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What we must do in order to test pictorial competence in animals

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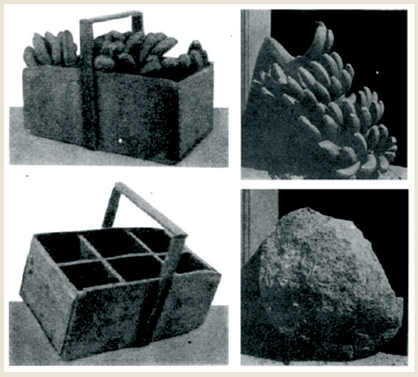
What we must do in order to test pictorial competence in animals

Can an animal categorise a fictional fire as a fire? (Can it also be seen as e.g. a flower?)



Picture stimuli used by Köhler [3], one of the first to study pictorial competence in the wrong mode.

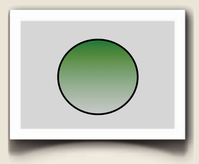
Pictures are common in the experimental study of animal cognition and have been successfully used in perceptual and conceptual tasks for decades.

A principal concern has been whether animals are able to recognise objects in pictures. The answer is positive (see [1], [2]).

But recognition does not necessarily equal seeing the picture as a depiction, which entails reference.

Referential pictorial competence is proven when categorisation of a motif is possible while confusion of picture and reality can be fully ruled out.

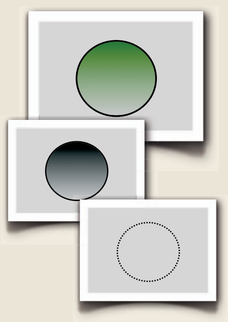
In order to test picorial competence one must thus show trial one performance on novel stimuli (precluding associative learning), demanding a categorical level response, using stimuli that require differentiation (e.g. non-realistic pictures).



A picture like this can be appreciated in at least 3 modes:

1. Bypassing motif recognition, but allowing responses to properties.

2. Motif recognition but no picture - referent differentiation. Typically elicited by realism.



3. Categorical recognition with differentiation and reference, allowing similarity judgements, thus making recognition of abstractions possible.

FREQUENTLY ASKED QUESTIONS

Why is not recognition enough?

To demonstrate pictorial competence we are after recognition of a certain kind: where the function of a referential object (i.e. as a sign) comes first, and interpretation follows. This is most evident if we consider pictures where the *expectation* of a motif is needed for recognition to occur. We do not see likeness in a Rorschach blob because it immediately pops out for us, but because we look for it. Interpretation thus depends on expectation of similarity.

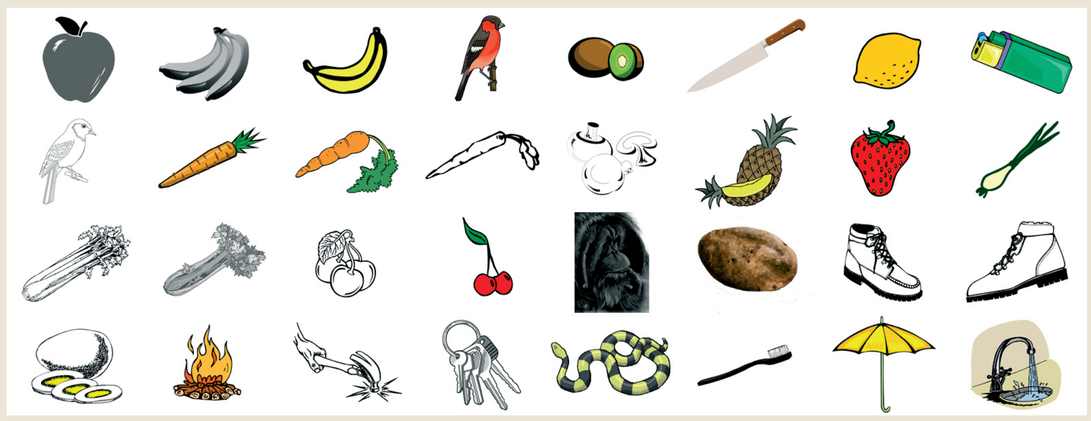
Why is not a "referential" *use* of pictures enough?

Because it is not necessary to see a picture as a picture in order to relate it to other instances of the depicted object. Just as one real object can be related to another real object. Such relations are not really referential, since there is no direction from picture to referent, no *aboutness*.

A picture that has been investigated by a bonobo. (With extensive experience of photographs.) Primates, including human infants, sometimes seem to expect pictures to retain properties of the real. Absence of such responses, however, does *not* on its own imply a referential understanding of pictures.

What would pictorial competence in animals suggest?

It would imply flexible concepts extendable to atypical instances, as well as an ability to form expectations of depiction (reference and differentiation) and motifs (similarity judgements). Such processes of interpretation – "filling in" meaning where it is really not present - is one definition of imagination. What we need to know, further, is what contextual scaffolding is needed to evoke the required expectations on the picture media. At present good evidence only exists in linguistically structured tasks (see below).



Examples of novel clipart correctly matched with lexigrams on trial one by bonobos in [4]. Subjects had never been formally tested on non-photographic stimuli before.

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[3] Köhler W (1922). Zur Psychologie des Schimpansen. *Psych res* 1(1) 2-46

[4] Persson T (2008). *Pictorial Primates: A Search for Iconic Abilities in Great Apes.* Lund: Media-Tryck.

BONOBOS AND DRAWINGS

Based on the requirements in the criteria above, two language-competent bonobos at The Great Ape Trust of Iowa, USA, were tested in 2006 on a computerised delayed matching-to-sample task where linguistic labels (lexigrams) were matched to pictures, and vice versa. Performance was above chance ($p<0.001$) in all conditions, and there was no significant difference between photographs and drawings, or between subjects. Interpretation in a pictorial mode likely took place. See full report in [4].

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