

心智與自然

知識論、家庭治療、溝通研究、
演化生物學、管理學、系統理論、
教育……等領域不可不讀的一本書

Mind and Nature
A Necessary Unity
by Gregory Bateson

統合生命與非生命世界
的心智生態學

葛雷格里·貝特森◎著
章明儀◎譯



【專文推薦】

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◎◎◎◎◎◎,◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎(John Keats)⁹ ◎◎◎◎◎◎◎◎(Ode on a Grecian Urn)◎◎◎
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歌德(Goethe)の『浮城物語』(Die Erziehung des Volkes)は、市民教育の重要性を説く。市民教育とは、国家の発展と繁栄のために必要不可欠なものである。市民教育を通じて、国民の道徳的・精神的成長を促し、国家の未来を明るくする。

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ॐ शिवाय नमः (Om Shivaaya Namah) is a Sanskrit phrase meaning "Salutations to Lord Shiva". It is a common form of devotion and prayer to Lord Shiva, one of the principal deities in Hinduism. The phrase is often used in rituals, pujas, and daily prayers.

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Occam's razor(刀)和rule of parsimony(简约法则)是科学方法论中的两个重要原则。它们都强调在解释现象时，应选择最简单、最经济的理论。Occam's razor通常指“如无必要，勿增实体”，而rule of parsimony则更侧重于选择假设最少、最简单的模型。两者在逻辑上是相通的，都是为了避免不必要的复杂性。

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9. Lucretius, *On the Nature of the Universe* (Baltimore: Penguin Books) 1924: 110-111 (Titus Lucretius Carus, B.C.98-55), [Google Books](#). [Google Books](#): [Google Books](#). [Google Books](#) [↩](#)

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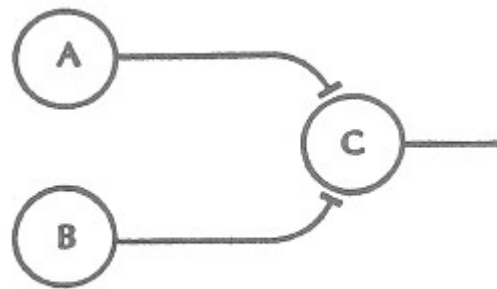
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神經元的整合功能

神經元的整合功能 (Synaptic Summation) 是指神經元接收來自多個神經元的輸入，並根據這些輸入的強度和時間特性，決定是否產生動作電位。圖五展示了兩個神經元 A 和 B 同時興奮神經元 C 的情況。如果 A 和 B 的興奮作用相加，使得 C 的膜電位達到閾值，則 C 將產生動作電位。否則，C 將不會產生動作電位。



圖五

如果 A 的興奮作用較強，而 B 的興奮作用較弱，則 C 的膜電位可能不會達到閾值，因此 C 不會產生動作電位。反之，如果 B 的興奮作用較強，而 A 的興奮作用較弱，則 C 的膜電位也可能不會達到閾值，因此 C 也不會產生動作電位。

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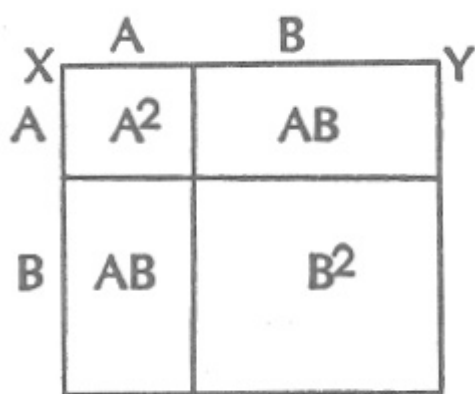
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圖六

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4. ◎◎:◎◎(garmete)◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎ ◎

5. ◎◎:◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
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6. ◎◎◎◎◎◎◎T (C.P. Martin)◎◎◎◎◎◎◎◎◎◎(Psychology, Evolation, tand
Sex, 1956)◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎(More Notebooks of Seixidel Butfiers)◎
◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎.◎◎◎◎◎,◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎:◎◎◎(◎◎◎)◎◎◎◎◎◎◎◎◎◎◎,◎
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7. ◎◎:◎◎◎(Janus)◎◎◎◎◎,◎◎◎◎◎◎◎◎ ◎

A visual representation of the number 37 using base ten blocks. It consists of three vertical rectangles (tens) and seven small squares (ones). The three tens blocks are arranged in a row, and the seven ones blocks are arranged in a row below them.

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၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀၀
 ၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀
 ၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀
 (1959)၀၀:၀၀၀၀၀၀၀၀.၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀၀

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[illegible]

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⁹. J. Von Neumann and O. Morgenstern, The Theory of Games and Economic Behavior (Princeton: Princeton University Press, 1944). [↩](#)

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◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎;◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎(◎◎◎◎,◎◎◎◎◎◎◎◎◎)

◎◎◎◎◎◎,◎◎◎◎◎,◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎,◎◎◎◎◎◎◎◎◎◎◎:◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎---◎◎◎◎◎◎?---◎◎◎◎◎◎◎◎,◎◎◎◎
◎◎◎◎◎(◎◎◎◎◎◎◎◎)◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎(C. S. Peirce)◎◎◎◎◎(abduction)◎◎,◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎
◎◎,◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎

◎◎,◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎
◎◎◎,◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎,◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎?◎◎◎◎◎◎◎◎◎,◎◎◎,◎◎
◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎◎;◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎(dormitive principles),◎◎◎◎◎◎◎◎◎◎(Molière)◎◎◎◎◎¹⁰◎◎◎◎◎◎◎◎◎◎◎(le
Malade Imaginaire)◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎:◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎,◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎,◎◎◎◎◎,◎◎◎
◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎¹¹◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎,◎◎◎◎
◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎---◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎---◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎¹²

10. ◎◎:◎◎◎(1622-1673)◎◎◎◎◎◎◎◎◎◎◎◎◎◎ ◎

11. ◎◎:◎◎◎(reserpine ◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎ ◎

12. ◎◎◎◎◎◎◎◎◎◎◎Warren McCulloch, Embodiments of Mind, MIT Press,
1965 ◎

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◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎
◎◎◎,◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎:◎◎◎◎◎◎
◎◎?◎◎◎◎◎◎◎◎?◎◎◎◎◎◎◎◎?◎◎◎◎◎◎◎◎?

◎◎◎◎◎◎◎◎?◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎
◎,◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎,◎◎◎◎◎◎◎◎◎◎◎:◎◎◎◎◎◎◎◎◎?◎◎◎◎◎◎◎◎◎◎◎
◎?◎

◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎

◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎(◎◎◎)◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎
(◎◎◎)◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎

◎◎,◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎(Natural Mind)◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎
◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎ ◎◎◎◎◎---
◎◎◎◎◎◎◎◎◎¹³

◎◎◎◎◎(◎◎◎◎◎◎◎),◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎
◎◎◎,◎◎◎◎◎◎◎

◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎:◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎?◎◎◎◎◎◎
◎,◎◎◎◎◎◎◎◎◎◎◎◎◎

13. ◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎,◎◎◎◎◎(◎
◎◎◎◎◎◎◎◎)◎◎◎◎◎◎◎◎◎◎◎,◎◎◎◎◎◎◎◎◎◎◎◎◎◎◎ ◎