

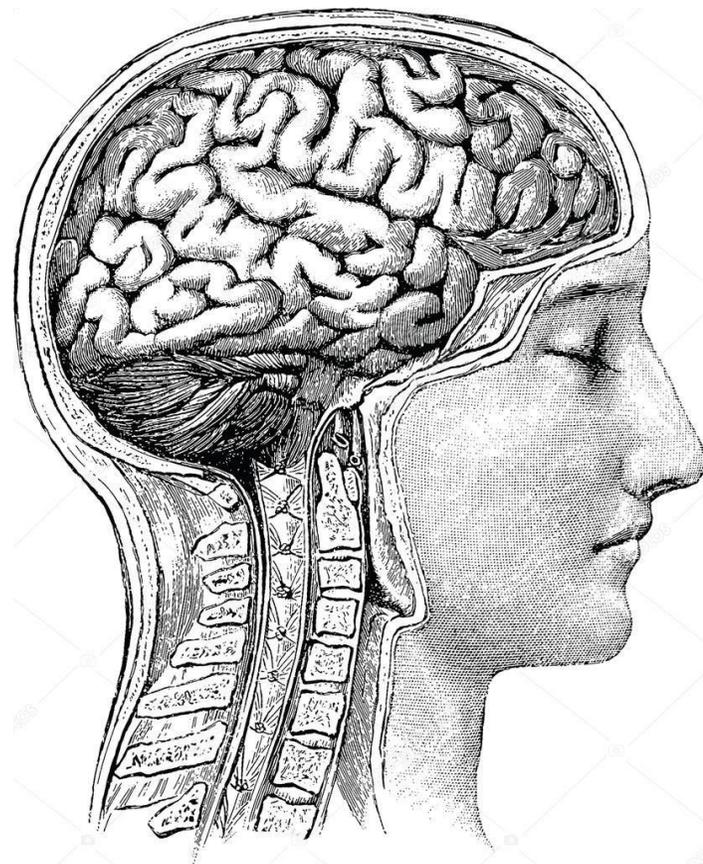
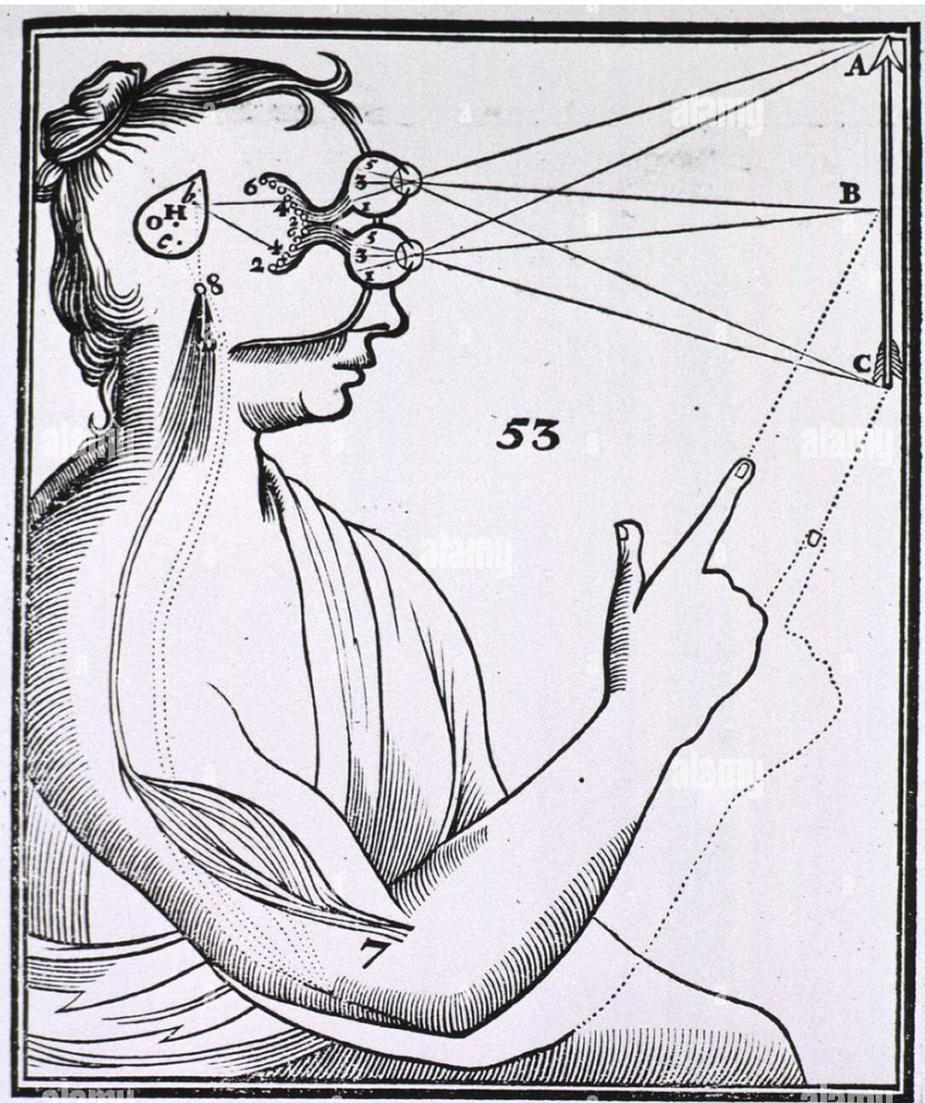
Percezione corticale:

come ricostruiamo la realtà combinando
vista e altri sensi

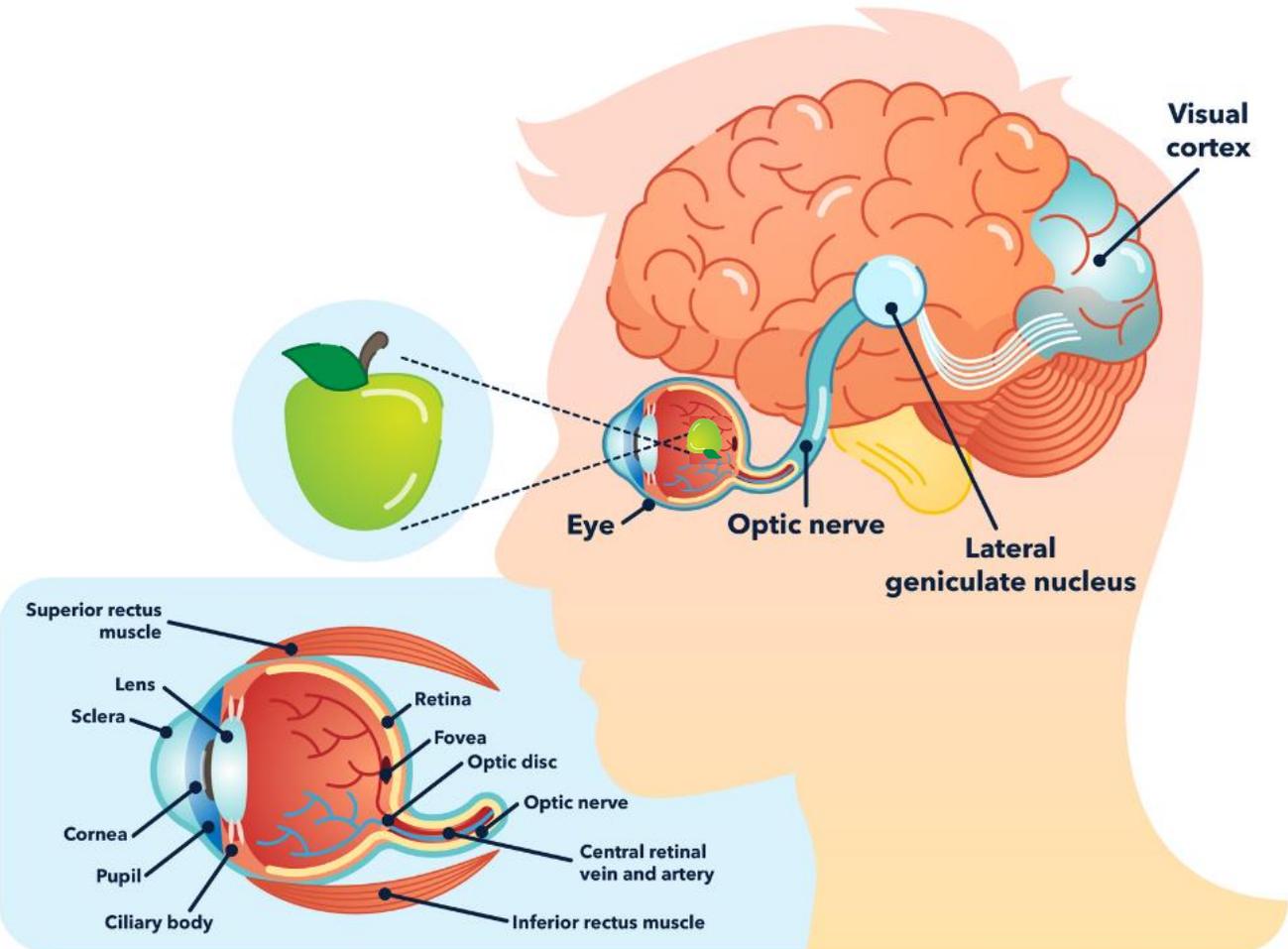
Valeria Peviani

Donders Institute for Brain, Cognition and Behavior
Radboud University, Nijmegen, The Netherlands

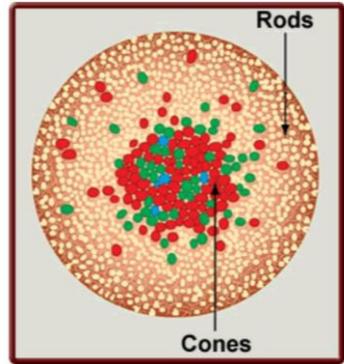
Max Planck Institute, Frankfurt am Main, Germany



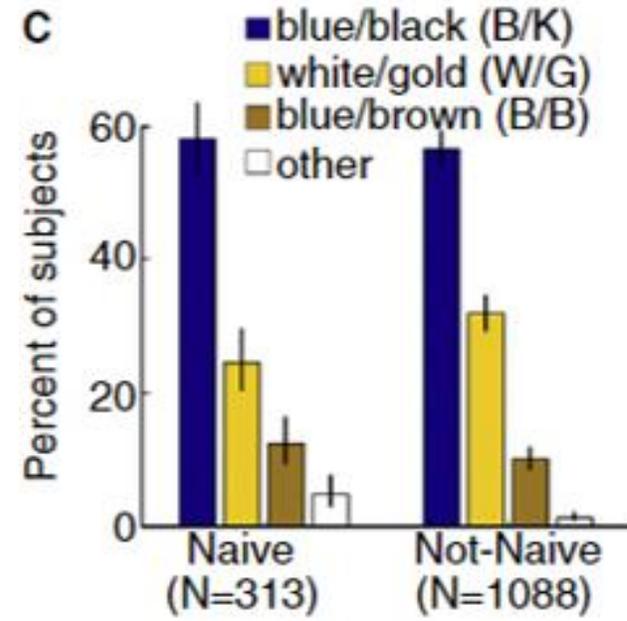
La vista

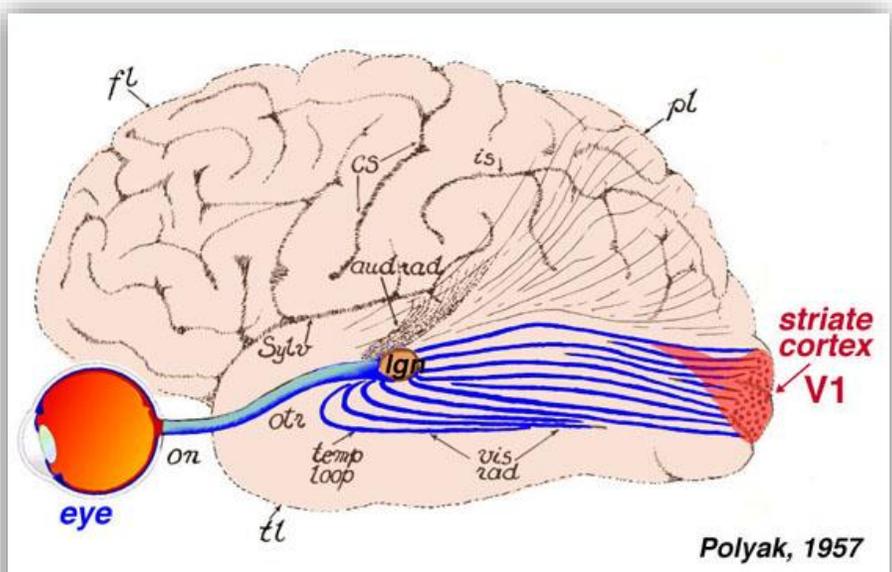
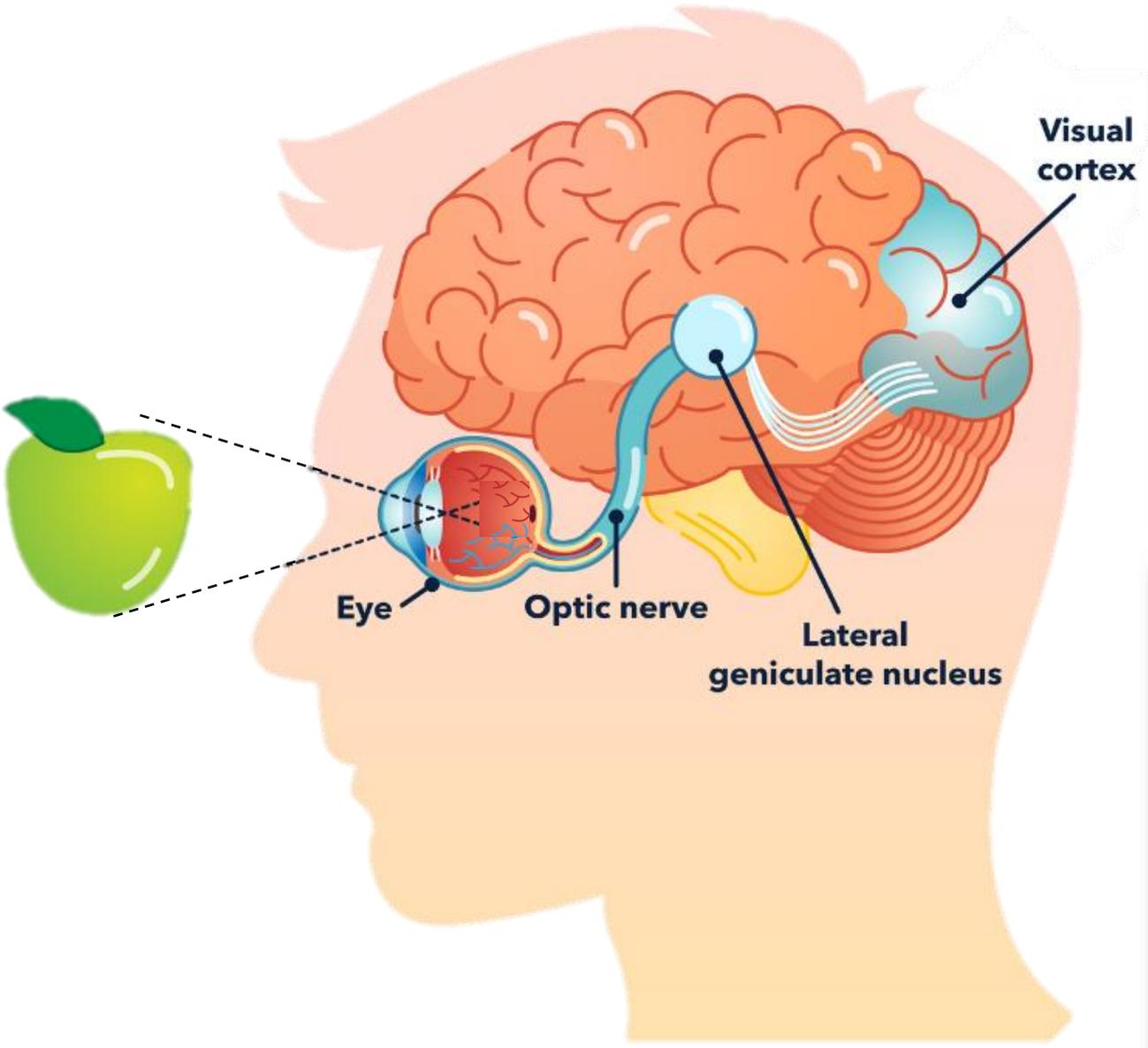


RETINA



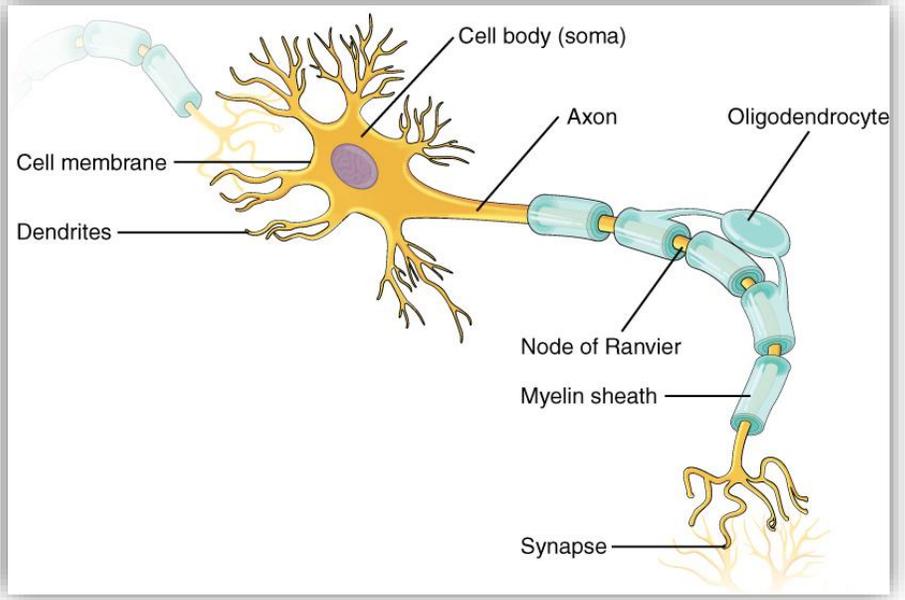




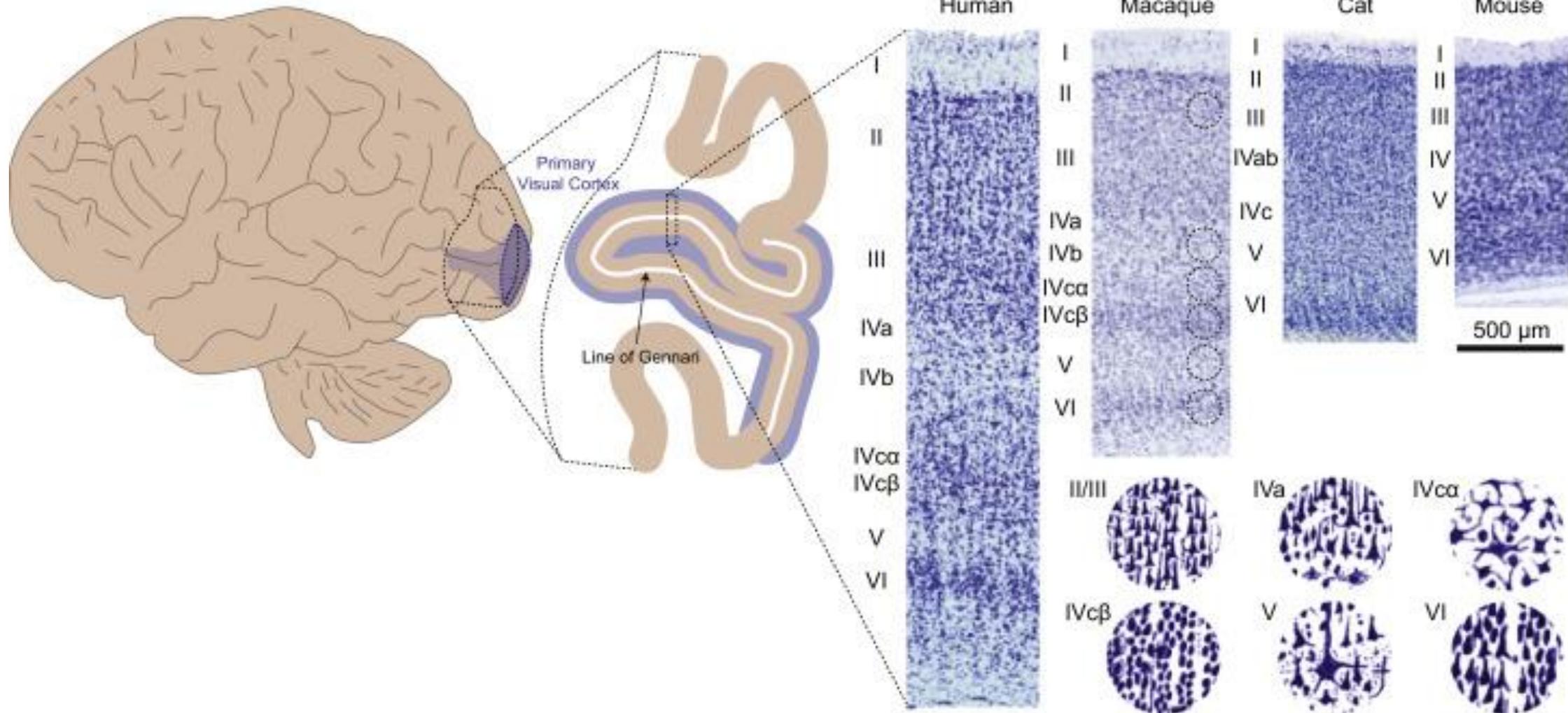


Polyak, 1957

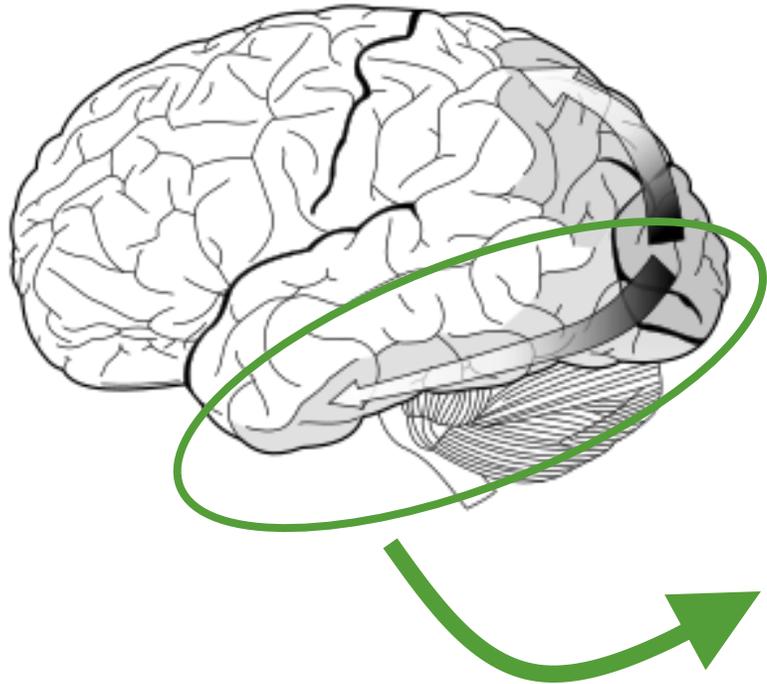
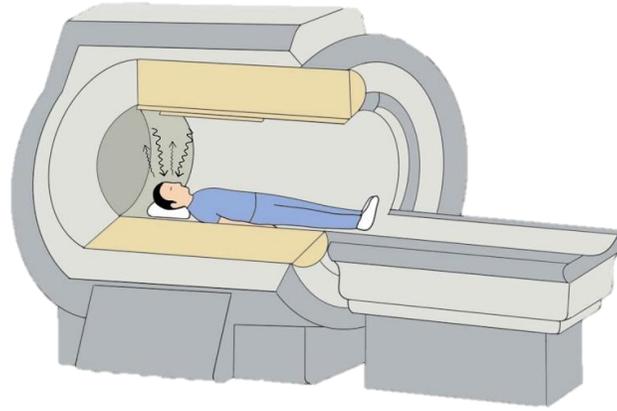
Figure 8. Visual input to the brain goes from eye to LGN and then to primary visual cortex, or area V1, which is located in the posterior of the occipital lobe. Adapted from Polyak (1957).



La corteccia visiva (V1)

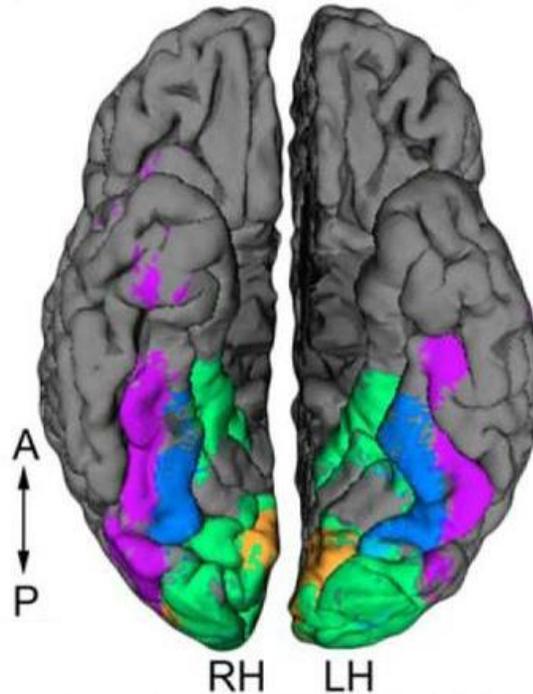


“Cosa” vedo



Stream Ventrale

Milner & Goodale, 1995



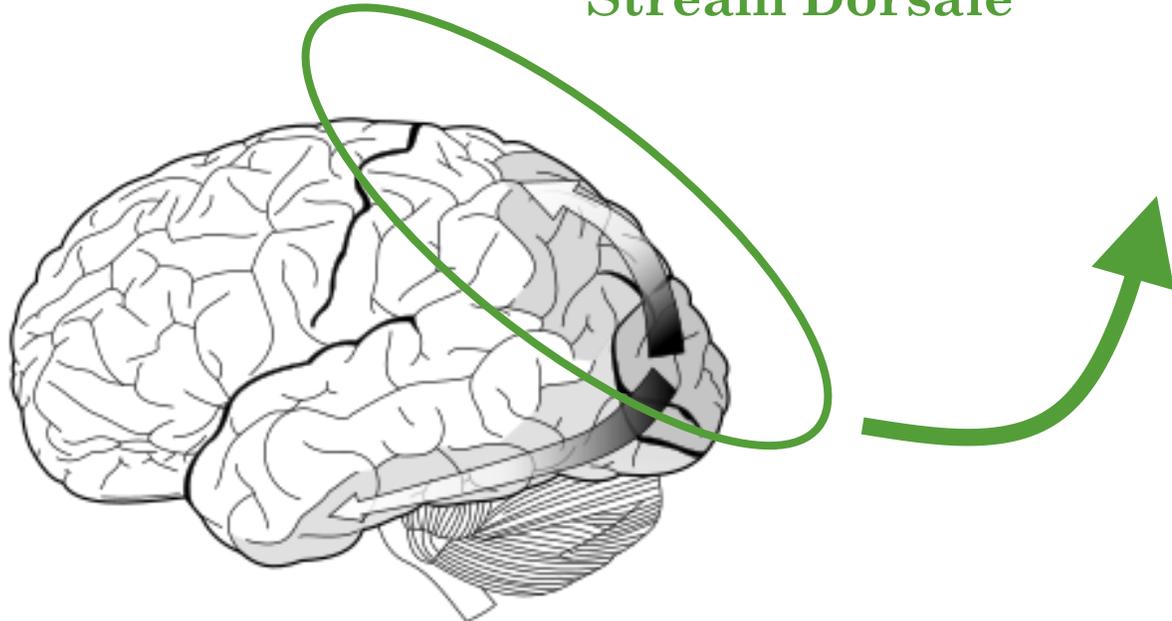
- faces
- color
- places
- fa. & pl.
- fa., pl., & col.



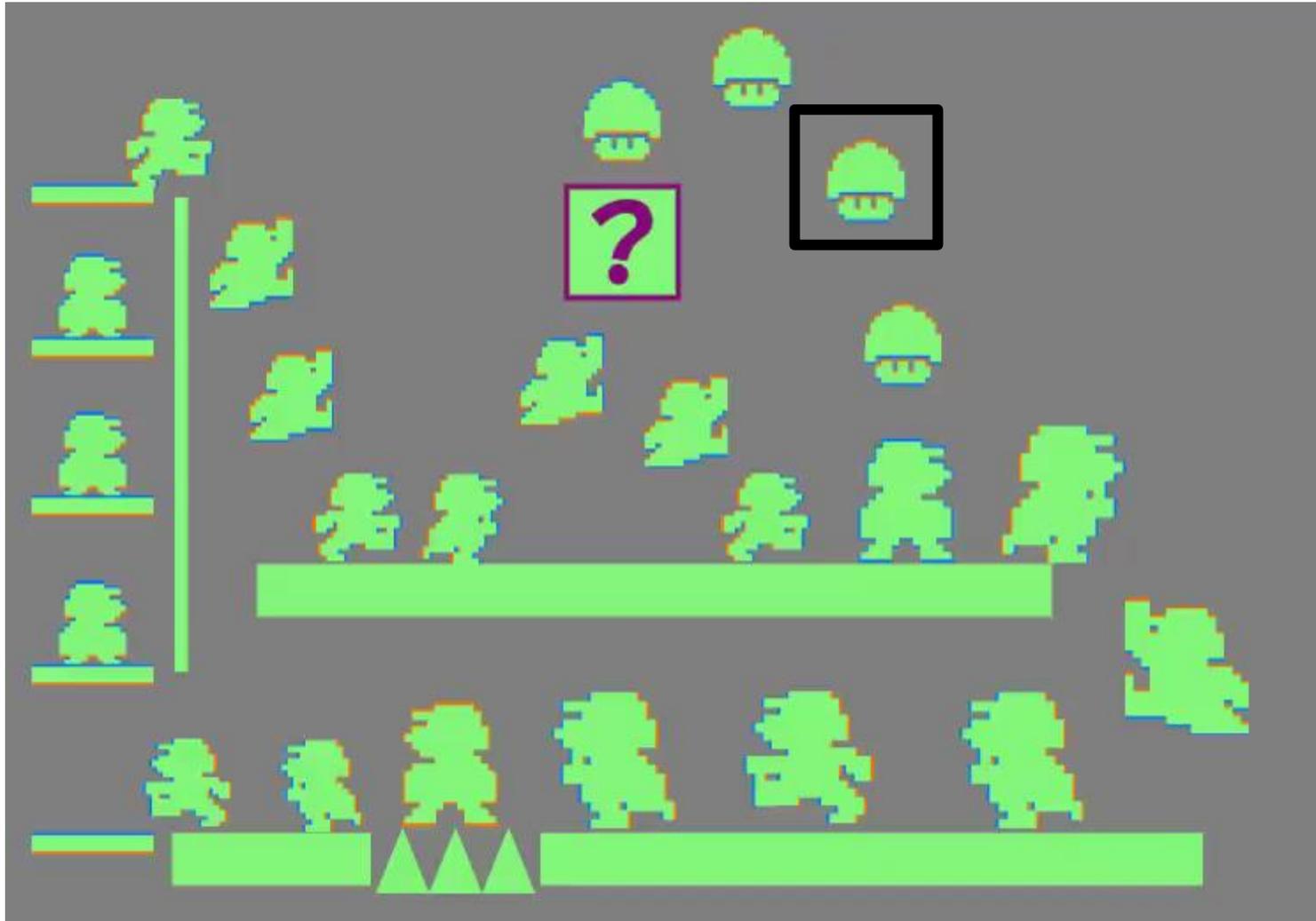
Lafer-Sousa, et al., 2016
Conway, 2018

“Dove” lo vedo

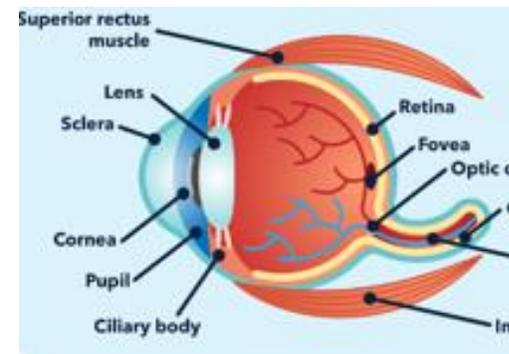
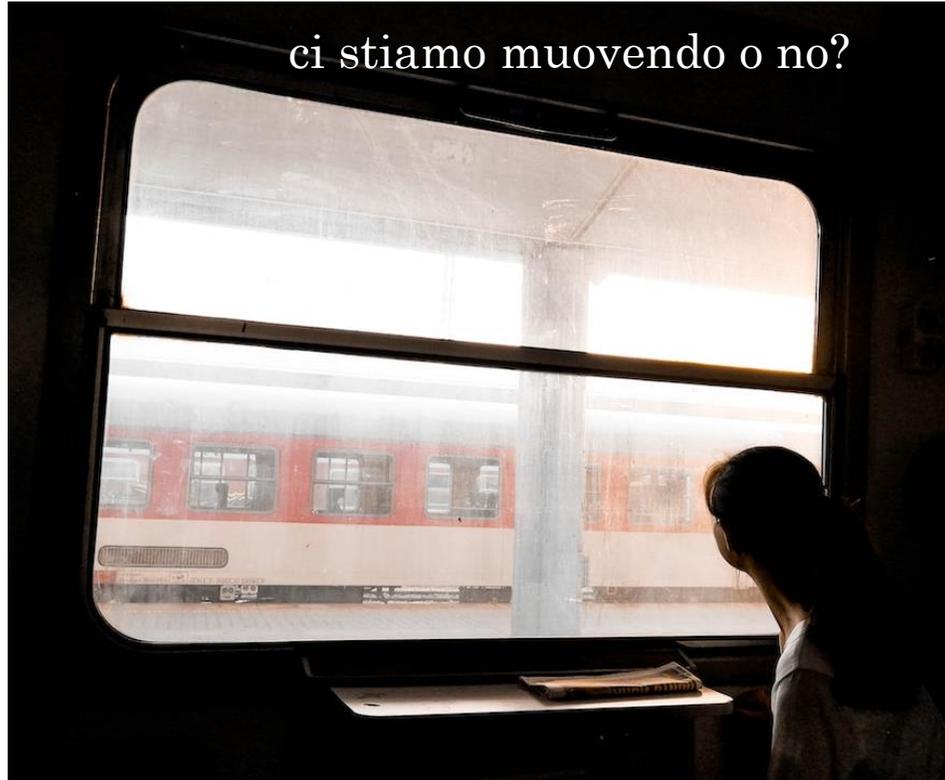
Stream Dorsale



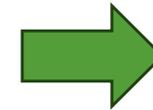
... per fare inferenze



... utilizzando
tutti i sensi a
disposizione



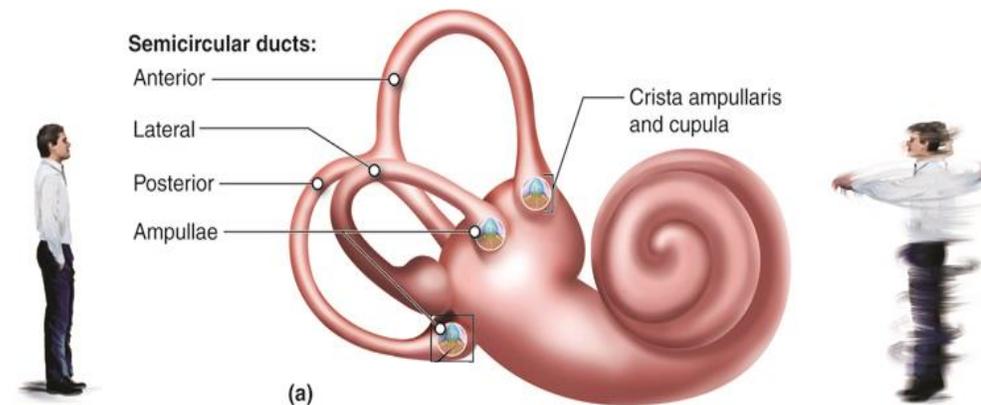
Visual signals



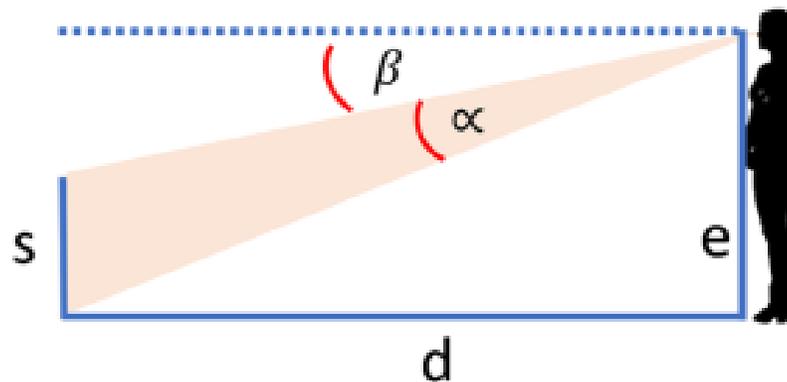
Vestibular signals

I segnali sono integrati
per formulare e
aggiornare inferenze
sullo stato piú probabile
del mondo

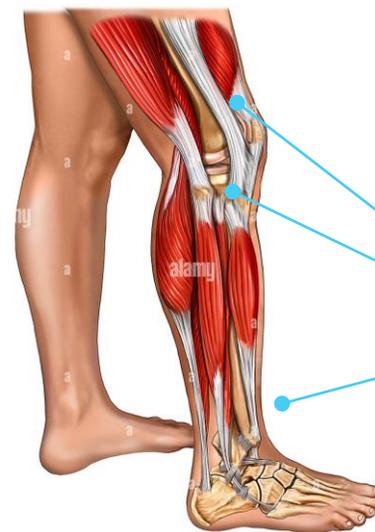
SISTEMA VESTIBOLARE



L'integrazione multisensoriale é necessaria



$$\text{Physical size (m)} = -\tan\left(90^\circ - \arctan\left(\frac{\text{distance}}{\text{eyeheight}}\right) - \text{retinal size}\right) * \text{distance} + \text{eyeheight} \quad (3)$$



PROPRIOCEZIONE

Recettori sensoriali in:

- Fibre muscolari
- Giunture
- Tendini

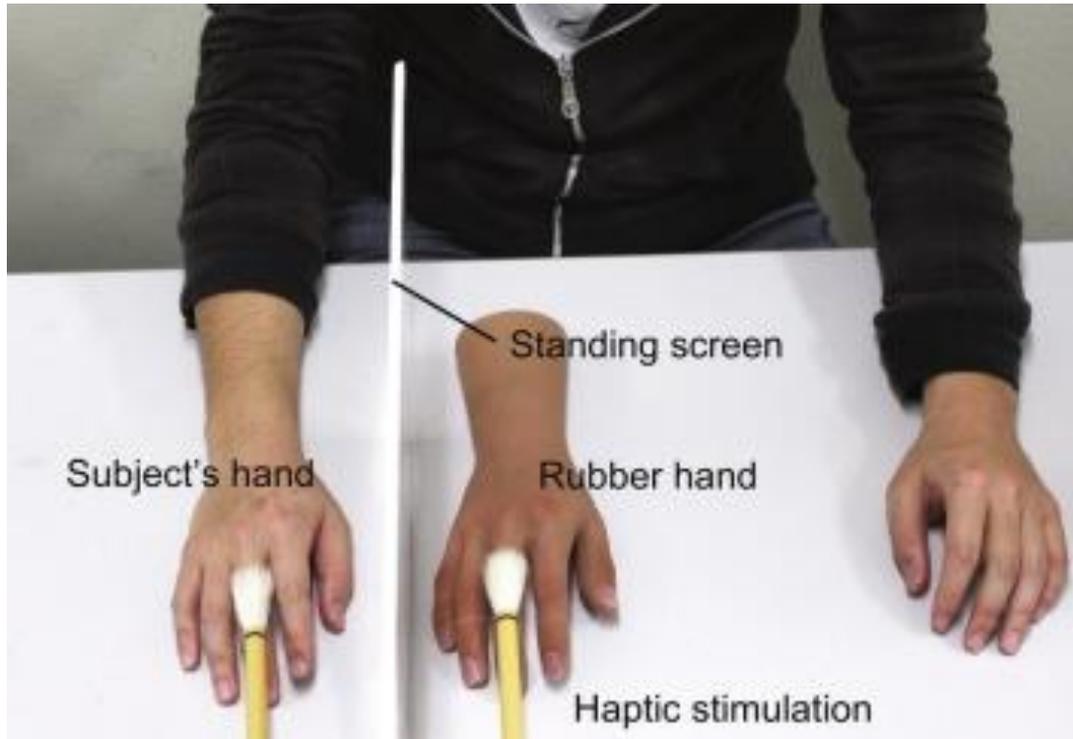
Scientific Correspondence | [Published: 19 February 1998](#)

Rubber hands 'feel' touch that eyes see

[Matthew Botvinick](#) & [Jonathan Cohen](#)

[Nature](#) **391**, 756 (1998) | [Cite this article](#)

60k Accesses | **2675** Citations | **341** Altmetric | [Metrics](#)



Touch 'felt'

Touch 'seen'



Se questi segnali sono in sincronia temporale, il cervello deduce che sono causati dallo stesso evento

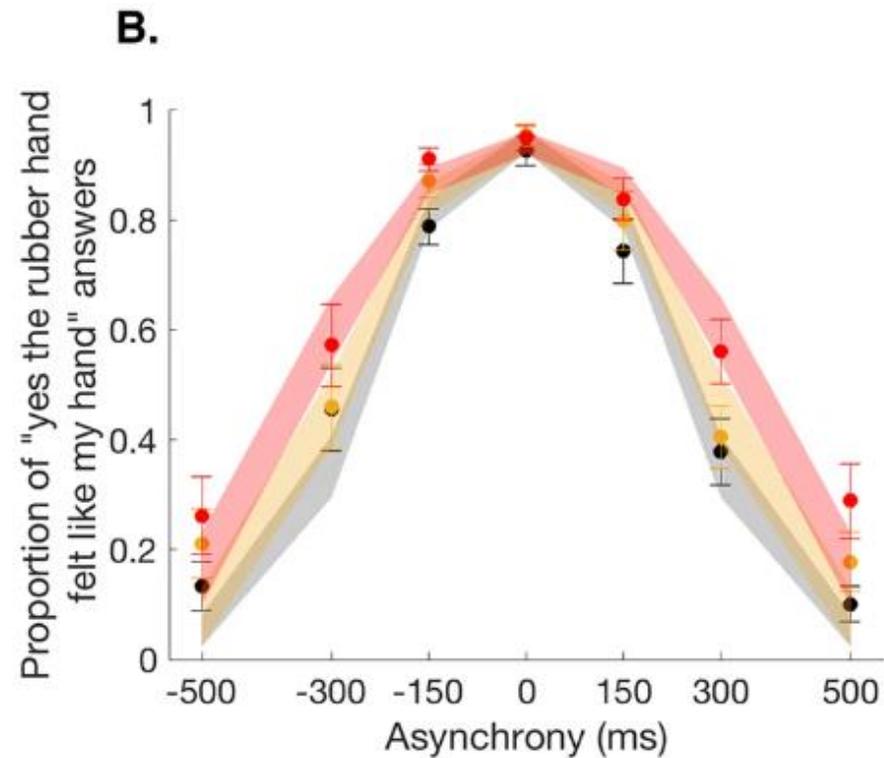
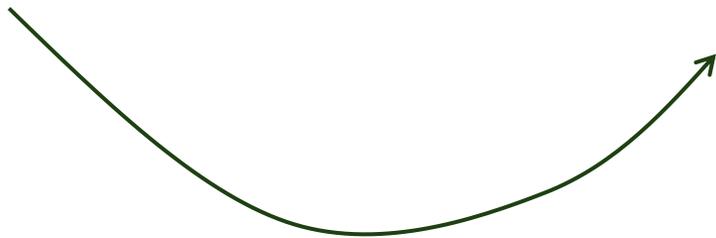
Uncertainty-based inference of a common cause for body ownership

Marie Chancel^{1*}, H Henrik Ehrsson^{1†}, Wei Ji Ma^{2†}

¹Department of Neuroscience, Karolinska Institutet, Stockholm, Sweden; ²Center for Neural Science and Department of Psychology, New York University, New York, United States

Il cervello calcola la probabilità che i segnali abbiano la stessa causa ($C = 1$), in base alla natura dei segnali stessi v e t (es. sincronia, precisione)

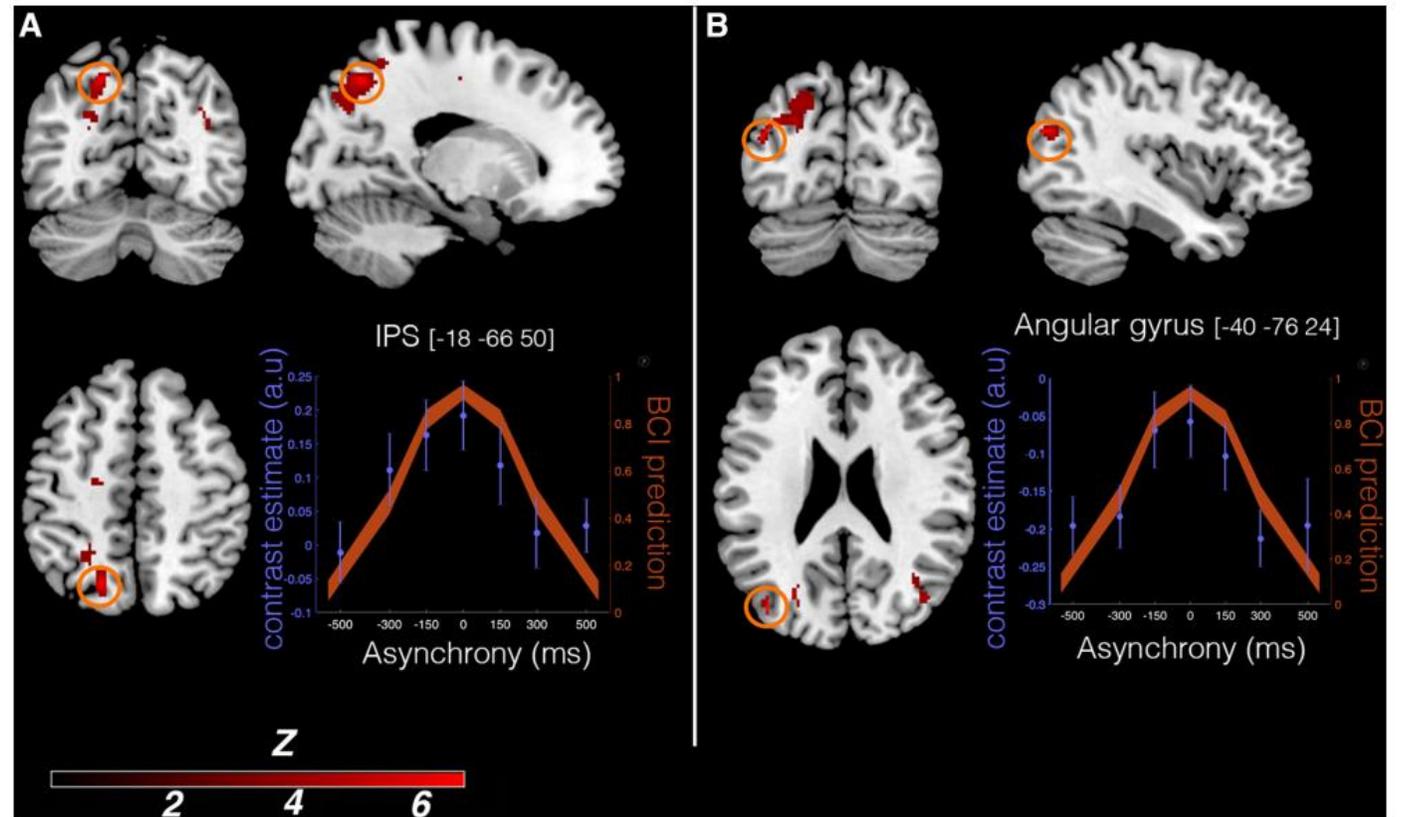
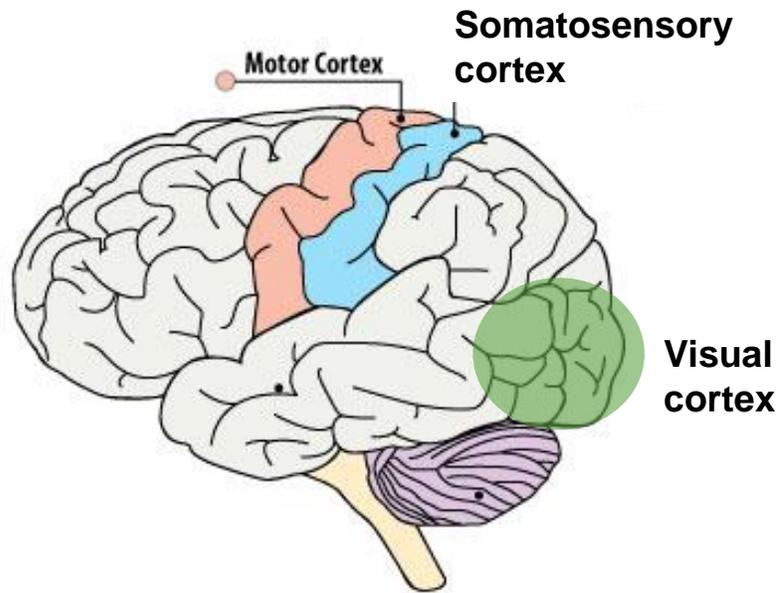
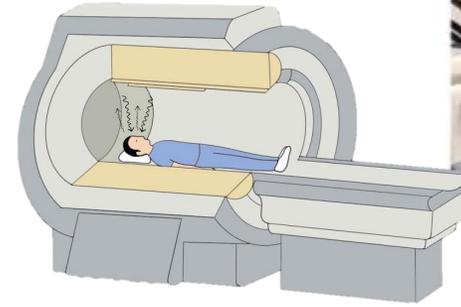
$$p(C = 1 \mid v, t)$$



Causal Inference of Body Ownership in the Posterior Parietal Cortex

Marie Chancel, Heather Iriye, and H. Henrik Ehrsson

Department of Neuroscience, Karolinska Institutet, SE-17177 Stockholm, Sweden



Grazie