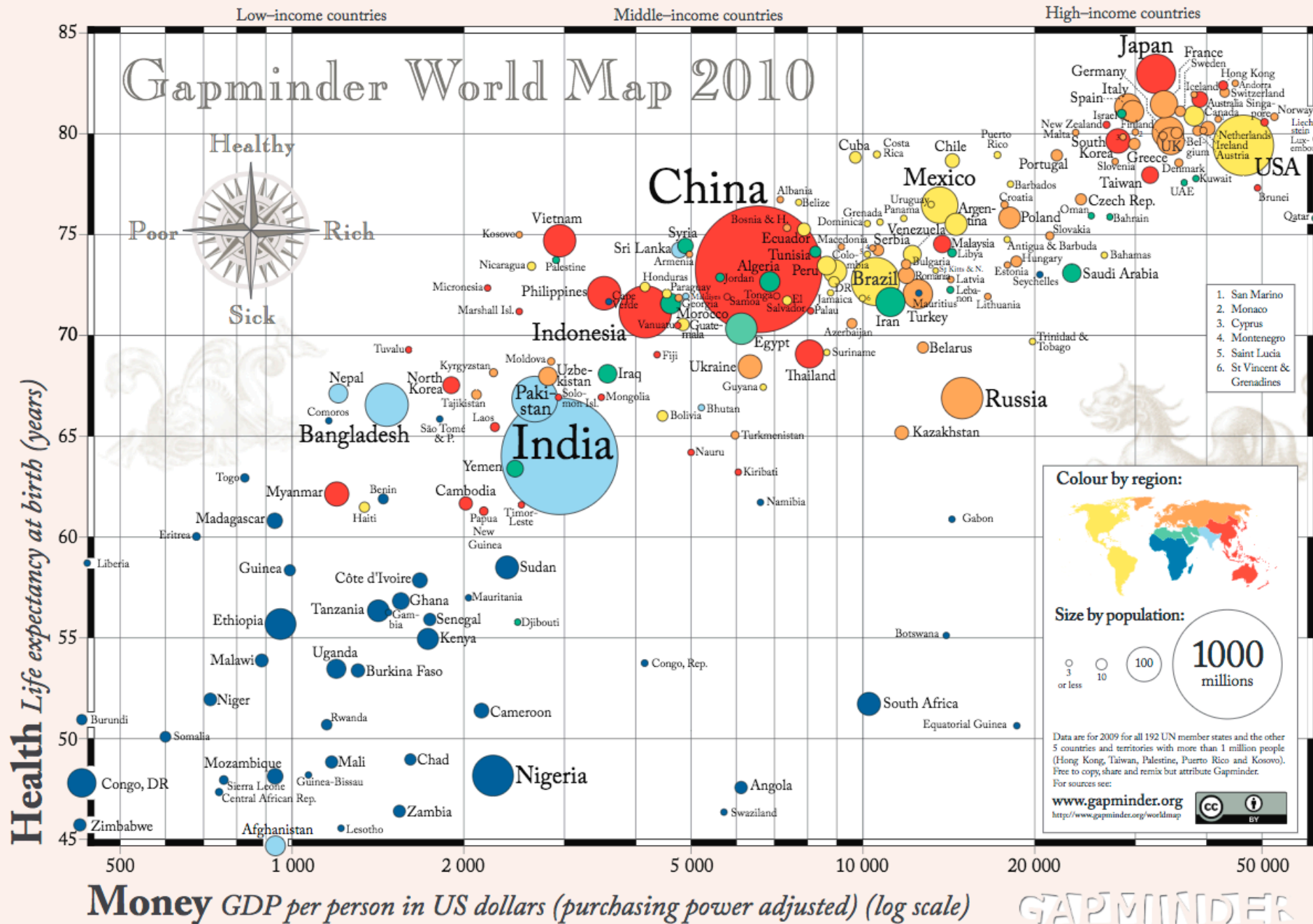


# Detection in Visual Search

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Which data features are the focus?



# Preattentive

200–250 milliseconds

# Color/Hue

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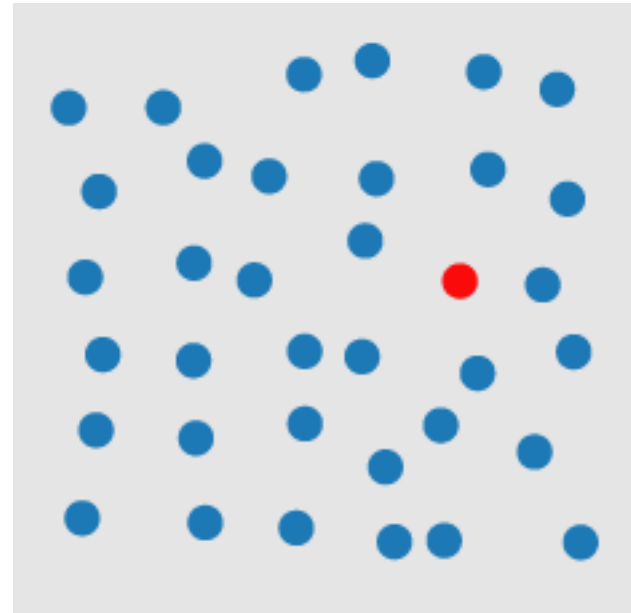
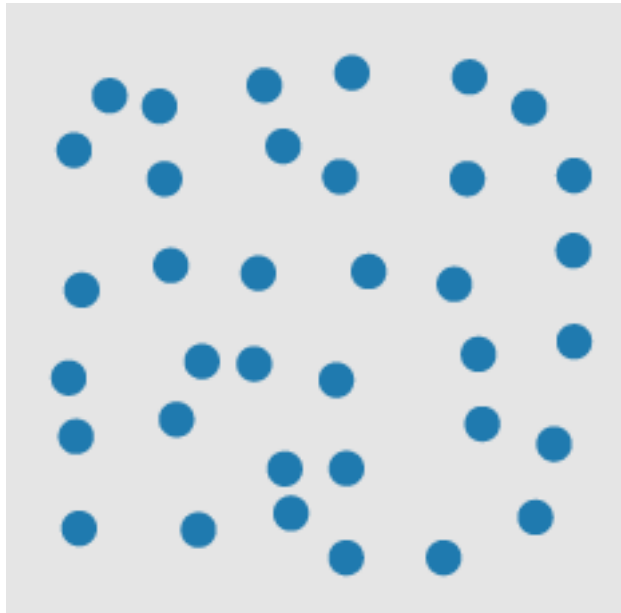


Diagram Healey

<https://www.csc2.ncsu.edu/faculty/healey/PP/index.html>

# Shape

---

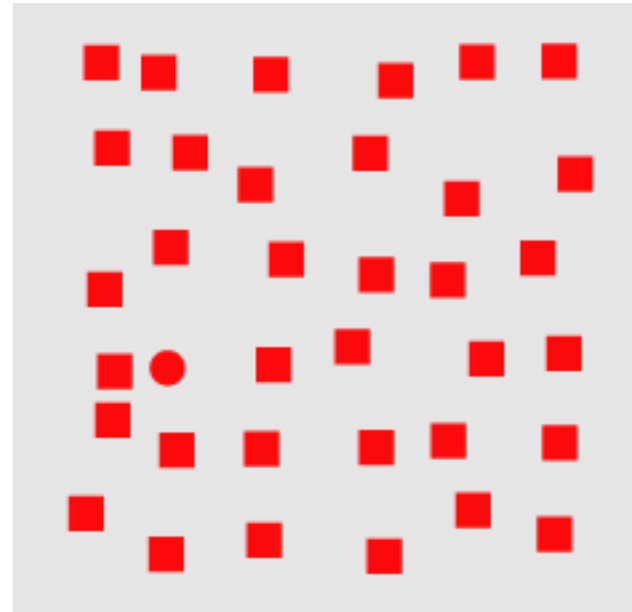
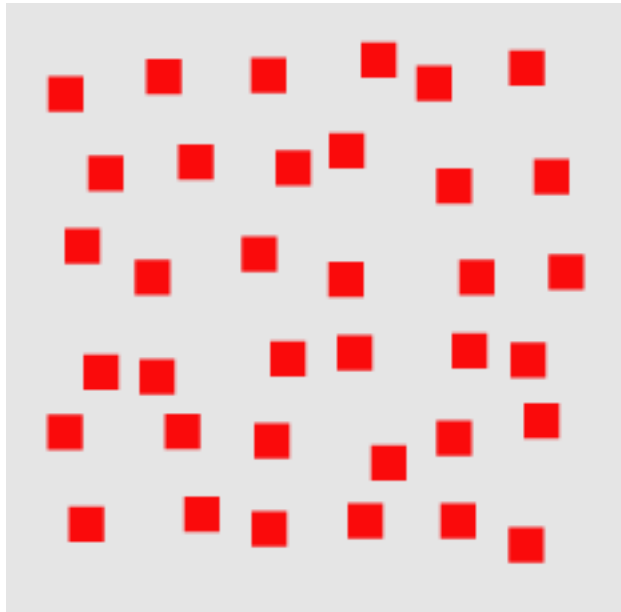


Diagram Healey

<https://www.csc2.ncsu.edu/faculty/healey/PP/index.html>

# Line Orientation

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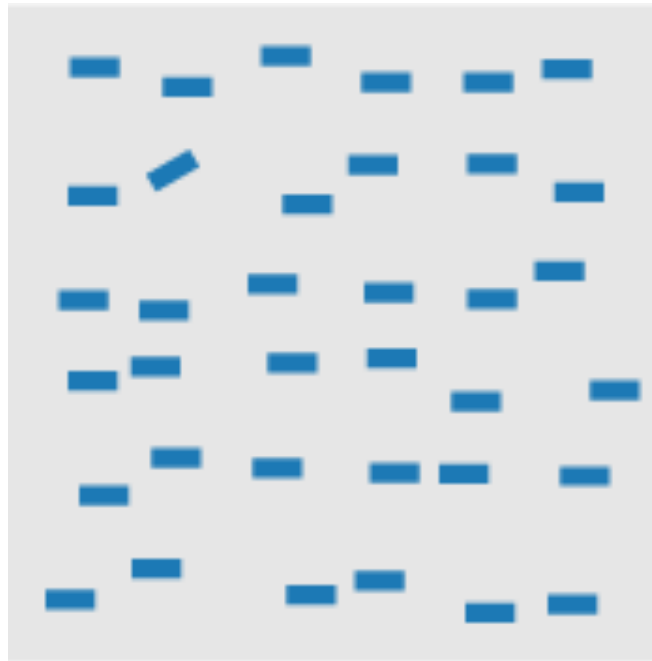


Diagram Healey

<https://www.csc2.ncsu.edu/faculty/healey/PP/index.html>

# Curvature

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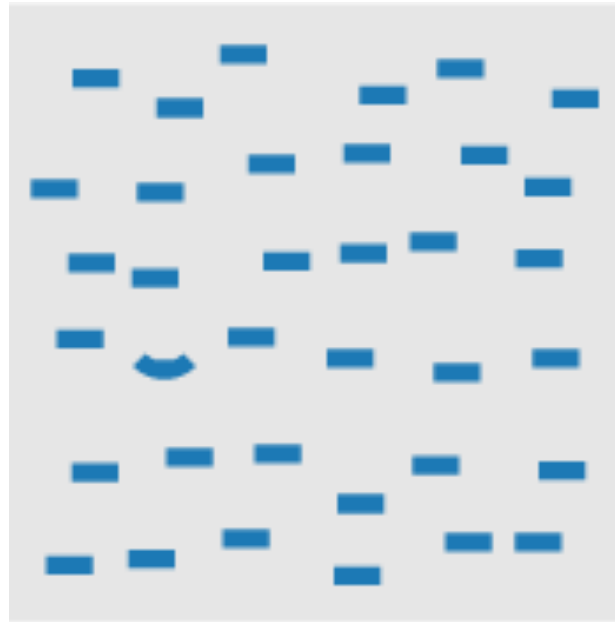


Diagram Healey

<https://www.csc2.ncsu.edu/faculty/healey/PP/index.html>



# Intersection

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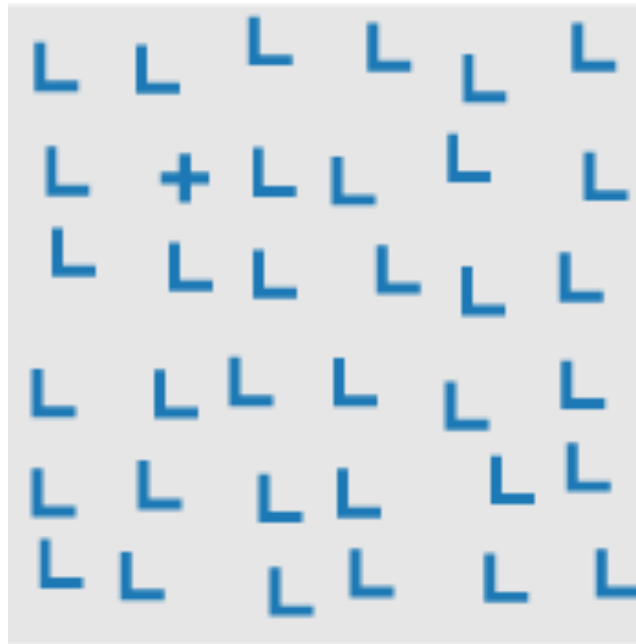


Diagram Healey

<https://www.csc2.ncsu.edu/faculty/healey/PP/index.html>

# Both Hue and Shape

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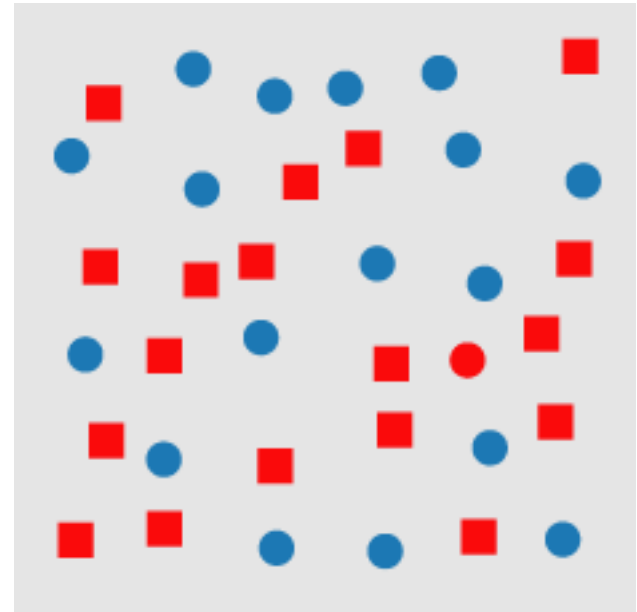
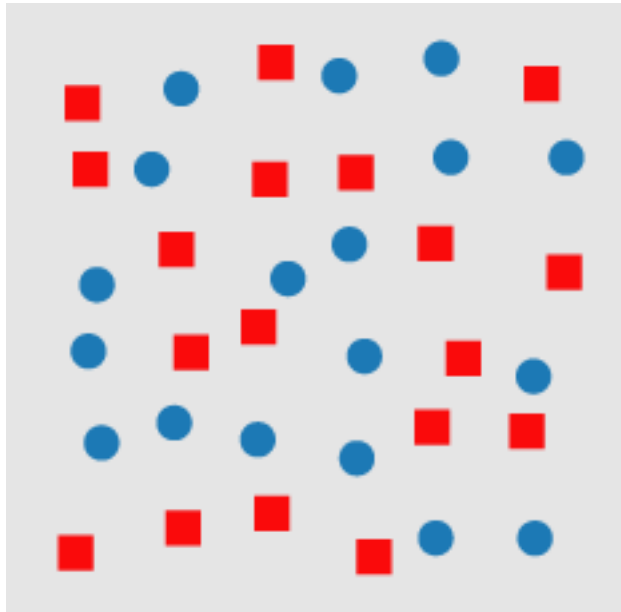


Diagram Healey

<https://www.csc2.ncsu.edu/faculty/healey/PP/index.html>

# Preattentive Attributes

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- Hue
- Shape
- Orientation
- Curvature
- Intersection
- Length
- Width
- Closure
- Size
- Density
- Color intensity
- Terminators (Ts)
- 3-D depth cues
- Stereoscopic depth
- 3-D orientation
- Lighting direction
- Flicker
- Direction of motion
- Velocity of motion
- Number estimation
- Artistic properties

# What is it good for?

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- Target detection
- Boundary detection
- Counting or estimation

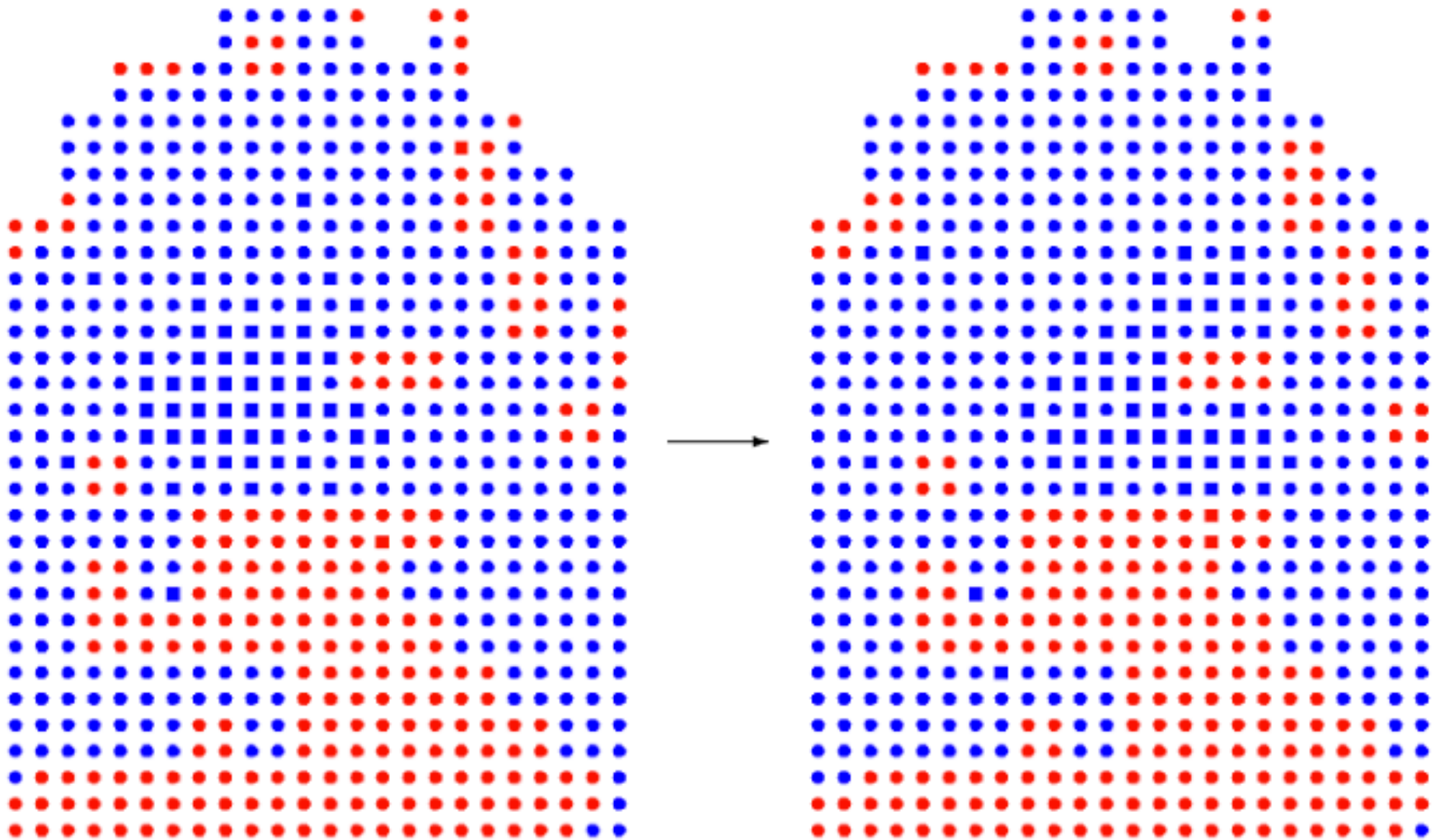


Diagram Source: Healey, Booth, & Enns, 1995

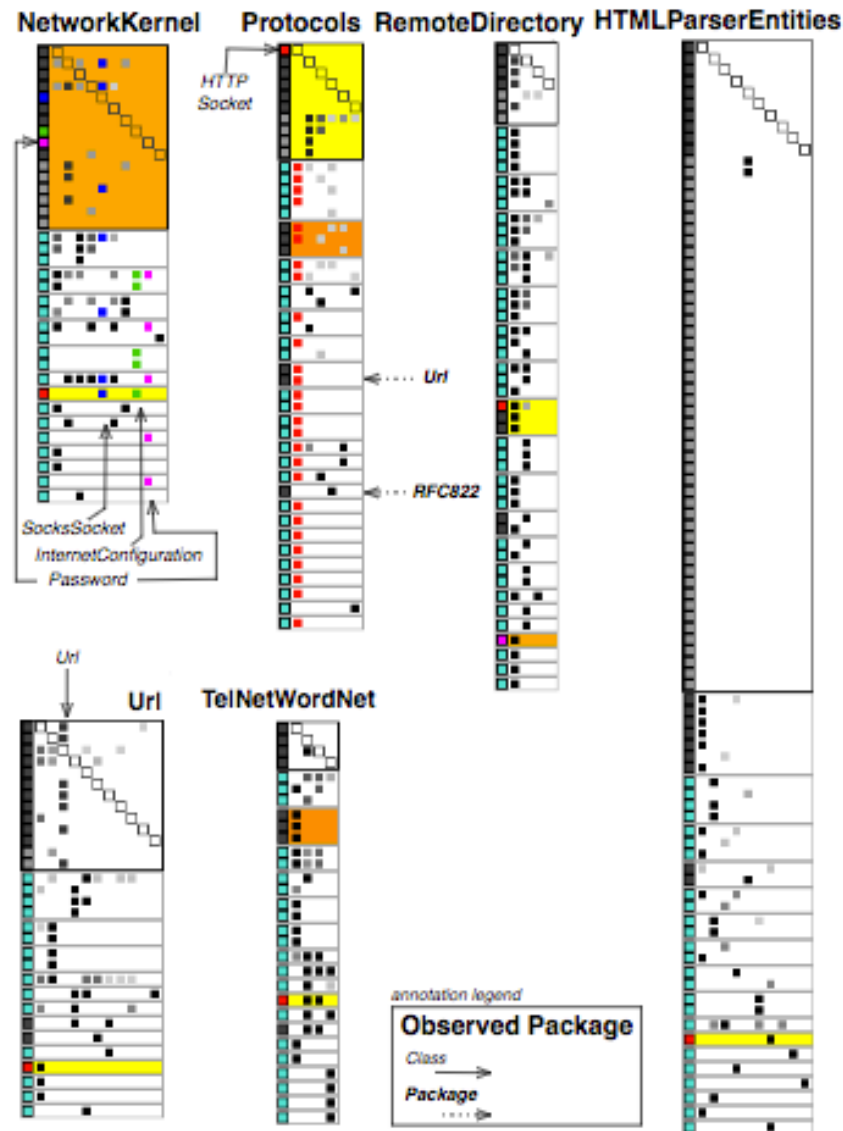
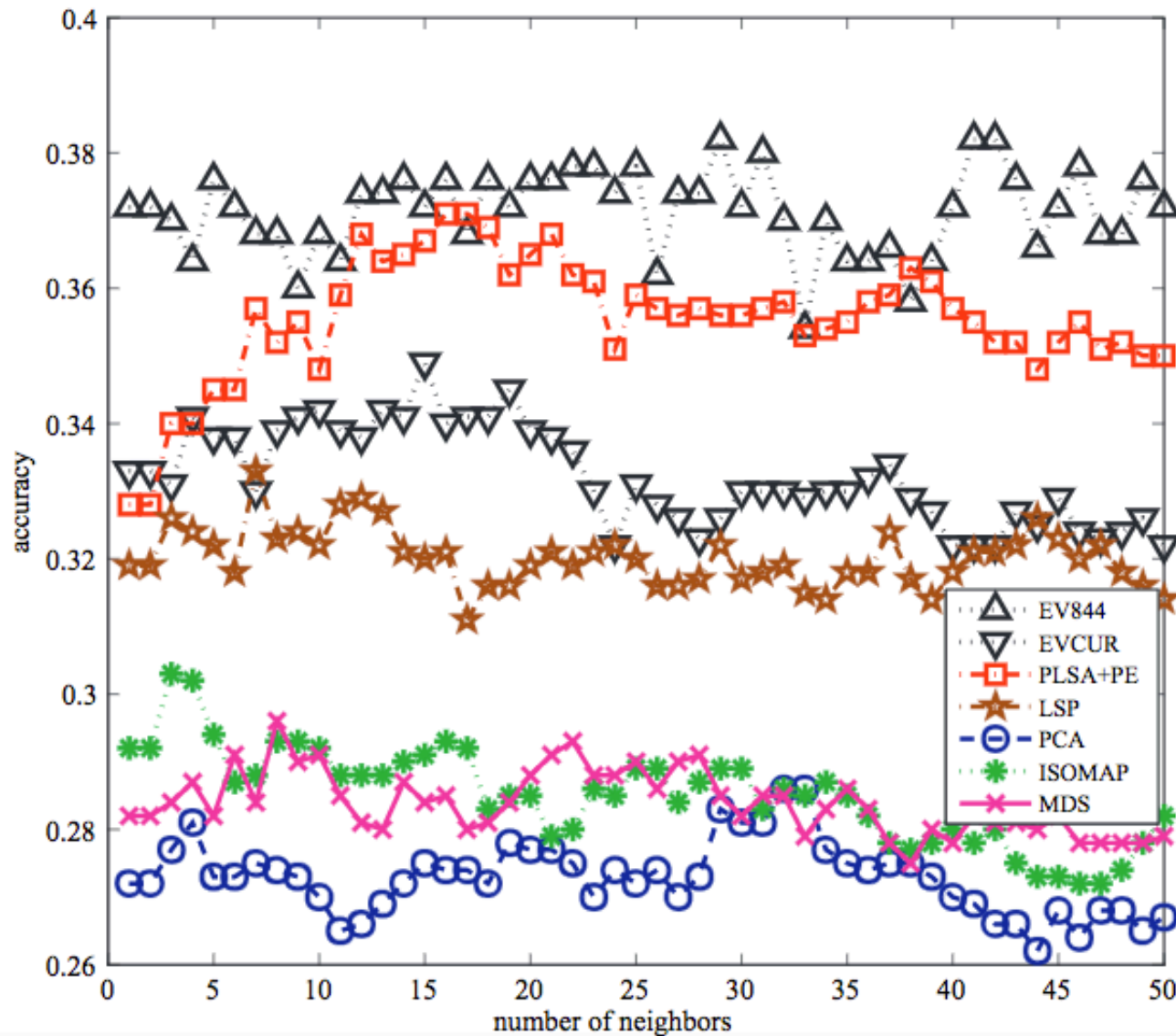


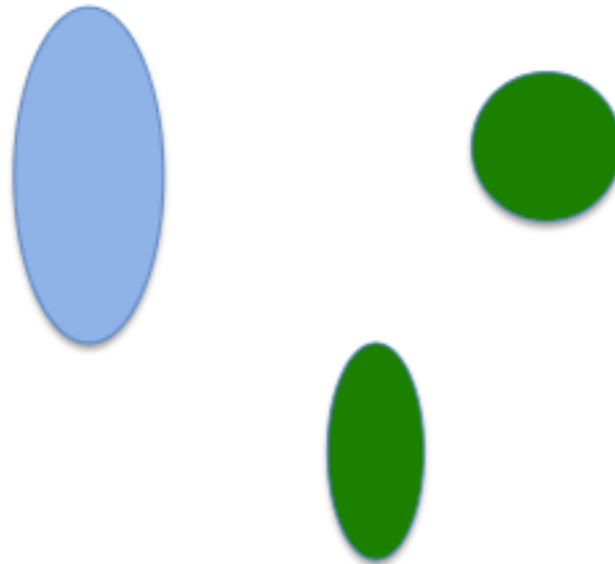
Figure 4: Outgoing Reference Package Blueprint Analysis.

Source: Abdeen, H., Ducasse, S., Pollet, D., Alloui, I., & Falleri, J. R. (2014). The Package Blueprint: Visually analyzing and quantifying packages dependencies. *Science of Computer Programming*, 89, 298-319.



Source: Chen, Y., Wang, L., Dong, M., & Hua, J. (2009). Exemplar-based visualization of large document corpus (infovis2009-1115). IEEE Transactions on Visualization and Computer Graphics, 15(6).

How would you group these?

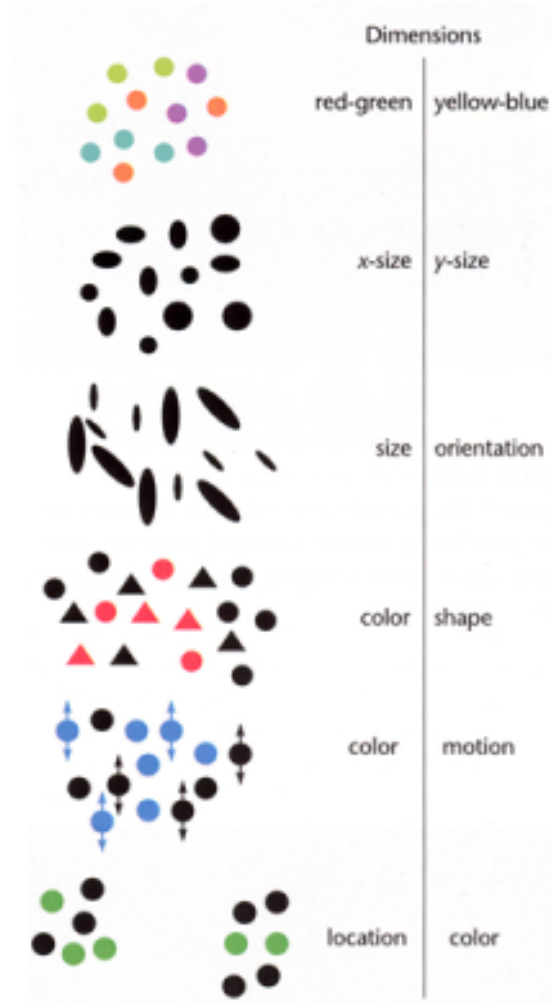




# Integral and Separable Dimensions

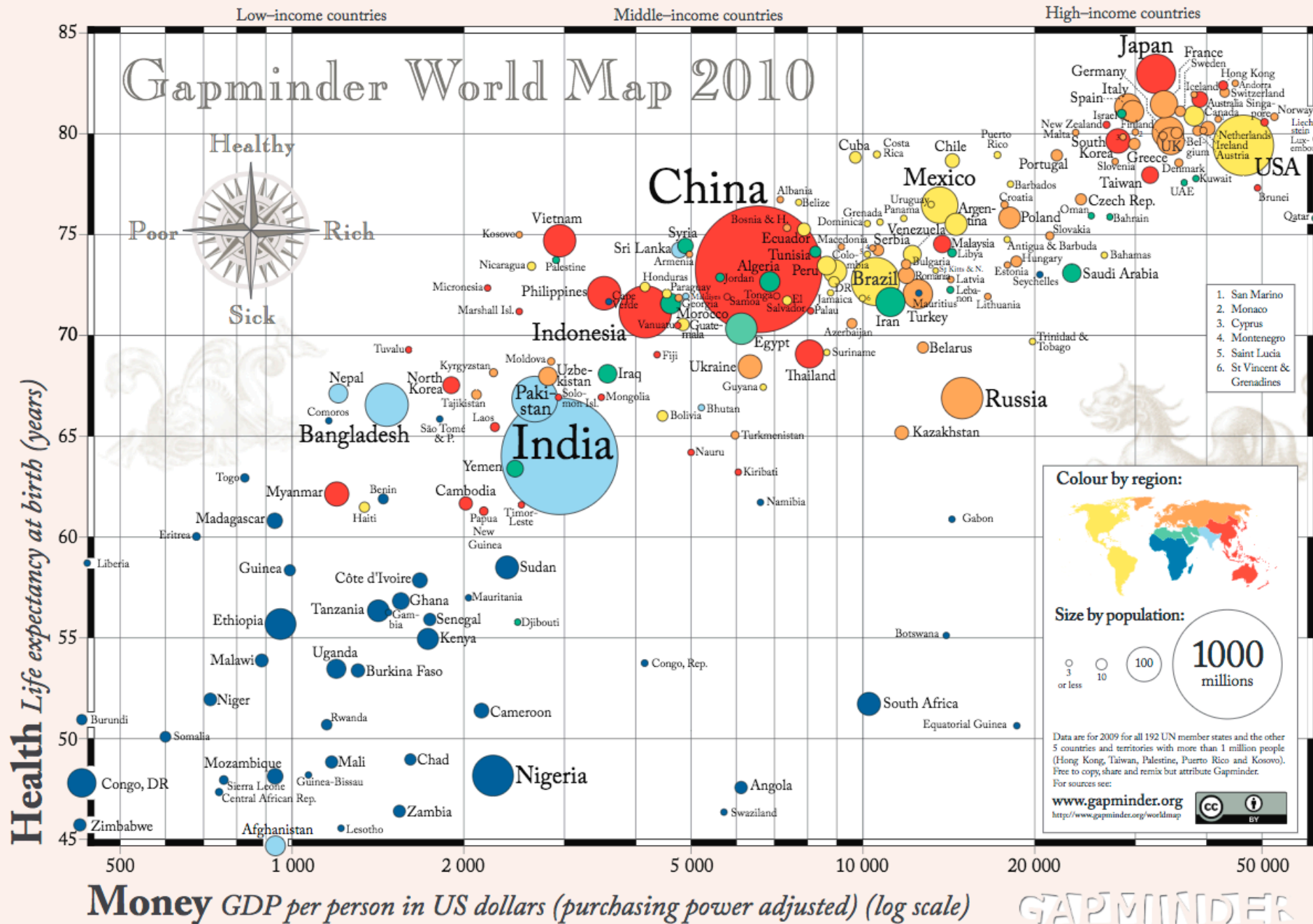
Integral

Separable



# Tips for Visual Detection

- Possible data features to encode: target, boundaries, rapid count
- Identify any conflicting dimensions
- Check for intended or unintended attention



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