Consciousness as Synesthesia

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Synesthesia is the involuntary experience of perception in one sensory modality in response to stimulus in another (Ramachandran & Hubbard, 2001; Ternaux, 2003). Clinically, it denotes the relatively rare capacity to hear colors, taste shapes, or experience other sensory composites. Synesthetes describe the color, shape, and flavor of a voice, or music that presents itself as a scintillation of triangles in the visual field. Presented with colors or letters, a synesthete might experience a distinctive odor as well. Such cross-modal experiences are typically in addition to ordinary perception. Synesthetes regard their experience as quite natural and they are surprised when they discover that others do not perceive things as they do.

The basis of synesthesia is a convergence of neural pathways in the perceptual trains of two or more sensory systems (Rizzo & Eslinger, 1989). Synesthesia has been surgically induced in laboratory animals by grafting these paths, and eliminated in humans by severing them (Armel & Ramachandran, 1999). Synesthesia illustrates an important general principle of interaction among a system of relatively independent modules, like the brain. *Information is always interpreted locally.* There is no reason that auditory stimulus should be meaningful to the visual cortex, but synesthesia demonstrates that the visual apparatus will try to interpret whatever is presented to it.

The hierarchy of modules in every sensory modality cooperates in precisely this way (Douglas *et al.*, 1993). For example, visual information begins as light strikes the retina, where feature extraction begins with neurons that respond selectively to edges, intensity changes, light spots, dark spots, and other low-level features. From this representation, the lateral geniculate nucleus and striate cortex extract mid-level features such as edge orientation, movement, texture, curvature, shading, and binocular perception. These interpretations, constituted in local representations across the various organs of the visual system, form the basis of object recognition and all the higher cognitive functions. At each level of integration in the visual hierarchy there is a transformation of the stimulus features that would be called synesthetic if it were available to consciousness.

It may be fruitful to regard consciousness itself as a form of synesthesia. Certainly, one important aspect of consciousness is the integration of disparate sensory impressions into a perceptual gestalt, which is known as “the binding problem” (Baars, 1997; Kosslyn & Koenig, 1992). Integration clearly goes well beyond the seven ordinary senses, which include proprioception and vestibular sensation. When we are aware of an association to a sensation, or when we think about what we perceive, then cognitive elements are bound into the gestalt as well. Perhaps it would be well to regard memory and cognition as sensory modalities in their own right. After all, we can be conscious of our thoughts and memories in a way that is similar to sensory consciousness.

All sensation, memory, and cognition must be regarded as distinct from its subjective manifestation. Consciousness is a medium of its own which is distinct from that of its various objects, and which normalizes them all to its own terms. This is precisely synesthesia but, since experience naturally mistakes the consciousness of sensation for sensation itself, we have no background against which to recognize it; as the fish fails to recognize the water that surrounds it. Consciousness is a synesthetic interpretation of whatever other content happens to fall within its momentary scope (Jaspers, 1971).

Whatever other functions consciousness might serve, it certainly provides an integrative perspective on its various contents, as well as lending them a special priority of influence that is experienced as personal will. The objects of consciousness are diverse and the scope of consciousness is flexible. To the extent that consciousness is preoccupied with any particular set of objects or sensations, others are excluded from consciousness even though they remain accessible to it. The executive necessity of coordinated behavior demands the inhibition of unselected alternatives at all levels (Goldberg, 2001). Focal content must remain fixated, sometimes in consciousness, long enough to support coherent action in real time.

That which is excluded from consciousness is thereby diminished or disabled. This is a fundamental requirement of evolutionary adaptation, but there are side effects. Opportunities that lurk beyond the focal horizon are necessarily overlooked (Jaspers, 1955). The essence of the phenomenological attitude is de-fixation. The various methods of phenomenological reduction are means of relaxing the focal boundaries of consciousness in order to allow its horizons to expand in any directions. The rigid fixation that is adaptive in the evolutionary competition for survival does not serve as well in the consulting room.

The phenomenology of the phenomenological attitude

When I am trying to adopt the phenomenological attitude, I am striving to relax my grip on the momentary contents of my consciousness. This paradoxical effort seems to be expended on the one hand in remaining alert to whatever presents itself to me, and on the other in neglecting the narrative threads and semantic interpretations that surface in my consciousness. At the same time there is an indescribable mental gesture which broadens the scope of my attention generally. I strive to remain open to any kind of insight that might present itself, without fixating upon, evaluating, or pursuing it. On a good day I can maintain this attitude for about 30 seconds at a time. I am working on it.

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