

台大杜鵑花節錯覺展：科學的藝術與藝術的科學

下條信輔教授暨台大師生聯合特展

Close Encounter – Illusions where science meets art

Shinsuke Shimojo's work in collaboration with National Taiwan University

五彩繽紛的蛇

SNAKES SPREADING COLORS

要做什麼？

- 1) 站在遠一點的位置（約2 ~ 3公尺外）看這圖案，你可以把眼睛固定在圖的某一點或者隨處移動看看。蛇形圖案發生了什麼事情？
- 2) 請站近一點（半公尺或更近），前後移動頭的位置（半公尺至1公尺），並保持眼睛盯住圖案的正中央。看看視野周圍的圖案和顏色有何改變。

【原創作品由北岡明佳所作，由吳道安與下條信輔編修於本展覽首展】

What to do?

- 1) Stay relatively far away (2-3m), and just watch the patterns, either with eyes fixated at one spot or moving around. Anything happens in the snake patterns?
- 2) Stay very close (0.5m or less), and move your head back and forth (say 0.5-1.0m or so) while keep fixating your eyes in the middle. See what happens to the patterns and the color in the periphery.

(The original version had been created by Akiyoshi Kitaoka, which was modified by Daw-An Wu and Shinsuke Shimojo for this exhibition.)

發生了什麼事？

- 1) 蛇形圖案的各個部份可能看起來在轉動。這是一個非常新的發現，發生的機制至今尚未被完全了解，研究者們初步認為可能與運動知覺的偵測及適應機制有關。
- 2) 當眼睛凝視於中央，頭前後擺動於靠近圖案的位置時，周圍圖案可能會有閃爍的現象（稱為星光閃爍效果）。此外，中央圖案的顏色可能快速地擴散到周圍，此設計是基於“色彩往外填補”的發現（金井, 吳, 與下條, 2006），顯示出大腦可能利用視野中央較強的訊號來補償視野周圍較弱或較混雜的訊號。

更多嘗試與體驗

- * 讓你眼睛固定或者移動，比較上述兩種效果有何不同。

What's going on?

- 1) Various portions of the pattern (snakes) may appear to rotate. This is a very new discovery, whose underlying mechanisms are not yet understood. However, researchers agree that motion detectors and adaptation may be involved.
- 2) When one moves back and forth at a very close distance with the eyes fixated, the peripheral patterns may cause a "twinkling" kind of impression (called "scintillation effect"). Also, the color of the central elements may spread quickly to the periphery. This is based on the original finding of "color filling out" (Kanai, Wu and Shimojo, 2006), which may reflect the brain capability of compensating weak or noisy signals in the periphery by strong foveal signals.

Other things to try

- * Compare each of the effects while your eyes fixating vs. moving.