

## **DOES ONE NEED TO BE CONSCIOUS TO HAVE CONSCIOUSNESS?**

**Buddhist and Neuroscientific Perspectives on Consciousness.**

**Geshe Lobsang Tenzin Negi, Ph.D.**

**N**euroscientific approaches to the problem of consciousness are quite recent, and there is still no consensus among this community as to what qualifies as “conscious,” or “consciousness.” The Buddhist tradition, on the other hand, has concerned itself for millennia with the nature and functions of consciousness. As dialogue between Buddhist traditions and modern science continues to grow, it is important that we clarify and carefully track the range of meanings associated with the term “consciousness.” Whereas consciousness often refers to a minimum degree of self-awareness in modern science, the term carries a broad range of meanings in the Buddhist tradition.

**Geshe Lobsang Tenzin Negi:** So far, this conference has been most enlightening. The presentations from Dr. Greyson this morning, and yesterday from other scientists, were clear in showing how the scientific community is thinking outside the box. I think this open-mindedness is wonderful as we continue these dialogues between modern science and the contemplative traditions. I would like to focus my presentation

today on the way consciousness is conceived in current neuroscience and Tibetan Buddhism.

I would like to start this conversation by asking, “Do we need to be conscious to have consciousness?” At this conference so far, references to “consciousness” have had a broad range of meanings and implications. What I want to talk about is the very specific way that consciousness is understood in mainstream neuroscience today and in Tibetan Buddhism. As we continue these dialogues, I think it’s very important for us to have a clearer sense of what is meant by the specific terms that we use when we are engaging the two disciplines of Buddhism and neuroscience.

While I cannot speak for the entire field, it seems that modern neuroscience has a consensus on how we define consciousness. In neuroscience, the definition of consciousness relates to a very specific aspect of mental experience that is limited to *a sense of self in the act of knowing*. Alternatively, the Buddhist definition of consciousness refers to the mind in general and includes all the cognitive, affective, or emotional states, even those emotions and cognitive states that modern neuroscience would characterize as taking place on a unconscious level outside of our awareness. From this perspective, mind or consciousness, which are often used interchangeably, is characterized as luminous and cognizant. The mind is luminous in the sense that its nature is to reflect the objects with which it engages, much like the way a mirror does. However, unlike a mirror, the mind is also cognizant as it does not merely reflect these objects, but engages with them as well. In Buddhism, consciousness is understood both in terms of its nature as well as its functions; the nature of mind is luminous and its function is to cognize or engage with its objects.

When consciousness is used interchangeably with mind, consciousness constitutes all aspects of mind. However, the Tibetan term *namshe*, or its Sanskrit equivalent, *vijnana*, is often translated into English Buddhist texts as “consciousness.” The term *namshe*, however, would not be used interchangeably with “mind,” as *namshe* only

encompasses a very specific aspect of mind understood as the primary mind, known also as *tso-sem*. Buddhist psychology makes a distinction between two aspects of mind: the primary mind and the secondary mind, sometimes translated as the mind and mental factors. As such, *namshe* refers only to the primary mind, and not the secondary mind, which is known in Tibetan as *sem-jung*. The primary mind is understood to simply register information. The secondary mind is responsible for the functions of the mind, such as distinguishing the characteristics of this information and labeling them accordingly. The primary mind and the secondary mind are completely interwoven. In fact, they are of one entity, but they are different from a functional perspective. What is important for the purposes of our discussion is not to understand the subtle differences between the functions of primary and secondary mind; rather I would like to draw your attention to the fact that *namshe*, or primary mind, is often translated as “consciousness.” However, within Buddhist psychology, *namshe* refers to a very specific mental event, and not the vast spectrum of mental phenomena that fall under the category of secondary mind or mental factors. Parsing these subtle understandings of the term consciousness is important because if a Buddhist scholar engaged in dialogue with a modern neuroscientist assumes that the neuroscientist is referring to either the broad definition of consciousness as the mind or the narrow understanding of consciousness as *namshe* by the term “consciousness,” this will necessarily lead to confusion as neither of these definitions are the modern neuroscientific understanding of “consciousness.” In order to avoid this miscommunication, it is very important that we make clear what we mean by the term “consciousness” before beginning a dialogue between Tibetan Buddhism and modern science. Perhaps before beginning discussion, the involved parties should agree on a definition of what is meant by consciousness in the context of that conversation.

Engaging in these kinds of dialogues, it is also important for us to consider that modern science and Buddhist traditions come from very different basic paradigms. The fundamental paradigms are completely

different when it comes to the nature of the mind, or life, if you will. Modern science purports that life emerged accidentally, that certain physical conditions were sufficient to give rise to such life, and that life supports a certain kind of entity, which registers information. That is the way mainstream science looks at the origins of the mind, at least on Earth, as we know it. On the other hand, the Buddhist conception is that the mind is not purely an emergent property of certain physical entities, arising out of these physical entities alone, but rather any mental state requires a certain preceding state of mind as its substantial cause. This idea, or this understanding of how mind comes into being, is dependent on two prongs: the substantial cause, which has to be mind, and the contributing cause, which can be a brain, neurons firing, or other environmental factors. To put it another way, Buddhist thought believes that consciousness or mind must be preceded by consciousness: environmental factors, such as having a brain or a body, can make the conditions ripe for consciousness to manifest, but these physical states cannot create consciousness on their own. In this sense we can certainly resonate with what Dr. Greyson was hinting at today: that the brain might not be the sufficient cause of the mind. In other words, the brain may not be the cause that gives rise to consciousness, but it certainly contributes to the various aspects of the mind. Those are the fundamental differences in the paradigms, but those differences need not hinder us in coming together and exploring the functions of the mind and different aspects of the mind in order to utilize them to enrich our lives, whether it be personal health or communal well-being.

How do we understand consciousness from the current, mainstream neuroscience perspective? Obviously, one way is through its evolutionary origins. But neuroscience also looks to explain the nature of consciousness, understood by modern neuroscience as a sense of self in the act of knowing, by breaking it up into two problems: the hard problem and the easy problem. The easy problem, which is still a daunting task, concerns understanding the very specific activities of the neural circuits, neural anatomy, neural function, and

the specific way the neural correlates produce consciousness. From the neuroscience point of view, this is considered somewhat easier, and tremendous advances have been made, although there is still a long way to go to. The second, hard problem of explaining consciousness involves qualia.

Qualia relates to a sense of knowing. Take this bottle, for example. You could have the most sophisticated computer with a camera that takes images of the bottle and analyzes what it is made of and the physical nature of this bottle and the water molecules and everything, but still such a computer would not have a sense of existing. The computer does not know that it exists, and in analyzing the bottle, does not know that it is engaging in the act of analyzing. A recent edition of *Time* magazine has an article on consciousness, and it describes this example of the best computer analyzing a tremendous amount of data and it still not knowing that it exists. The computer may be able to analyze properties of the bottle that we never could, but we are able to know that we are analyzing the bottle, whereas the computer cannot. The hard qualia problem involves how we explain this knowing as we engage with the act of knowing. That part is the part that the neuroscientists have until very recently stayed away from because it's something that is very hard to study. This is also referred to as "the explanation gap:" we can know what's going on in the brain when someone perceives something, but explaining how those brain functions lead to *knowing* is something we have not been able to do.

Antonio Damasio is one of the leading neuroscientists who has dedicated his time and energy to giving a detailed explanation of how consciousness came into being and how to understand it. Damasio's model presents it in evolutionary terms. Even a single cell organism that has no nervous system is nonetheless equipped with certain abilities to register information and to approach this information in a way that maximizes its survival. That function is there even in the most basic organism, and it tells us that organisms are most importantly about survival. The neuroscience explanation is that as organisms become more complex and have more complex behavior,

more complex mental activities develop. Finally, as you can see in the history of life, when you have the brain stem and limbic system, the thalamus, the more evolved frontal cortex, and so forth the mental activities become more complex. According to Damasio, it also has to do with emotions because emotions are about survival. Emotions are understood as signals that organisms are able to produce in the presence of certain stimuli and that regulate the system in order to protect themselves. If there is danger, we know that there is danger, and we avoid it. But these single cell organisms don't have that self-consciousness or self-awareness. It is instinctual. Damasio calls it a "proto-self," but there is no awareness of the self. As emotions are registered in the higher brain, there are feelings and the feelings relate to changes of the internal milieu, the internal organs and biochemical profile. Then there is a sense that the emotions that one is feeling are about the changes in one's system, and therefore there is a sense of the core self: once an organism has this capacity to know that feelings are their feelings and to understand the sense of self associated with these feelings, consciousness is present. There is also a more complex nature of the self, which more evolved beings such as humans experience: this is what he calls the "autobiographic self." This is neuroscience's story when they talk about consciousness.

Buddhism does not see it that way. That's why I started with the question of whether you have to be conscious to have consciousness. From the Buddhist point of view, you certainly do not have to be conscious to have consciousness. For example, a person in deep sleep, according to neuroscience, has no consciousness because there is no sense of self. However, from the Buddhist point of view, a person in deep sleep has consciousness because they have mind: sleep itself is a state of the mind. I believe that until very recently neuroscientists even considered people in a coma to be unconscious. That has changed since British and Belgian scientists subjected people in comas to tests by asking them names and observing responses from certain brain circuits associated with the names. When they were asked to imagine playing tennis, certain motor circuits lit up. Even when they were asked

about their names, the certain area that lights up whenever you think of your name, or of yourself, lit up in these comatose patients. These findings challenge the prevailing idea that to have consciousness you need to be awake in the conventional sense. When you see these kind of findings they demand that the scientific community step back and revisit how we understand consciousness; if those unconscious people are able to create very specific brain images, almost no differently than those people in wakeful states, how do we then decide who has consciousness and who does not?

As we develop a better understanding about these inner states, the methodology we apply is very important. In modern science, most investigations involve the externally measurable physical world. In recent years, the mind, and consciousness, have become the object of science, but the approach has remained largely conventional. I am talking about the third-person approach. To do science, an object must be measurable and, in the third-person, objective sense, it must also be reproducible. But there is a serious problem with that approach when it comes to investigating the inner states of the mind that are experiential, even though in some direct ways we can find many correlations through brain imaging and other behavioral measures. Ultimately, as His Holiness the Dalai Lama points out in his book *The Universe in a Single Atom*, we also have to utilize the first-person approach to investigate this inner state of the mind, and that's where the contemplative traditions become so helpful. Contemplative traditions, like the ancient traditions upheld by the great Indian masters and kept alive in Tibet for so many centuries, are living traditions among which you can find very advanced meditators. These advanced contemplative practitioners who have advanced skills in attention, mindfulness, compassion, and other mental qualities are able to recognize and distinguish their inner mental states with reliability and clarity. These skilled meditators provide an unprecedented opportunity for scientists to combine first-person and third-person approaches to investigate some of these inner mental states.

This is precisely what has been happening in places such as Dr. Richard Davidson's lab in Wisconsin. In one of the first studies of its kind, advanced Tibetan Buddhist meditators examined very specific mental states, such as attention or compassion. These researchers wanted to see if a person, subjectively and deliberately, could generate certain states that could be measured through the third-person approach using brain-imaging scanners. If these deliberately cultivated mental states repeatedly correspond with certain brain regions, we can say that the subjective experience of the meditator is valid in accordance with this objective data. Otherwise, introspection is considered an unreliable way to learn about what's going on inside the mind, because each individual has a different account. In a landmark study, Venerable Matthieu Ricard was subjected to this test in eleven one-minute intervals. He was asked first to focus and cultivate attention, and then to relax, and then do it again, and relax for a minute, and then again, and so on. When you see the graph of Matthieu's brain activity during the experimental period, it resembles the skyline of New York city, with high rises, gaps, and more high rises, precisely matching the one minute intervals when he was cultivating attention. This was also demonstrated with other mental states, including devotion and compassion. There are now hundreds of studies conducted on meditation, including studies concerning mindfulness and its impact on depression and the changes in the speed of recovery from psoriasis, a stress-related skin disease, among many others. This kind of collaborative work is building and gives a tremendous amount of hope and optimism for us to develop more understanding about these mental states in the future.

What do these changes that we can bring to the mental or emotional inner states mean in terms of our health and social well-being? We live on this globe together, as neighbors and co-workers, and if we are out of tune with each other, if we are not able to pick up on each other's mental states, we will not be interacting in a meaningful and healthy way that will promote harmony. Is there a way, or foundation, for contemplative practice to enable us to become more finely tuned with

the inner experiences of others? The good thing, again, is that science and the contemplative traditions have come together in beautiful ways where this is concerned, converging understanding from both traditions.

Neuroscience is studying mirror neurons in organisms, particularly humans. These mirror neurons enable us to understand each other's mind, thoughts, and feelings. It's not necessarily happening consciously, but often times we sense others' emotional states without realizing it, as demonstrated by the findings in studies with mirror neurons and other empathy-related neural networks. But we can get better in understanding such things. This is the thesis of Daniel Goleman's recent bestseller, *Social Intelligence*. This book has to do with the social world that we live in. Social intelligence is paramount for us to function properly in the social world, and certain meditation practices help you empathize with others, thereby increasing your social intelligence. One of the studies we have done at Emory University was about measuring empathy accuracy through a test known as "reading the mind in the eyes." This is a test that asks people to read an emotional state from the eyes, and to see how accurately they can pick up whether someone else is sad, happy, angry, and so forth. The idea is that the better you pick up another's emotional state, the more accurate your empathy level. In the study that has been done on compassion meditation, after eight weeks of meditation the meditators' accuracy was much higher when compared to the control group, even among meditators with no prior meditation experience. These findings of increased empathy accuracy were also associated with corresponding changes in the brain: areas of the brain rich with mirror neurons were more active in the meditation group than the control during the task of "reading the mind in the eyes."

These collaborations are very promising. Thirty years ago, far ahead of his time, His Holiness the Dalai Lama envisioned collaboration between modern science and traditional Tibetan Buddhism that would bear this kind of fruit with such inspiring results for the benefit of humanity. I am personally indebted to have an association with the

Library of Tibetan Works and Archives to work on a project that furthers the mission that His Holiness envisioned, the Emory–Tibet Science Initiative, and to promote this work where contemplatives and scientists can come together and collaborate in exploring these inner resources. We are just barely scratching the surface with this program for educating monks and nuns in the modern sciences in the hope that we can tap into their knowledge of the inner world of mind and emotions so that the whole world can benefit and be a better place. Thank you very much.