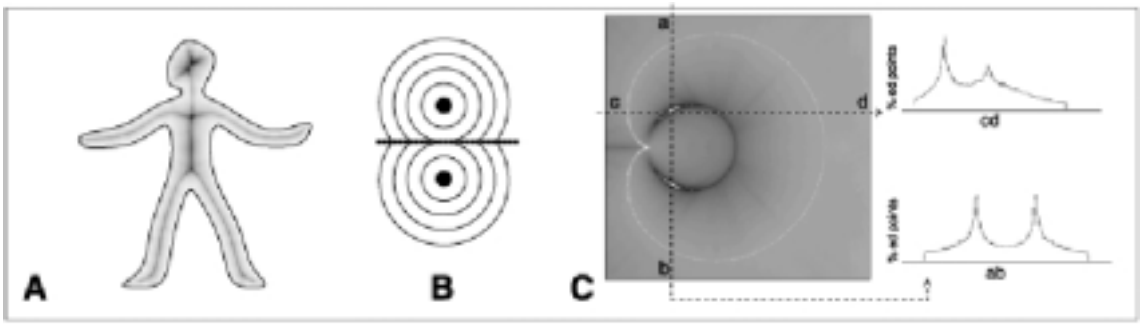
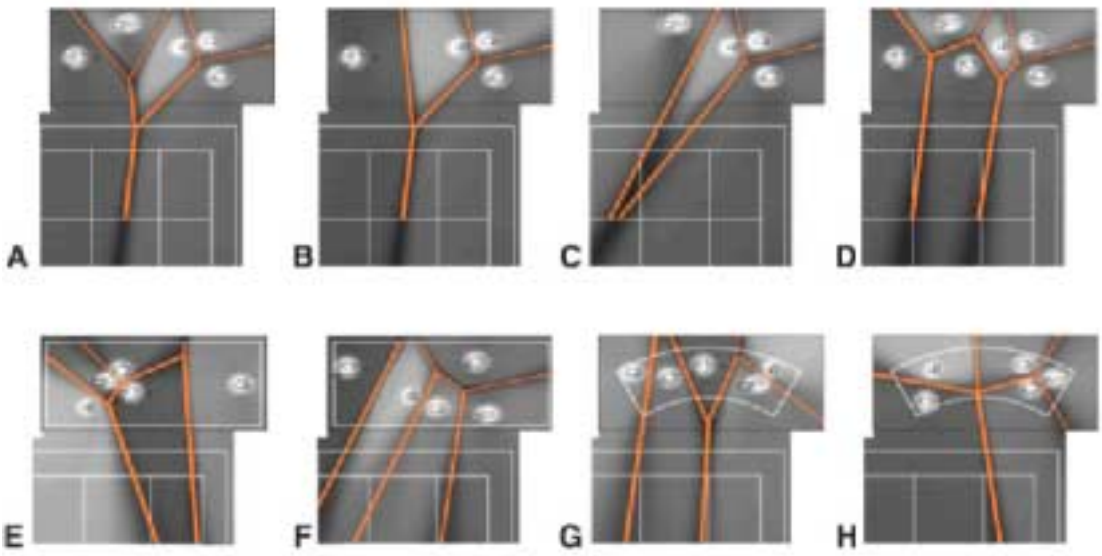


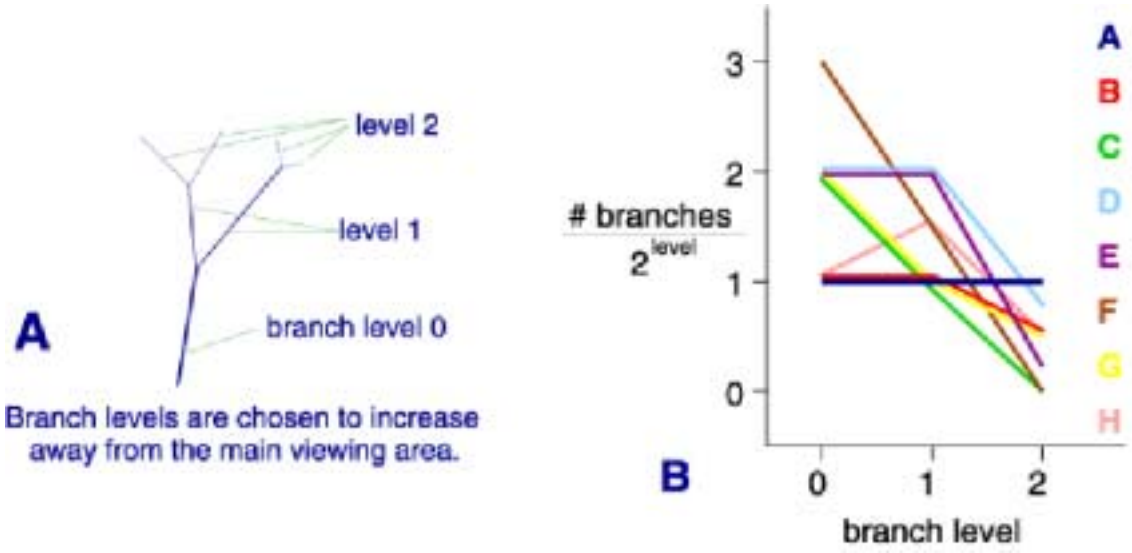

## Supplementary Figure 1

**A,** Example of a two-dimensional shape (solid line) and its medial axis transform (internal shading) computed using our model[3]. **B,** The medial axis of two rocks lies along the set of local symmetry maxima. **C,** Here we replicate Kovacs' contrast sensitivity enhancement data[5] with the same model[3] used to calculate the medial axis of the Ryoanji garden. A cardioid line figure (white) and the computed medial axis transform (dark) are shown. Vertical and horizontal cross sections plot the medial axis transform in regions of increased visual contrast sensitivity.




## Supplementary Figure 2

Medial axis transforms of **A**, the original garden plan, and with **B**, the most posterior rock omitted, **C**, the leftmost rock omitted and **D**, an additional rock added to the central area. Medial axes for random compositions generated within **E, F**, Cartesian grids and **G, H**, radial boxes. Out of 20 examples of randomly generated gardens, all failed to reproduce the characteristics of the original garden design. Input images were slightly blurred prior to computation of the medial axis transform to reduce the influence of rock and cluster shape details and concentrate on the overall composition of the five rock clusters. Medial axis structures are highlighted in orange.




## Supplementary Figure 3

**A,** Definitions of branch level nomenclature for the tree structure in the garden medial axis transform. **B,** Branching patterns of each example can be compared via plots of the number of branches per branching level. Only the original plan has a consistent branching pattern over all levels. Regression analysis yields the statistical significance of the difference in branching patterns between actual and modified garden configurations, showing that the difference between actual (A) and permuted (B,C,D) is statistically significant to $p > 0.019$ ($df=8$, $F=9.139$). The difference between the actual and random (E,F,G,H) configurations was found to be significant to $p > 0.001$ ($df=11$, $F=19.067$).