QUEENS' MATHEMATICAL SOCIETY

PHILOSOPHY IN THE MIRROR

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DO WE KNOW WHAT MIRRORS DO?

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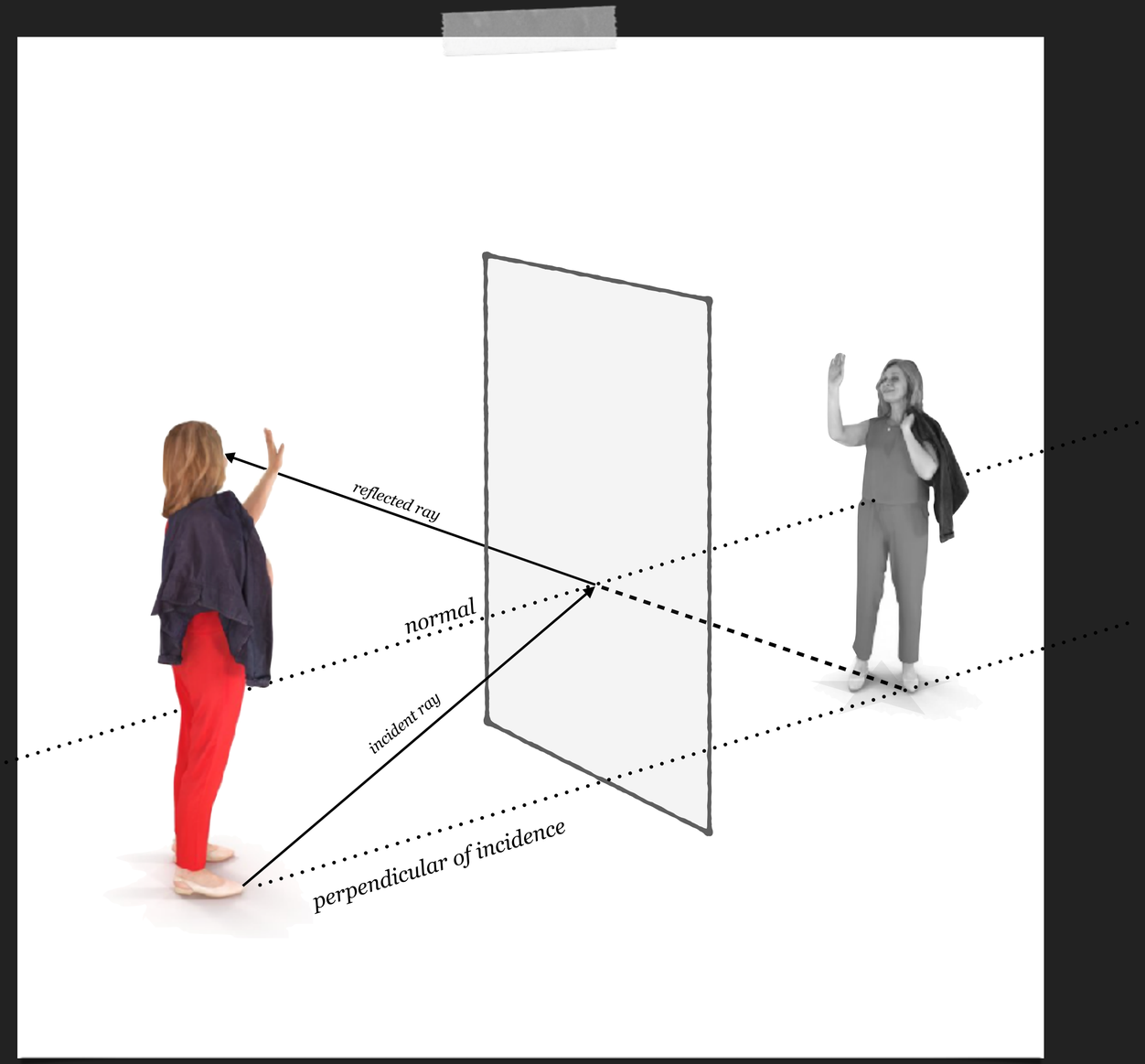
- Yes, we understand their geometrical optics because we know what the law of reflection is
- In addition, we know what Euclid said about where what we see in the mirror is located
- We also understand plane mirrors practically; we have no problem using mirrors (unless they are not clearly visible to us)



PHILOSOPHY OF MIRRORS

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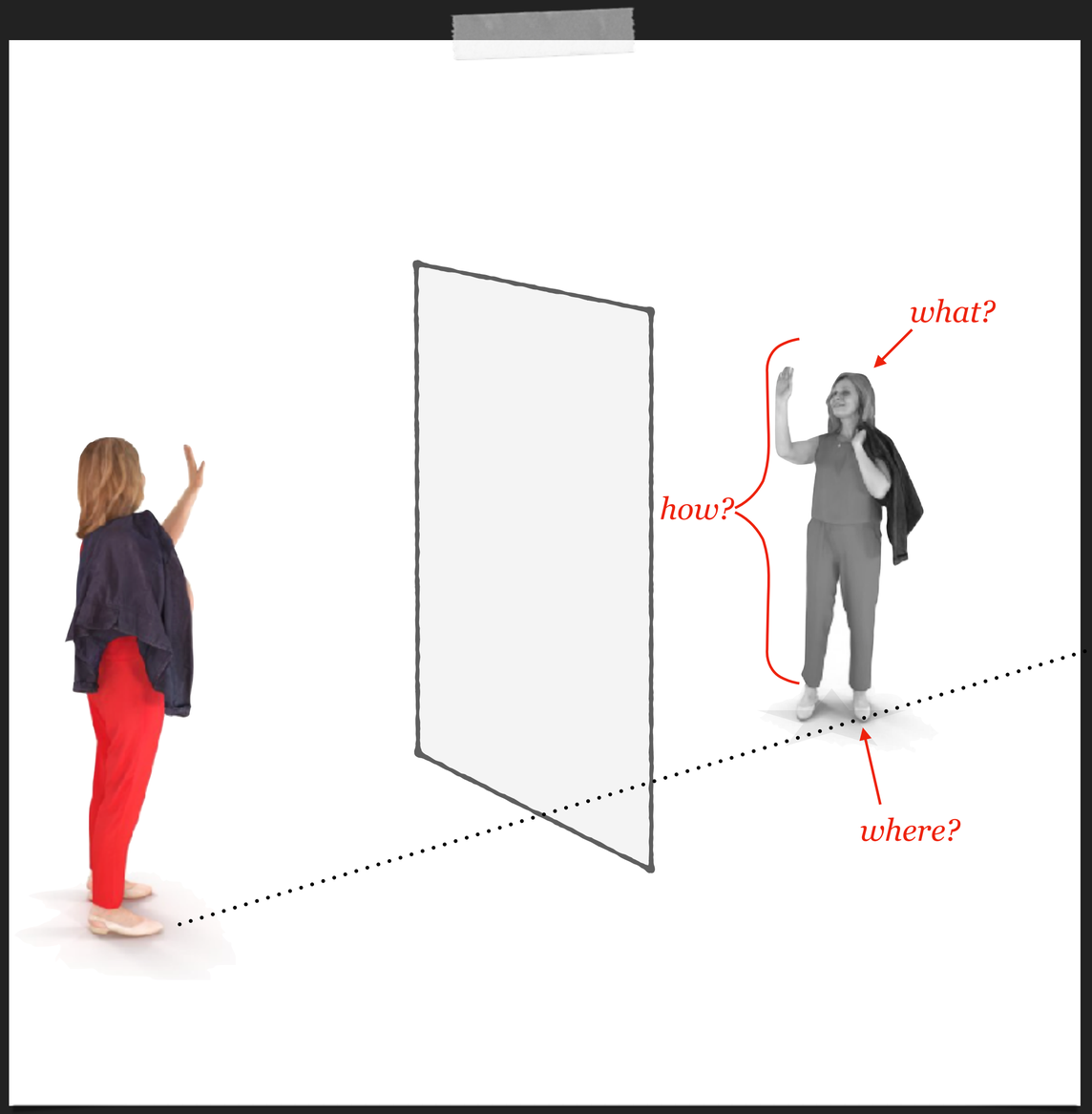
* There’s a puzzle about what we see in a mirror, a puzzle about mirror images
* There’s a puzzle about how what we see in a mirror looks, a puzzle about what is distinctive of mirror appearances
* There’s a puzzle about where what we see in a mirror appears to be, a puzzle about the perceived location of things we see in mirrors



MIRROR IMAGES

WHAT DO YOU SEE IN YOUR BATHROOM MIRROR?

- Common sense is confused: we speak of “seeing our reflection” just as readily as we speak “seeing our face” in a mirror
- Also the optical theories seem confused
  - We are told to construct an image behind the mirror surface; so there are mirror images?
  - Yet at the same time we shouldn’t think of this as a *real* image; so there aren’t any?

TAKING APPEARANCES AT FACE VALUE.

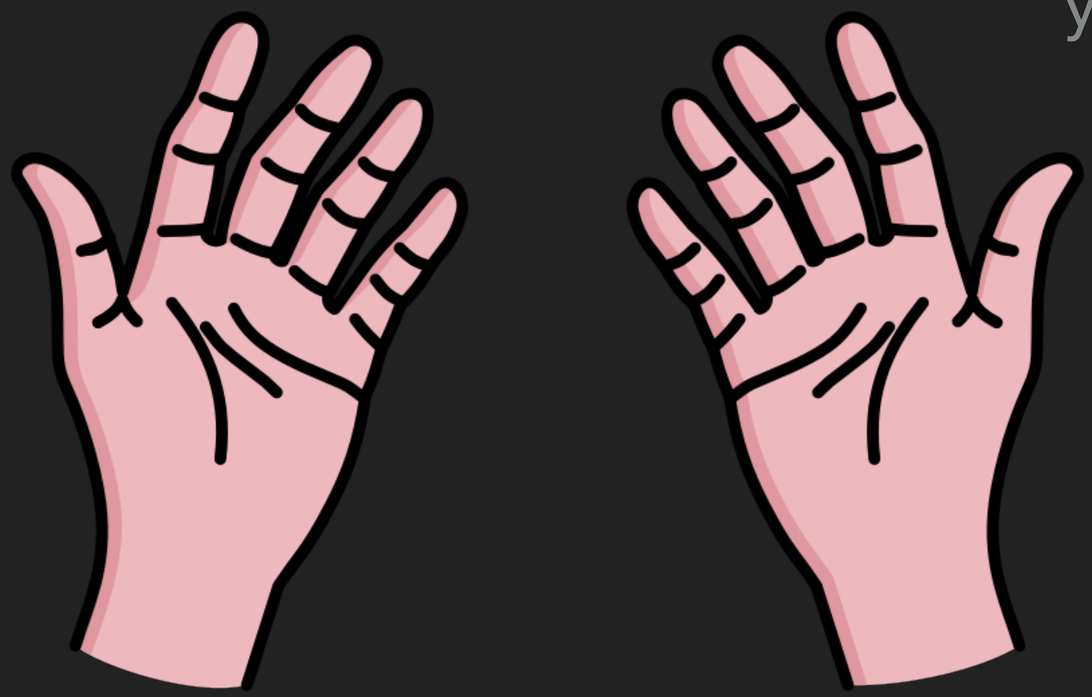
- What you see in a clear mirror doesn't look like an image of a human face, it looks like a human face
- If we take appearances at face value, we don't see mirror images
- Does this contradict optical theory? No. Geometrical optics offers a *model* of the visual world, instead of a description

LEFT/RIGHT REVERSAL

(A) WHY DO MIRRORS REVERSE RIGHT/LEFT
BUT NOT UP/DOWN?

(B) 

LEFT/RIGHT REVERSAL



- Ned Block: the relation between what you see in the mirror and your own face is like the relation between your left and right hand. They are enantiomorphs

Enantiomorphs are weird, but they don't privilege any axis as the weird one

Because we're so used to thinking of rotation as being along the vertical axis, mirrors *appear* to reverse left/right. But they don't really

LOCATION OF WHAT WE SEE

LOCATION OF WHAT WE SEE

- “What we see in the mirror appears to behind the mirror.”
  - If we see images, we get something right; if we see our own face, we get something wrong
- But typically mirrors are opaque. And they look opaque too! How can something appear to be behind something that looks to be an opaque object?

LOCATION OF WHAT WE SEE

- Response 1: The mirror doesn’t really appear opaque. Instead, mirrors appear, Lewis Carroll style, to be windows on a transparent mirror space.
- If that were the case, then our experience would be a much more magical illusion
- Response 2: The object does not appear to be behind the mirror

LOCATION OF WHAT WE SEE

- The optical model: what you see in the mirror is visible when you look in its direction. That's right. The object you see also appears to be visible in that direction. But this does not yet mean it also appears to be located somewhere in that direction. Apparent direction and apparent location can come apart
- This allows us to say that, at least typically, what you see in the mirror does not appear to be behind the mirror (it merely appears to be visible in that direction)

THE UPSHOT

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- What do we gain from having a better conceptual understanding of what mirrors do?
  - In part it will shed light on the uses of optical theory in theorising about visual perception, and on the fine-grained distinctions used to describe visual experience. That seems a useful result for psychology and vision science.
  - But perhaps it can also have a welcome disenchanting effect

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