

The Future of Neuroscience as Told by Dr. Georg Northoff



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More than 300 million people are suffering from depression worldwide, a number that is ever-growing. In addition, there are numerous other psychiatric conditions like schizophrenia or anxiety for which we are currently lacking both diagnostic and treatment capabilities. The solution to these issues undoubtedly lies in neuroscience. More specifically, the relationship between the brain and the mind, or in other words, how our brain constructs subjective phenomena like self, consciousness, and emotions, could be the key to spectacular breakthroughs in psychiatry. In addition to that, it is of course also a very profound, fundamental philosophical question. To better understand the current developments and to get an outlook into the future of this matter, I chose to interview Dr. Georg Northoff, a German philosopher, neuroscientist, and psychiatrist. He is currently a professor at the Royals Institute of Mental Health Research at the University of Ottawa researching at the forefront of this issue, especially focusing on potential uses for psychiatric treatment. He is thus the right person to talk about the future of neuroscience.

To get an idea of what is holding us back from gaining an in-depth understanding of how our brain produces things like emotions or other mental features, it makes sense to ask right away for the most critical issue that neuroscientists are facing at the present time. To this question, Dr. Northoff answered that while neuroscientists were able to get an enormous amount of data regarding the activities of the brain over the last couple of years (e.g., through functional brain imaging and functional magnetic resonance imaging), we are still lacking the key to encrypting that data. In very simple terms, this means that we are currently lacking a framework or a model to make sense of how brain activity translates into mind activity. Consequently, the number one priority right now is to find such a model that allows scientists to make inferences from neuronal activity to mental activity. Unsurprisingly, this is also the one thing that Dr. Northoff would see as a desirable outcome for the current research on the topic. Possible real-world applications of this knowledge would be manifold. One can easily think of many different scenarios and areas where such an application could be of tremendous use to humankind. For Dr. Northoff as a psychiatrist, the most obvious use would of course be in the analysis and treatment of psychological conditions. Here, this knowledge could lead to a revolution in psychiatric care. And this revolution is desperately needed: Even the cutting-edge treatment methods of today are often ill-targeted due to this lack of understanding of how our brain constructs mental features. As Dr. Northoff points out in the interview, at the present time we do not even have objective clinical markers for the most common psychological disorders like depression, schizophrenia, or anxiety. However, if this revolution does happen, targeted and personalized treatment methods could be developed, in theory capable of curing most neuronal disorders known to mankind. It is easily imaginable how this development could have a profound positive effect on our society. Next to the most important aspect, which would simply be a huge increase in the well-being of millions of people, it would also yield tremendous productivity gains. After all, burnout and depression are the most common reasons for long-term sick leave in the developed world right now. To help bring about these results, I was interested to get Dr. Northoff's opinion on his most desired systemic change that he feels would help bring about the desired outcome. I was surprised to hear that for him, this was actually an overhaul of the peer review process. While not neglecting the indisputable advantages of it, he expressed great dissatisfaction with its slowness and its politicization. This could be an indication that this process is not well suited to the incredible speed of innovation that we see today, especially in certain areas. In the case of Dr. Northoff, it has led him to launch his own company to accelerate this process. To do this, he is looking to capitalize on another technology that has, in addition to the previously mentioned imaging technologies, allowed for great advancements in neuroscience: the use of Artificial Intelligence (AI). Here, he emphasized the necessity of

converging and using AI in a meaningful way, something that he applies both to usage in an ethical manner, as well as in a way that yields actual knowledge. The need to not just blindly collect as much data as possible, but to use it in a value-adding context is coherent with the opinion of many other applicants of AI and big data today. In this domain, it is imaginable that the rapid innovation speed of AI will allow for completely new insights in the near future, undoubtedly accelerating the medical research in neuroscience as well.

To sum up, the interview showed how advancements in neuroscience have the potential for far-reaching effects not only in health care, but by extension also for society as a whole. In the short- to medium-term future, it has the potential to revolutionize psychiatric care, increasing well-being and, in the process, creating numerous new business opportunities as well. All of this constitutes that neuroscience is one of the most interesting domains right now, that should be closely monitored by researchers and businesspeople alike.