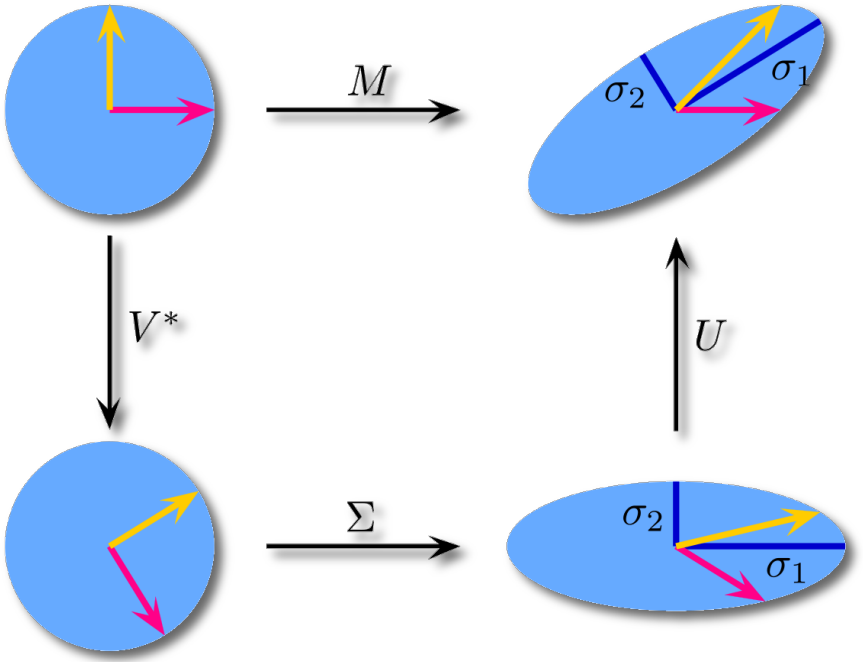
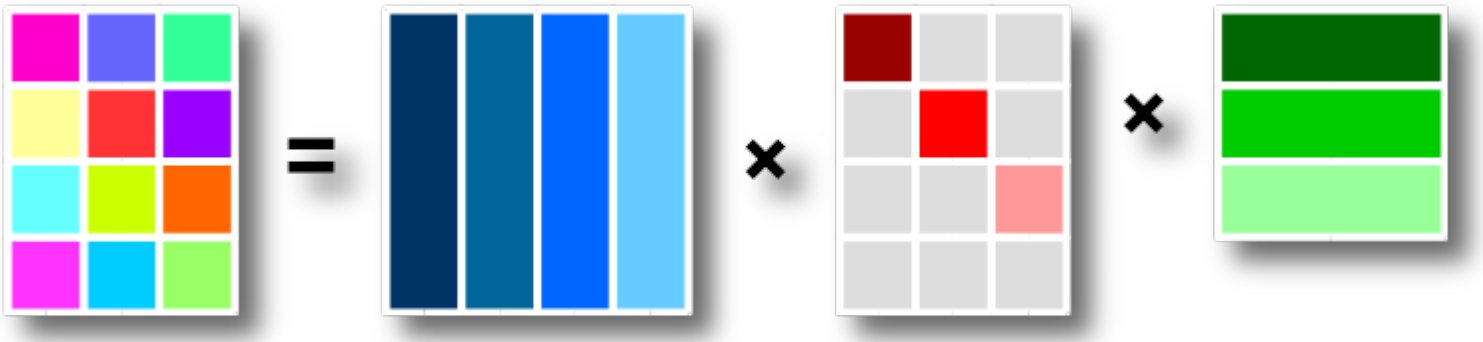
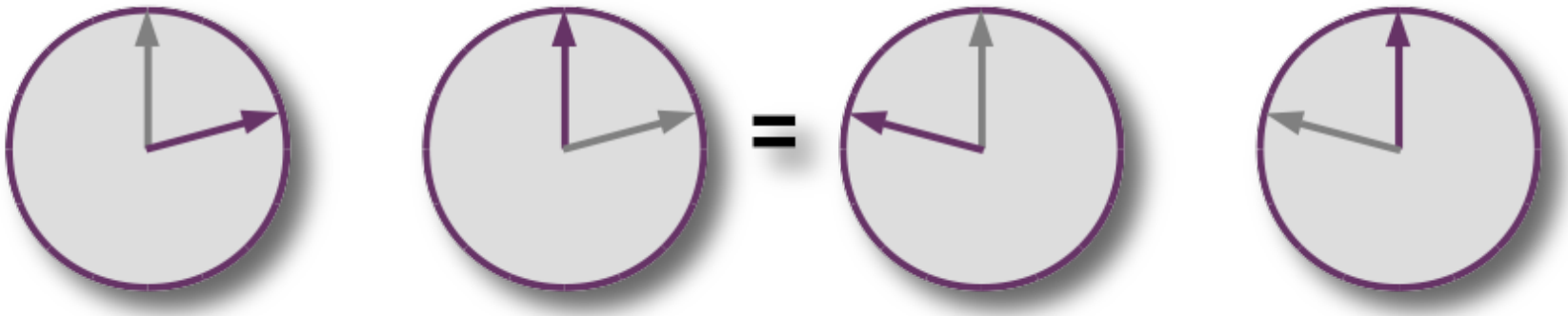
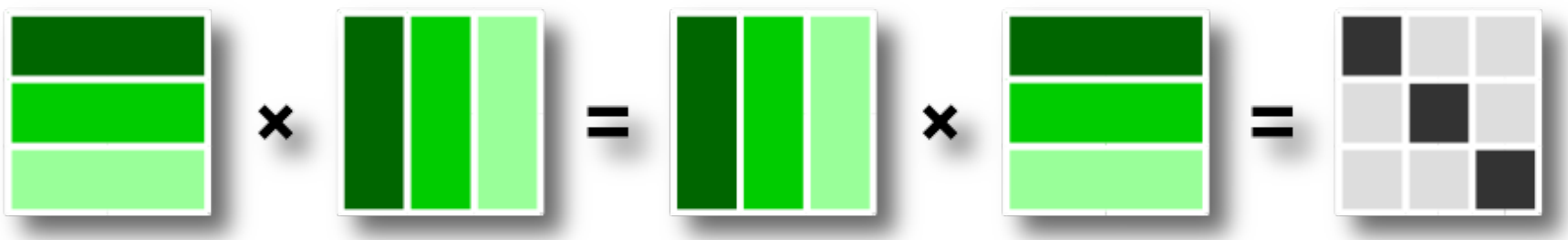
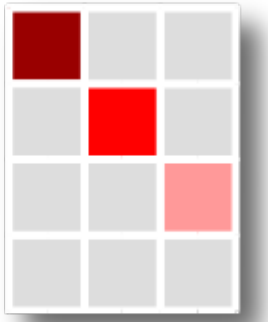


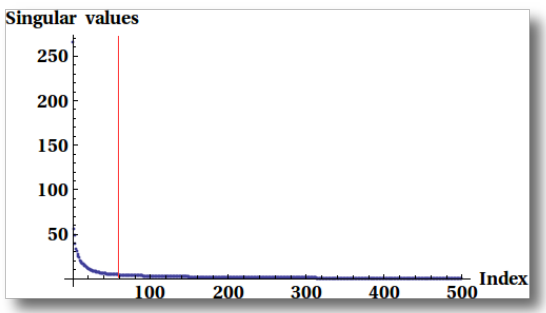

$$M = U \cdot \Sigma \cdot V^*$$

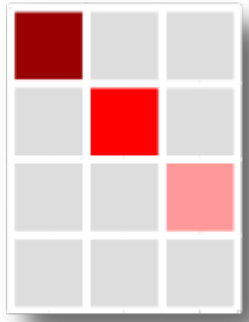


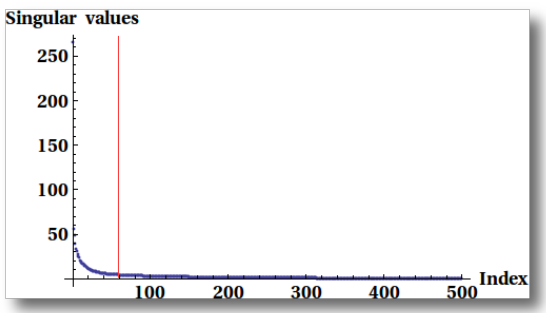




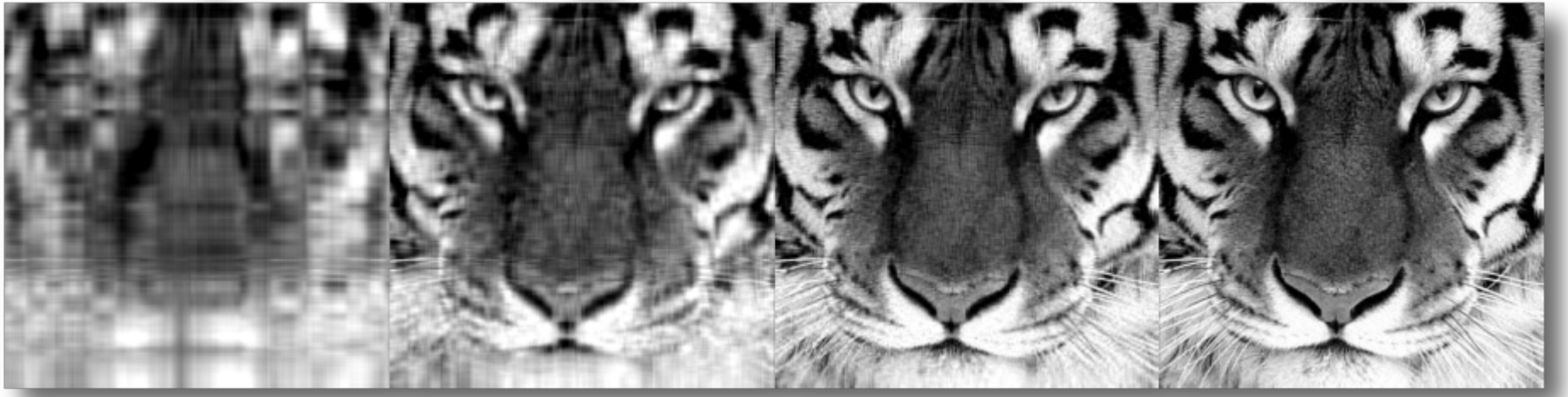



Singular values
250
200
150
100
50
100
200
300
400
500
Index

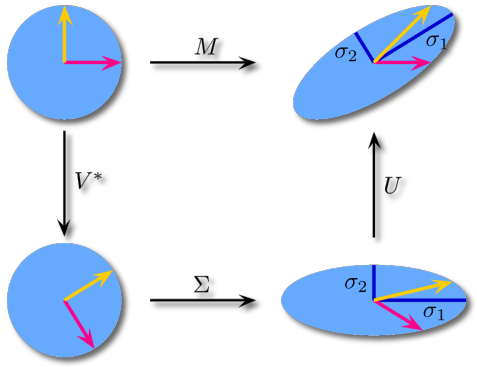



Singular values
250
200
150
100
50
100
200
300
400
500
Index

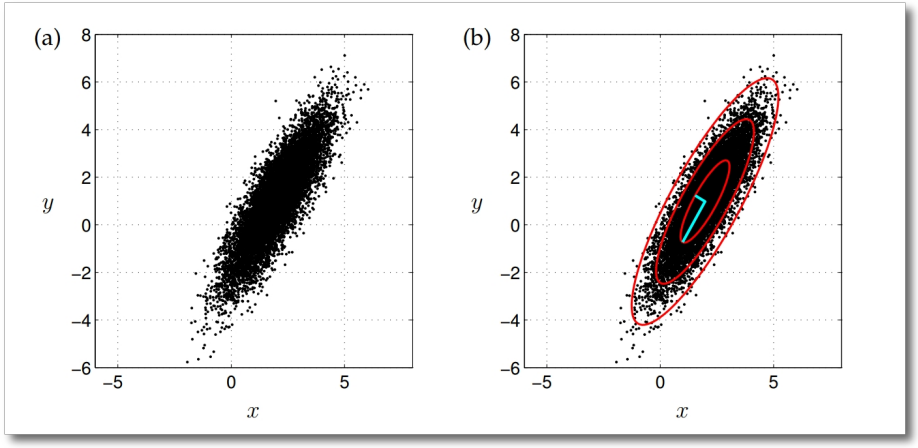
5 20 50 100



# Análisis de componentes principales

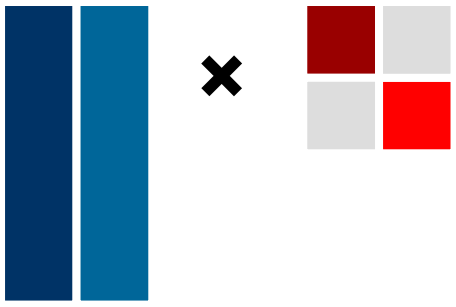


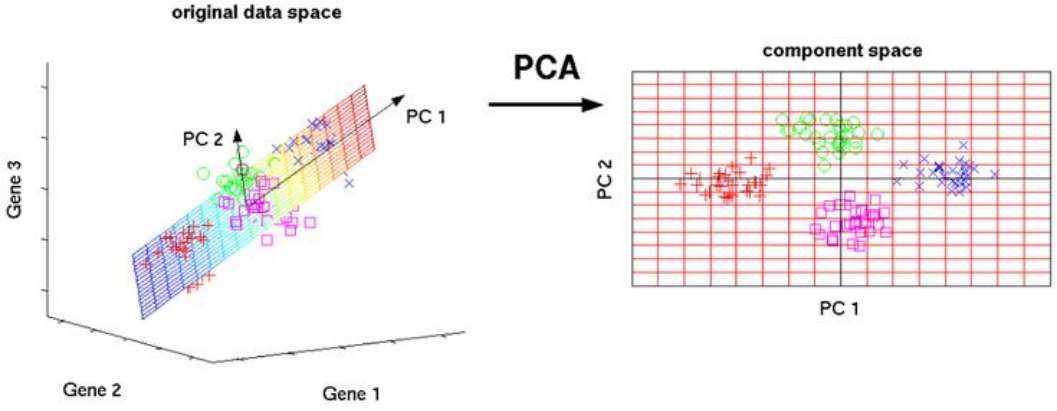

$$M = U \cdot \Sigma \cdot V^*$$



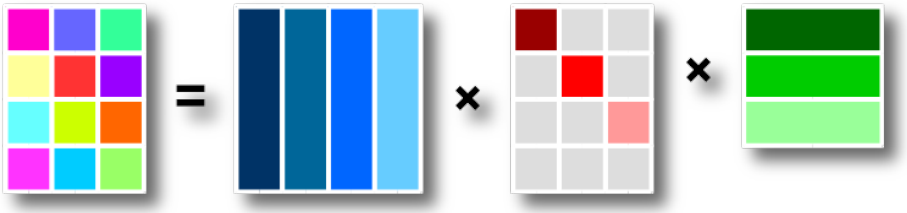

Identificar $\sigma_1$ y $\sigma_2$ y sus respectivas direcciones, mediante la matriz de componentes principales $T$.

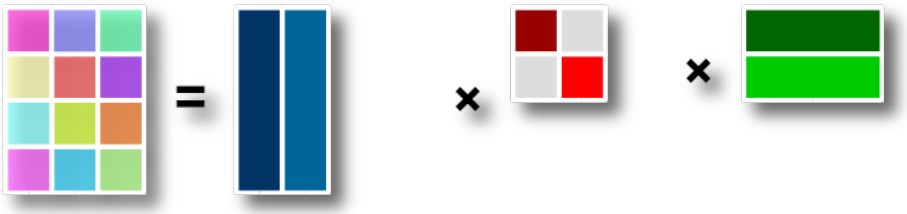
$$T = U\Sigma$$

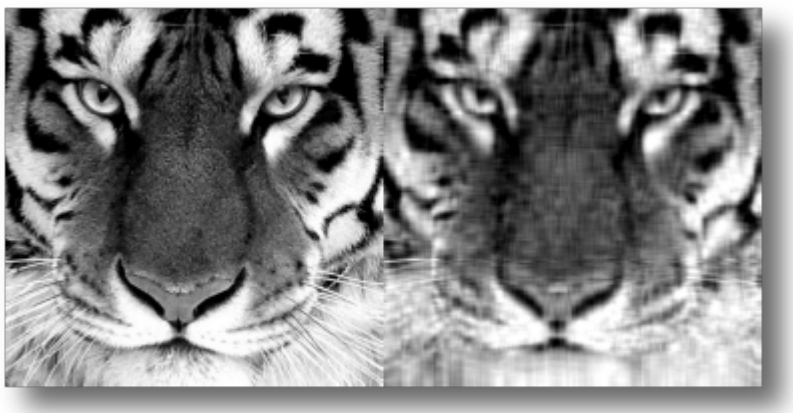




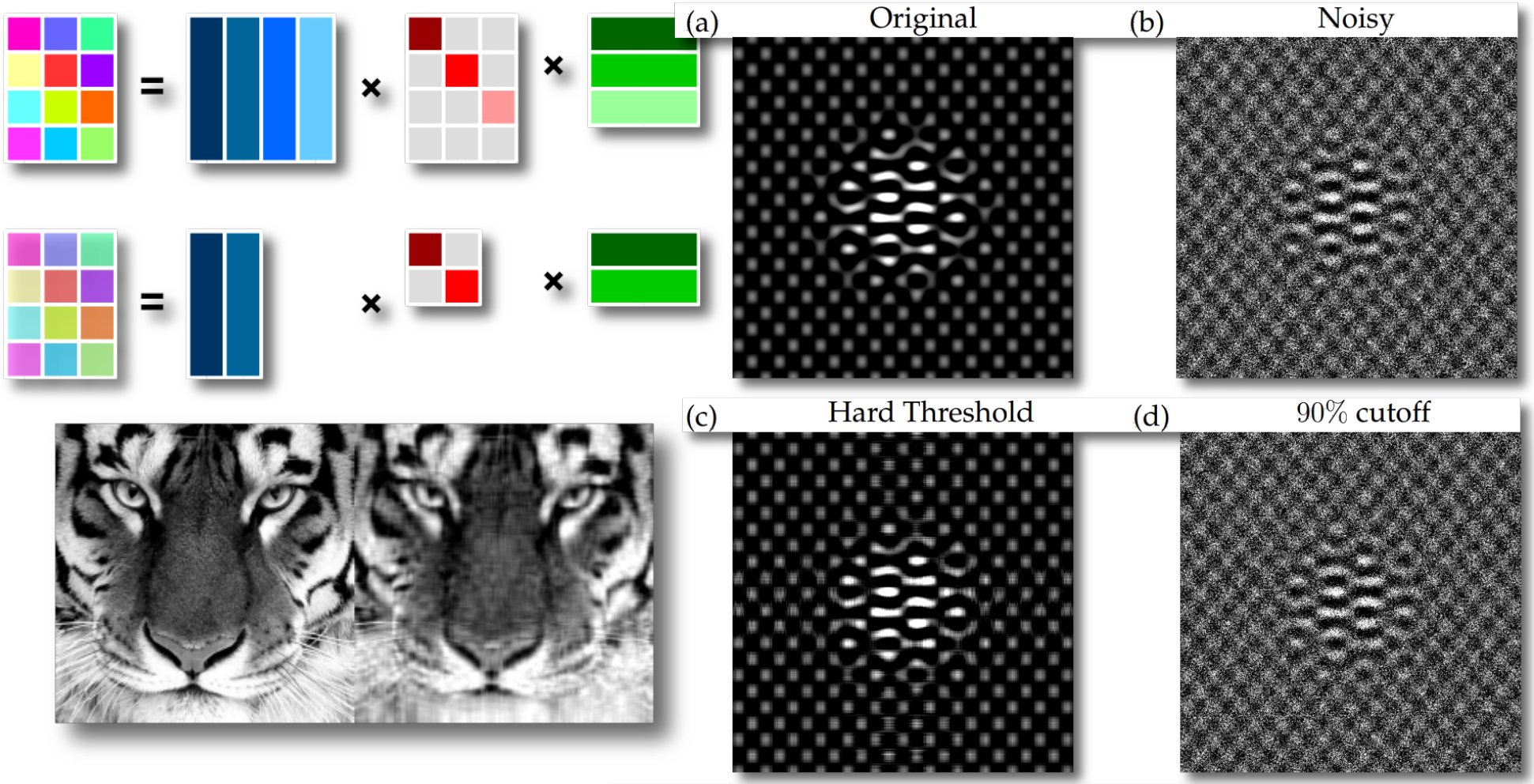

Al proyectar sobre los componentes principales.
Los datos se *separan*.







Tomar los primeros valores singulares, puede ser útil para eliminar ruido.




Tomar los primeros valores singulares, puede ser útil para eliminar ruido.

Figure 1.22: Underlying rank 2 matrix (a), matrix with noise (b), clean matrix after optimal hard threshold $(4/\sqrt{3})\sqrt{n}\sigma$ (c), and truncation based on 90% energy (d).