

Des illusions aux hallucinations visuelles: une porte sur la perception

Laurent Perrinet



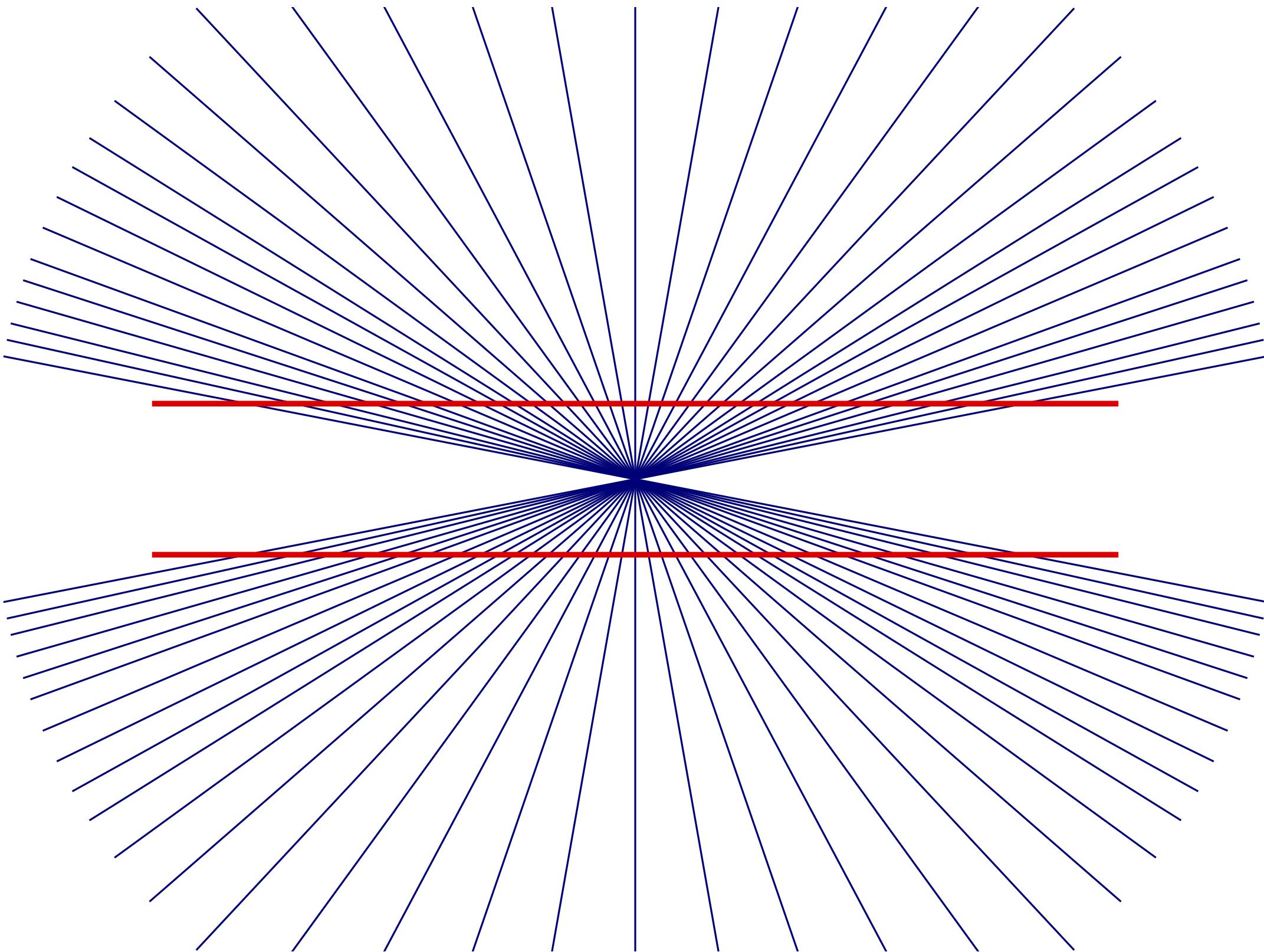
JNLF 2019, 18/4/2019

Acknowledgements:

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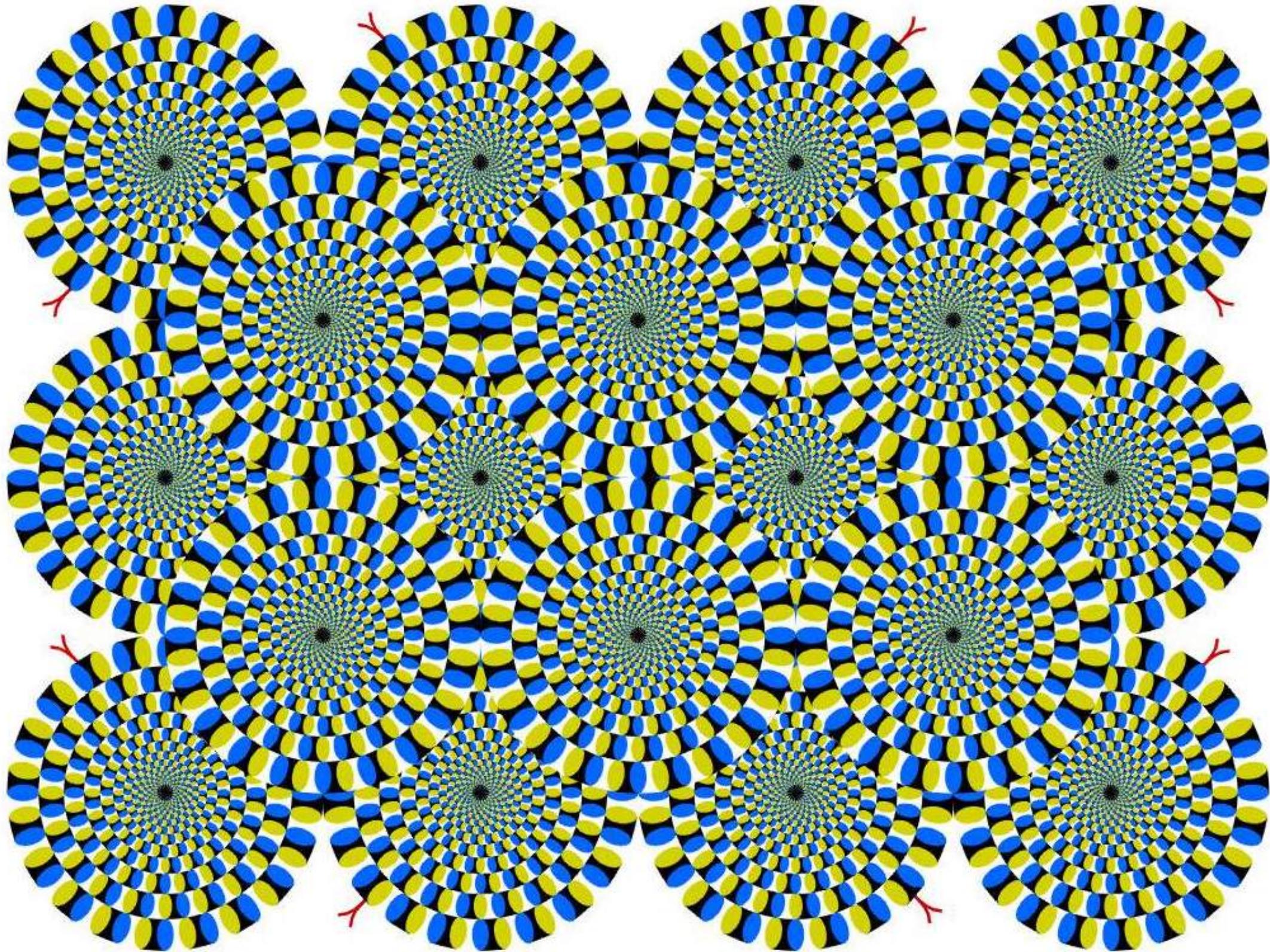
This work was supported by ANR project "Horizontal-V1" N° ANR-17-CE37-0006.



Hering illusion



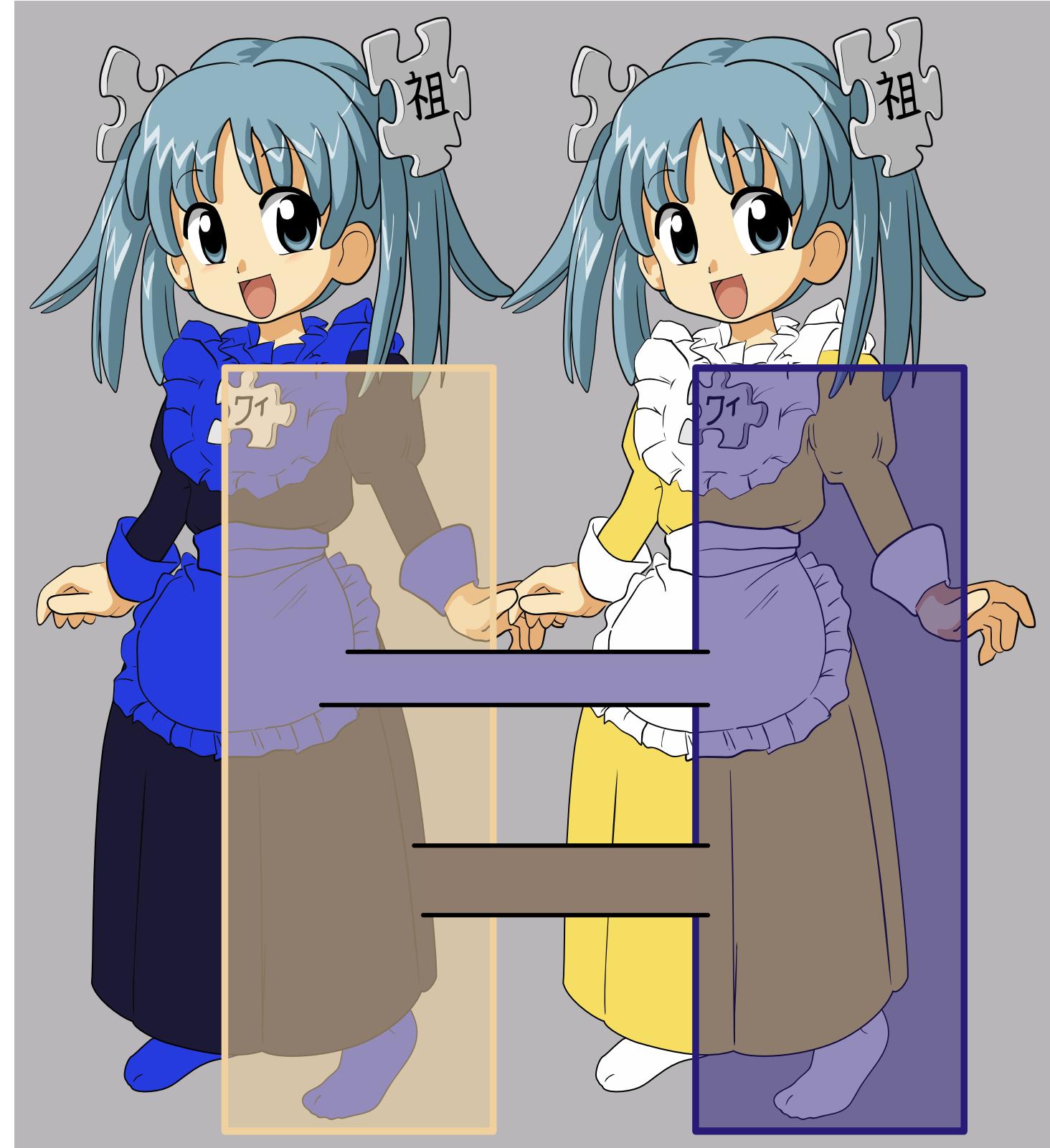
Hering illusion



Rotating Snakes - Akiyoshi KITAOKA



#TheDress: #whiteandgold or #blackandblue ?



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Paréidolie



Cydonia Mensae (1976) *Viking Orbiter image*

Paréidolie



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Paréidolie



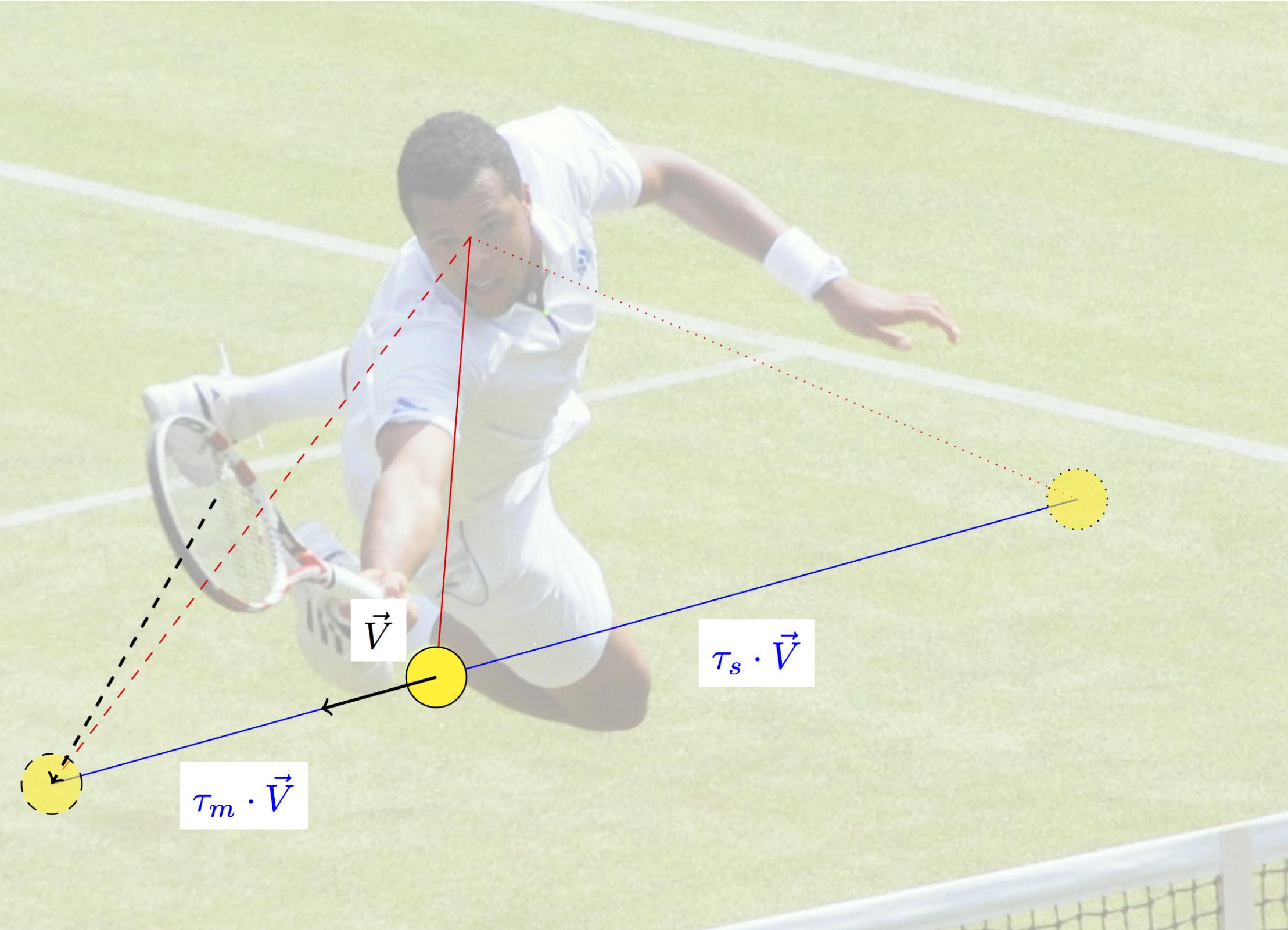
Cydonia Mensae (1976) *Viking Orbiter image*

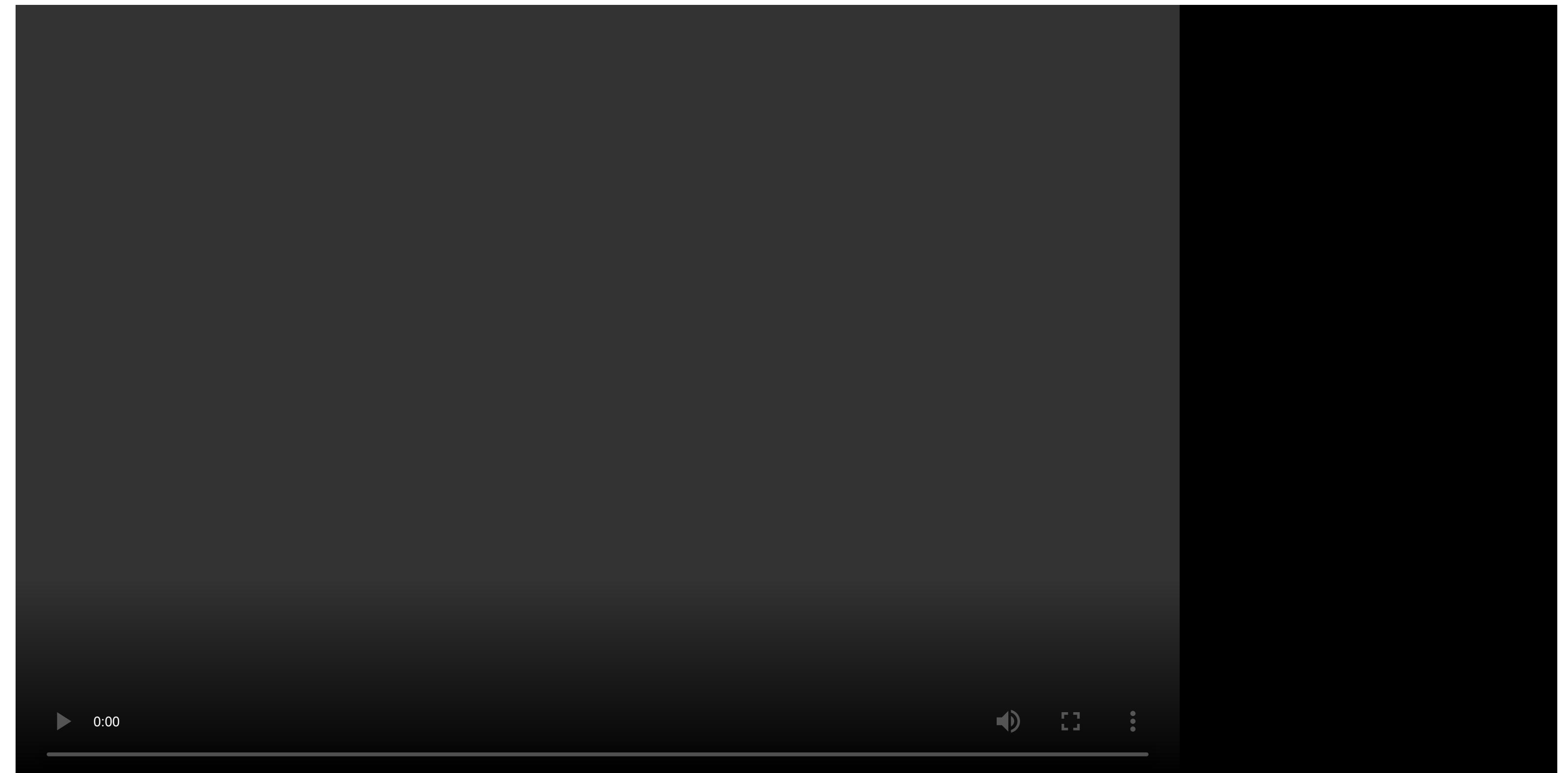
Outline

1. Illusions visuelles & hallucinations
2. Coute que coute, prédire le présent
3. Une neuro-anatomie fonctionnelle des illusions & hallucinations?

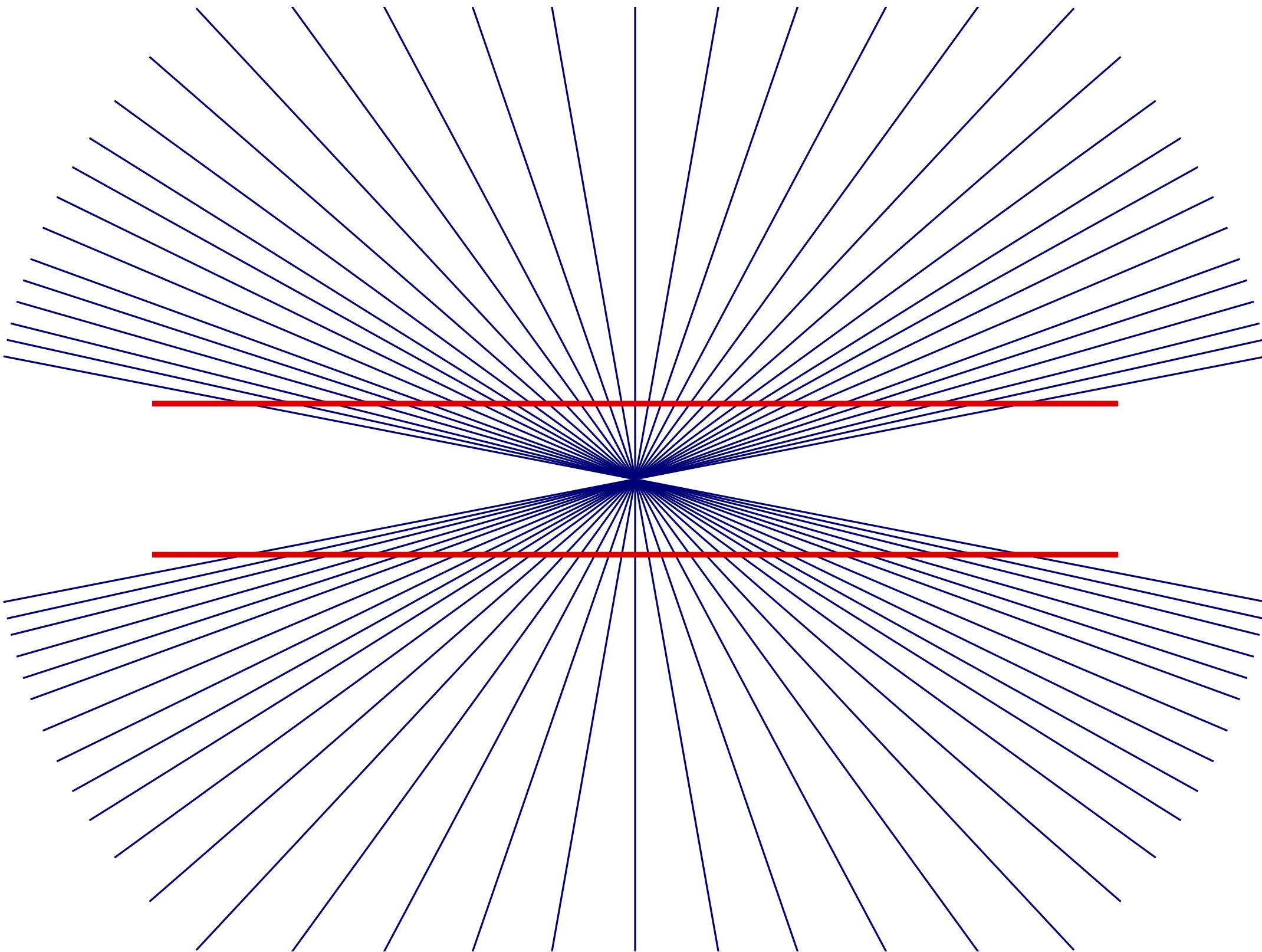
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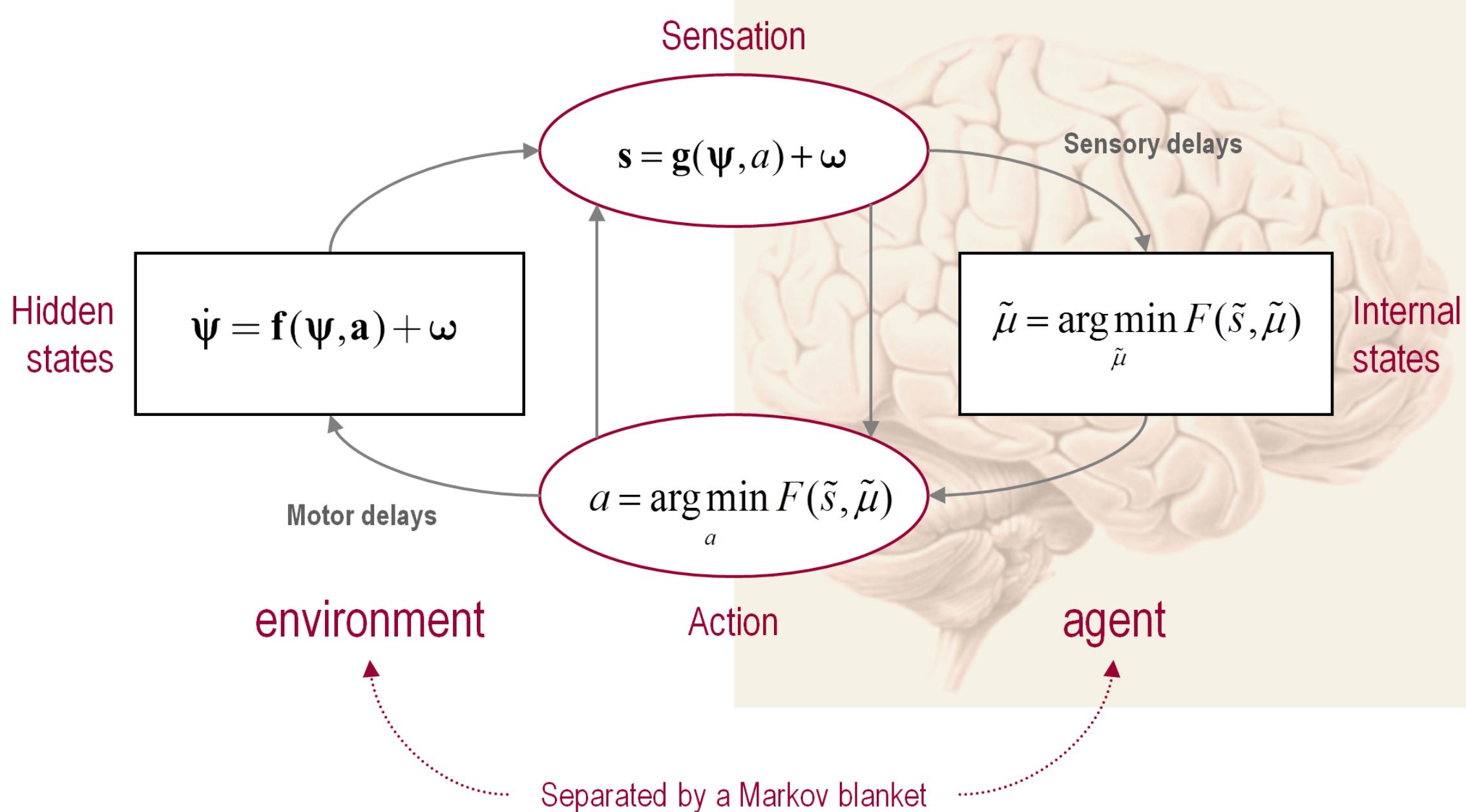




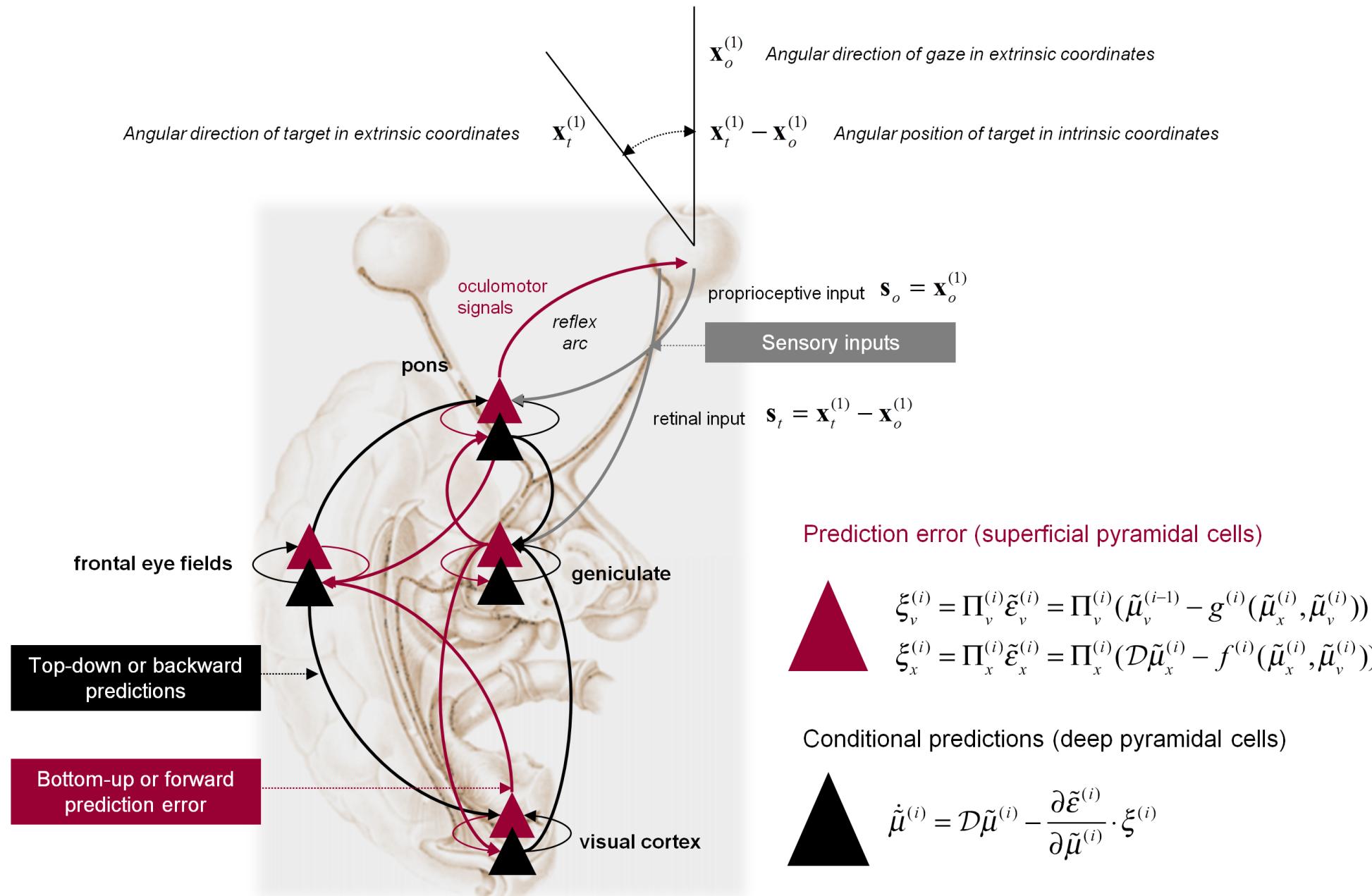
Khoei, Masson and LP (2017) *PLoS CB*



Changizi et al (2008) Cognitive Science



Friston , Adams, LP and Breakspear (2012) *Frontiers in Psychology*
 Adams, LP and Friston (2012) *PLoS ONE*
 LP, Adams and Friston (2015) *Biological Cybernetics*



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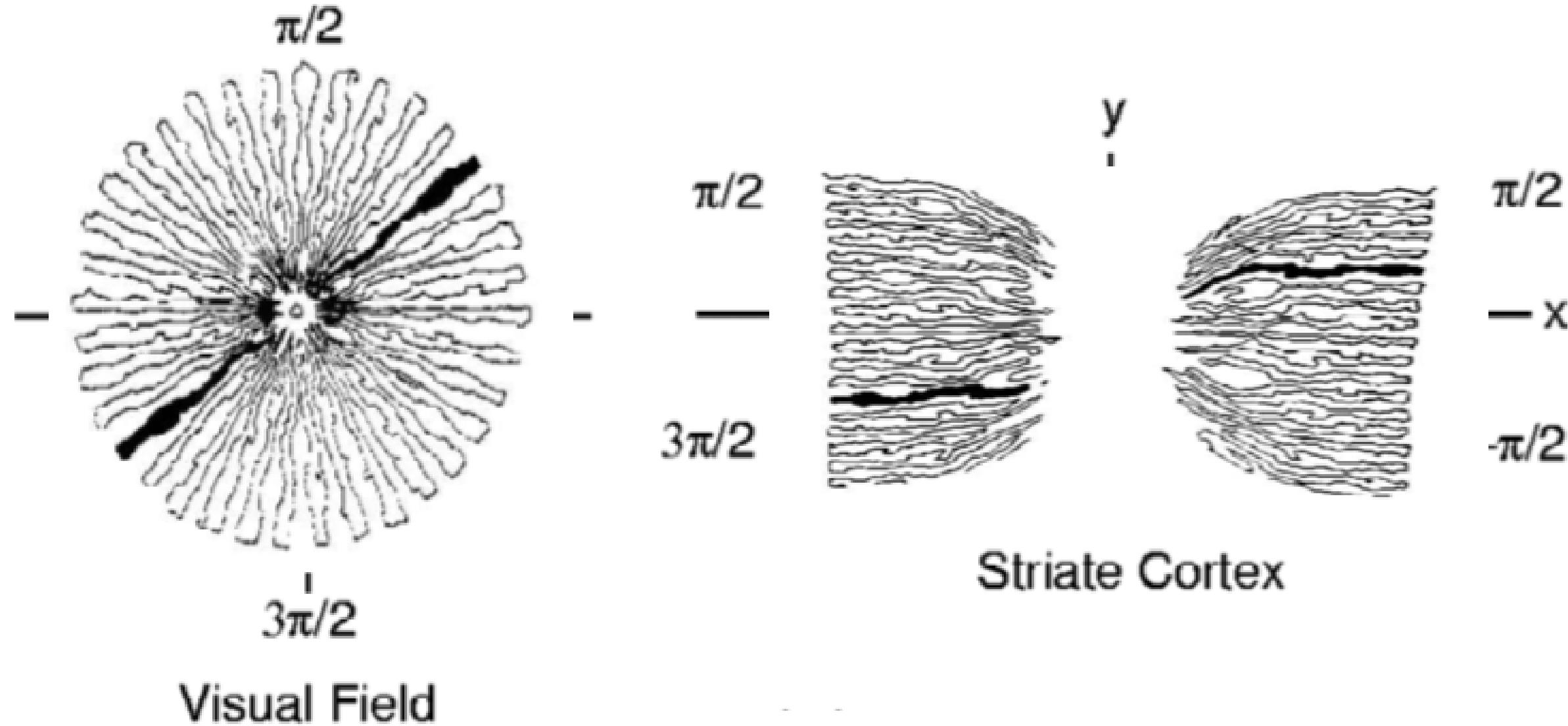


Figure 2: (a) Retino-cortical transform. Logarithmic spirals in the visual field map to straight lines in V1. (b, c) The action of the map on the outlines of funnel and spiral form constants.

Bressloff et al (2002) *Neural Computation*

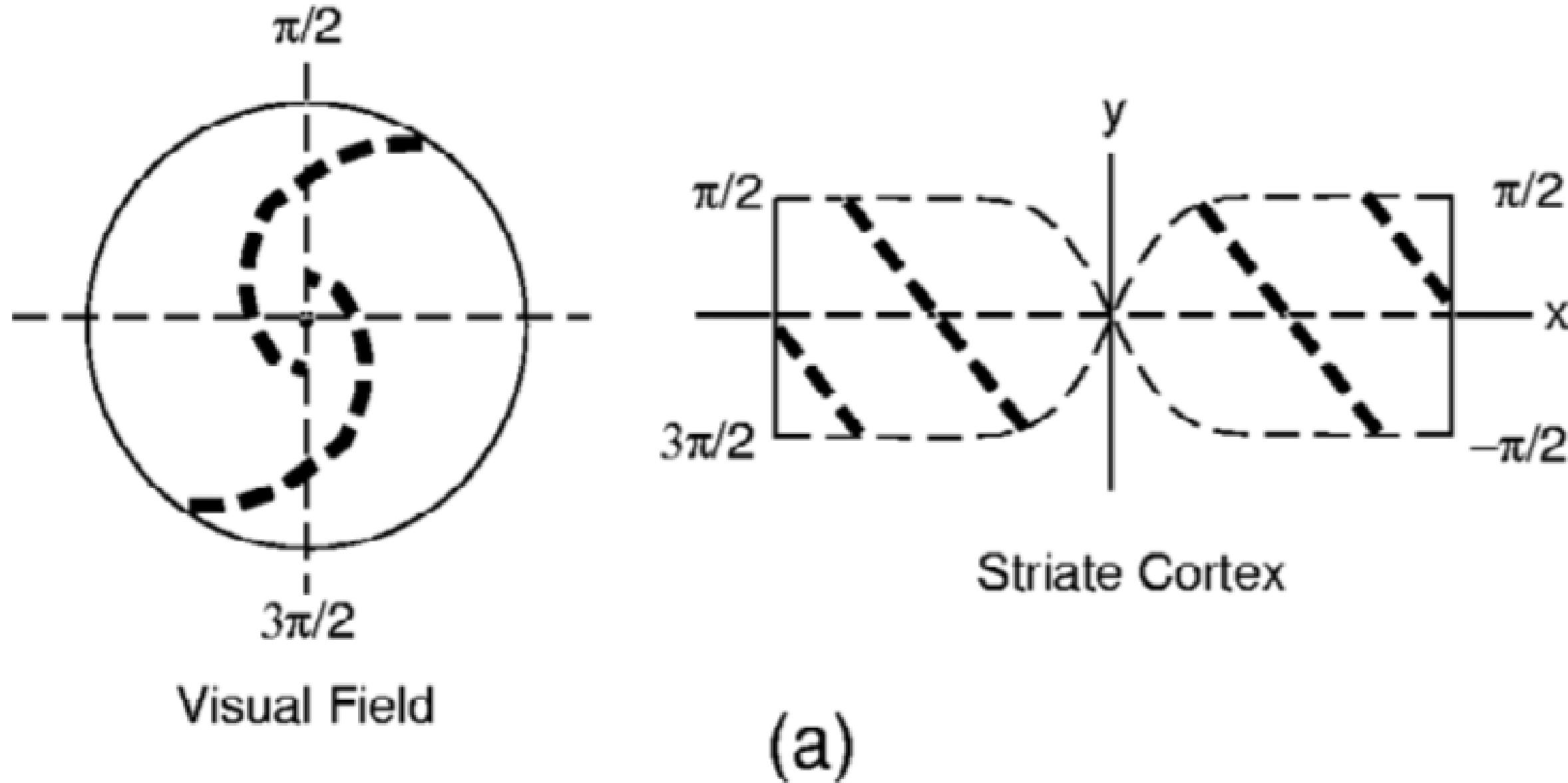


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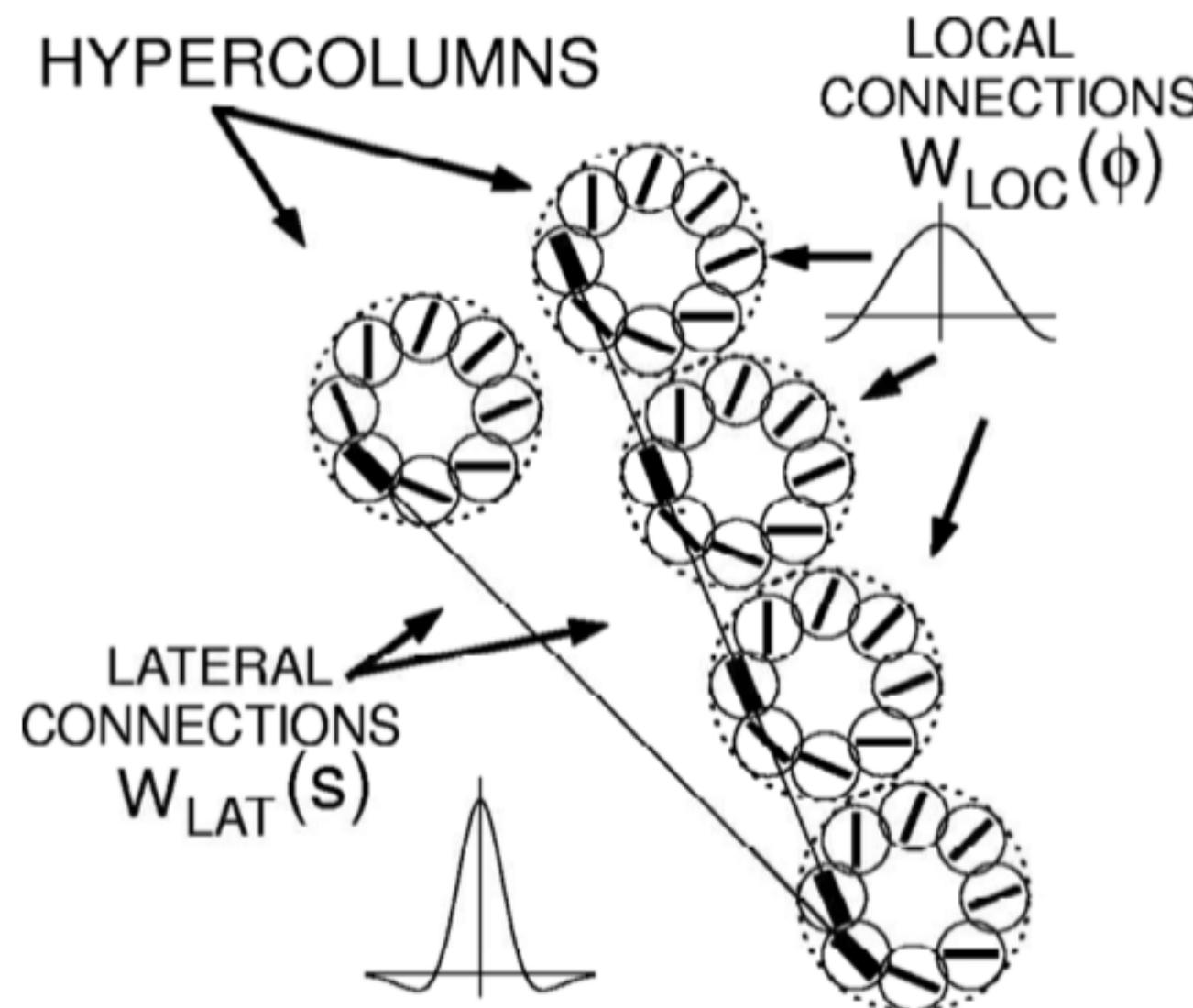
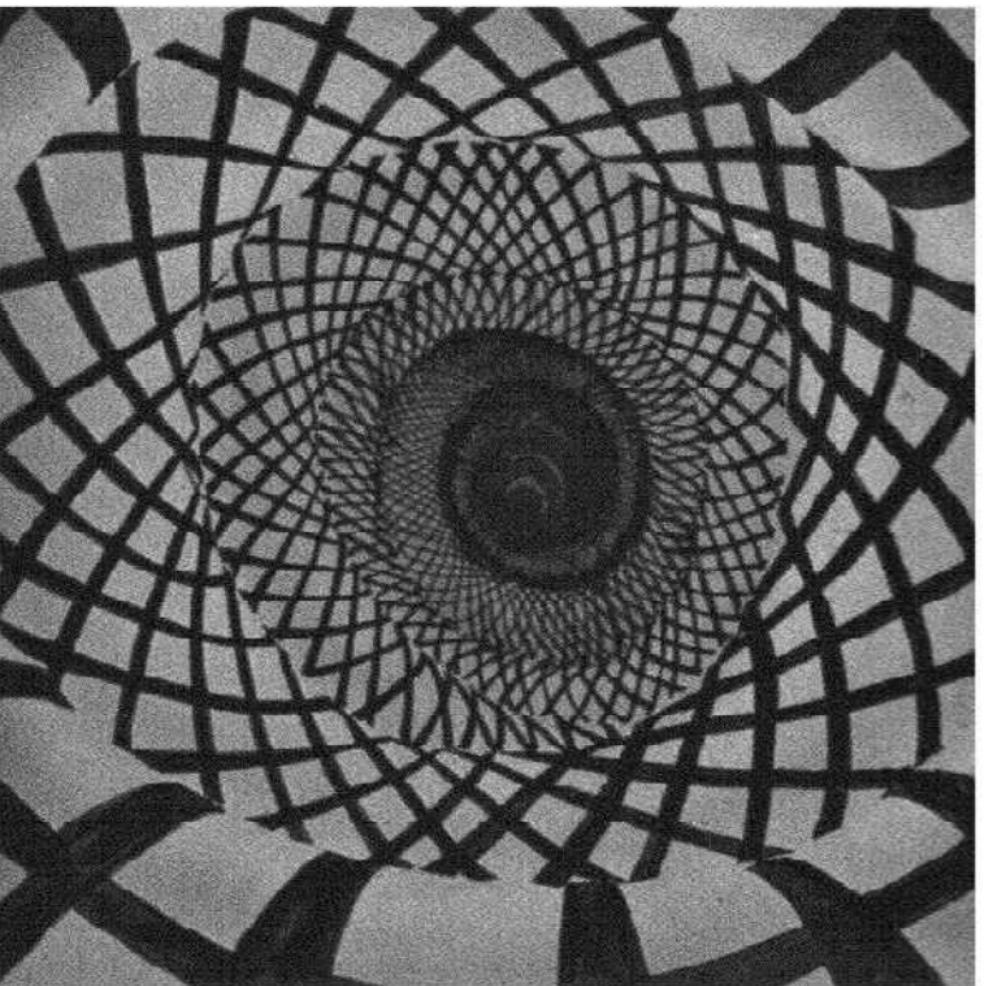
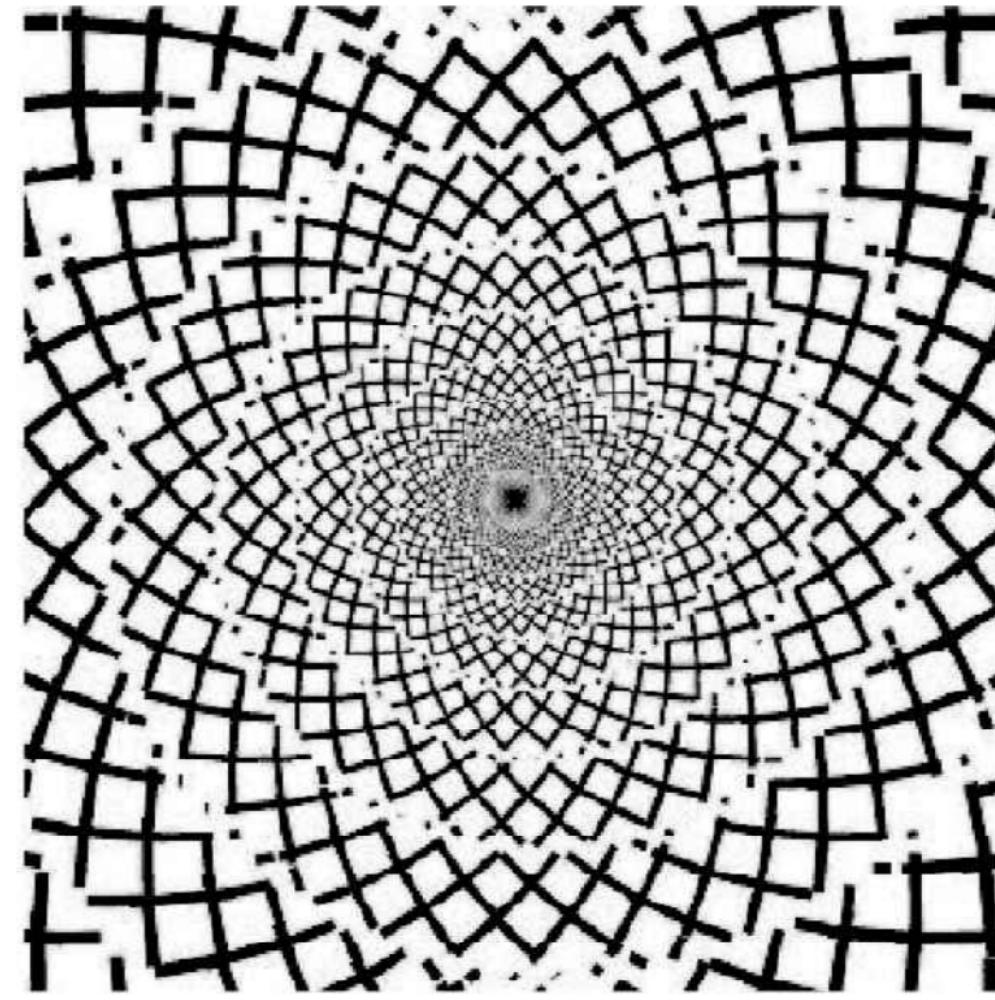


Figure 3: Outline of the architecture of V1 represented by equation 1.2. Local connections between iso-orientation patches within a hypercolumn are assumed to be isotropic. Lateral connections between iso-orientation patches in different hypercolumns are assumed to be anisotropic.



(a)



(b)

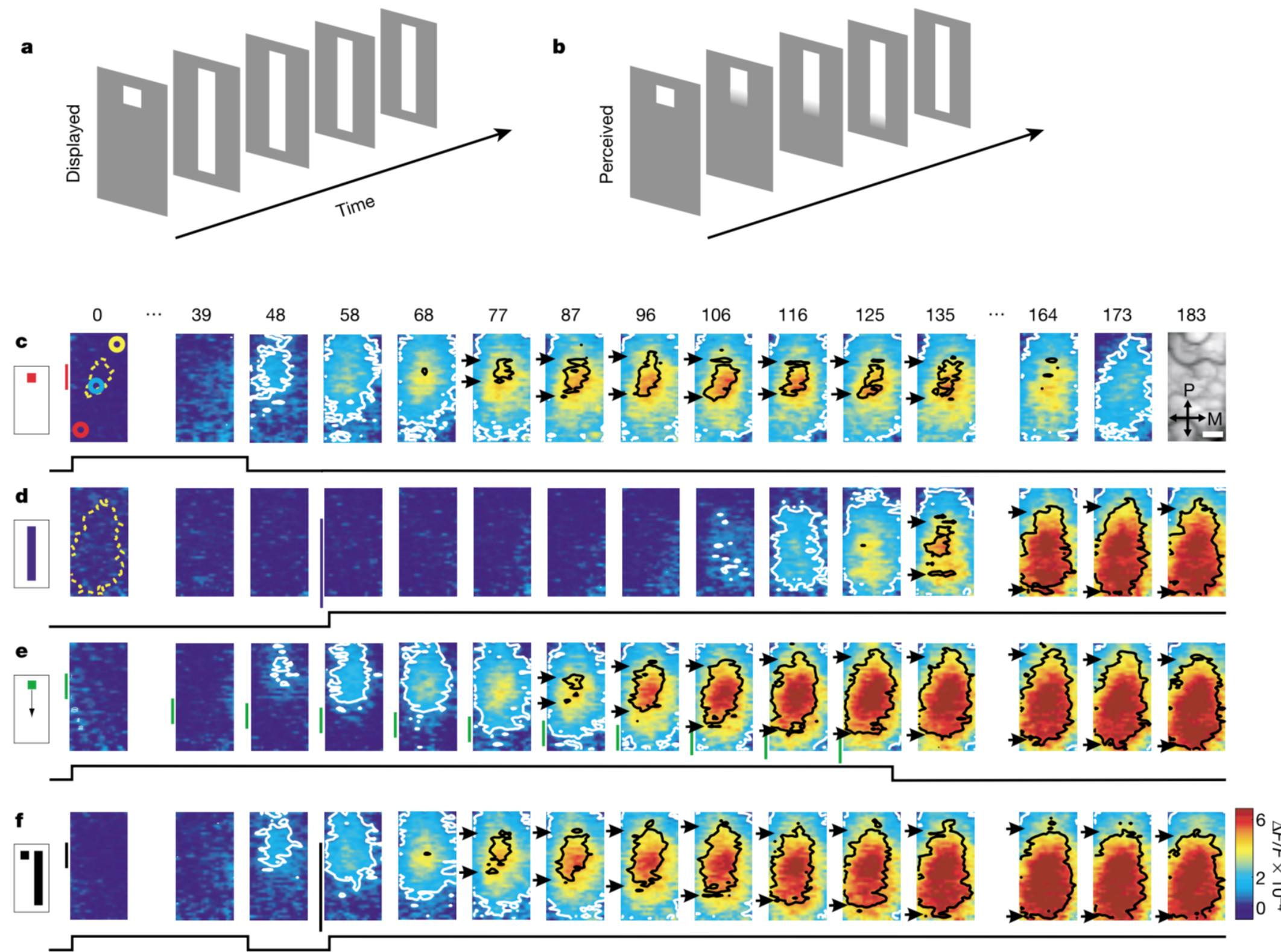
Figure 7: (a) Lattice tunnel hallucination seen following the taking of marijuana (redrawn from Siegel & Jarvik, 1975), with the permission of Alan D. Iselin. (b) Simulation of the lattice tunnel generated by an even hexagonal roll pattern on a square lattice.



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Une neuro-anatomie fonctionnelle des illusions & hallucinations?

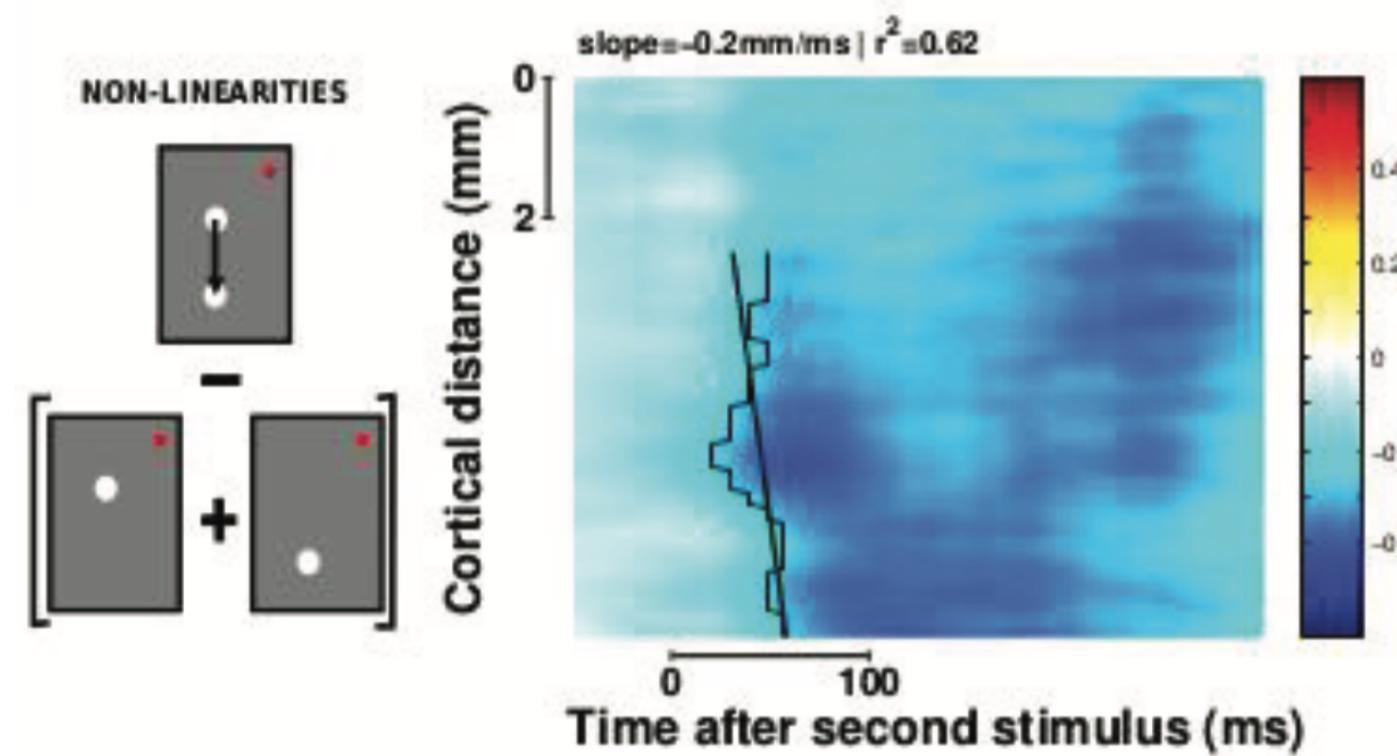
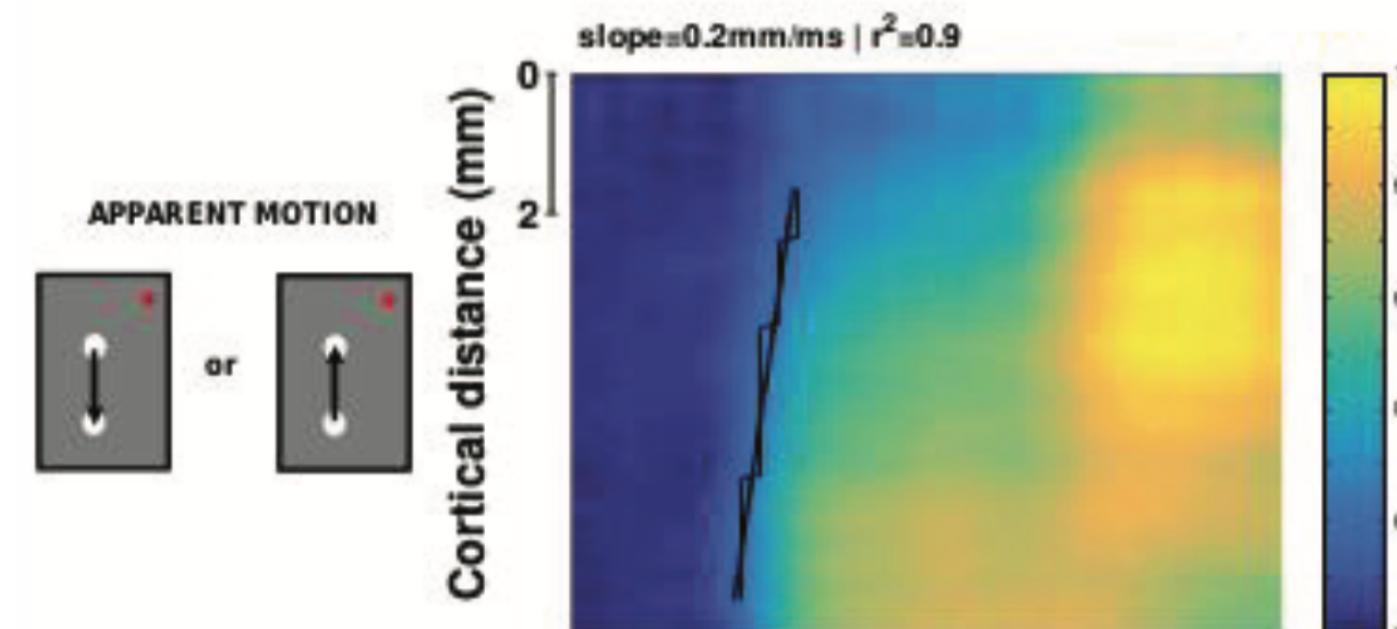




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<https://laurentperrinet.github.io/talk/2019-04-18-jnlf>