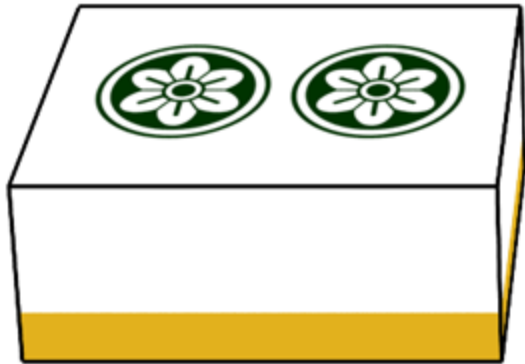


# Mahjong Illusion

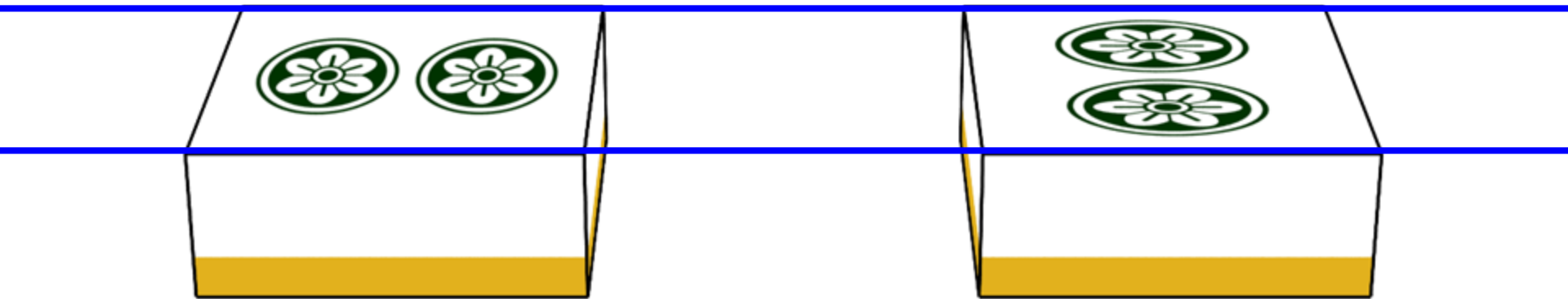
Illusory perception of object form induced by surface texture

Ryosuke NIIMI

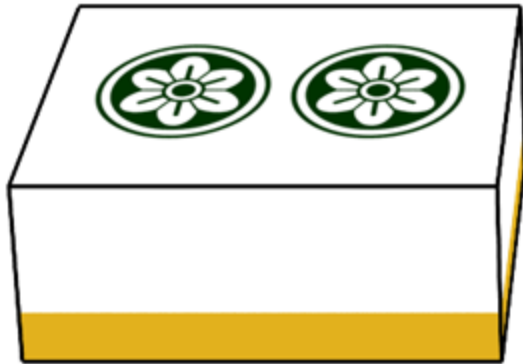
Dept. of Psychology, The University of Tokyo



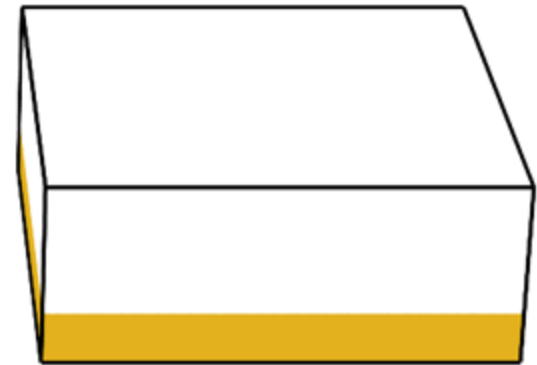
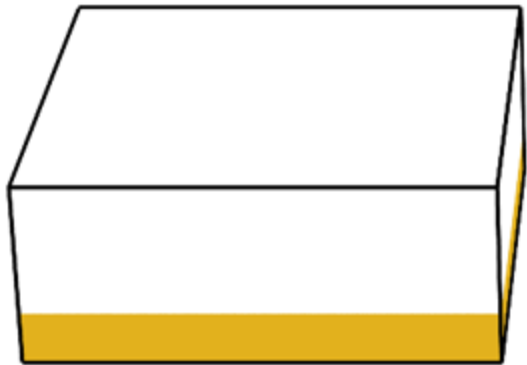
The left tile looks wider along the horizontal axis, while the right tile looks wider along the depth axis.



However, the contour shapes of the two tiles are completely identical.



The orientation difference of the surface texture (the two flowers) causes this illusion.



Without the texture, it is apparent that the two tiles are identical in shape.



No illusion occurs if the textures have the same orientation.



The illusion is not specific to mahjong tiles.  
The left card looks wider along the depth axis, while the right card looks wider along the horizontal axis.



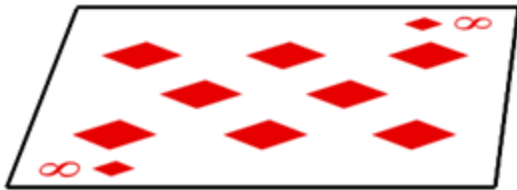
However, the two cards have identical contours.



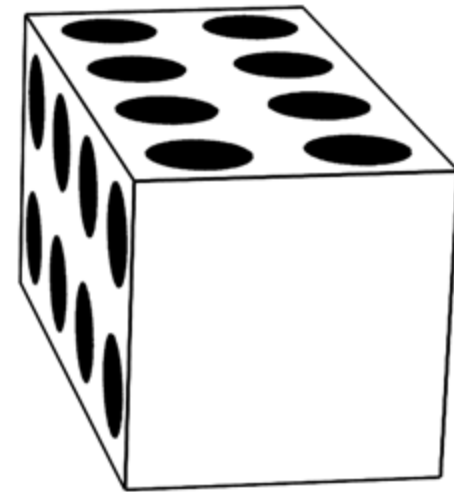
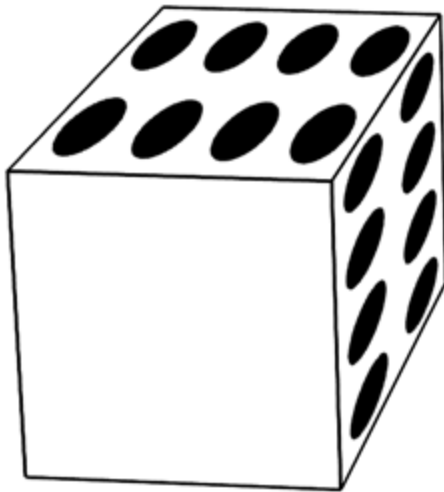
The surface texture matters.



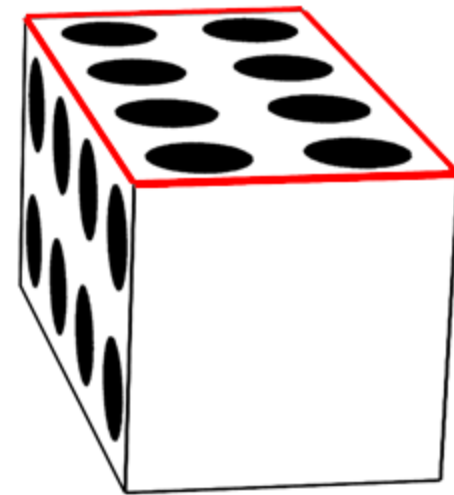
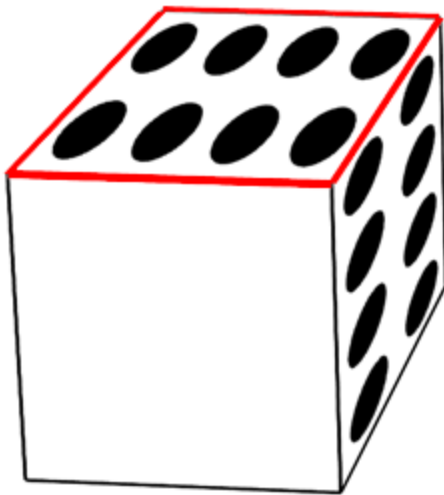
If there is no surface texture, no illusion will occur.



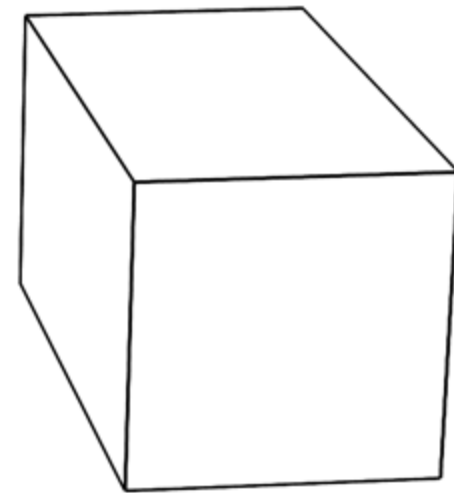
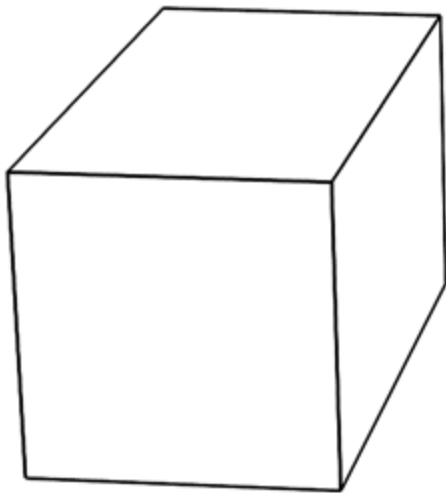
No illusion occurs if the textures have the same orientation.



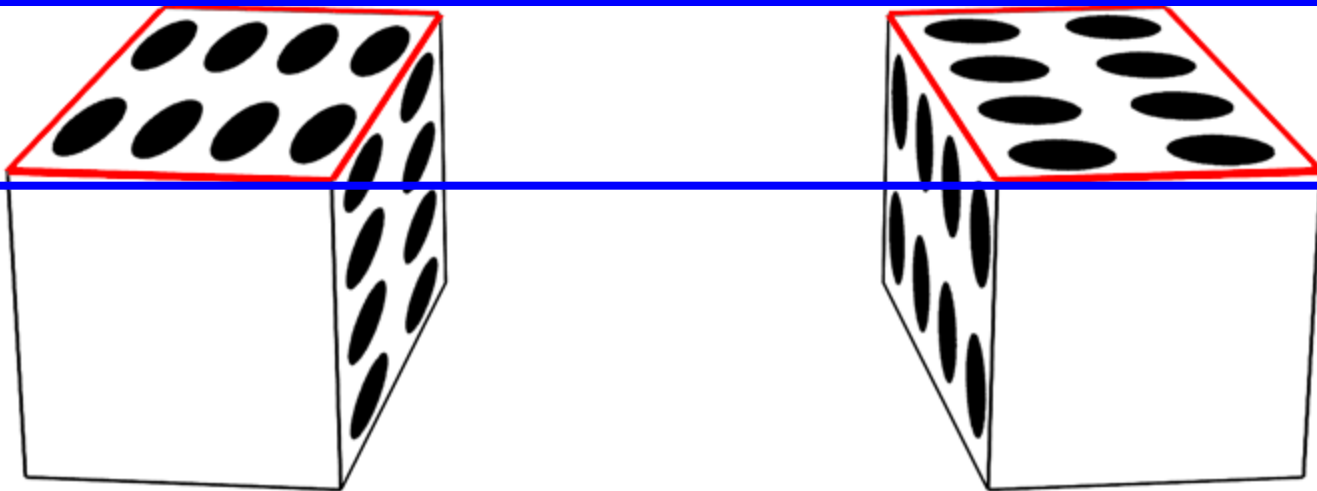
Is the illusion specific to familiar objects such as mahjong tiles and playing cards?  
No.



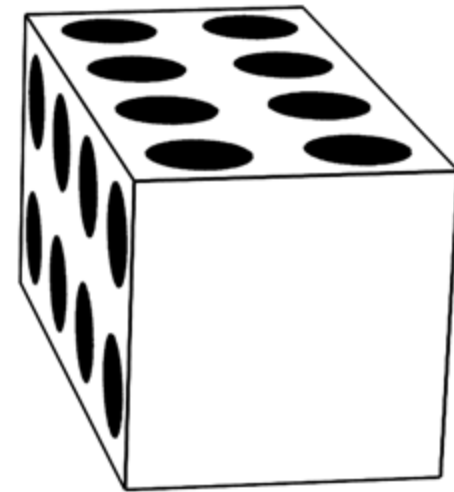
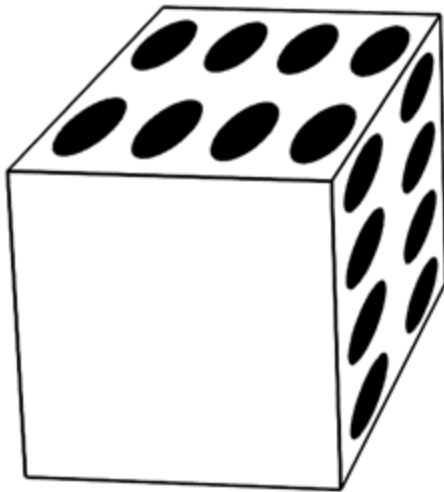
The right object looks longer in depth than the left object.  
The top panels indicated in red look different in shape.



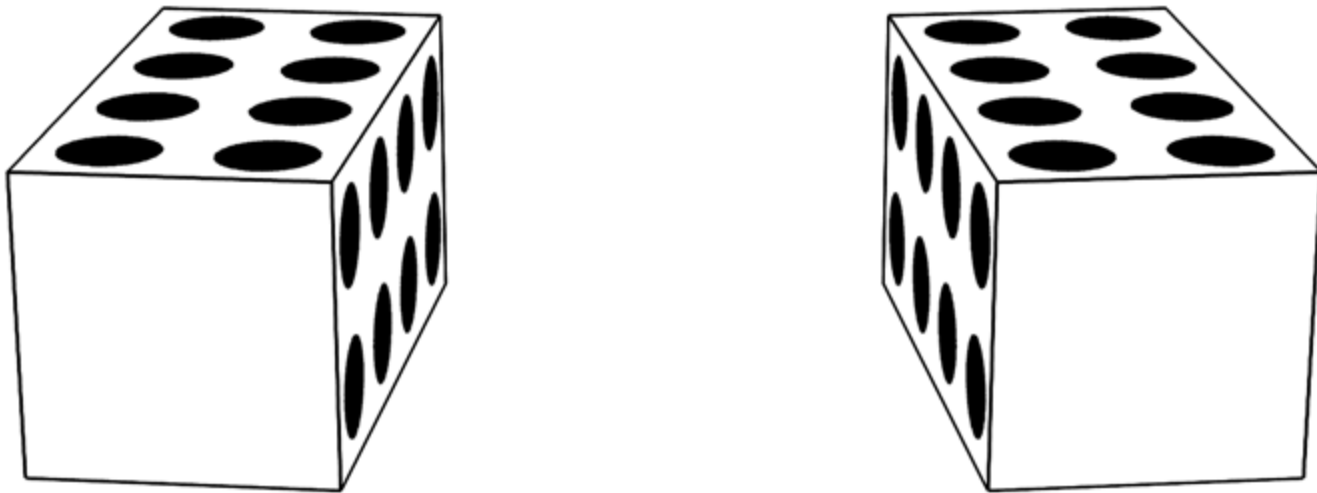
Without texture, it is apparent that the two objects are identical in shape.



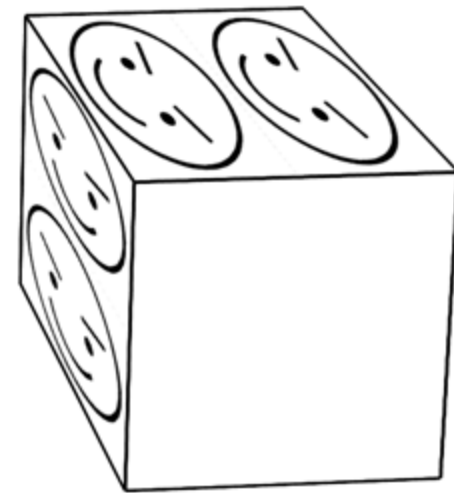
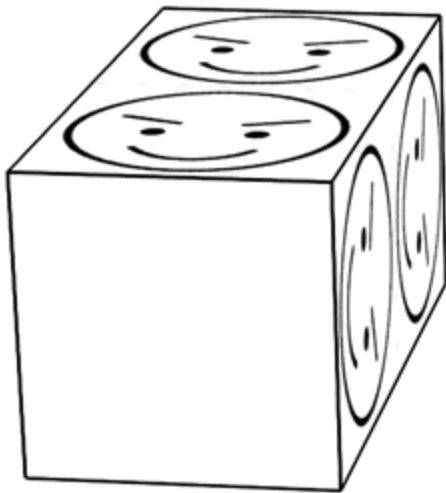
The top panels are identical in shape.



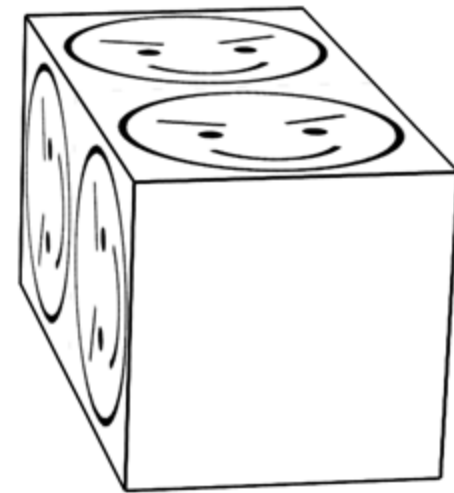
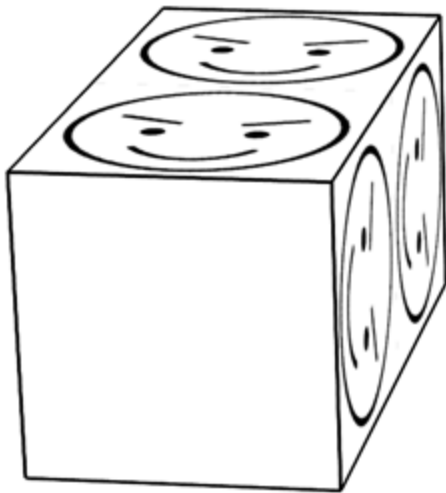
The textures of the left and the right objects provide us with different depth information, so the shapes of the two objects look different.



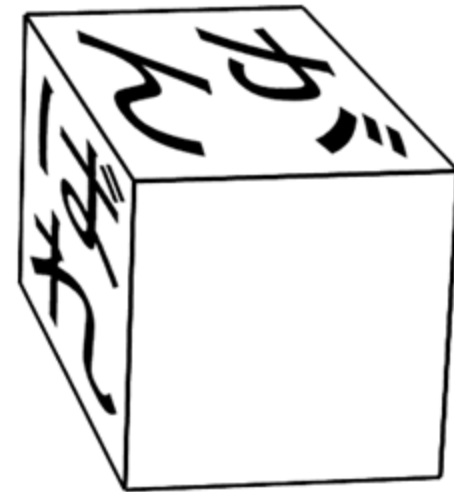
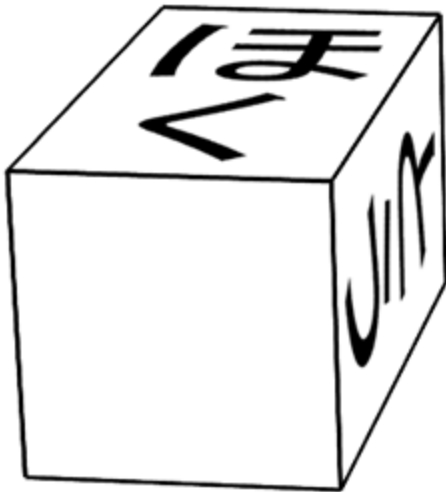
When the textures provide us with identical depth information, the two objects look identical in shape.



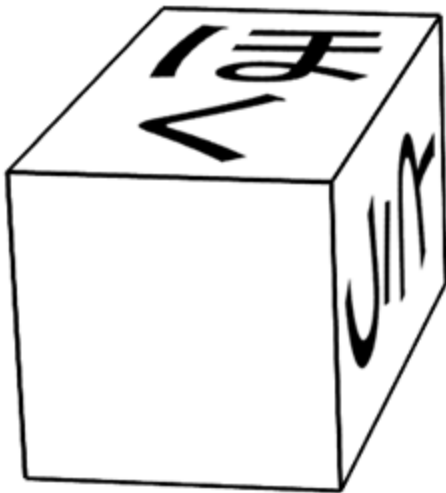
Some more examples...  
(the illusion induced by face texture)



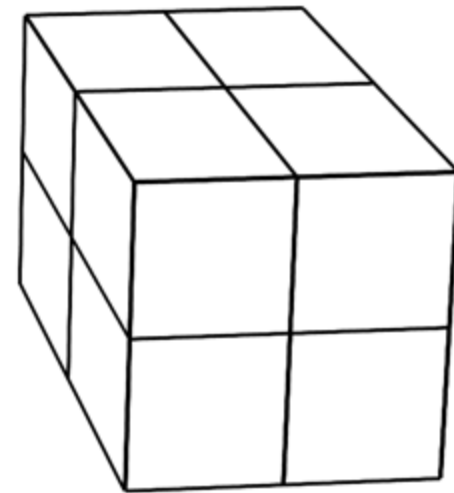
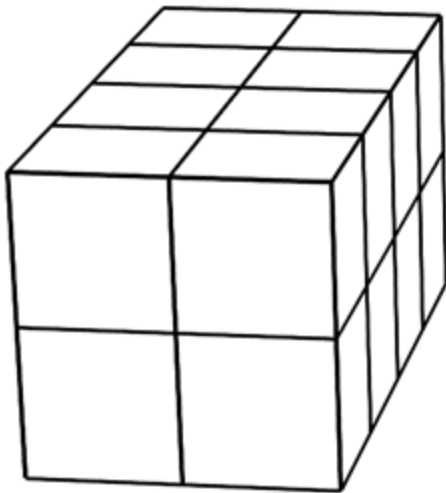
Some more examples...  
(no illusion)



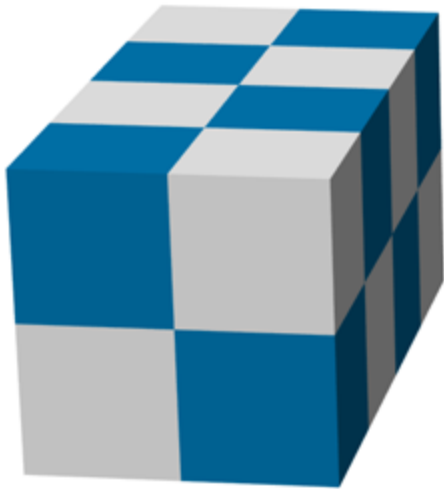
Some more examples...  
(the illusion induced by characters)



Some more examples...  
(no illusion)



Some more examples...  
(the illusion induced by grid texture)



Some more examples...  
(the illusion induced by checkerboard texture)

Thank you