# Preference for generic viewpoints between foregrounds and backgrounds

Andrew John Anderson, Pamashi Amarasekara, Neeyanta Yashasvi Kumar, Georgina Victoria Liapis, Sushweta Pal, Prasanjeet Singh, Julia Lee Williams
Department of Optometry & Vision Sciences, The University of Melbourne, Parkville, Australia
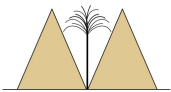
BACKGROUND

- **Generic viewpoints** are those where spatial relationships between features are largely preserved despite small changes in the observer's position, e.g.:
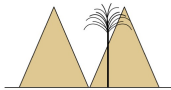
  Spatial relationship between foreground tree & background hills would look similar despite small observer movement

- **Specific viewpoints** are those where the spatial relationships only occur from single observer position, e.g.:

  Alignment between foreground tree & valley between background hills only occurs from one observer position

Ramachandran & Hirstein (1999) argued that generic viewpoints are preferred, as they are more common and avoid "suspicious coincidences"

Here we examined if empirical data supports this argument, for foregrounds and background elements of an image

METHODS

- 35 healthy observers
- Image pairs presented side-by-side (online)
- Forced choice – which image is aesthetically preferred?
- **Experiment 1**
  - **Cartoon tree in front of two triangular-shaped mountains**
  - 5 tree positions, ranging from alignment with valley to alignment with peak
  - Control experiment: tree positions as above, but with no background mountains
- **Experiment 2**
  - **Monet painting (Lion Rock, W.1091) containing a prominent horizontal alignment between a foreground clifftop and the background horizon.**
  - Digital lowering of horizon height by small (mod. 1), medium (mod. 2) or large (mod. 3) amount
  - Further image (mod. 0) to check the effect of stretching the sky, required for our digital manipulation
  - Another Lion Rock image (W.1090), plus other Monet images (W.1087, W.1088, W.1101, W.1104, W.1107, W.1108) added for visual interest

RESULTS: EXPERIMENT 1
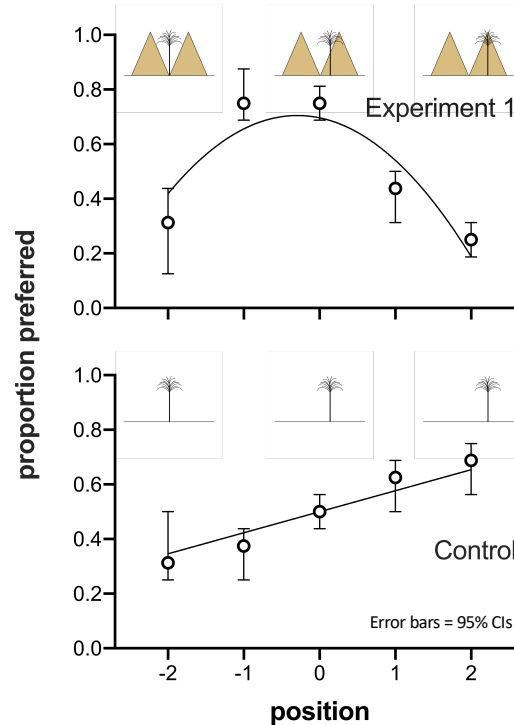
Generic views – where tree isn't aligned with valley or mountain-top – preferred

- The proportion of times an image was preferred as a function of tree position was significantly better fit by a second order quadratic than a straight line [F = 81.50 (1, 172); p<0.0001]
- Our results cannot be explained by the position of the tree within the frame, as the control data showed a different pattern and was not significantly better fit by a quadratic [F= 0.01 (1, 172); p=0.92].

RESULTS: EXPERIMENT 2

original
W.1091   mod. 0 (W.1091)   mod. 1 (W.1091)
mod. 2 (W.1091)   mod. 3 (W.1091)   W.1090
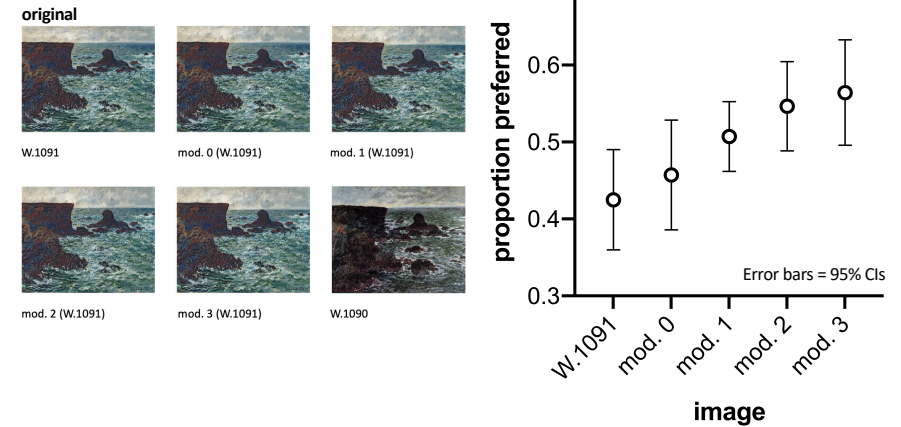
Preference for Monet image increases as alignment between horizon and clifftop is reduced via digital manipulation

- A simple linear regression of preference data for mod. 0, 1, 2 & 3, as a function of vertical displacement of the horizon gave a slope significantly different from zero (F = 7.128 (1, 138), P= 0.009)
- The stretching of the sky needed to allow our image manipulation (mod. 0) had no significant effect on preference (image W.1091 vs mod. 0, Wilcoxon matched-pairs signed rank test, p=0.49)

CONCLUSIONS

Our findings provide empirical support for Ramachandran & Hirstein's (1999) proposal that generic viewpoints are aesthetically preferred, at least in the context of foreground & background elements our images

- Other work has found that visual sensitivity – and, presumably, processing ease – is related to aesthetic preferences (Spehar, Wong, Klundert, Lui, Clifford & Taylor, 2015).
  - Generic viewpoints might be preferred due to processing ease, as background objects are less likely to be inappropriately grouped with foreground objects, leading to quicker object separation

REFERENCES

Ramachandran, V.S., & Hirstein, W. (1999). The science of art: a neurological theory of aesthetic experience. *Journal of Consciousness Studies*, 6, 15-51.
Spehar, B., Wong, S., Klundert, v.d., Lui, J., Clifford, C.W.G., & Taylor, R.P. (2015). Beauty and the beholder: the role of visual sensitivity in visual preference. *Frontiers in Human Neuroscience*, 9 (514)