



Menu

START LOCATION

DISTANCE

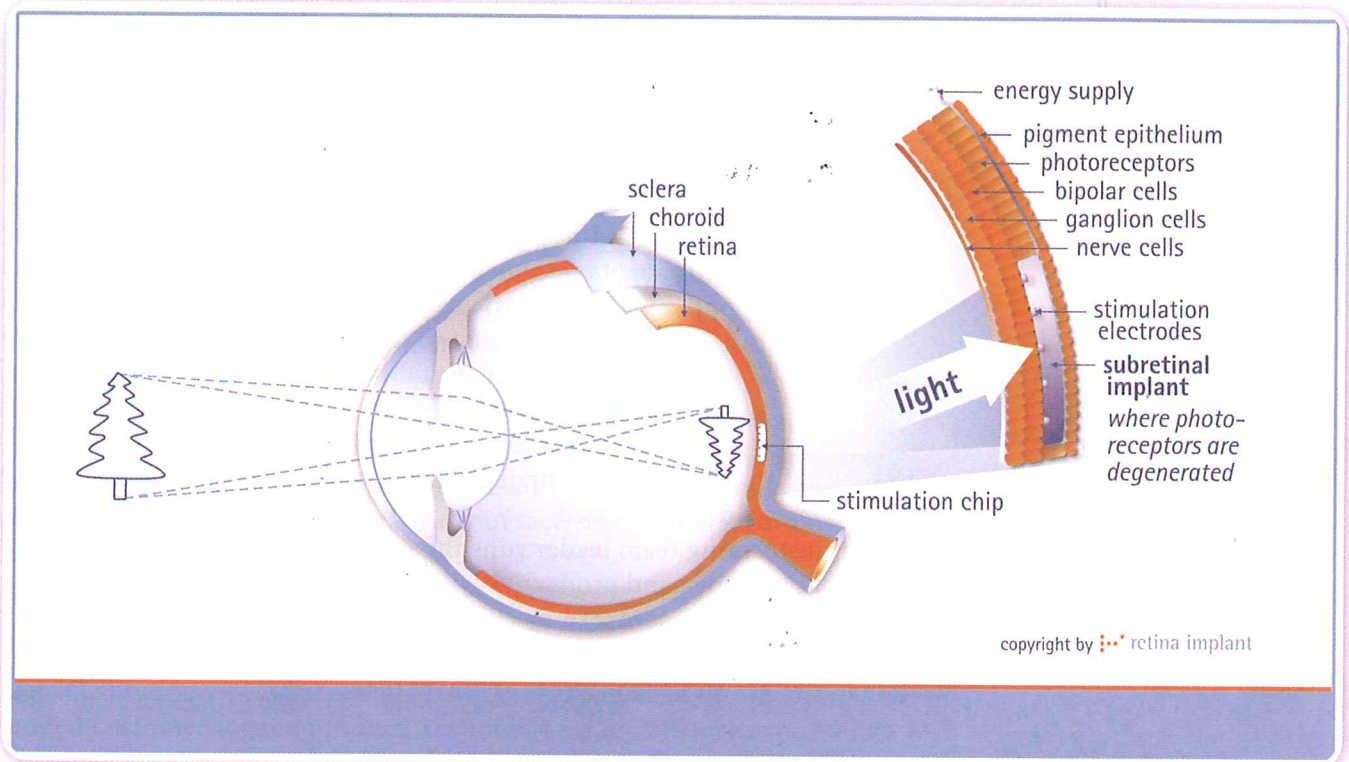
END LOCATION

Engineering Design

An Introduction

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FIGURE 2-12: (a) Eye implant. Current research in bio-optics and bioelectronics could one day restore a degree of vision to people afflicted by common forms of blindness. Several engineering approaches are being explored. This approach uses a tiny artificial retinal device being developed by the Retinal Implant Project, a joint research effort between the Massachusetts Eye and Ear Infirmary (Boston), the Massachusetts Institute of Technology (MIT; Cambridge, Massachusetts), and Harvard Medical School (Boston). In this design, an external laser, along with a tiny camera, is mounted onto a pair of eyeglasses that capture visual images. The images are converted to digital signals and transmitted by laser to the implanted chip. The artificial retina chip then transmits the electrical impulses to the brain. © Retina Implant AG (b) 2mm ASR device lying on a penny.



(a)

there brace-like designs that would be more useful for certain mobility problems? There are a number of creative possibilities. Taking time to find the root, or very basic problem at hand, is extremely important and sometimes not very easy to do.

Innovation can start at the problem-defining phase. Often, just recognizing a problem is the key to innovation. Let's look at a few quick examples of where problem recognition was an instrumental part of the innovative design process. At some point, someone saw that neither scissors nor files were optimal for trimming fingernails. Hence, we now most often use nail clippers. The inventor of nail clippers recognized a problem; the solution resulted in a substantial change in a weekly task for hundreds of millions of people. This is certainly a case where recognizing a problem was an instrumental first step.

For another problem, a person recognized the clutter of paperwork in his music sheets, resulting in the invention of "sticky notes." Sticky notes are used all



(b)