Experiments on patients with phantom limbs suggest that neural connections in the adult human brain are much more malleable than previously assumed. Three weeks after amputation of an arm, sensations from the ipsilateral face are referred to the phantom; this effect is caused by the sensory input from the face skin 'invading' and activating deafferented hand zones in the cortex and thalamus. Many phantom arms are 'paralysed' in a painful position. If a mirror is propped vertically in the sagittal plane and the patient looks at the reflection of his/her normal hand, this reflection appears superimposed on the 'felt' position of the phantom. Remarkably, if the real arm is moved, the phantom is felt to move as well and this sometimes relieves the painful cramps in the phantom. Mirror visual feedback (MVF) has shown promising results with chronic regional pain syndrome and hemiparesis following stroke. These results suggest two reasons for a paradigm shift in neurorehabilitation. First, there appears to be tremendous latent plasticity even in the adult brain. Second, the brain should be thought of, not as a hierarchy of organised autonomous modules, each of which delivers its output to the next level, but as a set of complex interacting networks that are in a state of dynamic equilibrium with the brain's environment. Both principles can be potentially exploited in a clinical context to facilitate recovery of function [1)].

1)
Ramachandran VS. Plasticity and functional recovery in neurology. Clin Med (Lond). 2005 Jul-Aug;5(4):368-73. Review. PubMed PMID: 16138492.