# What is a ‘feature’?
# A meta-analysis of selection criteria for salient visual properties.

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In assessing what counts as a ‘visual feature’, systematic privilege is given to particular classes of stimulus properties over others. Several characterizations of the notion of ‘feature’ have been proposed so far in specific fields of vision science, from electrophysiology to psychophysics, perceptual psychology and computational vision, yet the use of this notion is not immune from ambiguities.

Most studies implicitly assume a number of well-formedness and relevance conditions for selecting features, thus excluding *de facto* all properties that do not match such criteria. These criteria are not, generally speaking, necessary and sufficient conditions, but rather principles that orient the way in which relevant variables are picked up in experimental settings and modelling.

*Locality*, for instance, plays a major role among these selection criteria, as the current use of ‘feature detectors’ as ‘local neighbourhood operators’ seems to suggest.

Other criteria attested in current literature may include: *ascribability to objects*, *compositionality*, *scalability*, *invariance* across specific conditions, *early cortical selectivity*, *early discriminability, modal specificity*, *ecological and evolutionary relevance, conscious accessibility*.

Depending on the particular selection criteria, the notion of feature is then used as a synonym of other, usually much more constrained notions such as ‘channel’, ‘cue’, ‘texton’, ‘visual attribute’.

In this paper, I will survey the core criteria employed in vision science for defining what is a ‘good’ visual feature and I will suggest a tentative conceptual classification of what properties of stimuli are considered worth studying. This may contribute to a more constrained research on visual processing and to conceptual clarification of the use of this notion across distinct research fields of vision science.