

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

顛倒世界

INVERTED WORLD

要做什麼？

至服務櫃台借一副護目鏡並且穩穩的戴好(小心不要把它們摔到地上了)。慢慢轉頭看看周圍，開始小心地走動。注意看看“上面”和“下面”有什麼。你覺得會發生什麼事情？

【原創作品由田中紀之、小林敦與下條信輔在2004年於靜岡科學博物館設立】

What to do?

Borrow the goggles from the reception, and wear it tightly on your head (make sure not to drop them). Slowly look around, and start walking carefully. Pay attention to what's there "above" and "below." What do you think will happen?

(The original version was created by Noriyuki Tanaka, Atsushi Kobayashi & Shinsuke Shimojo at Shizuoka City Science Museum Ru·Ku·Ru in 2004.)

發生了什麼事？

由於我們眼睛內水晶體的構造，網膜上成像為上下顛倒左右相反，為何我們仍然看到正立的外在世界？天文學家克卜勒在17世紀提出這個問題，第一個實驗則由心理學家史崔頓在19世紀完成，這個實驗和後續實驗有著同樣的啟示：在上下顛倒的環境中，最初我們的行為是無望的，無法適應，但在數週之內不只是我們的行為，甚至知覺都能夠調整適應，世界會再變回正立的！最新的研究利用功能性磁振造影技術以視覺皮質區的可塑性確認此點。

更多嘗試與體驗

- * 試著跟你的朋友或者解說員握手。
- * 試著以單腳站立，看看能保持平衡多久。閉上眼後試試看。比較兩者的差異。
- * 請其他人丟一顆球或者是一頂帽子給你，試著接住它。

注意：請記得歸還護目鏡，讓下一位參觀者能夠使用。

What's going on?

Due to the lens in the eyes, our retinal images are upside/left-right inverted. Why do we still see the external world upright? The famous astronomer, J. Kepler, raised this question in the early 17th century. The first experiment was done by a psychologist named G. Stratton at the end of 19th century. This and all the following studies have the same implication. At the beginning our behavior is hopeless in this inverted environment, but not only behavior but also perception are readjusted within weeks; that is, the world will appear upright again! The latest fMRI (functional magnetic resonance imaging) studies further confirmed this by showing plastic changes in the early visual cortices.

Other things to try

- * Try to shake hand with your friend or the instructor.
- * Try to keep standing on only one foot to see how long you can keep the balance. Compare it with "your eyes closed" condition.
- * Ask somebody to throw a ball or a cap or something, and try to catch it.

NOTICE: When you are done, please make sure to return the goggles to their original position for the next guest.