Banquet Speech

Eric R. Kandel's speech at the Nobel Banquet, December 10, 2000

Your Majesties, Your Royal Highnesses, Members of the Nobel Assembly, Ladies and Gentlemen,

Engraved above the entrance to the Temple of Apollo at Delphi was the maxim "Know thyself." Since Socrates and Plato first speculated on the nature of the human mind, serious thinkers through the ages - from Aristotle to Descartes, from Aeschylus to Strindberg and Ingmar Bergman - have thought it wise to understand oneself and one's behavior. But, in their quest for self-understanding, past generations have been confined intellectually, because their questions about mind have been restricted to the traditional frameworks of classical philosophy and psychology. They have asked: Are mental processes different from physical processes? How do new experiences become incorporated into the mind as memory?

Arvid Carlsson, Paul Greengard and I, the three of us whom you honor here tonight, and our generation of scientists, have attempted to translate abstract philosophical questions about mind into the empirical language of biology. The key principle that guides our work is that the mind is a set of operations carried out by the brain, an astonishingly complex computational device that constructs our perception of the external world, fixes our attention, and controls our actions.

We three have taken the first steps in linking mind to molecules by determining how the biochemistry of signaling within and between nerve cells is related to mental processes and to mental disorders. We have found that the neural networks of the brain are not fixed, but that communication between nerve cells can be regulated by neurotransmitter molecules discovered here in Sweden by your great school of molecular pharmacology.

In looking toward the future, our generation of scientists has come to believe that the biology of the mind will be as scientifically important to this century as the biology of the gene has been to the 20th century. In a larger sense, the biological study of mind is more than a scientific inquiry of great promise; it is also an important humanistic endeavor. The biology of mind bridges the sciences - concerned with the natural world - and the humanities - concerned with the meaning of human experience. Insights that come from this new synthesis will not only improve our understanding of psychiatric and neurological disorders, but will also lead to a deeper understanding of ourselves.

Indeed, even in our generation, we already have gained initial biological insights toward a deeper understanding of the self. We know that even though the words of the maxim are no longer encoded in stone at Delphi, they are encoded in our brains. For centuries the maxim has been preserved in human memory by these very molecular processes in the brain that you graciously recognize today, and that we are just beginning to understand.

On a personal note, allow me to thank Your Majesties, on behalf of all of us, for this splendid evening, and to raise a toast to self-understanding. Skoal!

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