**Hippocampal spatial view cells, place cells, and concept cells: view representations**

**Supplementary Material**

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This file contains a high resolution version of Fig. 2 from the paper. Clicking on Acuity5.pdf below should open a high resolution version of Fig. 2, which can then be expanded to show that image ‘b. The visible image to humans’ allows identification of small items close to the fovea sufficient, for example, for face recognition. For comparison image ‘c. The visible image to rodents’ has insufficient resolution for recognition of items such as faces in scenes. This is one of the ponts made in the paper.



Fig. 2. Illustration of how the world is seen differently in terms of their contrast sensitivity functions (Haun, 2021) by rodents and primates including humans. (a) The unfiltered image which has 4096x4096 pixel resolution (made from <https://upload.wikimedia.org/wikipedia/commons/6/6a/>). The fixation point is just above the head of the man with the white shirt, and the eccentricity in degrees of different parts of the scene is indicated by the scale for the circles. (b) How the scene might appear to a human with a visual acuity of 60 cycles/° at the fovea decreasing rapidly at first to approximately 1.5 cycles/° at 90°. Note that in humans and other primates with forward facing eyes little can be seen beyond 90° of eccentricity from the fovea, which is indicated by the darker region in Fig. 2. (A macaque has a visual acuity of approximately 54 cycles/° at the fovea (Rolls & Cowey, 1970; Srinivasan, Carlo, & Stevens, 2015).) The image is available in the Supplementary Material as Acuity5.pdf, and inspection shows that the resolution of the filtered image at the fovea is sufficient for face recognition. (c) How the scene might appear to a mouse with visual acuity of approximately 0.5 cycles/°, decreasing to approximately half this at 135° of eccentricity (Prusky, West, & Douglas, 2000; van Beest et al., 2021). (The visual acuity of a rat is close to this, at approximately 1.6 cycles/° (Prusky et al., 2000).) If pasted to the walls of an enclosure with its reflected image too, the visual angle subtended would be approximately 256°, and indicates what a rodent might see, and what a human might see in a human Field of View that would be limited to approximately the central 180° (90° left and right.) (d) To emphasise how the visual acuity keeps increasing in primates close to the fovea, text is shown to be readable in only about the central 3° around the fovea (i.e. to a radius of 1.5°, with the region shown extending to 8.9°.) (e) Acuity for humans and mice. Collaboration with Professor Andrew M. Haun (Department of Psychiatry, University of Wisconsin-Madison, WI, USA) who modified his software made available in connection with Haun (2021) at <https://osf.io/8xf9w/> is warmly acknowledged. The algorithm takes into account the spatial frequency contrast sensitivity at each eccentricity, and also produces an impression of what might be provided by the rodent colour system. The filtered images in (b-d) show what exceeds the contrast sensitivity threshold at each eccentricity. (Acuity5.eps)

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