

# FUTURE CENTRE



Rappresentare un Ecosistema

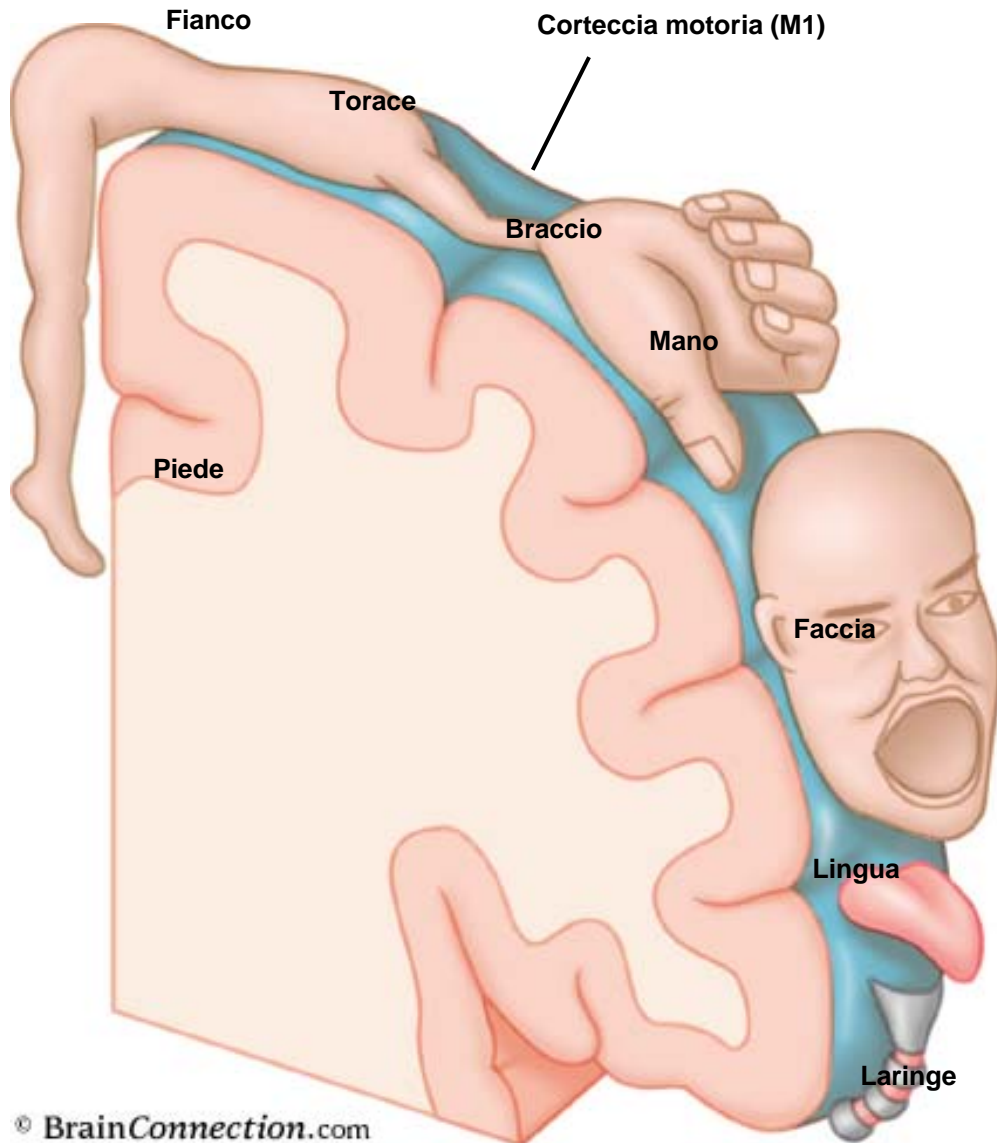
I primi modelli...



Una nuvola che sembra...



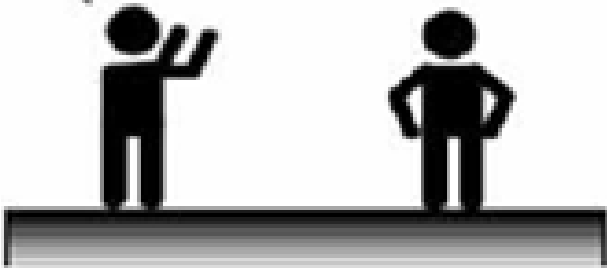
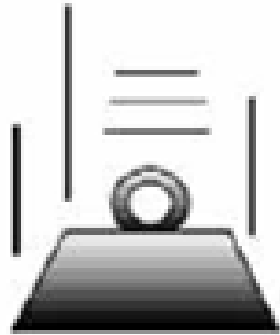
# Chi vive di modelli....



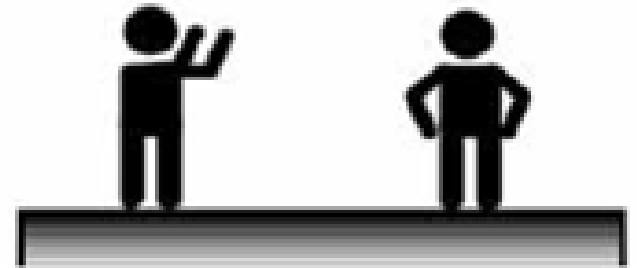
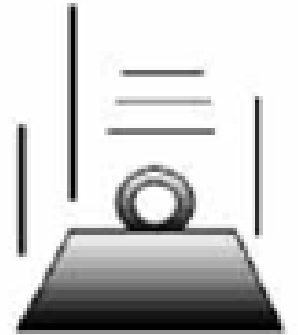
# Modellare la complessità: l'astrazione

Precisione e significato nel mondo reale

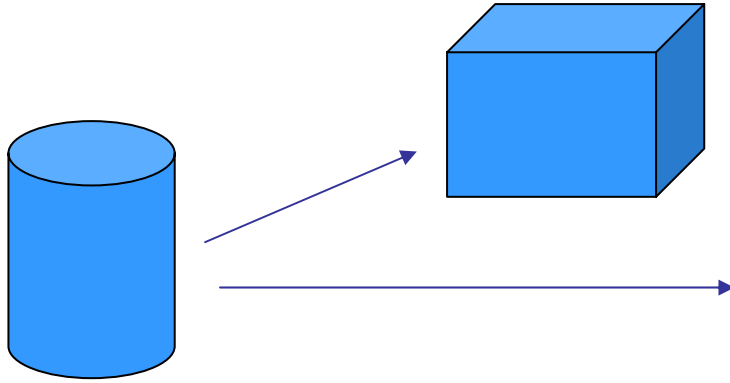
Una massa di  
100 kg si sta  
avvicinando alla  
tua testa a 45m/s



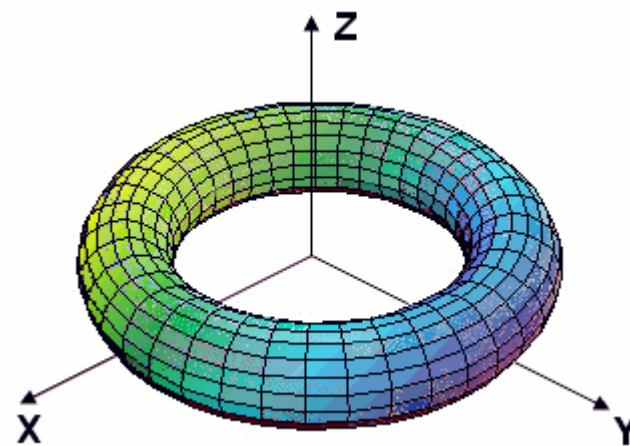
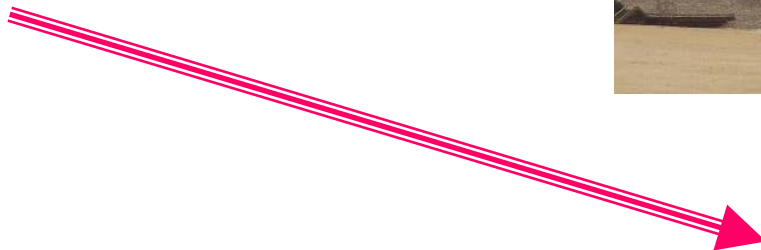
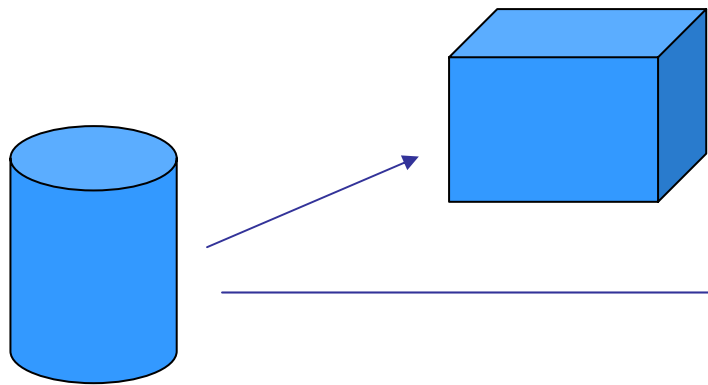
**ATTENTO !**



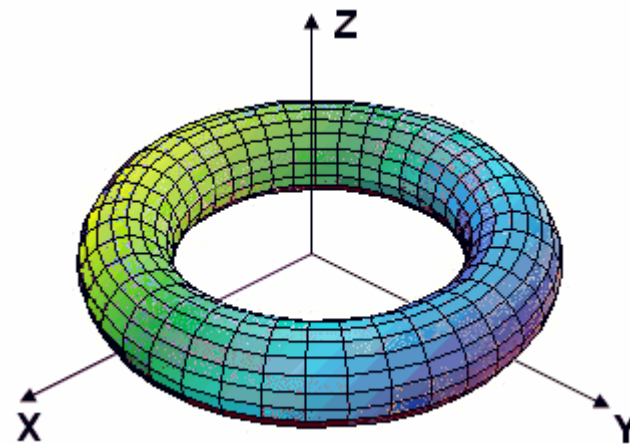
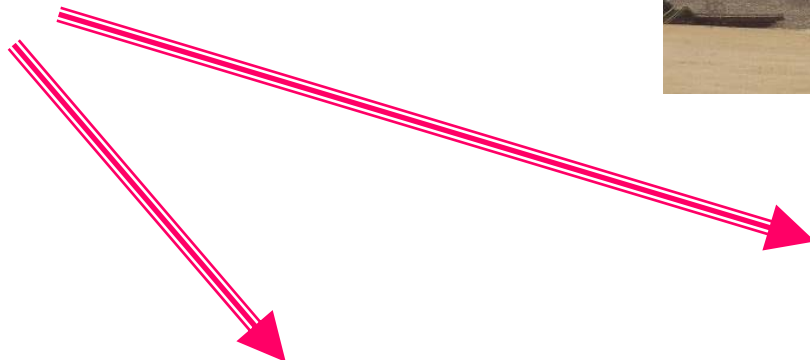
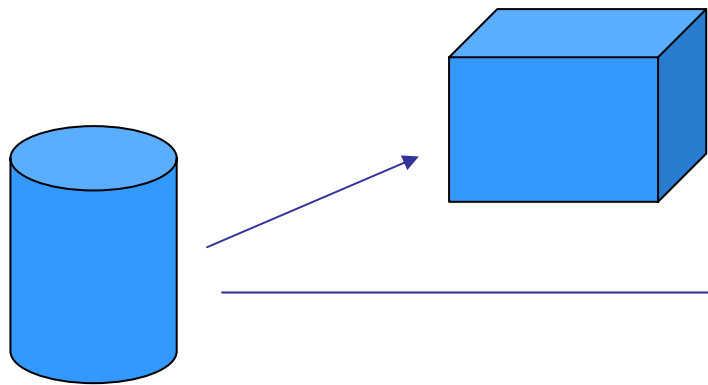
# Modelli o modellini?



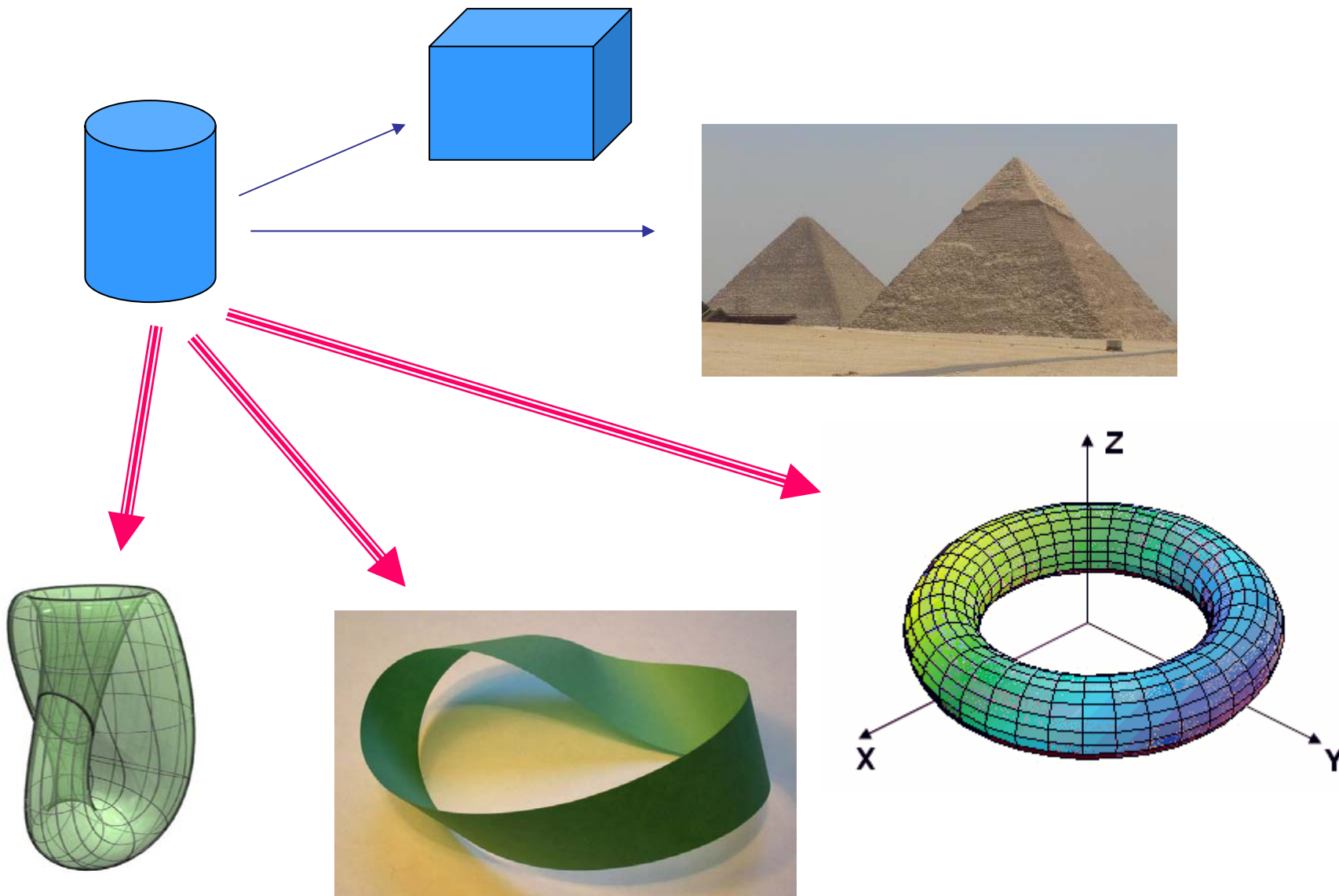
# Modelli o modellini?



# Modelli o modellini?

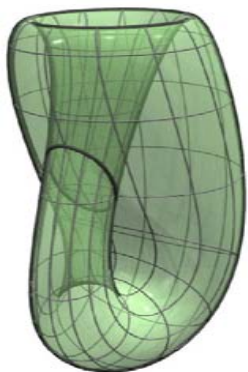


# Modelli o modellini?



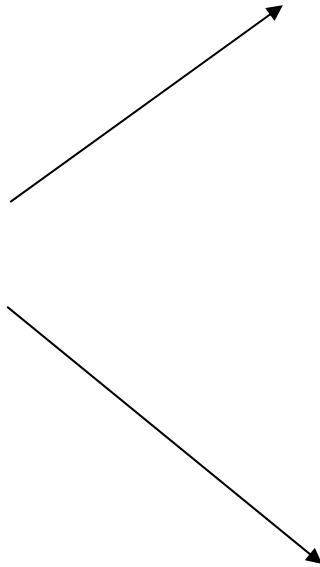
# Modelli o modellini?

## Trasformazione Isomorfa nella 4 dimensione



# Modelli o modellini?

**ISOMORFISMO**

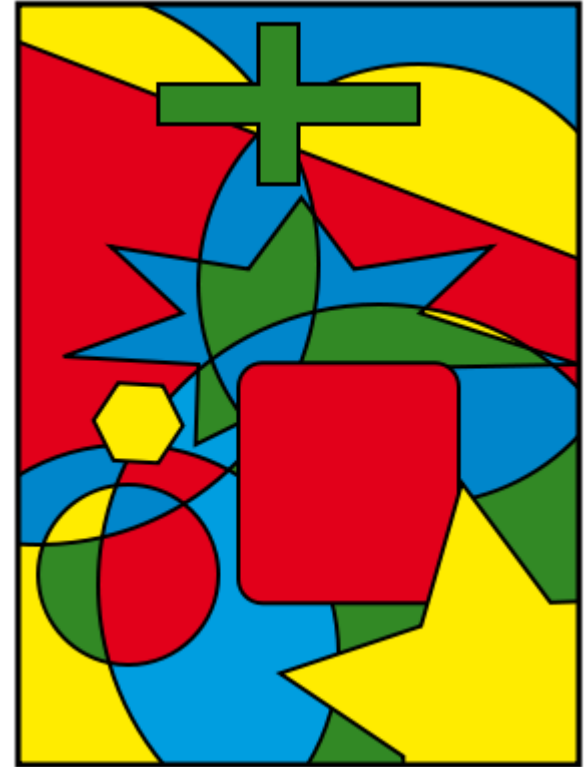


# Il problema dei 4 colori

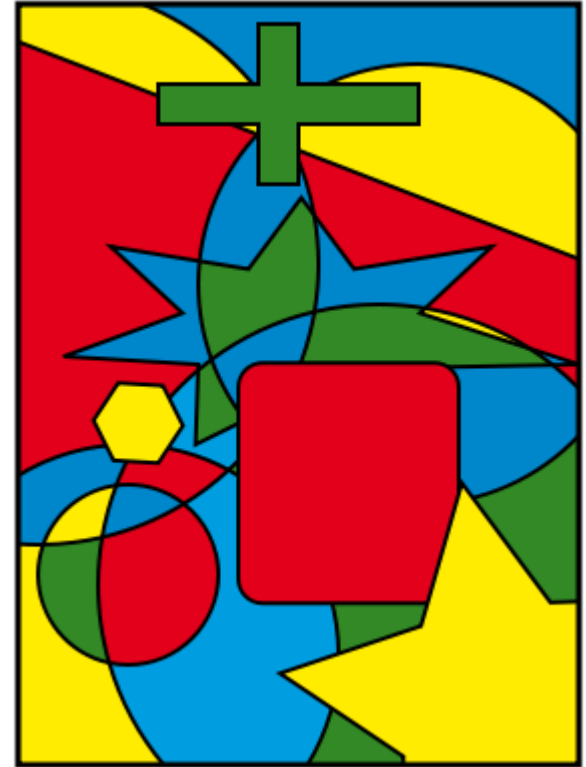
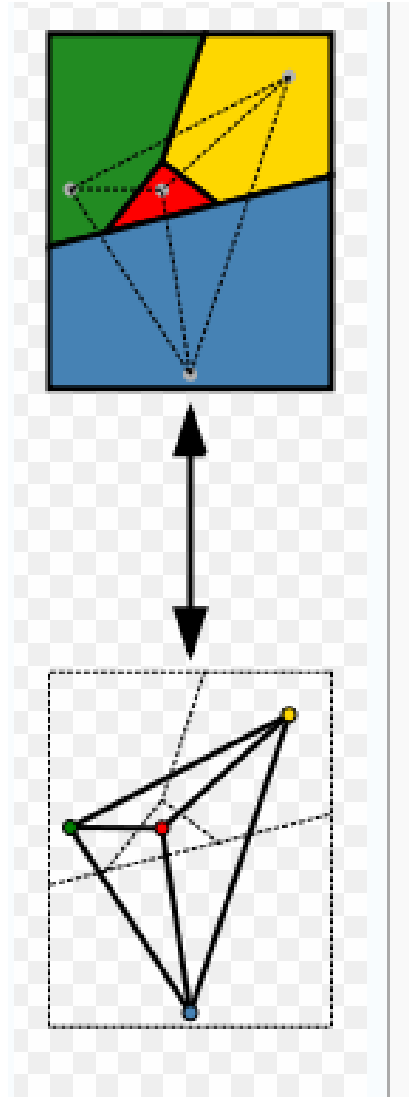
**3 colori non bastano**

**5 colori sono sufficienti**

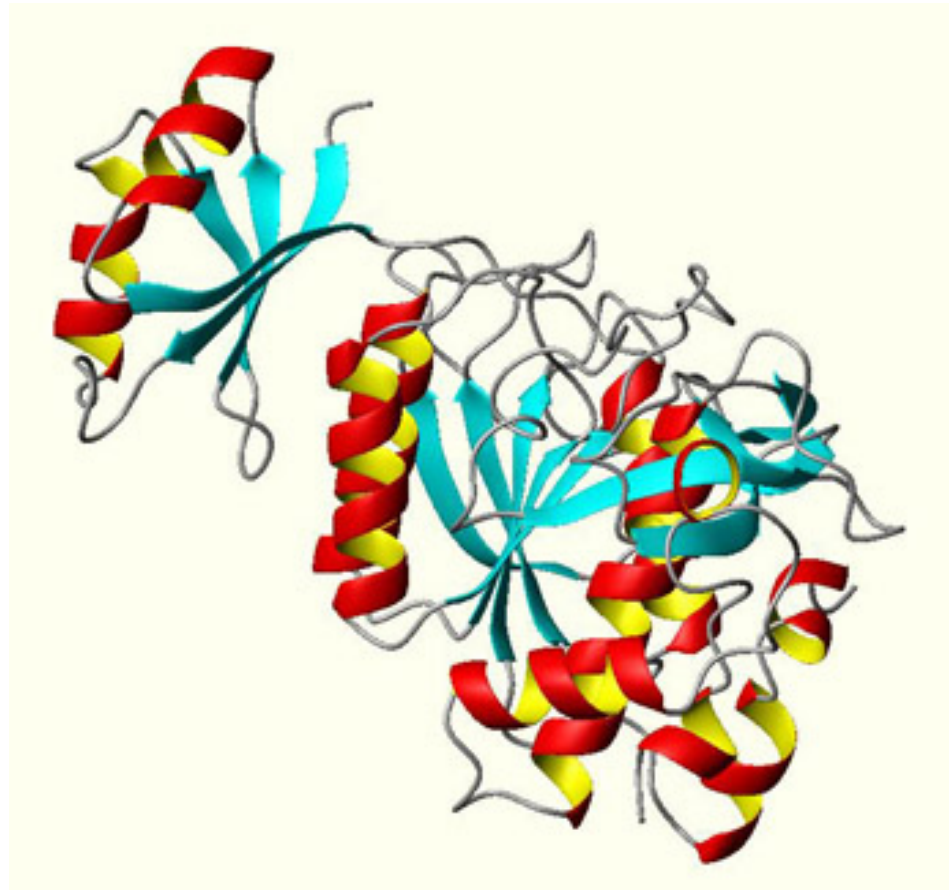
**4?**



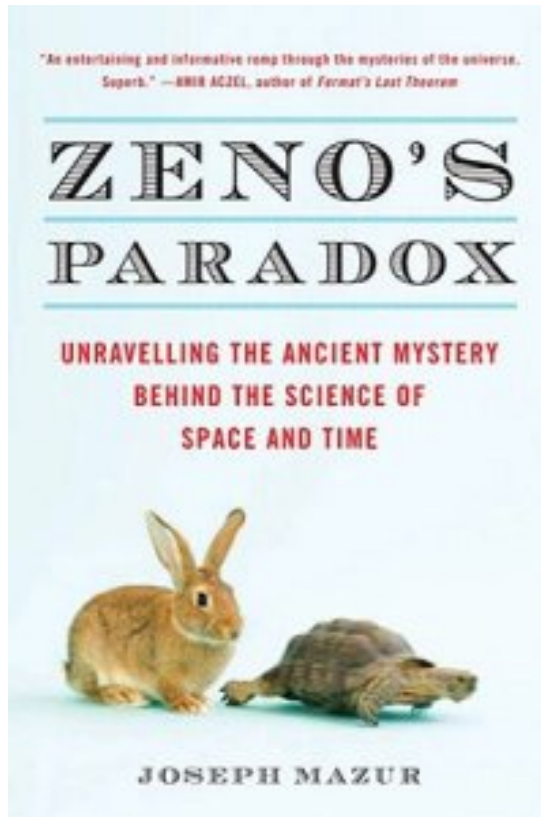
# Il problema dei 4 colori



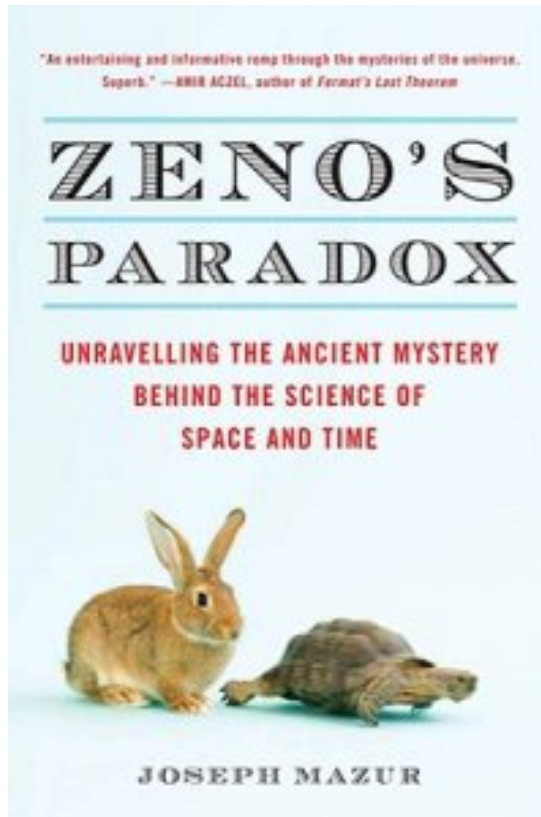
# Modellare la complessità



# Continuo vs Discontinuo



# Continuo vs Discontinuo

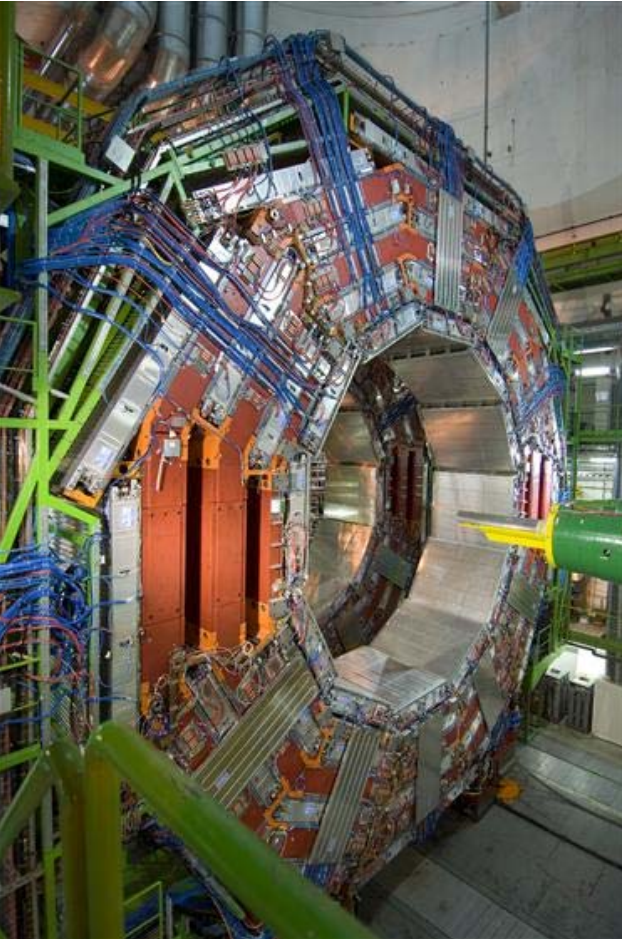


$$\oint_{\partial S} \mathbf{E} \cdot d\mathbf{l} = -\frac{\partial \Phi_{B,S}}{\partial t}$$

$$R_{\mu\nu} - \frac{1}{2}g_{\mu\nu} R + g_{\mu\nu} \Lambda = \frac{8\pi G}{c^4} T_{\mu\nu}$$

$$\left( \beta mc^2 + \sum_{k=1}^3 \alpha_k p_k c \right) \psi(\mathbf{x}, t) = i\hbar \frac{\partial \psi}{\partial t}(\mathbf{x}, t)$$

# Continuo vs Discontinuo



**LHD: Large Hadron Collider**

$$R_{\mu\nu} - \frac{1}{2}g_{\mu\nu} R + g_{\mu\nu} \Lambda = \frac{8\pi G}{c^4} T_{\mu\nu}$$

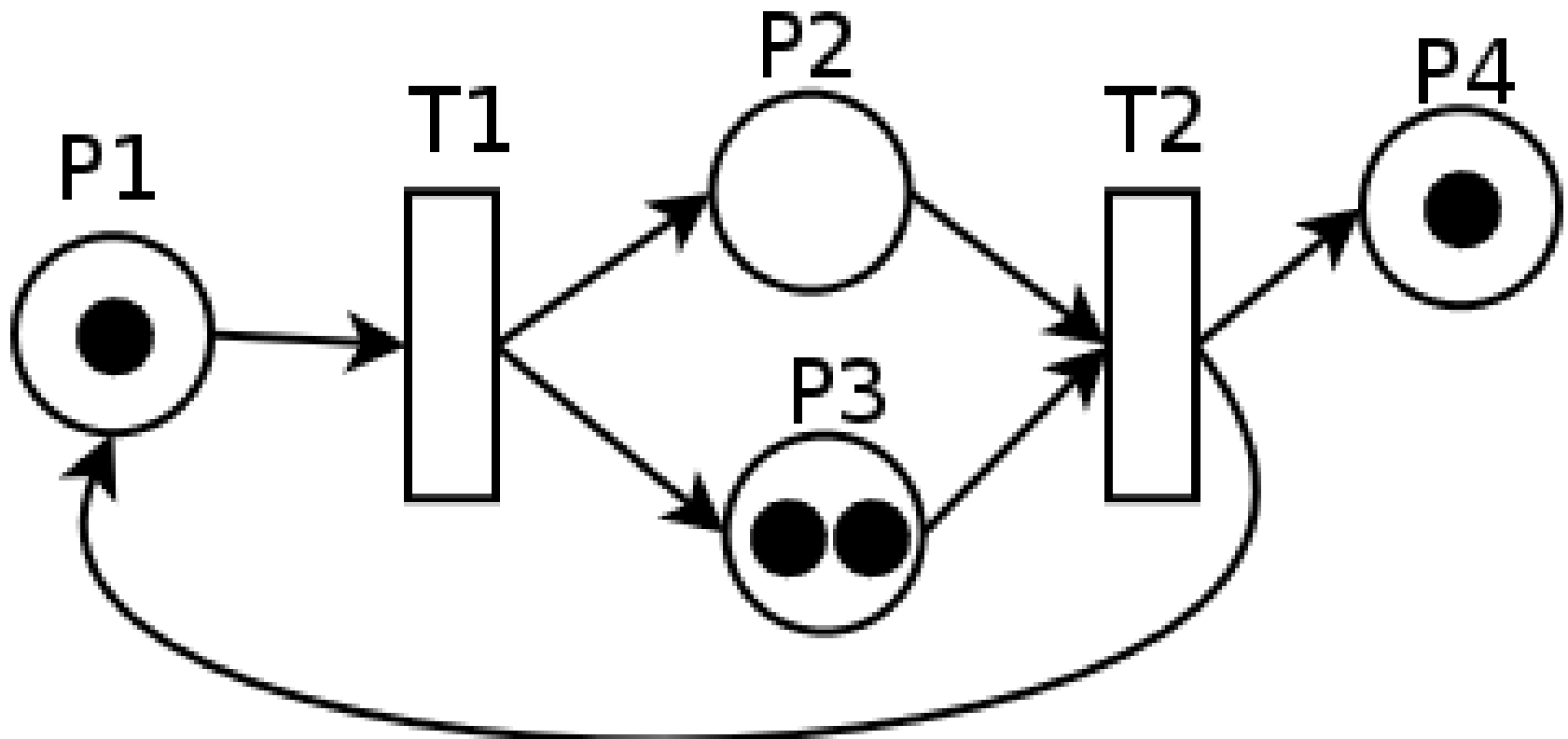
$$\left( \beta mc^2 + \sum_{k=1}^3 \alpha_k p_k c \right) \psi(\mathbf{x}, t) = i\hbar \frac{\partial \psi}{\partial t}(\mathbf{x}, t)$$

# Modellare la complessità: gli strumenti

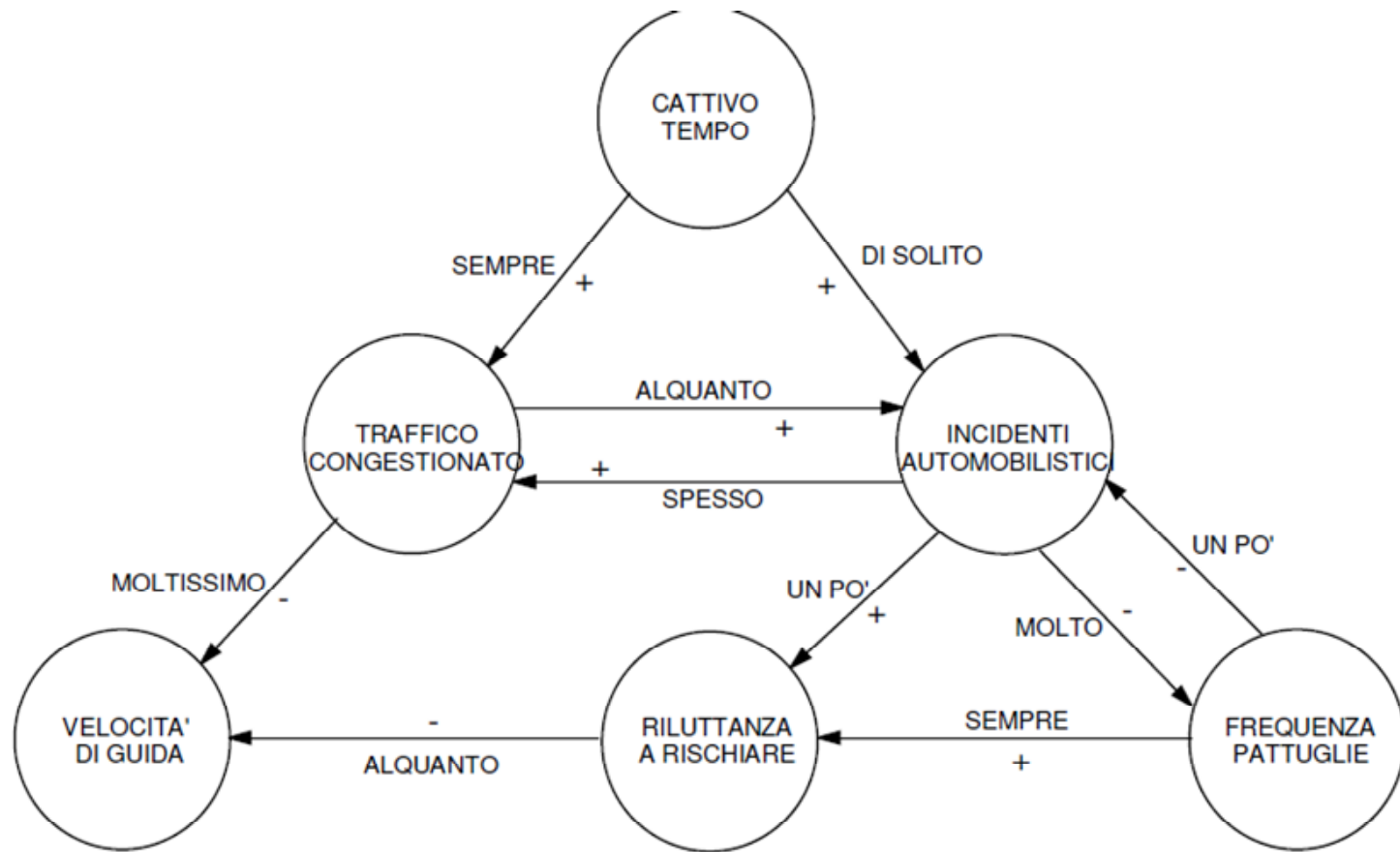


$(A, B, C, D) \rightarrow (A, B, C, D)$   
 $(A, B, C, D) \rightarrow (C, D, A, B)$   
 $(A, B, C, D) \rightarrow (B, A, D, C)$   
 $(A, B, C, D) \rightarrow (D, C, B,$   
 $A),$

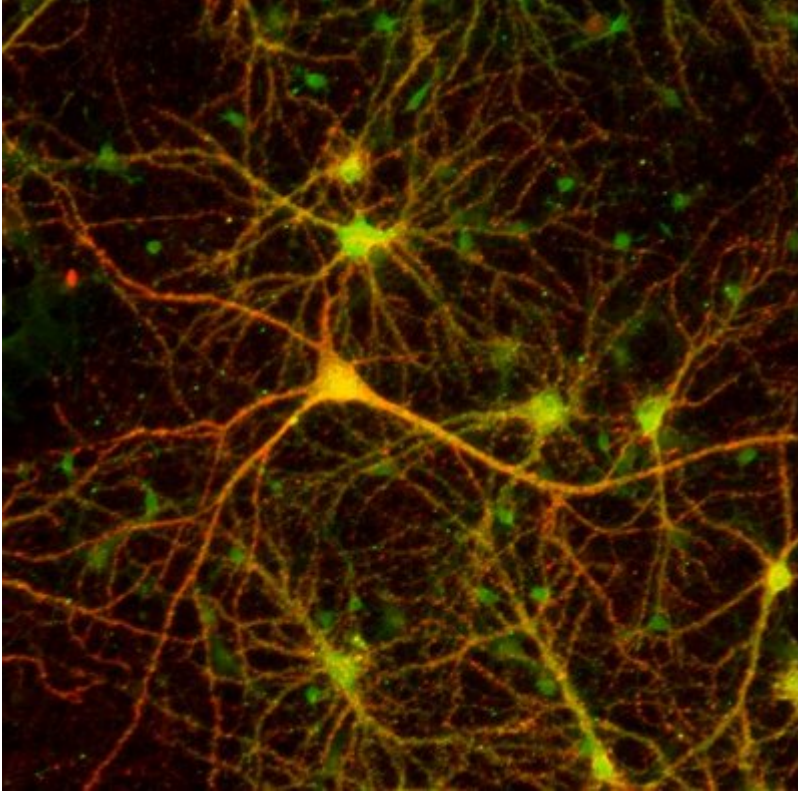
# Modellare la complessità



# Modellare la complessità: Fuzzy



# La Rete nel Cervello

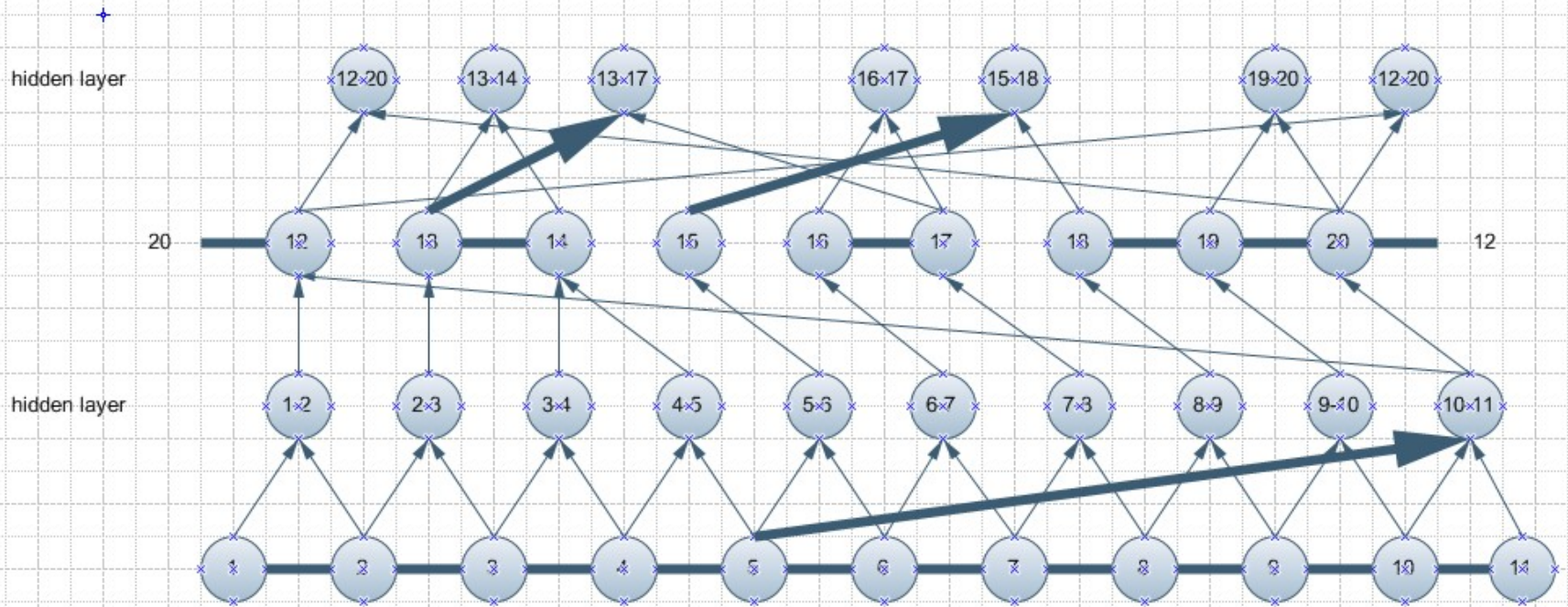


Un esperto in equazioni differenziali

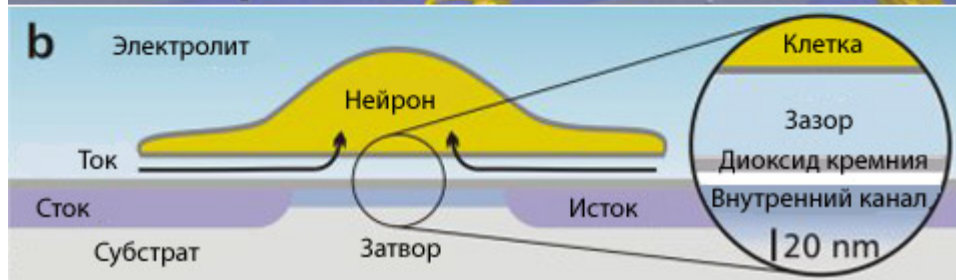
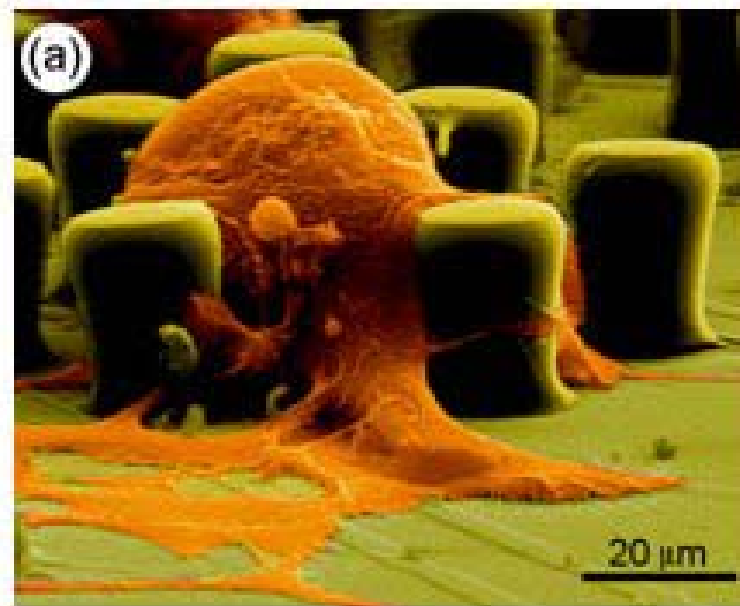
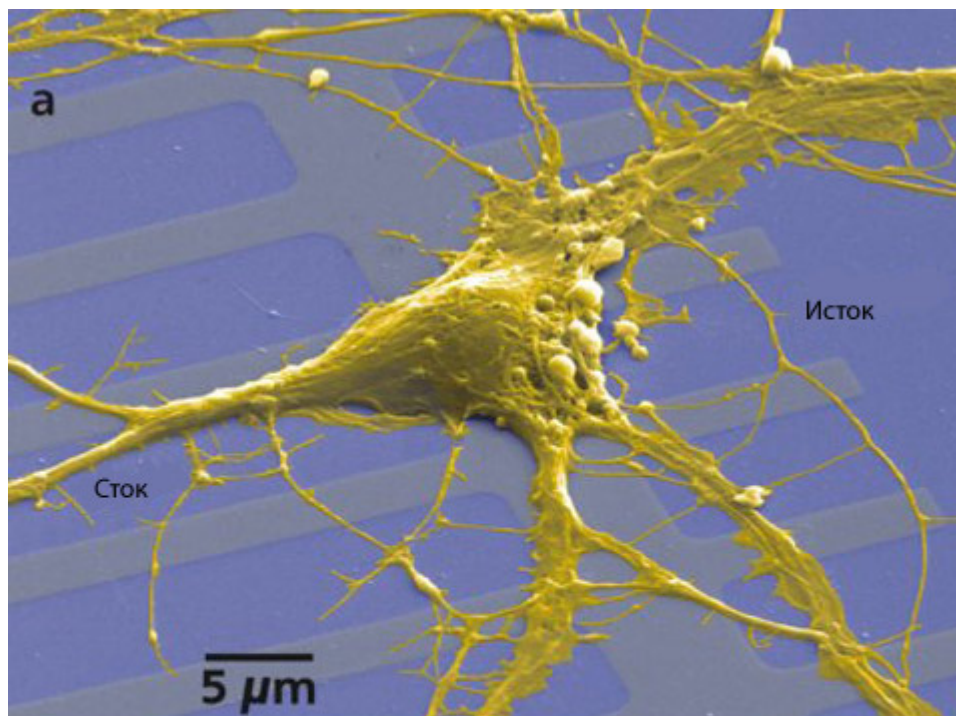


# Reti Neurali

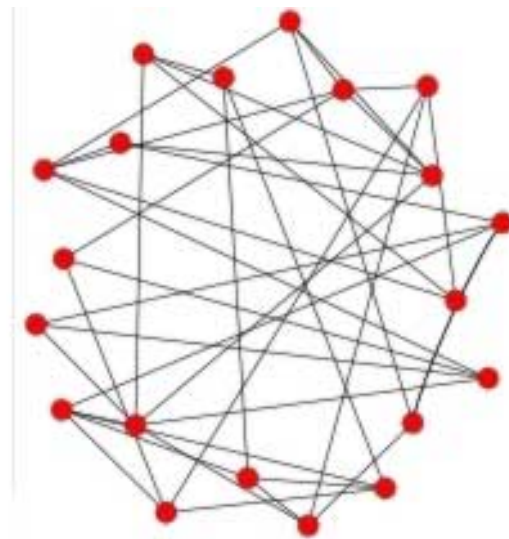
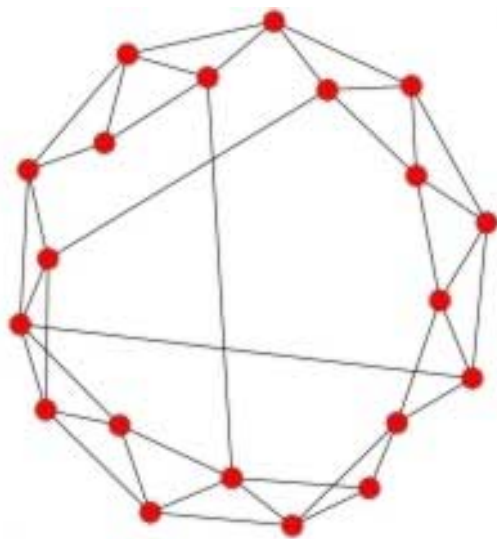
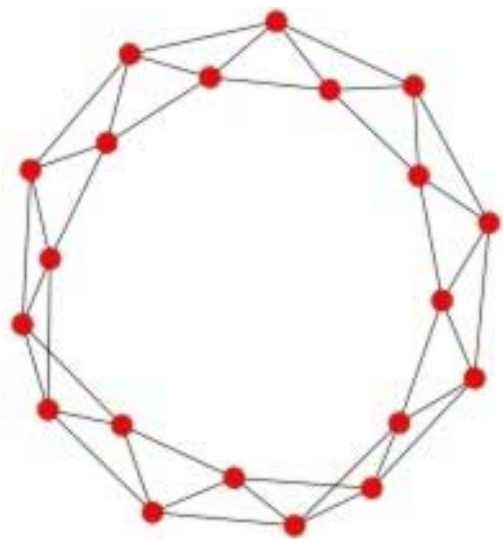
"small world" network mapped on multilayer perceptron



# Reti Neurali Ibride



# Le Reti del Piccolo Mondo

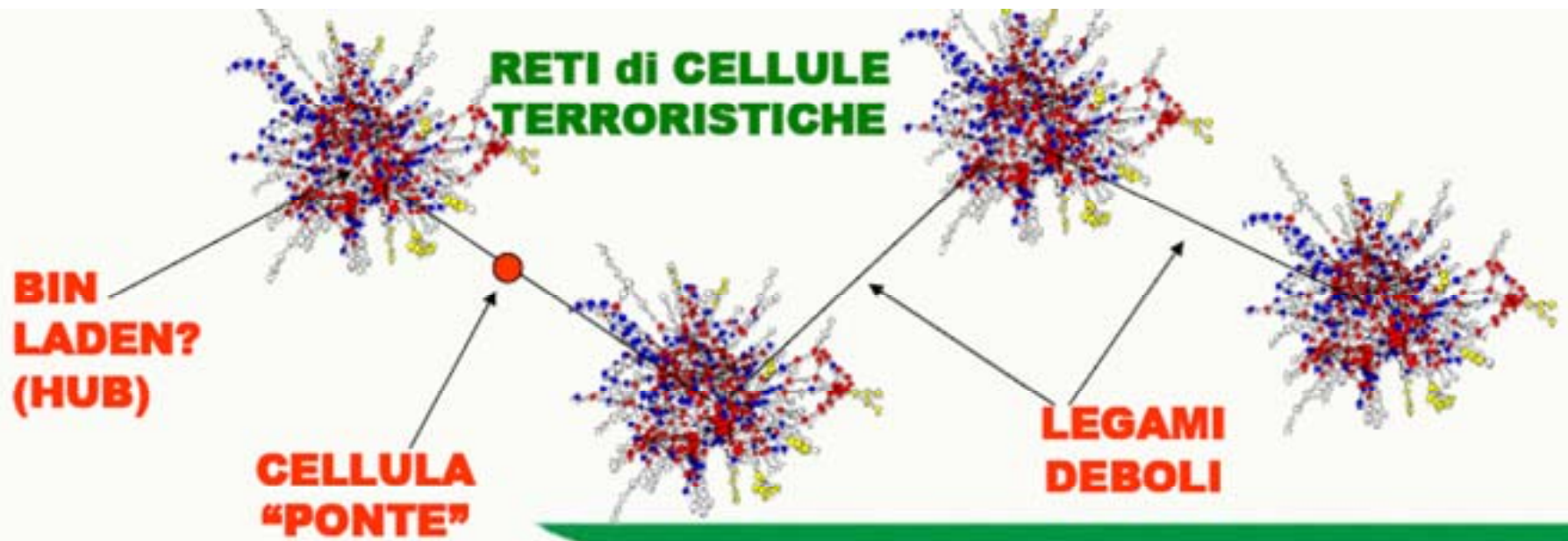


0

Randomness

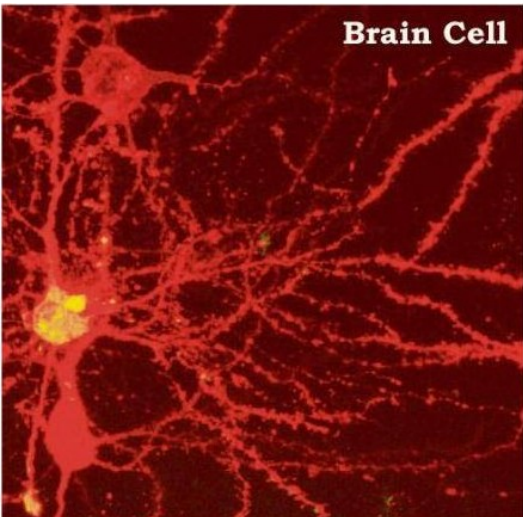
1

# Le Reti del Piccolo Mondo



# Le Reti del Piccolo Mondo

Brain Cell



The Universe

