The Nature of Consciousness
Handout [13]

Martha Farah: ***Visual Perception and Visual Awareness after Brain Damage: A Tutorial Overview***

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§ The Goals

1. Recent findings in neuropsychology are forcing us to revise this notion of the relation between perception and conscious awareness. Brain-damaged people may manifest considerable knowledge of stimuli, or of particular properties of stimuli, of which they deny any conscious perceptual experience.

2. Four neuropsychological syndromes involving apparent dissociations between vision and awareness of vision:
___ (i) blindsight
___ (ii) covert recognition of faces in prosopagnosia
___ (iii) unconscious perception of extinguished or neglected stimuli
___ (iv) implicit reading in pure alexia

3. The goals:
___ to review representative findings about each syndrome,
___ to lay out the different possible mechanistic explanations,
___ to consider the implications of each of the accounts for the relation between conscious awareness and neural information processing, and
___ to consider the broader implications of these findings for the functional and neural systems underlying conscious awareness.

[Question]: What could these discrepancies tell us about how the brain works?

§ The Syndromes

1. Blindsight (1973)

Blindsight refers to the preserved visual abilities of patients with damage to primary visual cortex, for stimuli presented in regions of the visual field formerly represented by the damaged cortex.

2. covert recognition of faces in prosopagnosia (1984)

Prosopagnosia is an impairment of face recognition following brain damage, which can occur relatively independently of impairments in object recognition and is not caused by impairments in lower-level vision or memory. In some cases of prosopagnosia, there is a dramatic dissociation between the loss of face recognition ability as measures by standard

tests of face recognition, as well as patients' own introspections, and the apparent preservation of face recognition when tested by certain indirect tests.

3. unconscious perception of extinguished or neglected stimuli (1979)

Neglect is a disorder of spatial attention that generally follows posterior parietal damage and results in patients' failure to report to even orient to stimuli occurring on the side of space contralateral to the lesion. Patients with neglect need not be blind in the affected side of space, although they may behave as if they are.

Extinction is often viewed as a mild form of neglect.

The behavior of patents with neglect and extinction suggests that they do not perceive neglected and extinguished stimuli. However, evidence is beginning to accumulate showing that, in at least some cases, considerable information about neglected and extinguished stimuli is extracted by patients. This information is generally detectable only using indirect tests.

4. implicit reading in pure alexia (1980)

Patients with pure alexia are impaired at reading, despite being able to write normally and understand spoken words. To the extent that they can read at all, they appear to do so in a letter-by-letter fashion, spelling the word to themselves before they can recognize it.

In implicit reading, the dissociation that holds for all patients is between the ability to report a specific word and the ability to make judgments about the lexicality and semantic category of the word, not the dissociation between word perception and awareness of that perception.

§ Brain Mechanisms and Conscious Awareness: ___ What Kind of Relations?

[Three Types of Theories]

1. Consciousness as the *Privileged Role* of Particular Brain Systems

Schacter, McAndrews and Moscovitch:
___ Although they do not propose a localization for the conscious awareness system (CAS), their account does suppose that there is some brain system or systems, the CAS, separate from the brain systems concerned with perception, cognition, and action, whose activity is necessary only for conscious experience. Within this framework, unconscious perception can be explained very simply in terms of a disconnection between perceptual systems and the CAS.

2. Consciousness as a State of *Integration* among Distinct Brain Systems

Kinsbourne:
___ Conscious awareness is a brain state in which the various modality-specific perceptions, recollections, current actions, and action plans are mutually consistent.

Crick and Koch:
___ Synchronization across visual areas could enable both binding and conscious awareness of stimuli.

Damasio:
___ The type of binding he discusses operates across different modality-specific representations of an object rather than within the visual system.

3. Consciousness as a *Graded Property* (*the Quality of Representation*) of Neural Information Processing

Farah:
___ Consciousness may be associated only with the higher-quality end of the continuum of degrees of representation.

Cautionary Claim:

None of these accounts offers any insight into the question of what consciousness is, above and beyond its hypothesized dependence on a certain brain system, or state of integration, or quality of representation. Nor do they tell us why a certain brain system, state of integration, or quality of representation should be necessary for consciousness. Nevertheless, they are not vacuous or question begging. Although they do not **answer metaphysical questions about consciousness, they are substantive claims about the neural correlates of conscious experience.**

§ General Conclusions

One general conclusion that should be abundantly clear is that the four different syndromes reviewed here are unlikely to share a common explanation.... We may need to consider the possibility that the relation between conscious awareness and neural systems is itself not explicable by just one type of account.

Among all of the syndromes, there is none for which visual perception, in its totality, has been convincingly demonstrated to be normal or near normal. Therefore, there is no reason to view these syndromes as consisting of normal perception with conscious awareness merely striped away.

We need (i) more conceptual analysis of the subject matter and (ii) more empirical analysis of the results.