Greatest myth of all

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What do you mean when you talk about "yourself"? Leading neuroscientists Peter Halligan and David Oakley are rewriting the rules on consciousness.

You know what it's like to be you—to be aware of yourself as an individual with your own thoughts and feelings. You know how it feels to have consciousness. More than likely you also feel responsible for your thoughts and actions, that you decide what to think and say and do. But you are mistaken—your experience of consciousness is an elaborate self-deception.

Neuropsychologists and researchers studying certain types of brain damage have come to the conclusion that many of our actions and perceptions are carried out by unconscious parts of our brains (*New Scientist* , 5 September 1998, p 30) . For example, if you want to reach out and pick up an object, you don't need to be conscious of the exact size and shape of it, or what each of your muscles needs to do.

But surely it's not like that for higher level mental activities, such as our thoughts and feelings? Most people—and many researchers—consider that these originate within the realms of consciousness. We don't agree.

We suggest that all the thoughts, ideas, feelings, attitudes and beliefs traditionally considered to be the contents of consciousness are produced by unconscious processes—just like actions and perceptions. It's only later that we become aware of them as outputs when they enter our consciousness. As pointed out by Jeffrey Grey of the Institute of Psychiatry in London—consciousness occurs too late to affect the outcomes of the mental processes that it is apparently linked to.

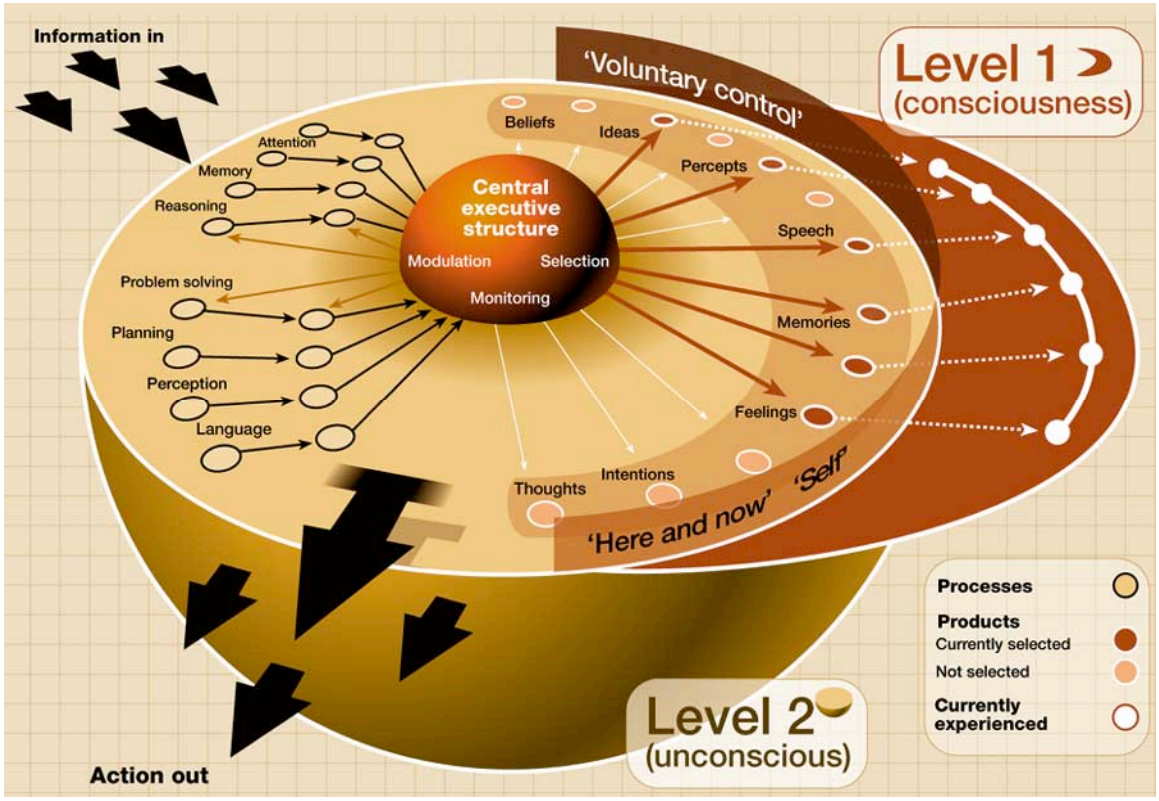
You may prefer the notion that you are in charge of your own mind. But where did that idea come from? If you stop to think about it, you'll probably find that it just popped into your head—like all your thoughts. Perhaps you have decided to read the rest of this article. But did "you" really make that choice? Keep reading, if you can. You may never think of "yourself" in quite the same way again.

The next time you're casually talking to someone, see if you can guess what your next words will be. If speech is a product of our conscious minds, it should be easy. But almost certainly you'll have to wait until you hear your words spoken before you can know what they are. The same applies to writing, particularly creative writing. Many authors say they often don't know what the next sentence will reveal, or where the next turn in the plot will take them.

Enid Blyton, the children's story writer, described to the psychologist Peter McKellar how she would close her eyes and wait, typewriter at the ready, for her characters to emerge into her mind's eye and begin their adventures. She felt she could not have

thought up the storylines by herself. So who did? Her brain created them outside her conscious experience, but she only became aware of them later as fully formed ideas, conversations, even jokes.

In our view, speaking, writing and all of the brain's information processing activities occur at an unconscious level, only later giving rise to a continuous conscious experience of the world and of yourself. In our model, we refer to these "unconscious" parts of the brain as Level 2. Within this level, there must be some kind of decision-making device, a central executive structure. The CES identifies the most important task the brain is carrying out at any moment, and selects the information that best describes the current state of the brain in relation to the chosen task. Only this information would be allowed to enter Level 1, to produce "our" conscious experience (see Diagram) .



Our mental process from thoughts to actions

Imagine that you are sitting in an uncomfortable chair, listening to a lecture. If the talk is interesting, you'll be aware of the speaker's voice, the meaning of what's being said, and perhaps also the speaker's surroundings. These are all products of Level 2 processing that the CES currently considers important. It has therefore allowed them into Level 1—so "you" experience them.

At the same time, Level 2 is processing information about the hard chair, the smell of the room, sounds from outside and the whispered conversation going on behind you. Because they are not important to the task of listening to the lecture, the CES does not select them for entry to level 1, and "you" remain unaware of them.

However, if the talk becomes boring, the CES might judge that doing something about your discomfort is now the priority, and "you" become aware of the hard chair. More dramatically, even during the most engaging talk, if your name is whispered, you suddenly become aware of the conversation behind you and lose the thread of the lecture completely. But "you" didn't consciously decide to attend to the pressure of the chair or to the conversation. The information was "outed" by the CES from Level 2 to Level 1 and you become aware of the product.

Outing can be public, in the form of speech or writing, or can remain private, in the form of feelings and thoughts. But whether public or not, these outed products have certain distinctive features. They are always identified as belonging to the "here and now", rather like a process of automatic date stamping, and they are labelled as belonging to the "self". Actions, especially when they are labelled as originating from self, are also tagged as being voluntary. In the process of outing, any thoughts, ideas, beliefs, perceptions and acts become "yours" and are automatically linked to the idea of free will.

Inevitably, it will be difficult to prove this account of consciousness and free will, especially as most people recoil from the idea that their thoughts originate anywhere other than in their own consciousness. Even if, as we propose, all the contents of Level 1 are second-hand, they can only be viewed by "you" as first-hand experiences. But if we move away from everyday experiences and think about some of the effects of hypnosis, it becomes clear just how illusory is the feeling that we control the contents of our own consciousness.

In some people who are easily hypnotised, it is possible to create the experiences of blindness, deafness, paralysis or insensitivity to pain. Richard Bryant and Kevin McConkey, psychologists at the University of New South Wales in Sydney, have shown that a hypnotically blind person is still able to respond to visual information, in a way that resembles cases of "blindsight" (*New Scientist* , 5 September 1998, p 38) . For instance, people who had been hypnotised could respond accurately to indicator lights above a set of switches, even when they were experiencing hypnotic blindness.

Perhaps hypnosis works by allowing an external influence, such as the suggestion of the hypnotist, to affect the decision-making process of the CES (*Contemporary Hypnosis* , vol 16, p 215). In the case of hypnotic blindness, it is as though the hypnotist is able to persuade the CES to stop selecting visual information as current and so prevent its entry into Level 1. The hypnotised person claims they cannot see, but with further appropriate suggestions their sight is restored. Because they continue to respond to visual signals when hypnotically blind, Level 2 must still be processing the relevant information. The CES simply ceases to select it for entry into consciousness. As a result, the person doesn't experience the visual signals and so will report, quite honestly, that they cannot "see" anything.

The idea that many aspects of consciousness represent the products of prior levels of "unconscious" processing is not new. Pioneers such as Hermann von Helmholtz and

Wilhelm Wundt, who founded the first psychology laboratory in Leipzig in 1879, recognised that most mental processes were in many ways no different to the physiological processes of the respiratory, cardiac or digestive systems. All are efficient automatic processes that happen outside our awareness. Nevertheless, many people consider that mental events accompanied by conscious experience somehow involve additional or superior processes that are not present in the vast range of unconscious operations. We disagree.

According to our model, everything experienced in consciousness has already been formed in the unconscious, and consequently there is no need to propose any additional or further processing. The selected products of Level 2 and the contents of Level 1 are one and the same thing—the only difference is that once these products are selected as current and "outed" they become part of the conscious experience of the individual. The contents of Level 1 as conscious experience do not go on to do anything more, nor do they directly influence any other processing. They are simply replaced by the next set of current contents from Level 2.

Even when it comes to thinking, which just doesn't seem possible without consciousness, all is not as it seems. In his book *Psychology: The science of mental life* , George Miller provides a thought-provoking illustration. He invites the reader to try to think of their mother's maiden name and report what happens in their mind as they do so. Most people describe feelings of tension, maybe an irrelevant image or two, and then suddenly the answer was there in full consciousness. Consciousness, he says, gives no clue as to where the answer comes from. It is the result of thinking, not the process of thinking, that appears in consciousness. As Susan Blackmore from the University of the West of England in Bristol has pointed out, consciousness does not "do" anything; consciousness is simply "what it is like to be me now".

But consciousness has its uses. Along with our actions, the publicly outed elements of our consciousness enable others to form a picture of us. In order to survive in complex social groups, this picture should be as consistent and apparently rational as possible. Society also needs us to take responsibility for our actions. Consequently, one of the most important creations of Level 2 is a belief in a self to which mental processes can be attributed. Level 2 thinking and feeling becomes "I think" and "I feel" when selected for entry to Level 1.

Level 2 is responsible for creating and maintaining this consistent self-representation. To do so it has to keep track of what has already been outed in the form of biographical memory. As Nicholas Humphrey, a psychologist and philosopher at the London School of Economics, has suggested, having a strong representation of ourselves may provide the basis for understanding others and for them understanding us. The self we present to the outside world is thus a useful fiction created by Level 2 and the experience we have—in Level 1—of control, free will and continuity of experience is simply a congenial myth.

According to Michael Gazzaniga, a neuroscientist at Dartmouth College in Hanover, New Hampshire, part of the role of consciousness is to serve as a reliable "spokesperson"

for the individual. To achieve this, output at Level 1 needs to be made consistent with previously outed material. This can lead to Level 2 inventing plausible explanations if it does not have all the relevant information in biographical memory. When that invention is selected to enter our consciousness, our experience will be that it is correct and accurate.

More than 30 years ago, Richard Nisbett and Timothy Wilson of the University of Michigan in Ann Arbor demonstrated this process. They suspended two cords from the ceiling and asked people simply to tie the two ends together. The only snag was that the cords were too far apart to reach both simultaneously. When the subjects had exhausted all their ideas, the experimenter walked past one of the cords and "accidentally" brushed against it, setting it in motion.

Very soon after that most of the subjects solved the problem, coming up with the idea of tying a weight on one of the cords and setting it swinging, making it easy to reach the ends of both cords at the same time. However, when they were asked how they arrived at the solution most failed to mention the experimenter's hint—they simply said that the solution just dawned on them. It seems that information about the significance of the experimenter's behaviour was not selected by the CES for elevation to Level 1 and so was not available to be outed in speech and thought.

In conjunction with the notion of a self, Level 2 also creates an illusion of control over our actions—the appearance of free will. We usually feel that voluntary actions follow a clear intention to act. Benjamin Libet of the University of California, however, used electrical recordings of the brain's activity to show that preparations for carrying out an act can be detected in our brains shortly before the intention to act appears in our consciousness (*New Scientist* , 5 September 1998, p 32) . The idea that you form an intention and then act on it is compelling, but wrong.

Even if you look carefully at your own experience of decision making, it is evident that you don't make up your own mind—if you are honest, and you take the time, you discover that your mind makes itself up. Take the following familiar example of deciding to get out of bed in the morning. Guy Claxton, a psychologist at the University of Bristol, describes his own experience of this. First, on waking, he becomes aware of thinking "I must get up" or "I'm going to get up" and then his mind drifts off onto other things and he continues lying there. Then, when he is in the middle of a completely unrelated train of thought, he suddenly "comes to" to find that he has already begun to get out of bed. In other words, when you decide to get up, you frequently don't. When you have stopped thinking about getting up, at some point you do.

Some of the views expressed here may be unsettling. They seem to rob us of the most cherished characteristics of the human mind. But while we are saying that our conscious experiences of self and control are an elaborate delusion, we are not dispensing with the notions themselves. We are merely shifting those mental processes traditionally associated with them away from the domain of consciousness into the unconscious mechanisms of Level 2. We accept that somewhere in our minds is a representation of a

self, and there are clearly systems of control, maybe even free will. But none of these reside in our consciousness.

Our message is that we should all learn to accept our Level 2 and extend the concept of "myself" to include it when claiming to make decisions, organise or plan strategies. Perhaps we all should recognise that "me" is, at best, a partial and often biased version of the "larger me" in our unconscious. We should not deceive ourselves by believing that the "me" each one of us is conscious of has any significant influence over our actions and experiences. In many respects this "me" only operates as a monitor or recorder of events which occur elsewhere in the unconscious parts of our minds.

Perhaps by now you have begun to think of yourself differently, to realise that "you" are not really in control. Nevertheless, it will be virtually impossible to let go of the myth that self and free will are integral functions of consciousness. The myth is something we are strongly adapted to maintain, and almost impossible to escape from. Maybe that's not so surprising, because, after all, "we" are part of the illusion.

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