

Centering and Identification— An Accommodation to Converging Concepts

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“Ungerleider and Mishkin first suggested the possibility that the visual pathways projecting from striate cortex to other cortical regions could be divided into two relatively independent ‘streams’ of visual processing.”... “Since its introduction just over ten years ago, this distinction between object vision and spatial vision (‘what’ versus ‘where’) has become one of the most familiar functional dichotomies in visual neuroscience.”¹

Amazement and dismay flooded over me as I read this passage. This was the beginning of a 1993 article that appeared in *Current Opinion in Neurobiology*. The Ungerleider and Mishkin article that is cited which introduced the “two stream” concept appeared in 1982. It struck me that A.M. Skeffington, O.D., made this distinction almost 30 years earlier.² His use of the terms centering and identification were essentially synonymous with these “where” and “what” aspects of the visual process.

Please understand that the two “streams” (described as a dorsal stream and a ventral stream respectively) of information are not congruent with the parvocellular and magnocellular pathways described in current literature.^{1,3} These streams receive input, in a reciprocal manner, from both parvo and magno cells. It’s possible that each of these streams is actually multiple streams, or that each stream forms a parallel distrib-

uted network.⁴ These streams originate in striate cortex, but research indicates that retinal output actually targets nine other areas in the primate brain.⁵ Other researchers are demonstrating the role of an active, feedforward process in our visual experience.⁶ It becomes apparent that, by and large, neuroscience has validated the clinical, behavioral observations that Skeffington synthesized into the ideas of centering and identification many years ago.

Skeffington presented the distinctions between centering and convergence on the one hand, and identification and accommodation on the other. He struggled to succinctly describe these distinctions. There were occasions in his early expressions when Skeffington did seem to use the terms as synonyms, but as his understanding developed they became more distinctly different.⁷ Many optometrists had difficulty grasping the distinction. They characterized the use of these terms as confusing and hindering communication. They wondered why anyone would reject terms that were universally accepted (convergence and accommodation) and replace them with new, unrecognized words (centering and identification).

Detractors suggested that the new terms served simply to brand the members of a clique based on Skeffington’s ideas. Along these lines, the terms iden-

tification and centering have been described to me as “arcane lingo.” Colleagues suggest that I should avoid using the terms because they offend or confuse those who do not accept or understand the concepts. Instead, the pairs of terms continue to appear in confusing ways as synonyms. As an example, a question recently posed as part of a credentialing examination asked candidates to describe how they evaluate “convergence/centering.” This attempt at political correctness serves to deepen the confusion and perpetuate the misunderstanding. Centering was not intended to be a new synonym for convergence. Convergence describes the alignment of the visual axes on a particular point. Centering refers to the aggregate of visually mediated activities generated by the individual in selecting an area of space for directing movement and deriving meaning.

Many of the objections to the concept of the centering and identification processes claimed that these ideas were unscientific. I never totally accepted that criticism, and now that the scientific mainstream has accepted the idea the point is moot. Now we need to move ahead. Convergence and accommodation are mechanisms for adjusting the light energy input to the eyes. These are not the same as the processes of center-

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ing and identification. These integrated processes involve selecting and organizing, from the available visual array, that which is necessary to direct action and to derive meaning.

It is not my mission to confirm Skeffington as a prophet. Frankly, I think there were some gaps in his organization of these concepts. Nevertheless, it is noteworthy that it took 30 years for others to come up with an almost identical statement of the basic hypothesis. But, Skeffington had an edge: he was an optometrist. He appreciated the clinical reality that a model of visual function limited to the mechanisms of convergence and accommodation is insufficient to explain the pervasive role of vision in human behavior. The dismay I felt when reading the opening passage came from knowing that the impetus for the research to develop the hypothesis did not come from *optometry*.

My primary interest is to foster optometry's utilization of these ideas in meaningful and productive ways. The processes involved in determining "where" and "what" are separable to some degree and are not identical to the mechanisms of convergence and accommodation. Although I personally am comfortable with the words centering and identification to describe these concepts, I would be amenable to suggestions of better words. In the meantime, let's not continue to cloud the issue. The acts of accommodation and convergence are certainly a part of the visual process and should not be discarded, but used in the proper context. Optometry, however, should recognize that these mechanisms per-se do not fully explain the total visual process. Discussions about how an individual uses the visual process to construct solutions to visual problems can require all four terms.

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