How perceived causality influences perceived symmetry
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**Introduction**

Similar concavities, different causes

Examples where the process shaping the object is salient

Shape scission

Transformation

How does causal interpretation of negative parts influence perceived symmetry?

**Experiment 1**

1. Rating
2. Dot placement

Examples of shapes and their transformations:

- Shape A: Ellipse, Banana, Heart, Banana
- Bitten ellipse: Apple, Rectangle, Shape 10

**Experiment 2**

**Interpretation changes perceptual organization**

- Transformation
- Bitten shape similarity compared to
- Complete, bitten, smoothed
- Neither (smooth)
- Rough, complete, bitten, smoothed

**Experiment 3**

**Roughness does not determine ‘bite’ interpretation**

- Complete, bitten, smoothed
- Partly rough, rough

**Conclusion**

- Subjects spontaneously compensate for ‘bites’ in symmetric & familiar shapes
- For asymmetric & unfamiliar shapes subjects are uncertain about response
- Reported symmetry axis changes with causal interpretation of concavity
- Generative models of shape play an important role in perceptual organization and shape perception

**Experiment 2**

- Shape 2, shape 5, shape 6, shape 7, shape 10

**Experiment 3**

- Shape 1, 2, 3, 4, 5

**Transformations**

- Complete, bitten, smoothed
- Neither (smooth)
- Rough, complete, bitten, smoothed

**Intrinsic properties**

- Stable, intrinsic attributes of objects: e.g. material

**Extrinsic properties**

- Variable, incidental attributes of scene or viewing circumstances: e.g. processes/forces

Subjects take ‘bites’ into account!

Reported symmetry axis changes with causal interpretation of concavity

Transformation

‘true’ shape

Shape scission

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