Wallace and the Malay Archipelago

In his travels through Indonesia, Alfred Russel Wallace was struck by the abrupt change of species in the short passage between the islands of Benu and Celebes, noting, “in a few hours we may experience an amount of geological difference which only weeks or even months of travel will give us in any other part of the world.” While research since then has found some transition of species typically strong centuries or figures, in the context of accompanying human migration, this demonstration is still considered valid today. A very plausible aspect of this line is its separation of the primarily placental mammals of Asia from the largely marsupial mammals of Australian lineage.
Darwin and Kelvin: The Age of the Earth
Energy Unleashed in Southeast Asia
Energy Unleashed in Southeast Asia
Lecture 1: The Course in Perspective

(Bodenschatz et al.)
Theme 1: Information Theory Approach to Statistical Mechanics

Claude Shannon

Edwin Jaynes

\[ H = - \sum_i p_i \log p_i \]
Theme 2: Applications of Statistical Mechanics - Chemical Potential

Entropic forces - depletion attraction

Adsorption on surfaces

\[ \theta = \frac{Kp}{1+Kp} \]

Theme 3: Interfaces

http://www.cyrannus.com/images/HPAnwendAktiv.jpg
Theme 4: Putting the Dynamics Back in Thermodynamics

Fluorescence recovery after photobleaching (FRAP)

Initial condition
Laser Beam
Photobleach
Recovery

Fluorescence

\[ F_i \]
\[ F_0 \]
\[ \sim 1/2 \]

Time
"Theories of the known, which are described by different physical ideas may be equivalent in all their predictions and are hence scientifically indistinguishable. However, they are not psychologically identical when trying to move from that base into the unknown. For different views suggest different kinds of modifications which might be made and hence are not equivalent in the hypotheses one generates from them in ones attempt to understand what is not yet understood."