhood and their more modern components. The frontal region adds editorial commentary, applause or warning labels, and thereby calls up other ideas, not comprehending them all, but only semi-comprehending them. The comprehension of the whole agent is the emergent product of all the activity.”⁵⁵

Thus, it leads us to say that there is no other being inside the skull that uses the brain to know just as brain uses the eyes to receive visual stimuli. There is not a play to be managed. The completeness comes from the correlated functions of the bits and scraps of many functions. Here thus we present the body as something that is aware of itself – a conscious body. Yes, the whole body becomes conscious of itself.

The Vegetative Soul

If we were to look out for a mind or a self as something set in the body or as a part of the body, it would be a futile attempt, there is nothing like a mind to be found anywhere. Though we know that the central nervous system is the controlling mechanism of the body, we will not find a mind therein. Here we might look at the Aristotelian concept of the ‘vegetative soul’. The autonomic nervous system is a control system more along the lines of the organization of a plant, preserving the basic integrity of the living system. It was developed as a system of internal cohesion and control, lately extending their realm of affairs to the immediate world outside the formed matter of their own body. This is well pointed out in Damasio,

“In evolutionary history, organisms must have begun with a concern only for their internal problems and prospects, eventually graduating to a concern for proximal problems and prospects at their boundaries, before advancing to the concern for, and cognitive appreciation of, ever more distal problems or prospects.”⁵⁶

⁵⁵ Ibid.

⁵⁶ Ibid.

Thus, from such an evolutionary view, we might conclude that the later development of a conscious self was on the ancient, slow and unconscious foundations of a mechanism meant for the internal sustenance of the organism. It is clear that even now many of the things that we do are unconscious.⁵⁷ It is from this part of the mind that a fleeting sense of a conscious self emerges.

“It is this part of our mind, what we might call our Greater Self that we can in principle understand in terms of nerve cells and circuitry. To say that our Greater Self is a big unconscious control computer is not so far off. The other part of our mind comes and goes: the Evanescent Self, as we might call it, the conscious mind, the bit that is made of qualia, the bit that switches on every morning.”⁵⁸

Damasio would say that the mere physical activation in the brain, in terms of the neural circuits alone do not cause the emergence of a mind, but the ability to coordinate and produce thought. “Brains can have many intervening steps in the circuits mediating between stimulus and response, and still have no mind, if they do not meet an essential condition: the ability to display images internally and to order those images in a process called thought.”⁵⁹

What these ‘images’ are composed of? “Images are based directly on those neural representations, and only on those, which are organized topographically and which occur in early sensory cortices.”⁶⁰ These are, in vision, the ‘retinotopic maps’ that preserve features of the geometry of the retinal image, and more generally the ‘body image’ patterns of stimulation that similarly preserve a map of the whole body. These neural representations exploit the geometry of the map (to some extent) to encourage the evocation of the patterns that matter, *when* they matter, and *because* they matter to the body.⁶¹

If we were to ask as to who displays the images and to whom is the message displayed, again the problem of a self might pop up. We have seen before that there is no director in

⁵⁷ Bertelsen, 3.

⁵⁸ Cairns-Smith, “If Qualia Evolved...”

⁵⁹ Damasio, *Descartes’ Error*, 89.

⁶⁰ *Ibid.*, 98.

⁶¹ Dennett, “Review of Antonio R. Damasio,” 3-4.

this game; the images themselves fight for representation and the stronger ones, in relation to the situation and the past experiences, succeed. Now who is the audience before whom the presentation takes place? Dennett goes on to clearly state that it is not a Cartesian self, but an Aristotelian vegetative soul.

“Who or what is the audience for this ‘display’ of ‘images’? Not a Cartesian ego or self, isolated in some central module--the dread Cartesian Theater--and overburdened with powers and responsibilities, but a self distributed throughout the body, a clear descendant of the Aristotelian vegetative soul.”⁶²

The self as distributed throughout the body, reception and coordination of the images of the world initiated and ordained by the nervous system, in consultation with the rest of the body, renders it a complete sense of an embodied self. It is not a matter of boss and servants. It is but a coherent unit, the parts of it doing their bits and then coming together unconsciously to give rise to a conscious self. We may like to have a look at the strong words of Nietzsche here, identifying the self with the body, reinstating the concept of a vegetative soul.

“‘Body am I, and soul’--thus speaks the child. And why should one not speak like children? But the awakened and knowing say: body am I entirely, and nothing else; and soul is only a word for something about the body. The body is a great reason, a plurality with one sense, a war and a peace, a herd and a shepherd. An instrument of your body is also your little reason, my brother, which you call ‘spirit’--a little instrument and toy of your great reason. . . . Behind your thoughts and feelings, my brother, there stands a mighty ruler, an unknown sage--whose name is self. In your body he dwells; he is your body. There is more reason in your body than in your best wisdom.”⁶³

But is the problem solved? There is the age old sense that to know something there should be at least two things: the knower and the known. This may be the biggest reason as to why the postulation of a knowing being was proposed after all. Now to say that there is no difference, but oneness of the known and the knower, could be a problem.

⁶² Ibid.

⁶³ Friedrich Nietzsche, *Thus Spake Zarathustra*, Thomas Common, trans., The Pennsylvania State University, 2008, in *Electronic Classics Series*, 5 July 2006, <<http://www2.hn.psu.edu/faculty/jmanis/nietzsche/tszarath.pdf>> (12 May 2011), 40.

Fusion of the Knower and the Known: Self-Consciousness

There is a generally considered view that the knower and the known should be different for knowledge to be possible. In that case, how does the body know itself? A possible solution provided to human mind knowing its own activity is that it is divisible and it can know the function of its remaining parts. But we come to reject such a postulation, for, a part of the brain knowing other parts will mean there is still a smaller part within that part, as we not only know about this particular feature but also we know that we know it. Here, to avoid the homunculus fallacy the only solution would be to admit that the brain along with knowing certain facts also comes to know that it knows them. It is not the brain or a part of the brain becoming conscious. "None of these anatomically identifiable 'convergence zones' is a Cartesian Theater because none does more than just a fraction of the cognitive work."⁶⁴ Rather it is the interconnected parts and functions of the brain that is assisting me to become conscious. Now one might ask who is this 'me' who is made conscious?

This will lead us to the question of self. The Indian thought concedes to the formation of an ego within the human mind. This may be what we mean by the 'self' – the unifying concept that remains till the brain functions properly. We have seen enough evidence in the second chapter, how the concept of self is destroyed in various brain diseases. Also we know that the features of self or consciousness such as continuity, coherence, unity, and embodiment are all made possible since there is a brain functioning properly. Thus, the very concept of the self that we take for granted is the product of the brain. We know the world through a developed brain. Thus by knowing the world, the sense of a self is created as a mode of separation in relation to the world and then a model of the world itself is created. Thus ultimately our way of modeling the world is consciousness (being aware of the world) and a concept of the self (the one who knows).

The presence and perceived absence of consciousness during sleep or anesthesia does not mean that consciousness is something other than the body coming and going from elsewhere. It is rather a disconnect that happens within the brain among the various

⁶⁴ Dennett, "Review of Antonio R. Damasio," 3-4.

functioning centres. Hence, it seems there is not much of a technical need for bringing in another being to keep the distinction of the knower and the known intact. Another fall out of suggesting something extra bodily would be that we will finally end up assuming the existence of a being that is not aware of itself. We may be conscious but finally we may not be. Thus, to save the situation, it is better to end the game here and find out why the difference of the knower and the known should be preserved. Since the whole question of consciousness is the fusion of the knower and the known, we might settle it here within the brain. If that does not take place, it will be a series of knowing through one being after another – an endless chain of knowing but not becoming conscious. I understand consciousness as the fusion of the knower and the known. If there was a knower in me that knows through me and then another one to know that, then there would be only a process of knowledge. There may not be consciousness. To be conscious, I should know the world as the object and myself as the knower. I thus become the known and the knower simultaneously to make reflexive consciousness possible. Unless and until that happens, we may not progress to the state of reflexive consciousness but remain in the level of knowledge itself. And if we approve such a proposition, then we find answers to consciousness here within the very region of the human brain.

Having said that it is the brain that knows itself, now we may move on to know how objective it is. It is true that it may be possible to bring consciousness back to the realms of the mundane but we still may not be in a position to take it to the laboratories like any other object of scientific study. Lot of serious research may be needed to make our position strong. But what we need now is a change in attitude, in thought, to think that finally the answer could be very mundane and less mysterious than previously thought.

Conclusion

It may be nice to sit and think if a physicalist approach to the problem of consciousness would be worth the ordeal. Will it not degrade man more just like the Galilean, Darwinian and Freudian theories did? Next step in understanding man would be to say that there is not much a difference between the rock out there and him. In the words of Ramachandran, “Many social scientists feel rather deflated when informed that beauty,

charity, piety and love are the result of the activity of neurons in the brain, but their disappointment is based on the false assumption that to explain a complex phenomenon in terms of its component parts (reductionism) is to explain it away.”⁶⁵ Yes, explaining consciousness in physicalist terms is not to explain it away in any way. Rather, it is a way of knowing to accept the reality and for sure all these sublime feelings are there to stay. Also it is an estimable understanding. It takes us closer to oneness with reality. “So, in a sense, indirectly by saying that you are not a separate soul, that you are really part of this great dance of *Shiva*, far from being humiliating, it’s actually ennobling. That would be my explanation of why people are always fascinated by questions about origins, and their place in the cosmos.”⁶⁶

Finally, we may conclude that the problem of consciousness may be something that could be traced to the complex mechanisms of the human brain, in fact, the most complex that it has ever come to know of in the nature. The still unsolved mysteries associated with different aspects of it might be a result of our biasness in thinking. Maybe we need more austere training of mind to exorcise the ghost of Cartesian dualism from our thought and language. Also much more rigorous research might be needed to take us to proper light since we are still to know a lot as to how the whole miracle of consciousness comes about. “There is, at the moment, no agreed philosophical answer to the problem of consciousness, except that most living philosophers are not Cartesian dualist - they do not believe in an immaterial soul which is distinct from the body. We suspect that the majority of neuroscientists do not believe in dualism.”⁶⁷ But still it is not a way of reducing the miracle of consciousness to pure reductionism. It is rather a way of just getting it rid of the mysterious and speculative aspects surrounding it. Science has done it before and more than suspicion it should invite us more innovative thoughts and discussions.

⁶⁵ Ramachandran, *The Emerging Mind*, 67-68.

⁶⁶ Ramachandran, “In the Mind of the Brain,” 4-18.

⁶⁷ Crick and Koch, “Consciousness and Neuroscience,” 103.

CONCLUSION

William Henry Davies in his poem *Leisure* asks, “*What is this life if, full of care, We have no time to stand and stare?*” Once paused to look at the world, of which we are a part too, there are surprises alone, waiting to be revealed – the biggest of them being the person himself/herself who pauses to look. But how do the beauties and marvels of the world get into us through the senses? Science must have gone a long way exploring sensations and has told us how sensations take place. But it is difficult to believe that the different forms of energy should produce in us such a rainbow of experiences.

What is man? Man is a being that can pause ‘*till the beauty’s mouth enriches that smile her eyes began*’, imagine of a lotus blooming in the blue skies, forget everything about the world and be in the bliss of spiritual oneness, can dream of horses flying and pen them down to beautiful poetry, but more important than all of these, one who knows that s/he can do and know all these. I know that I am a unique being who can imagine infinity, abstract redness from a rose, think of the fate of this finite being, ask questions, recollect the past and feel good about it. It was to be for Shakespeare to describe the nobility of humanness, in *the Hamlet*. “*What a piece of work is a man! How noble in Reason! How infinite in faculties! In form and moving how express and admirable! In action how like an Angel! In apprehension how like a god! The beauty of the world! The paragon of animals! And yet to me, what is this quintessence of dust?*” Yes, what is the *quintessence* of this humanness of ours – what sets us apart from the other animal species in the nature? As V. S. Ramachandran asks, “how does the activity of the neurons – mere wisps of protoplasm – in the visual areas of the brain give rise to all the richness of conscious experience, the redness of red or blueness of blue? Or the ability to tell a burglar from a lover?”¹

The ancient man believed in the existence of a soul that set us apart and was a guarantee for our superiority over the world. We were different from the world, having a qualitative union with the efficient cause of the world. We developed sense of good and evil based

¹ V. S. Ramachandran, *The Emerging Mind: the Reith Lectures 2003* (London: Profile Books, 2011), 28.

on this belief. Features like life, consciousness and will were all due to the presence of this eternal occupant of our body. We have visions of God, sense of spiritual ecstasy and numerous religions as givers of identities. As time moved further, may be, the name of this being changed; but a principle other than this body existed in it, giving meaning and purpose to life. Copernicus, Darwin and Freud were all champions of dethroning man from this title, '*Crown of Creation*' and taking him to the world of the mundane. Even in the modern era, philosophers like Descartes held on to the notion that these strange faculties that we possess were something given externally. Thought and extension were dichotomized, man was considered a union of soul and body and the immaterial principle was made custodian of all the sublime qualities.

If we were to negate such a platonic concept of the soul and to attribute these qualities back to the body as was found in the Aristotelian concept of essence, Charles Darwin would be the one to show us the way. Whatever we are or we have are the results of a long chain of evolution. The very humanness that you and I are proud of is nothing divinely given but naturally begotten. The present work '**THE EMERGING CONSCIOUSNESS: a Philosophical Exposition of the Neurophysiological Evolution of Human Consciousness**' was an attempt at looking man from this evolutionary point of view. Here consciousness was looked at from the nature's end, demystifying it by bringing the discussion to the laboratories of the neuroscientist.

It is easy to say something does not work but then the demand for an alternate model is justified as well. The recent developments in and interest of science in philosophical issues have given new vigor to debates. Serious researches done in Physics, Neuroscience, Evolutionary Biology, Artificial Intelligence etc have provided new life to the issue of consciousness, long shrouded in mysteries. Of all these sciences, Neuroscience seems to be a step ahead in consciousness studies as it studies the most marvelous formation of matter known to man today, the human brain. As we track the evolution of brain as an organ of consciousness, it seems that the answers to the mystery of consciousness are to be found in the human brain.

Consciousness is still a topic, of which we do not know much. A possible definition of it is carefully avoided by philosophers to save it from any ills of a premature definition. Hence, to understand what consciousness is, it was thought better to study different features that are attributed to consciousness. This is how the first chapter of this work, 'Consciousness: Being Aware of Awareness' began and then different types of theories proposed in philosophy, science and religion were looked at to have a better understanding of the possible ways of solving the problem of consciousness. There are a few issues that the philosophers and the scientists face alike while entering into consciousness studies. We have taken note at a few of them. Since an objective study of consciousness is proposed in this work, the very possibility of such an attempt is the first problem faced by the scientists. Here we have taken into account the famous view of Thomas Nagel about the first person perspective of subjective experience. If conscious experience is something really subjective and not shareable, then any attempt of an objective study will take us farther away from the very issue. Another problem faced is the problem of reductionism. Does understanding consciousness in the physicalist terms necessarily mean reducing the issue to pure matter? It does not seem so. Though the thinking perspective could be changed, there does not seem to be any danger to the sublimity of consciousness as such. The third problem explained in the first chapter is the soft and hard problems of consciousness, made famous by David Chalmers. The question, 'how do the disturbances in the neurons necessarily give rise to the richness of mental experiences?' seems to be the sole problem with consciousness. The first chapter thus is more of a descriptive nature about the topic and issues faced in its study.

Another important question that has to be asked while getting engaged with consciousness studies is the reason for there being any consciousness at all. If one is not averse to looking at consciousness from the nature's point of view, there seems to be some intelligible purpose for its being there. The physiology of man is not that apt for survival as that of other animal species in an environment of persistent competition. To compensate for this, to make our chances of survival thicker, consciousness must have evolved. We have decided to deliberate on those essential chunks of data deemed necessary for further serious action and have suppressed irrelevant details to unconscious

levels to save our brain from getting swamped from the overloading gush of data. It may also be a strategy to posit a unified and sensible sense of self. The contradictory and competing experiences and thoughts are suppressed to project a coherent and beautifully knit picture of self before others. When this does not function properly, we have various anomalies related to the concept of self.

Antonio Damasio, in *Descartes' Error*, takes consciousness as something initially intended for the control of internal prospects and problems, in the line of 'the vegetative soul' of Aristotle, and then developing to the near proximity as a model building and then to distal problems and prospects. Daniel Dennett, while reviewing this book, compares this development to that of the communication system we have. The nervous system emerged as an internal control system for securing the basic integrity of the living system, developing on the bloodstream, a low-tech postal system of sorts, as a faster and better way of communication.² This is why nervous system and then the autonomous nervous system developed. Now the development of consciousness as explained by Dennett is interesting too. There was a time when man, having no proper language, communicated through gestures and meaningless growls. Without knowing what was asked but understanding the intention, they started cooperating and doing things on a shared basis. Reflexive thinking must have emerged when there was no one to listen to the growls but the ears of the person who produced them. The request and the solutions were of the same person.³ If we think now, consciousness is a shortened process of questioning and answering going on within oneself.

We have come to know that certain parts of the brain are more involved with the origin of consciousness than the others. Also, there are certain parts of the brain evolutionarily more recent than the others, which seem to have better roles to play in making a person conscious. Is consciousness something that can be located somewhere within the brain? This seems to be a wrong way of reasoning. There is nothing called consciousness but

² Daniel C. Dennett, "Review of Antonio R. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, 1994," *Times Literary Supplement* (25 August 1995): 3-4.

³ Daniel Dennett, "The Self as a Center of Narrative Gravity," in F. Kessel, P. Cole and D. Johnson, eds., *Self and Consciousness: Multiple Perspectives* (Hillsdale, NJ: Erlbaum, 1992), 275-88.

there are conscious beings. But it is true that brain being an organ of consciousness has a more important role to play than any other organ in the body. But is it not interesting that we can even address lofty philosophical questions about the nature of the self with this tiny brain: why do we endure as a person through space and time, and what brings about the seamless unity of subjective experience? What does it mean to make a choice or to will an action? And more generally, how does the activity of tiny wisps of protoplasm in the brain lead to conscious experience?⁴ These questions become clearer in the light of various cases that the neuroscientist comes to face everyday. Persons with unfortunate malfunctioning or damage of certain parts of the brain seem to miss a part of consciousness. Many of them have a distorted sense of self and some even claim that they are dead as their sense of self has completely dissolved.

It is clearly seen that an integrated information processing system is what generates conscious awareness. Sensations, memory, emotion, abstract thinking all contribute to the generation of conscious awareness. When the system of communication breaks down or when the different functional parts of the brain stops to be a synchronized unit, consciousness disappears. It is also well established by scientists who are working on sleep and anesthetics. During sleep, different parts of the brain almost stop communicating and then we just miss that buzz in the head. Thus, we understand consciousness as an emergent property of the functions of the brain, just like a clock tells right time when all its pieces are combined together and functions well. These were the issues covered under chapter two, 'The Emerging Consciousness', speculating possible solutions to the problems of consciousness and trying to back them up with data from scientific studies.

There are some other serious issues in the study of consciousness such as the problem of subjectivity, qualia and the hard problem of consciousness etc. dealt with in the third chapter, 'Self-Consciousness: in the Mind of the Brain'. There is an attempt at bringing the findings and speculations of the scientists into the realm of philosophical debates. The

⁴ V. S. Ramachandran and Sandra Blakeslee, *Phantoms in the Brain: Human Nature and the Architecture of the Mind* (London: Happer Collins, 2009), 3.

mysterious nature of consciousness, it seems, is due to the first person perspective attached to it – there is a ‘mineness’ attached to the experience that one happens to have. There is something more to experience than what could be shared through. But the fact is that, due to the influence of the culture that we share and the common language that we speak, there is a lot of reciprocity between the members of a community. Also we have seen the mirror neurons providing an effective way of feeling the world as the other feels and thus enabling us to share the experience of the other.

Coming to the problem of qualia, there seems to be some mystery surrounding it too. As in the case of Mary, there is something more to experiencing redness than knowing everything possible about it. Though as a person with normal senses, I may be able to know what redness is but is unable to share this experience with a blind. We have no proven methods of sharing this experience. Thus, the hard problem of consciousness pops up. How do the neural firings in the body generate something as the redness that we experience? But the problem of qualia seems to be nothing super physical. It is true that we are not able to make someone understand what redness is. We know if only the color sensitive photoreceptors in my retina receive light with the right wave length and my brain decodes it, I may be able to sense red. Here, the problem related to qualia seems to be one of language. There is no possible way of translating the poetry of mental experience into our everyday language. And if we have doubted that qualia were something more than the nature’s way, it may be due to the influence of the ghost of Cartesian dualism in our thinking. Once we get the issue of qualia settled for good, we may see the hardness of the problem of consciousness melting too.

Also it may be significant to understand that the whole of scientific effort is not to reduce the issue of consciousness to pure reductionism. It is only an attempt to avoid the speculative and mysterious aspects surrounding it. Science has done it before. Science is not ‘reducing’ human reason, human judgment, human art and moral insight to the ebb and flow of hormones and neuromodulators. Rather it is providing a model of the mechanisms - and barring miracles, there have to be mechanisms--that subserve and implement those precious human activities and propensities. There is still as much room

as ever (perhaps more, now that the mists have parted a little) for praise and blame, for desert and self-criticism and wonder. These gifts never could be made to reside in some precious pearl of Cartesian mind-stuff, so the sooner we find out how our bodies make room for them, the better.⁵

This is time for serious research and debates to concretize the hypotheses and speculations proposed towards the issue of consciousness. We know that the answers are there to be found but we do not have them now in the black and white. Science today speaks not only of data and results but even speculates as to what the nature of these philosophical issues could be. May be supplementing speculation with serious research and creaming it with an interest for the mysteries of human nature may resolve the issue.

⁵ Dennett "Review of Antonio R. Damasio," 3-4.

BIBLIOGRAPHY

Books:

- Aristotle. *De Anima*. Hugh Lawson-Tancred, trans. London: Penguin Books Ltd., 1986.
- Baars, Bernard. *A Cognitive Theory of Consciousness*. Cambridge: Cambridge University Press, 1988.
- Baron-Cohen, Simon. *Mindblindness*. Cambridge, MA: MIT Press, 1995.
- Bertelsen, Preben. *Free Will, Consciousness and Self: Anthropological Perspectives on Psychology*. New York: Berghahn Books, 2005.
- Bhaskarananda, Swami. *Journey from Many to One: Essentials of Advaita Vedanta*. Chennai: SRM, 2009.
- Chalmers, David J. *The Conscious Mind: In Search of a Fundamental Theory*. Oxford University Press, 1996.
- Churchland, Paul M. *The Engine of Reason, the Seat of the Soul: a Philosophical Journey into the Brain*. Cambridge, MA: MIT Press, 1995.
- Composta, Dario. *History of Ancient Philosophy*. Myroslaw A. Cizdyn, trans. Bangalore: Theological Publications in India, 1990.
- Crick, Francis. *The Astonishing Hypothesis: The Scientific Search for the Soul*. New York: Scribner, 1994.
- Critchley, MacDonald. *The Parietal Lobes*. New York: Hafner Publishing Company, 1953.
- Damasio, Antonio. *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*. London: Vintage Books, 2003.
- Damasio, Antonio. *Descartes' Error: Emotion, Reason and the Human Brain*. London: Vintage Books, 2006.
- Damasio, Antonio. *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. New York: Harcourt Inc. 1999.
- Dennett, Daniel C. *Brainstorms*. Cambridge: MIT Press, 1978.
- Dennett, Daniel C. *Consciousness Explained*. Boston: Little, Brown and Company, 1991.

- Eccles, John C. *How the Self Controls its Brain*. New York: Springer-Verlag, 1994.
- Edelman, Gerald. *The Remembered Present: A Biological Theory of Consciousness*. New York: Basic Books, 1989.
- Harris, Roy. *Mindboggling: Preliminaries to a Science of the Mind*. Luton: The Pantaneto Press, 2008.
- Hawkins, Stephen. *A Brief History of Time: from the Big Bang to the Black Holes*. London: Bantam Books, 1988.
- Hume, David. *A Treatise of Human Nature* (1739). Macnabb DGC, ed. Glasgow: William Collins sons & Co. Ltd., 1962.
- Ito, Masao. *The Cerebellum and Neural Control*. New York: Raven Press, 1984.
- James, William. *The Principles of Psychology*. New York: Henry Holt, 1890.
- Lycan, W. *Consciousness*. Cambridge, MA: MIT Press, 1987.
- Lycan, W. *Consciousness and Experience*. Cambridge, MA: MIT Press, 1996.
- Mondin, Battista. *A History of Mediaeval Philosophy*. Vatican: Pontifical Urbaniana University, 1991.
- Papineau, Dominic. *Philosophical Naturalism*. Oxford: Blackwell, 1994.
- Papineau, Dominic. *Thinking about Consciousness*. Oxford: Oxford University Press, 2002.
- Penfield, Wilder. *The Mystery of the Mind: a Critical Study of Consciousness and the Human Brain*. Princeton, NJ: Princeton University Press, 1975.
- Penrose, Roger. *Shadows of the Mind*. Oxford: Oxford University Press, 1994.
- Penrose, Roger. *The Emperor's New Mind: Computers, Minds and the Laws of Physics*. Oxford: Oxford University Press, 1989.
- Perry, John. *Knowledge, Possibility, and Consciousness*. Cambridge, MA: MIT Press, 2001.
- Ramachandran, Vilayanur S. and Sandra Blakeslee. *Phantoms in the Brain: Human Nature and the Architecture of the Mind*. London: Happer Collins, 2009.
- Ramachandran, Vilayanur S. *The Tell-tale Brain: Unlocking the Mystery of Human Nature*. Noida: Random House India, 2010.

Ramachandran, Vilayannur. *The Emerging Mind: the Reith Lectures 2003*. London: Profile Books, 2004.

Ryle, Gilbert. *The Concept of Mind*. London: Hutchinson and Company, 1949.

Searle, John. *The Rediscovery of the Mind*. Cambridge, MA: MIT Press, 1992.

Tye, Michael. *Ten Problems of Consciousness*. Cambridge, MA: MIT Press, 1995.

Tye, Michael. *Consciousness, Color, and Content*. Cambridge, MA: MIT Press, 2000.

Articles:

Block, Ned. "On a Confusion about a Function of Consciousness." *Behavioral and Brain Sciences* 18, 2 (1995): 227-47.

Block, Ned. "Troubles with Functionalism." In *Readings in the Philosophy of Psychology*, Vol.1, Ned Block, ed. 268-305. Cambridge, MA: Harvard University Press, 1980.

Chalmers, David J. "Facing Up to the Problem of Consciousness." *Journal of Consciousness Studies* 2, 3 (1995): 200-19.

Chalmers, David J. "The puzzle of conscious experience." *Scientific American* (December 1995): 62-68.

Chalmers, David and Frank Jackson. "Conceptual Analysis and Reductive Explanation." *Philosophical Review* 110, 3 (2001): 315-60.

Churchland, Paul M. "Reduction, Qualia, and Direct Introspection of Brain States." *Journal of Philosophy* 82 (1985): 8-28.

Courchesne, Eric. "Brainstem, Cerebellar, and Limbic Neuroanatomical Abnormalities in Autism." *Current Opinion in Neurobiology* 7 (1997): 269-278.

Crick, Francis and Christof Koch. "The Problem of Consciousness." *Scientific American* 267 (1992): 153-159.

Crick, Francis and Christof Koch. "The Unconscious Homunculus." *Neuro Psychoanalysis* 2 (2000): 3-11.

Crick, Francis and Christof Koch. "Consciousness and Neuroscience." *Cerebral Cortex* 8 (1998): 97-107.

- Crick, Francis and Christof Koch. "Toward a Neurobiological Theory of Consciousness." *Seminars in Neuroscience* 2 (1990): 263-75.
- Crick, Francis and Christof Koch. "Why Neuroscience may be Able to Explain Consciousness." *Scientific American* 273 (1995): 84-85.
- Dennett, Daniel. "Quining Qualia." In *Consciousness in Modern Science*, edited by A. Marcel and E. Bisiach, 381 - 414. Oxford: Oxford University Press, 1988.
- Dennett, Daniel C. "Review of Antonio R. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain, 1994*." *Times Literary Supplement* (25 August 1995): 3-4.
- Dennett, Daniel. "The Self as a Center of Narrative Gravity." In *Self and Consciousness: Multiple Perspectives*, edited by F. Kessel, P. Cole, and D. Johnson, 275-88. Hillsdale, NJ: Erlbaum, 1992.
- Gallese, Vittorio and Alvin Goldman. "Mirror Neurons and the Simulation Theory of Mind-reading." *Trends in Cognitive Sciences* 3 (1998): 493-501.
- Hauk, Olaf, and Friedmann Pulvermueller. "Neurophysiological Distinction of Action Words in the Fronto-central Cortex." *Human Brain Mapping* 21 (2004): 191-201.
- Heilman, Michael K. "The Neurobiology of Emotional Experience." *Journal of Neuropsychiatry and Clinical Neurosciences* 9 (1997):439-48.
- Hoffman, Elizabeth A. and J. V. Haxby. "Distinct Representations of Eye Gaze and Identity in the Distributed Human Neural System for Face Perception." *Nature Neuroscience* 3 (2000): 80-84.
- Jackson, Frank. "Epiphenomenal Qualia." *Philosophical Quarterly* 32 (1982): 127-136.
- Jackson, Frank. "What Mary did not Know." *Journal of Philosophy* 83, 5 (May 1986): 291-295.
- Koch, Christof and Francis Crick. "Are we aware of neural activity in primary visual cortex?" *Nature* 375 (11 May 1995): 121-23.
- Levine, Joseph. "Materialism and Qualia: the Explanatory Gap." *Pacific Philosophical Quarterly* 64 (1983): 354-361.
- Levine, Joseph. "The Explanatory Gap." In *The Oxford Handbook of Philosophy of Mind*, edited by Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, 281-91. Oxford: Clarendon Press, 2011.
- Nagel, Thomas. "What is it like to be a bat?" *Philosophical Review* 83, 4 (October 1974): 435-456.

- Neumann, Roland and Fritz Strack. "Mood Contagion: The automatic Transfer of Mood between Persons." *Journal of Personality and Social Psychology* 79 (2000): 211–23.
- Oberman, Lindsay M., Edward M. Hubbard, Joe McCleery, Emil L. Alschuler, Vilayanur S. Ramachandran and Jaime A. Pineda. "EEG Evidence for Mirror Neuron Dysfunction in Autism Spectrum Disorders." *Cognitive Brain Research* 24 (2005): 190–98.
- Oberman, Lindsay M. and Vilayanur S. Ramachandran. "The Simulating Social Mind: The Role of the Mirror Neuron System and Simulation in the Social and Communicative Deficits of Autism Spectrum Disorders." *Psychological Bulletin* 133, 2 (2007): 310–27.
- Perry, John. "Subjectivity." In *The Oxford Handbook of Philosophy of Mind*, edited by Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, 223-38. Oxford: Clarendon Press, 2011.
- Premack, David and G.Woodruff. "Does the Chimpanzee have a Theory of Mind?" *Behavioral and Brain Sciences* 4 (1978): 515–26.
- Ramachandran, Vilayannur and William Hirstein. "Capgras Syndrome: a Novel Probe for Understanding the Neural Representation of the Identity and Familiarity of Persons." *Biological Sciences* 264, 1380 (22 March 1997): 437-444.
- Ramachandran, Vilayanur S. and Diane Rogers-Ramachandran. "Denial of Disabilities in Anosognosia." *Nature* 382 (August 1996): 501.
- Ramachandran, Vilayanur S. and Lindsay M. Oberman. "Broken Mirrors: a Theory of Autism." *Scientific American* (November, 2006): 62-69.
- Ramachandran, Vilayanur S. and William Hirstein. "The Perception of Phantom Limbs: The D.O. Hebb Lecture." *Brain* 121 (1998):1603–30.
- Ramachandran Vilaynur S. "Plasticity and Functional Recovery in Neurology." *Clinical Medicine* 5 (2005): 368–73.
- Ramachandran, V. S. "All in the Brain." Interview by Vijay Nagaswami. *Magazine, The Hindu* (Sunday, 13 February 2011): 2.
- Ramachandran, V. S. "In the Mind of the Brain." Interview by Sashi Kumar. *Frontline*, 7 (April 2006): 4-18.
- Rause, Vince. "Searching for the Divine." *Reader's Digest* (January 2002): 124-129.

- Rosenthal, David M. "Higher Order Theories of Consciousness." In *The Oxford Handbook of Philosophy of Mind*, edited by Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, 239-52. Oxford: Clarendon Press, 2011.
- Rosenthal, David. "Two concepts of consciousness." *Philosophical Studies*, 49 (1986): 329-59.
- Ryle, Gilbert. "Self Knowledge." In *Self Knowledge*, edited by Quassim Cassam, 19-42. New York: Oxford University Press, 1994.
- Shields, Robert W. "Functional Anatomy of the Autonomic Nervous System." *Journal of Clinical Neurophysiology* 10 (1993): 2-13.
- Shoemaker, Sydney. "Functionalism and Qualia." *Philosophical Studies* 27 (1975): 291-315.
- Tye, Michael. "Representationalism about Consciousness." In *The Oxford Handbook of Philosophy of Mind*, edited by Brian P. McLaughlin, Ansgar Beckermann and Sven Walter, 253-67. Oxford: Clarendon Press, 2011.
- Van Gulick, Robert. "Physicalism and the Subjectivity of the Mental." *Philosophical Topics* 13 (1985): 51-70.

Online Resources:

- Arvan, Marcus. "Out with the Qualia and in with the Consciousness: why the 'Hard Problem' is a Myth?" *Online Papers on Consciousness*, compiled by David J Chalmers and David Bourget, 1.2d, (1 February 2001). <<http://consc.net/online/1.2d>> (14 February 2011).
- Britt, Robert Roy. "Brain Areas Disconnect During Deep Sleep: Experiments Shed Light on what Happens to Consciousness." 29 September 2005. <http://www.msnbc.msn.com/id/9535945/ns/technology_and_science-science/t/brain-areas-disconnect-during-deep-sleep/> (13 April 2011).
- European Society of Anesthesiology. "What happens in the brain as it loses consciousness." 11 June 2011. <http://www.sciencecodex.com/-3d_movie_shows_for_the_first_time_what_happens_in_the_brain_as_it_loses_consciousness> (8 July, 2011).
- Koch, Christof and Francis Crick. "On the zombie within." 19 November 2003. <<http://www.klab.caltech.edu/news/laweekly-2003.pdf>> (12 May 2011).

Levine, Joseph. "Conceivability, Identity, and the Explanatory Gap." 1 October 2002. <<http://cognet.mit.edu/posters/tucson3/Levine.html>> (15 January 2011).

Papineau, David. "Theories of Consciousness." 1 February 2001. <<http://www.kcl.ac.uk/ip/davidpapineau/Staff/Papineau/OnlinePapers/theoriescon.html>> (13 April 2011).

Pinker, Steven. "The Brain: The Mystery of Consciousness." *Time*, 19 January 2007. <<http://www.time.com/time/magazine/article/0,9171,1580394-7,00.html>> (11 March 2011).

Richter, Duncan J. "Ludwig Wittgenstein." *Internet Encyclopedia of Philosophy*, 30 August 2004. <<http://www.iep.utm.edu/wittgens/>> (11 May 2011).

Scaruffi, Piero. "*Quantum Consciousness*." 1 February 2011. <<http://www.scaruffi.com/science/qc.html>> (16 February 2011).

Scaruffi, Piero. "The Physics of Consciousness: A Critique of Neuroscience." 25 June 2005. <<http://www.scaruffi.com/tat/consc3.html>> (14 June 2011).

Schwartz, Jeffrey M., Henry P. Stapp and Mario Beauregard. "Quantum Physics in Neuroscience and Psychology: A Neurophysical Model of Mind/Brain Interaction." 13 August 2004. <<http://www-physics.lbl.gov/~stapp/PTB6.pdf>> (22 February 2011).

Zimmer, Carl. "Sizing up Consciousness by Its Bits." *The New York Times on the web*, 20 September 2010. <<http://www.nytimes.com/2010/09/21/science/21consciousness.html>> (12 June 2011).

Web Sites:

<http://www.euroanesthesia.org>

<http://www.iep.utm.edu>

<http://consc.net/master.html>

<http://plato.stanford.edu>

<http://cbc.ucsd.edu/ramabio.html>

<http://www.jstor.org/>