

# Reflection & Refraction

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15/11/2019, Torino – Workshop *New Reflections on Mirrors*

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## Nicole Oresme, *On Seeing the Stars*

“I hold absolutely the same opinion concerning refraction and reflection, for if the object is not seen but the image [is] when vision is reflected, so also in the same way, [the object is not seen but the image is] when refraction occurs.”

“It immediately follows that we never see the sun, the moon, a planet, or any star at all, but only [their] images—except when they are over the zenith.” (D. Burton, ed. & trans. Leiden: Brill. 2007)

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## Oresme’s argument for Optical Scepticism

1. If S sees O by reflection, then S really only sees an image of O (‘Oresmic image assumption’)
2. If (If S sees O by reflection, then S really only sees an image of O), then (If S sees O by refraction, then S really only sees an image of O) (‘Parity’)
3. If S sees O by refraction, then S really only sees an image of O (inference from 1,2)
4. If S sees O, then (S sees O by refraction) or (S sees O by reflection) (‘Anti-abstractionism’)
5. If S sees O, then S really only sees an image of O (inference from 1,3,4)
6. If (If S sees O, then S really only sees an image of O), then Optical Scepticism is true (‘Optical Scepticism’)
7. Optical Scepticism is true (conclusion from 5,6)

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## Minimalism about images

- Look: a complex universal that can be instantiated by three-dimensional objects and determines the phenomenal character the object has for vision, e.g. the complex of redness, roundness and size of a tomato.
- Possession: An object possesses a property iff the object is a way determined by the property. A tomato possesses redness if and only if it is red.
- Presentation: An object presents a property iff perceiving the object can acquaint one with the property. For example, a red tomato not only possesses redness, but it also can acquaint you with redness.

To be an image is to represent a look.

To represent a look is to present that look without possessing it.

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## **Mizrahi on invisible media**

“When myopic subjects wear eyeglasses, they do not see the optical properties of their eyeglasses in addition to the objective properties of their environment. What they do see are the visual properties that were not visible to them without wearing eyeglasses. Refractive lenses don’t have any intrinsic phenomenological properties; they only change perceptual experiences by changing what portion of reality is accessible to the perceiver.” (Mizrahi)

1. When we see through a refractive medium, we do not see the medium.
2. If we always see an image when we see through a refractive medium, then when we see through a refractive medium, we do see the medium.
3. Hence, we do not always see an image when we see through a refractive medium.

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## **Against Parity**

Those sympathetic to the image assumption really need to reject Parity: the idea that reflection and refraction are on a par.

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## **Phenomenology of reflection**

Reflective seeing: we see the visual aspect the surface presents us with (and clearly doesn’t possess) as somehow on the surface.

Refractive seeing: we do not see anything as on or in the medium (the distinctive phenomenology involves not seeing the medium).

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## **Phenomenology of mirrors**

As with the highlight, you see the visual aspect the mirror presents you with (and clearly doesn’t possess) as on the surface of the mirror.

But unlike the highlight, you do not see this visual aspect as a visible in its own right; you recognise it for what it is: the appearance of something else.

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## **Conclusion**

There is a distinctive phenomenology to reflection. It is an integral part of the phenomenology of mirror perception. But another integral part is the phenomenology of the image.

As I have suggested, none of this is in conflict with the sensible thought that we can see the ordinary objects and people around us when we look in an appropriately placed mirror.

Oresme’s argument fails, but it fails instructively.