HANDOUT: "Sensations as the bearers of colours in a, maybe, colourless external world: contra Sanford and Hardin." John M. Nicholas, Department of Philosophy, University of Western Ontario, Canada <jnichola@uwo.ca>

(A) HARDIN'S DICHOTOMY

[1] THERE ARE NO COLOURS IN EXTERNAL BODIES

[2] THERE ARE NO COLOURS IN VIEWERS (SENSATIONS ARE NOT THE BEARERS OF COLOURS)

[1] AND [2] EXHAUST THE OPTIONS, **SO**:

THERE ARE NO COLOURS

For sketch of Hardin's grounds for [1], see page 4 below. Damaging implications follow for

- Direct Realism
- Disjunctivism
- Intentional-Representationalism

Grounds for [2] depend partly on the idiosyncracies of Frank Jackson's SDT.

MY THESIS: [2] IS UNWARRANTED; Hardin's and Sandford's arguments pro are inconclusive.

(B) HARDIN'S TARGET: JACKSON'S SDT

The objects in the world that we see are *mediate* rather than *immediate* objects of perception, where

> X is a *mediate* object of (visual) perception (for S at t) iff S **sees** at t, and there is a y such that (x ≠ y and) S **sees** x *in virtue of* **seeing** y.

Paradigm cases of the '*in virtue of*' relation include:

- my car being red in virtue of its body being red
- a sentence's being true in virtue of a given proposition's being true
- someone's being strong in virtue of his body being strong
- someone's living in Australia in virtue of living in Melbourne.

Jackson's fundamental "analytic thesis" is

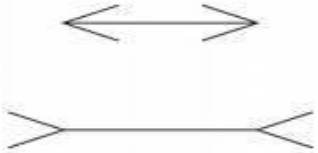
> … that to *see* a reasonable-sized, opaque material object is to *see* something distinct from that object, the relevant immediate object of perception (whatever the ontological status of the latter may turn out to be).
>
> The immediate object of perception / "seeing" is a colored patch.

[C] HARDIN'S DIFFICULTIES FOR SDT

[Class A] A coloured patch is seen but it fails to bear the properties which the seen object appears to have
[Class B] A coloured patch is indeed seen, but its properties are indefinite or contrary
[Class C] Something is seen but without awareness of any coloured patch

[D] CLASS A: NOT BEARING THE APPARENT PROPERTIES

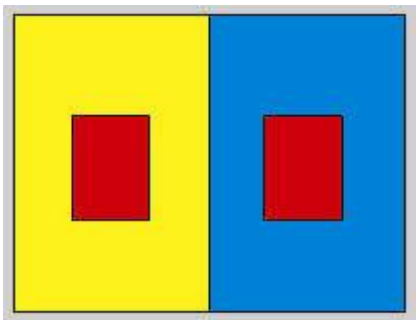
[1] *Müller-Lyer Illusion* (non-colour case, but ….)



Hardin: "'in the application of this strategy to the MLI the sense datum theory cannot be 'helpful' … would the one sense datum line be longer than the other sense-datum line? And if it were, then since the terminations of the lines remain as before, would it not look even longer?'(106)

Sanford, Hardin's acknowledged precursor in this line of argument: "Suppose that there were a sense-datum that really has the properties the physical lines look to have. The two sense-datum lines of equal length also have Müller-Lyer wings. We know that such wings make physical lines of equal length appear unequal. The sense-datum theory requires that these wings, which can have such a marked effect on how long two physical lines look to be, have no effect on how long two sense-datum lines appear to be. There is no reason to believe this and plenty of reason to disbelieve it."

[2] *Simultaneous Colour Contrast*



Sanford: "Suppose … that there were sense-data that really have the colors that the colored expanses of paper A and B look to have. The sense-data of A and B are respectively surrounded by sense-data of colored expanses C and D. The sense-datum theory requires that although physical surrounding colored areas C and D have a marked effect on the color appearance of the physical surrounded areas A and B, the corresponding surrounding sense-data have no effect on the color appearance of the sense-data they surround. *Except for a desire to defend the theory, there is no reason to believe this*.'

[E] Why Does Sanford/Hardin Think This?

Sandford highlights Russell's "The Philosophy of Logical Atomism", particularly Russell's grounding of analysis "in theory, if not in practice" in an ontological base of "ultimate simples, out of which the world is built". Russell treated sense data as examples of such "ultimate constituents of the world".

The things we call real, like tables and chairs, [and Muller-Lyer Illusion stimulus cards! – *JMN*] are systems, series of classes of particulars, and the particulars are the real things, the particulars being sense-data when they happen to be given to you. A table or a chair will be a series of classes of particulars, and therefore a logical fiction.

MY GUESS: Hardin and Sandford suppose that the sense datum theorist is committed to a regressive explanation of perception which invokes 'seeing' of external visual targets and 'seeing' of sense data. If the 'seeing' term is used univocally, and denotes the same kind of operations, it would be plausible perhaps to accept the Sanford-Hardin line.

'the homunculus fallacy' … 'when one attempts to explain what is involved in a subject's being related to objects in the external world by appealing to the existence of an inner situation which recapitulates the essential features of the original situation to be explained … by introducing a relation between the subject and inner objects of essentially the same kind as the relation existing between the subject and the outer objects' (Evans, Gareth, 1985a, p. 397)

REGRESSIVE EXPLANATIONS AREN'T PER SE BAD

Terrestrial gravity is explicable, by appeal to a microstructure of particles which have gravity. The explanation is not of gravity, but of the circumstances of its operation.

Notably, however, one version of Jackson's SDT is viciously regressive. Cf. also, Locke on the perception of external things by the inner perception of ideas.

Jackson again:

- someone's living in Australia in virtue of living in Melbourne.

The Sanford/Hardin argument seems to be:

- Sense data and physical things are the same sorts of things, and
- Seeing physical things and seeing sense data are similar operations
- So: we might reasonably expect the same nomological constraints on inner seeing and outer seeing.

HOWEVER, THIS IS ABSOLUTELY INESSENTIAL TO THE SDT. 'AWARENESS' OF SENSATIONS IS NOT THE SAME AS 'SEEING' EXTERNAL OBJECTS. THE 'MIND'S EYE' IS NOT AN EYE.

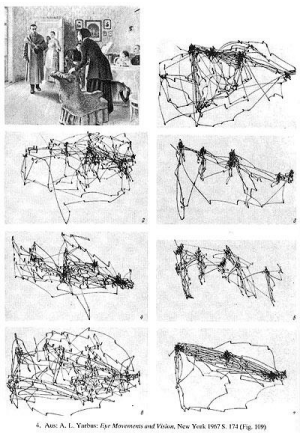
[F] CLASS B: SENSE DATA WOULD HAVE CONTRARY PROPERTIES

[1] Motion After Effect: Waterfall Illusion

Hardin's claim: 'Paradoxical' combination of appearance of *motion* with appearance of no *change of place*. SDT implies that the sense datum bears the apparent properties. The sense datum bears incompatible properties. This violates Bivalence.

The Falls of Foyers (Addams)

[i] **But what about the saccades? Won't multiple saccades imply multiple sense data, which can divide the labour of supporting the 'contrary' properties?**



(Yarbus, '67)

- ***Won't there be multiple sense data?***
- If we saccade 3-5 times per second, our fixation point will change numerous times during the illusion.
- Are you aware of any drift of fixation during your experience of the illusion?
- No experiments have been performed on motion after-effects which examine spontaneous saccades, or other renewal of fixation (eg smooth pursuit).
- Why does this matter? Because renewed fixation would in all likelihood require the formation of new sense data.
- Multiple sense data could divide the labour of instantiation of motion and no-change-of-place without inconsistency.
- Hardin's argument would be undermined; the phenomenon has multiple SD, not a single SD.

'When voluntary saccadic eye movements are made to a silently ticking clock, observers sometimes think that the second hand takes longer than normal to move to its next position. For a short period, the clock appears to have stopped (chronostasis).
Here we show that the illusion occurs because the brain extends the percept of the saccadic target backwards in time to just before the onset of the saccade.'
Yarrow et al (2002)

Saccadic suppression implies hindsight SD construction: temporal extension of the target's percept is one of the mechanisms that "fill in" the perceptual "gap" during saccadic suppression.

But don't we fixate rigidly in MAE, without new saccades?

Not likely. Coppola and Purves (1996) have shown that image erasure begins at less than 80 ms, when there is strict fixation. They say: "Here we show that images of entoptic vascular shadows can disappear in less than 80 msec. The rapid vanishing of these images implies **an active mechanism of image erasure and creation as the basis of normal visual processing."** (Emphasis added.)

Hardin's appeals to Class A and Class B anomalies in his case against sense data as the bearers of apparent properties are inconclusive. The perceptual mechanisms in question have not been sufficiently examined. The science is unsettled, and further research is needed. However, Hardin is to be much admired for his own work and his recognition that the matter is to be settled by scientific honest toil, not by philosophical theft.

Suggestive evidence: Yarrow et al on Temporal "Filling In"

"post-saccadic moving objects undergo a substantial temporal bias relating to stimulus onset, and that this bias is accompanied by a spatial adjustment at stimulus offset which may be compensatory in nature. These results provide a novel insight into the nature and duration of the window of consciousness (James, 1890). … Our results are unusual, however, in that whereas previous findings have shown that a subsequent event can strongly influence perception of an earlier event (e.g., the cutaneous rabbit, Geldard & herrick, 1986) our results can be interpreted as demonstrating trading between an earlier perceptual interpretation and a later one; the visual system is essentially forced to lie about space in order to cover an earlier incorrect inference about time."

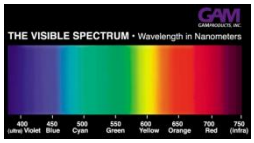
Compare with Eagleman and Sejnowski: "The flash resets motion integration, and motion is newly calculated and postdicted to the time of the flash. This hypothesis requires visual awareness to be postdictive, a conclusion already supported elsewhere (14). For example, in backward masking (15) the perception of a stimulus can be blocked or modified if it is followed in rapid succession by a moving second stimulus … Overall, these experiments indicate that the visual system consults the ongoing input of information from the near future of an event before committing to a percept (17)."

[2] von Bezold's Spreading Effect

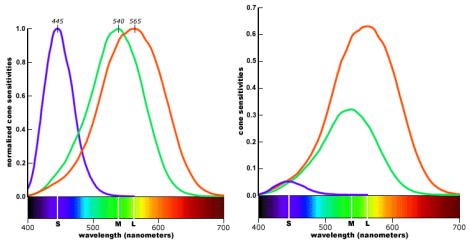
Simil.: multiple sense data at distinct fixation points?

THE CASE FOR [1]: There are no colours in external bodies.

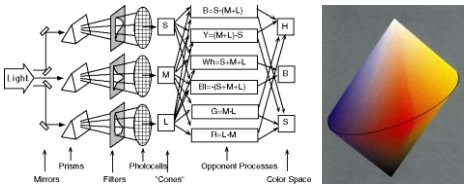
[I] **NOT FREQUENCY OF LIGHT**:



A necessary condition for identity is implicit in the above common diagrams: mapping frequency to hue.



Retinal cone responses suppress frequency information.

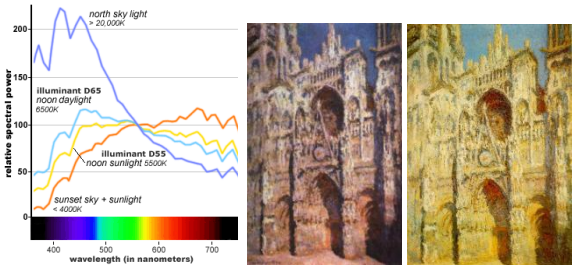


Hue (as well as saturation and brightness) is determined by sums and differences of the relative activation of the three kinds of cones. Innumerable combinations of frequencies will yield identical colour: the metamerism problem. For example, the effect of a monochromatic beam (λ = 577nm, 'pure' yellow) can be duplicated by two beams (λ = 540nm red, 670nm red), not including the original.

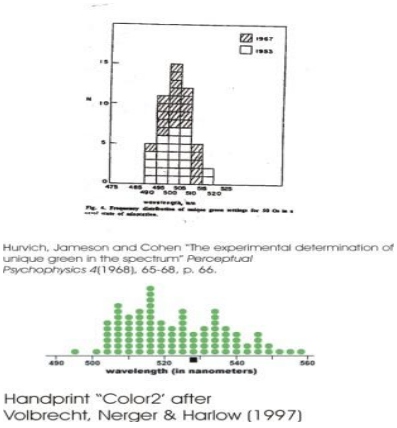
[ii] **NOT THE EFFECT OF DISTAL STIMULI ON NORMAL PERCEIVERS UNDER NORMAL CONDITIONS**

There is no principled basis for normality [rather than conventional 'standardness'] of conditions, or of observer.

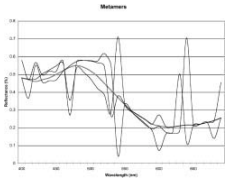
(Rhetorically) Which is normal illuminant (for Rouen Cathedral)?



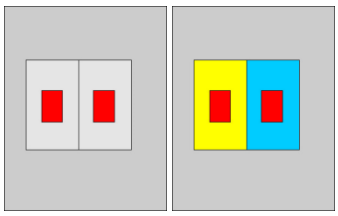
There is no principled basis for normality of perceiver. Consider the two following spreads for unique green:



[iii] **NOT SURFACE REFLECTANCE**



Surface metamerism: identical colour but dissimilar reflectances (for a given illuminant)



Simultaneous Colour Contrast; one illuminant, same reflectance, **two** colours! Colour of light sources?

[iv] **DEPENDENCE OF COLOUR ON OPERATING CHARACTERISTICS OF THE VISUAL SYSTEM**