Neural Probes
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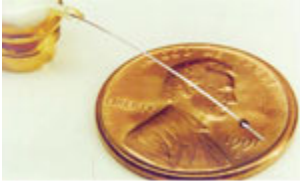
Neuroprosthetics is an area of neuroscience concerned with neural prostheses, developing artificial devices to replace or improve the function of an impaired nervous system. The neuroprosthetic seeing the most widespread use is the cochlear implant, with approximately 100,000 in use worldwide as of 2006.

An early difficulty in the development of neuroprosthetics was reliably locating the electrodes in the brain, originally done by inserting the electrodes with needles and breaking off the needles at the desired depth. Recent systems utilize more advanced probes, such as those used in deep brain stimulation to alleviate the symptoms of Parkinsons Disease. The problem with either approach is that the brain floats free in the skull while the probe does not, and relatively minor impacts, such as a low speed car accident, are potentially damaging. Some researchers, such as Kensall Wise at the University of Michigan, have proposed tethering 'electrodes to be mounted on the exterior surface of the brain' to the inner surface of the skull. However, even if successful, tethering would not resolve the problem in devices meant to be inserted deep into the brain, such as in the case of deep brain stimulation [DBS].

Research has also been undertaken by the American CIA in the 1950s as part of the MKULTRA program, although it is uncertain whether this meets the definition of neuroprosthesis. Examples: Subproject 86 (developing an invasive prosthetic identifier thought to expand in reporting body responses such as blood pressure or tremor), subproject 94 (neurostimulus in animals immediately defining direction of movement and control) and subproject 119 (remote "reassembly" or unification of monitored neural impulse into a useable data product).

Read more at: http://en.wikipedia.org/wiki/Neuroprosthetics