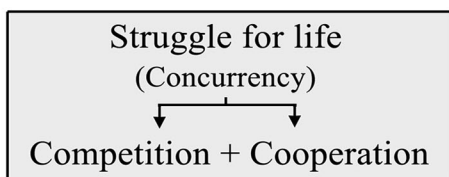


# Struggle to translate Darwin's view of concurrency

SIR — In your Editorial 'Humanity and evolution' (*Nature* **457**, 763–764; 2009), you mention Charles Darwin's image of a fiercely competitive world. But did his view simply refer to the competition among organisms for limited resources?

It was Darwin's first translator, German palaeontologist Heinrich Georg Bronn, who interpreted Darwin's metaphorical 'struggle for existence' exclusively in these terms. Bronn transmuted this expression, which referred to the production of offspring by animals and plants, into *Kampf ums Dasein* ('fight for existence or life'). However, Darwin himself rejected this Malthusian translation.



In a letter to the physiologist Wilhelm T. Preyer on 29 March 1869, Darwin says: "I suspect that the German term, Kampf etc., does not give quite the same idea. The words 'struggle for existence' express, I think, exactly what 'concurrency' does. It is correct to say in English that two men struggle for existence, who may be hunting for the same food during a famine, and likewise when a single man is hunting for food; or again it may be said that a man struggles for existence against the waves of the sea when shipwrecked." (See E.-M. Engels *Ann. Hist. Philos. Biol.* **10**, 31–54; 2005.)

But what does the word 'concurrency', Darwin's synonym for 'struggle for life', mean in this context? According to an English dictionary of 1893, concurrency had several meanings: pursuit of the same object with another, competition, rivalry; running together in place or time; accordance in operation or opinion, cooperation, consent. However, in modern English, concurrency, or 'concurrence' means simultaneous occurrence or coincidence, and agreement or cooperation. Hence, Darwin's term 'struggle for existence' (that is, concurrency) has two opposing meanings: competition and cooperation.

It follows that post-Darwinian discoveries, such as altruism in animal populations or mutualistic (symbiotic) interactions among organisms, cells or organelles — concepts integral to our modern theory of biological evolution — are not in conflict with Darwin's key term, which the philosopher Herbert Spencer later circumscribed as 'survival of the fittest'. If we equate fitness with lifetime reproductive success, the dual meaning of Darwin's word 'struggle', in the sense of concurrency, becomes immediately apparent.

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