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CSC 366
Professor Craig Graci
Chapter 4 Salient Sentences

1. “High-level perception, on the other hand, involves·taking a more global view of this information, extracting meaning from the raw material by accessing concepts, and making sense of situations at a conceptual level. This ranges from the recognition of objects to the grasping of abstract relations, and on to the understanding of entire situations as coherent wholes.” pg 169-170
2. “The study of high-level perception leads us directly to the problem of mental representation. Representations are the fruits of perception. In order for raw data to be shaped into a coherent whole, they must go through a process of filtering and organization, yielding a structured representation that can be used by the mind for any number of purposes.” - pg 170
3. “Low-level perception is given short shrift in this paper, as it is quite removed from the more cognitive questions of representation and meaning. Nonetheless, it is an important subject of study, and a complete theory of perception will necessarily include low-level perception as a fundamental component.” - pg 171
4. “One of the most important properties of high-level perception is that it is extremely flexible. A given set of input data may be perceived in a number of different ways,depending on the context and the state of the perceiver. Due to this flexibility, it is a mistake to regard perception as a process that associates a fixed representation with a particular situation.” - pg 171
5. “We may divide representations into two kinds: long-term knowledge representations that are stored passively somewhere in the system, and short term representations that are active at a given moment in a particular mental or computational process. (This distinction corresponds to the distinction between long-term memory and working memory.)” - pg 172
6. “Usually, researchers use their prior knowledge of the nature of the problem to hand-code a representation of the data into a near-optimal form. Only after all this hand-coding is completed is the representation allowed to be manipulated by the machine. The problem of representation-formation, and thus the problem of high-level perception, is ignored.” - pg 172
7. “The Physical Symbol System Hypothesis (Newell & Simon, 1976), upon which most of the traditional AI enterprise has been built, posits that thinking occurs through the manipulation of symbolic representations, which are composed of atomic symbolic primitives. Such symbolic representations are by their nature somewhat rigid, black-and-white entities, and it is difficult for their representational content to shift subtly in response to changes in context. The result, in practice - irrespective of whether this was intended by the original proponents of this framework - is a structuring of reality that tends to be as fixed and absolute as that of the objectivist position outlined above.” -pg175

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8. “In cases such as these, it seems that no single, rigid representation can capture what is going on in our heads. It is true that we probably have a single rich representation of DNA sitting passively in long-term memory. However, in the contexts of different analogical mappings, very different facets of this large representational structure are selected out as being relevant, by the pressures of the particular context.” - pg 180
9. “In light of these considerations, it is somewhat disheartening to note that almost all current work in the computational modeling of analogy bypasses the process of perception altogether. The dominant approach involves starting with fixed, preordained representations, and launching a mapping process to find appropriate correspondences between representations. The mapping process not only takes center stage; it is the only actor.” - pg 182
10. Amodel of high-level perception is clearly desirable, but a major obstacle lies in the way.For any model of high-level perception to get off the ground, it must be firmly founded on a base of low-level perception. But the sheer amount of information available in the real world makes the problem of low-level perception an exceedingly complex one, and success in this area has understandably been quite limited.” - pg 190