

Commentary on Christof Koch, Science of Consciousness

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<http://kcts9.org/education/science-cafe/consciousness>

Interest in topic

Jason Webster told me:

It was by far the largest crowd that has ever attended talks in the Science Cafe series, completely packing Ts McHugh's Restaurant, and there was a lot of interesting discussion to be had with fellow attendees both before the talk, during the break, and afterward.

Why do you think that there is such a fascination with the topic of consciousness?

I think that there are two reasons. *First*, consciousness seems immaterial and, hence, mysterious. We can see and touch our body, but we can't see or touch our mind. We can see and touch another person's body, but we can't see or touch their mind. As a result, the mind seems immaterial and mysterious. *Second*, our conscious experience makes our life and relations colorful, vivid, alive; and our conscious experience is the basis for the intimacy that we share with other people. Intimacy that we share with another person pertains to conscious experiences that we assume are similar between us and them.

Overview of Koch talk, 2011-09-06

I viewed the talk at the above link. The video consists of a 30-minute talk followed by a 30-minute Q&A session. I wish to comment on two related subject matters: experimental science and theoretical science.

Experimental science. The ad for the talk says:

What happens in your brain when you watch a red sunset or stub your toe? ...In this Science Cafe, Dr. Christof Koch of the Allen Institute for Brain Science explores what is known about the neurobiology of consciousness, the limits to our knowledge, and current experiments to discover the nerves and other biological components that make us conscious.

I was surprised and disappointed that, in my view, Koch did not cover the stated topic. I learned virtually nothing about the stated topic from Koch's talk.

Theoretical science. Koch spent a fair amount of time addressing the theory of consciousness since people are naturally interested in the theory and their questions often pertain to the theory. However, in my view, Koch revealed his lack of mastery of the theory. And since Koch is presumably conversant in the scientific literature on the topic, Koch's lack of mastery may reflect a lack of mastery of the theory by the authors of the respective scientific literature.

Commentary

I wish to briefly present an overview of the topic of mind and consciousness as developed in my comprehensive theory of human life, *Why? In Pursuit of the Ultimate Answer* (2008), www.philipbitar.com.

Knowledge

What would you say if I asked you, "Is walking easy?" No doubt you would say, "Yes, of course!" But, in fact, walking is not necessarily easy; it depends on the circumstances. What if you had to walk near the edge of a cliff? What if you had to walk along a narrow ledge?

Just as it's easy to walk in the normal circumstances of everyday life, so it's easy to acquire knowledge and understand the ramifications of our knowledge in the normal circumstances of everyday life. But if we address the fundamental theoretical problems of human life, the acquisition and understanding of knowledge are no longer easy. In fact, it becomes necessary to understand the nature of knowledge itself in order to solve the fundamental theoretical problems of human life, one of which is understanding the fundamental nature of mind and consciousness.

So let's ask, "What is knowledge?"

Knowledge is given by the simplest, most accurate model for predicting our observations.

All knowledge — even knowledge that is nominally about the past, mathematics, or God — is, strictly speaking, about future observations that we could potentially make. An observation is an arbitrary portion of our experience that we are interested in, where experience encompasses all human experience, including perception, thoughts, imagination, and emotion. A model is an axiomatic system, as in mathematics and theoretical science.

For the interested reader, I go into more detail on this topic in a handout on knowledge: at www.philipbitar.com, click Handouts in the home menu.

I will now apply the foregoing theory of knowledge to elucidate the fundamental nature of mind and consciousness.

Mind-body problem — private-public dichotomy

The mind-body problem is solved on realizing the following: it is logically impossible for one person to observe the mental activity of another. To illustrate, in order to experience another person's pain, we would have to be that person, otherwise what we experience would be our pain. Thus, mental activity is, of logical necessity, private to the respective person. In this light, we can see that our intuition that the mind is immaterial is due to the fact that mental activity is private, so we can't perceive it with our five senses. The simplest, most accurate model of the mind, hence, is that the mind is material. This solves the mind-body problem.

Koch was unable to solve the mind-body problem. All that he could do is appeal to the progress of science, saying that just as science has solved other difficult problems that once seemed unsolvable, so we can take confidence that science will solve the problem of explaining the cause of consciousness. Koch is correct to say this, but he is incorrect to think that the mind-body problem can be solved in this way. The mind-body problem is solved by the private-public dichotomy identified above.

Other minds

If we can't observe the mental activity of another person, why do we assume that another person has a mind? To answer this question, we must refer to the theory of knowledge given above. Since we can't observe the mind of another person, the reason that we assume that they have a mind is not to increase the predictive accuracy of our model but to increase its simplicity.

Koch appealed to the simplicity criterion without identifying it as such — which he couldn't do without the theory of knowledge. Koch argued that we assume that other people have minds and, more generally, mammals have minds because it simplifies our understanding of the world as opposed to assuming that only we — as an individual — have a mind. This is correct.

Unconscious mental activity

The concept of unconscious mental activity was part of psychological theory decades before Freud, and it pertained to automatic behavior. When we learn a new motor skill, such as riding a bike, we must focus our attention on low-level facets of the behavior, but as we acquire the ability to perform the skill, our mind performs the low-level facets automatically, allowing us to focus our attention on high-level facets. To

illustrate, low-level facets include how to pedal and turn the bike, while a high-level facet is simply riding where we want to ride.

Once we recognize the role of automaticity, we can see that our body is controlled by hierarchically organized unconscious activities of our mind and that consciousness constitutes a focusing feature for the purpose of concept development, skill development, and decision-making. To use an analogy, consciousness is like the foreman of a work crew, where the activities of the work crew are like the unconscious activities of the mind. This role of consciousness is illustrated by the phenomenon of blindsight, in which a blind person can catch a ball even though they can't see it. Blindsight occurs in a seeing person who sustains damage to the visual area of the cortex, causing a loss of the conscious experience of seeing but leaving intact the prior visual pathways. Toads, alligators, and sharks operate on the basis of blindsight since their visual pathways don't go to the cortex.

Koch is of the widespread misunderstanding that Freud introduced the idea of unconscious mental activity, and Koch added that Nietzsche may have been the first to identify the idea. This is incorrect, as indicated above. Furthermore, once we understand the role of automaticity in mental activity, we realize that Freud's idea of the unconscious activities of the mind can be discarded on the basis of the simplicity criterion of knowledge.

Koch recognized the role of automaticity, attributing its operation to lower parts of the brain, such as the basal ganglia. Koch illustrated the role of automaticity by saying that we can drive while texting. However, this is a poor example because our eyes need to look at the road in order to provide the visual input that is necessary for our unconscious mental activity to drive the car competently. A better example is that we can converse while driving, and we can listen to a talk show on the radio while driving. Koch also said that if we focus on the operation of a learned activity, we will perform it more poorly; hence, we should leave the activity to operate automatically. Not quite. What we should do is use our focusing facility to focus on the overall operation, and we should focus on low-level details only when necessary due to unusual circumstances or due to exceptional difficulty in a portion of the automatic activity.

Someone asked Koch if a person should work to replace bad habits with good habits, and Koch didn't know what to say. The answer is yes. Why? Because a habit is an automatic mental activity, and if we have a bad habit, we should use our consciousness/attention/focusing facility to learn a good habit to replace the bad habit. To illustrate, just as a tennis player should concentrate to replace a bad playing action with a good one, so a person with a temper should concentrate to replace a habitual anger response with a more productive response.

Reason for consciousness

Under the assumption that the species were created by a purpose-driven process — a process such as evolution using natural selection — there is a reason for consciousness. Drawing on the above insights, we can see that the reason for consciousness is to enhance survival by facilitating concept development, skill development, and decision-making. Furthermore, species creation through evolution is a biological process, and a biological system is an analog system. Thus, *structurally*, consciousness is a biological, analog means of representing information, and *functionally*, consciousness is a singular, centralized, focusing process for the purpose of concept/skill development and decision-making.

In addition, consciousness promotes relational intimacy, and relational intimacy, in turn, enhances the motivation to survive and the ability to survive.

Koch mentioned the idea that consciousness may be a function of the complexity of the system such that a computer will be conscious if it is sufficiently complex. We eliminate such an idea by noting the reason for consciousness, together with the simplicity criterion of knowledge, which eliminates unnecessary complexity in our model. The simplicity criterion also eliminates the idea of pan-psychism — that everything is to some extent conscious. Koch allowed that pan-psychism may be true, but, in fact, we eliminate this idea from our model because it adds complexity without increasing the predictive accuracy of the model.

Definition of consciousness

Koch didn't know how to define consciousness, but in light of the foregoing model of mind, we can define consciousness.

Consciousness is the portion of a person's private, mental activity of which they are aware.

Just the same, keep in mind that any definition must be grounded in basic concepts that we take as understood, in this case the concept of awareness.

Bowel and bladder evacuation

The activities of bowel and bladder evacuation provide an outstanding example of the complementary roles of conscious and unconscious mental activity and of the sophisticated interplay between the two. (Koch didn't mention this topic.)

When we are born, our bowels and bladder evacuate themselves without restraint from our brain, and, hence, from our mind. But as we mature, our conscious mind learns to recognize the feelings associated with bowel and bladder evacuation, and as a result, we learn to restrain evacuation, postponing it to an appropriate time and place. This is a great advance in maturity because it enables us to stop wearing diapers.

What is even more interesting is the control of bladder evacuation during sleep, for as we mature, our unconscious mind learns to prevent bladder evacuation during sleep, thereby eliminating the problem of bed wetting, which is common among young children. Thus, just as we learn a motor skill, such as walking, through the direction of our conscious mind, and just as the details of such learning come to be implemented by our unconscious mind, so we learn the skills of restraining bowel and bladder evacuation, and the details of such learning come to be implemented by our unconscious mind, even during sleep.

But let's think more deeply about this. We've all had the experience of awakening in the middle of the night and needing to evacuate our bladder. What does this reveal? This reveals that what our unconscious mind learned was not that it must prevent evacuation during sleep but that it must prevent evacuation in the absence of a decision by our conscious mind to evacuate. Furthermore, as the urge to evacuate increases during our sleep, at a point of sufficient urgency, the activity of our unconscious mind will awaken us so that our conscious mind can take control and make a decision about evacuation. And notice that this unconscious mental control is continuous through all stages of sleep.

As a corollary, general anesthesia can be taken to different depths, and as it is taken deeper, it eliminates more and more of the unconscious mental activity of the brain. So if it is taken deep enough, a catheter is required, and if it is taken too deep, breathing and heart beat will stop, as evidently occurred in the death of Michael Jackson. Similar principles apply to bowel evacuation during sleep and anesthesia, but the need for restraining bowel evacuation is evidently reduced during sleep due to a reduction in bowel peristalsis..

In sum, we can see that the activities of bowel and bladder evacuation provide a fascinating illustration of the complementary roles of conscious and unconscious mental activity and of the sophisticated interplay between the two.

Conclusion

Regarding experimental science, in my view, Koch did not cover the stated topic. Regarding theoretical science, in my view, Koch revealed his lack of mastery of the theory of consciousness, and this may reflect a lack of mastery of the theory by the authors of the respective scientific literature.

Drawing on my comprehensive theory of human life, I solved the mind-body problem, and I explained the following topics: other minds, unconscious mental activity, the reason for consciousness, and the definition of consciousness. I illustrated the complementary roles of our conscious and unconscious mental activity using the example of bowel and bladder evacuation. For the interested reader, I provide more detail in my book *Why? In Pursuit of the Ultimate Answer* (2008), which I introduce at www.philipbitar.com.