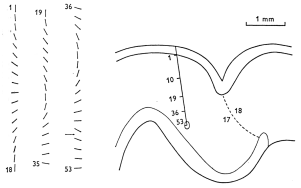
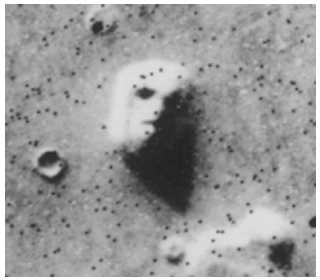
In chapter 13 of the reader, there is a diagram on page 232, figure 13.5 that explains Hubel and Wiesel's electrode experiment in which they angled the electrode and came up with the marks that seem to invert. I was not entirely sure what this figure meant to represent for the experiment. It seems that the response from the brain seemed to change direction as certain angled electrodes were placed but I am not sure what exactly became inverted or really why an angled electrode would even create this response. The book says that the "preferred orientation suddenly reversed.." but I do not know what is meant by the "preferred orientation." Did vision become inverted? Or does this mean that a certain side of the brain becomes favored?



Following the display of illusions last week, I was reminded of two phenomena that while not quite illusory, I think run along the same vein. The first is Pareidolia (http://en.wikipedia.org/wiki/Pareidolia). While in the larger sense, it's a phenomenon whereas we find significant meaning in vague stimuli, I think it's more commonly encountered with visual stimulus, the face on mars, the moon, or even the "classical" smiley face. It seems to be the opposite of Prosopagnosia in ways, but attributing details that aren't there. You might find the "Evolutionary Advantage" part interesting. . . . [E]specially when it comes to faces, I can see why we might have forgone certainty for expediency to see a face in times of trouble. A person could mean aid, or could be an enemy and the face is the most distinctive part of a person. Sort of like an imperfect IFF, but why do our brains try and force order on something?



One problem I see with a lot of the studies in the readings is that a good number of them use animal subjects (Macaque monkeys). I would have to assume that the animals spend the vast majority of their time in cages- how does this play into their visual systems (specifically with motion processing and depth perception) given the, "use it or lose it" theory of brain activity.

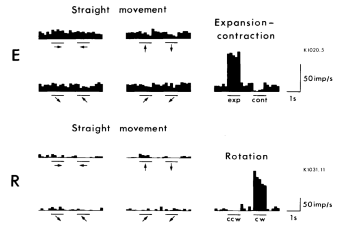
In readings and classes, we have stressed how much of the cortex is involved in visual processing. I am curious as to what the cortex of a blind individual looks like. Do these areas simply atrophy? Or, do other senses pick up the slack and use the same pathways, just different input sense (ie. do the touch and hearing pathways "take over" the visual processing areas and follow similar patterns- the "what" and "where" pathways. Clearly color processing has to vanish, but what about motion as well as the P and M streams? Also, could there be any further clues about how VISION is processed, based on these blind individuals.

One thing that jumped out at me during this week's reading was a comment made on page 242 of the text. The author is discussing Marr's work in 3-D computational systems that modeled the human process of 3-D visual representation, but comments that a number of theorists in the field question whether living organisms ever actually represent a 3-D model of the environment, speculating instead that they extract only relevant, partial, information as it is needed to navigate. So, is it actually necessary to construct a representation of the environment three dimensionally, or could it be accomplished using glimpses of 2-D representation at different times, on an as-needed basis?

I have some questions about Marr vs. Gibson. First of all, what does Gibson mean by "in the light." In the slides, you described it as "directly perceiving," and he rejected the idea of vision as making inferences. Does he mean that we (and the other organisms such as the gannet) simply receive light information, and then that information is turned into a type of reaction? For example, the gannet seeing the visual field getting smaller and then reacting by closing its wings at a certain threshold of it's visual field? If this is so, how can he defend that information isn't processed? for example, even though this is a "simple measure," how can he disprove that information isn't processed even on the most basic level. He even admits that the organism has the possibilities of action and that the agent must know where it is and how it is moving in the environment. It's hard to understand that Gibson might think that it's simply the light directing us when all of these areas such as V1, V2, V3, V4, V5, the temporal lobe, and the parietal lobe have all been discovered and seem to be interacting.

Gibson's claim that there is a plethora of information available from the visual environment of the observer is a reasonable explanation of how an individual perceives the world through sight. However, the question of what is occurring within the brain still remains. It seems that Gibson is asserting that the surrounding environment has enough information for humans to directly interpret what they visually perceive. If the knowledge attained from external stimuli is sent directly to an active observer such that there is no mediating step between perceiving and interpreting, it seems that brain states can be reduced to mere behavior.

Looking at figure 12.3 on page 216, I see that some cells in the MSTd respond to very specific patterns of motion. If some are receptive for very complex patterns such as spirals and rotation....are there cells for every type of pattern possible or do cells with different directional sensitivity work together to process a complex image pattern? For instance, if an artistic person created a video full of changing spirals and patterns in general, if someone had never seen these before, would new processing cells form due to exposure?



In chapter 13 the reader talks about the difficulties behind how a low level feature detection system leads to the recognition of objects. In order for this to happen, images from the environment have to be captured as features and sent as stimuli from the retina to the striate cortex, translated as 2 and 1/2 D sketches onto the cortex (and associated extrastriate areas) and eventually reformed to become a 3 D percept in the mind. My question is: does this transfer of information in anyway distort perception? I learned from another class' reading that if you were to have two rectangular prisms of the same size and you were to place them so that the same face on both prisms was up, but one prism was placed perpendicular in relation to the viewer and the other was parallel, to the viewer the rectangles would appear different. The one which was placed perpendicular to the viewer would appear to be longer. This is because the retinotopic map of the eye tends to draw out shapes vertically so that (for example) a sphere would appear slightly longer along its north -