Philosophers have traditionally conceptualized the contents of perceptual states relative to either their accuracy conditions, what they putatively refer to, or some conception of their internal representational structure. However, it has proven difficult to pin down either the proper referents of smells or the nature of the olfactory percept (are smells object-like, flavor-like, feeling-like?). Therefore olfaction has proven problematic for philosophical theories of perception. We argue that these difficulties can be resolved if one takes olfaction as a starting point for a global theory of perception. This approach runs counter to a standard visuocentric view of perception as a tool producing veridical, general purpose, global world models to be scanned, interpreted, and cataloged in the service of action. It leads instead to a crossmodally integrated, opportunistic model of perception as system for attributing salience to sensory signals on the fly, for sorting and filtering sensory inputs relative to their biological significance and instrumental value to the local goals of an organism. We argue that the principal axes of odor perception are defined by their biological value to the organism, rather than physical dimensions of stimuli. In support of this claim we review evidence that systems for chemosensation and valuation evolved in parallel and are functionally integrated. Finally, we propose a framework for perception in which the evaluative role of olfaction is taken to be primary and paradigmatic of the general function of sensory systems in perception, cognition and behavior.