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[9, . 309].

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[8, . 538] , «the  
metaphorical use of Darwinian principles risks  
concealing the real mechanisms underlying  
economic and cultural evolution»<sup>3</sup>.

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[10].

[11-13]. «...social and environmental systems coevolve such that environmental systems reflect the characteristics of social systems — their knowledge, values, social organization, and technologies – while social systems reflect the characteristics of environmental systems – their mix of species, rates of productivity, spatial and temporal variation, and resilience. The coevolutionary description of development explains why, and to some extent how, everything is related to everything else<sup>1</sup>» [14].

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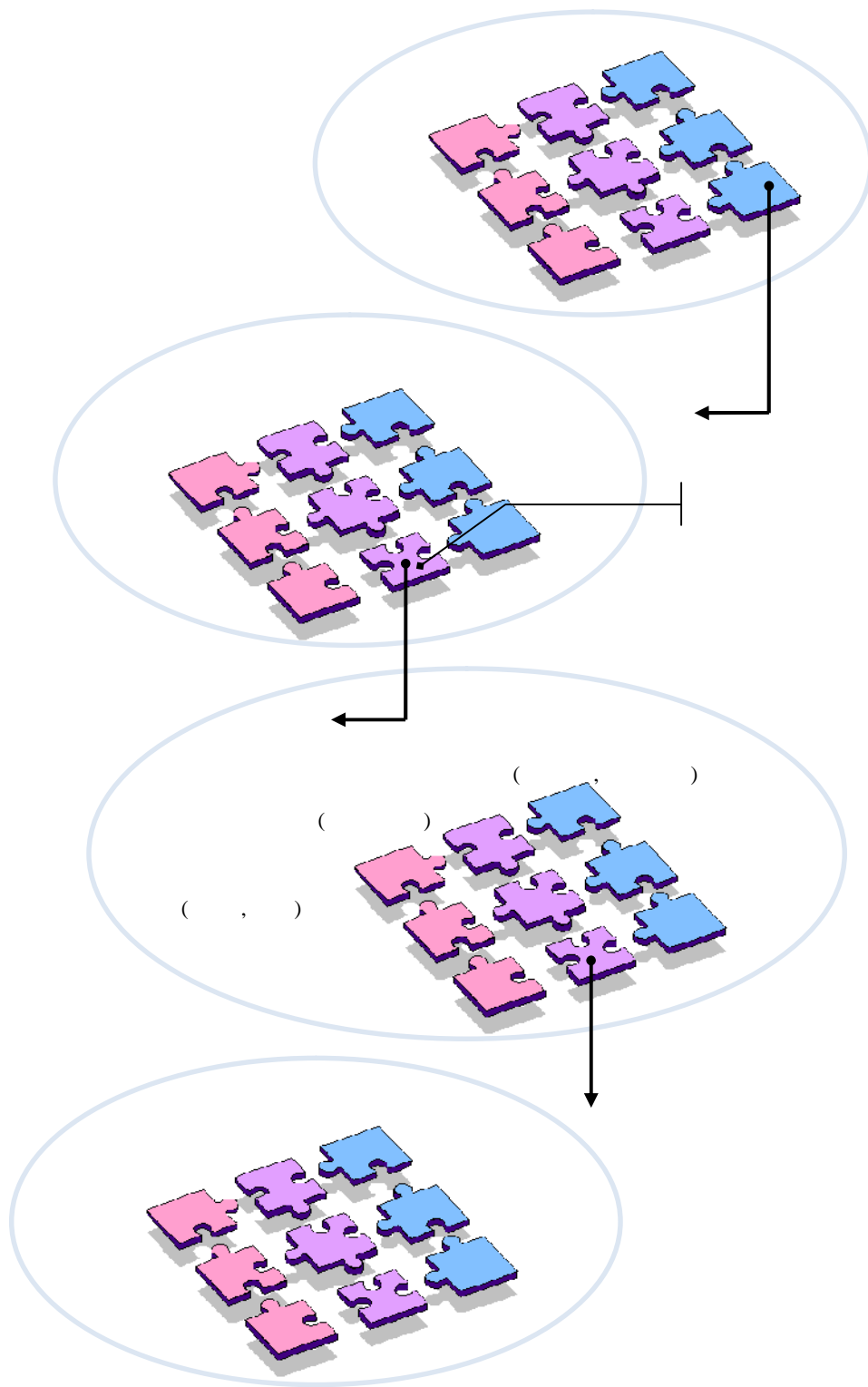
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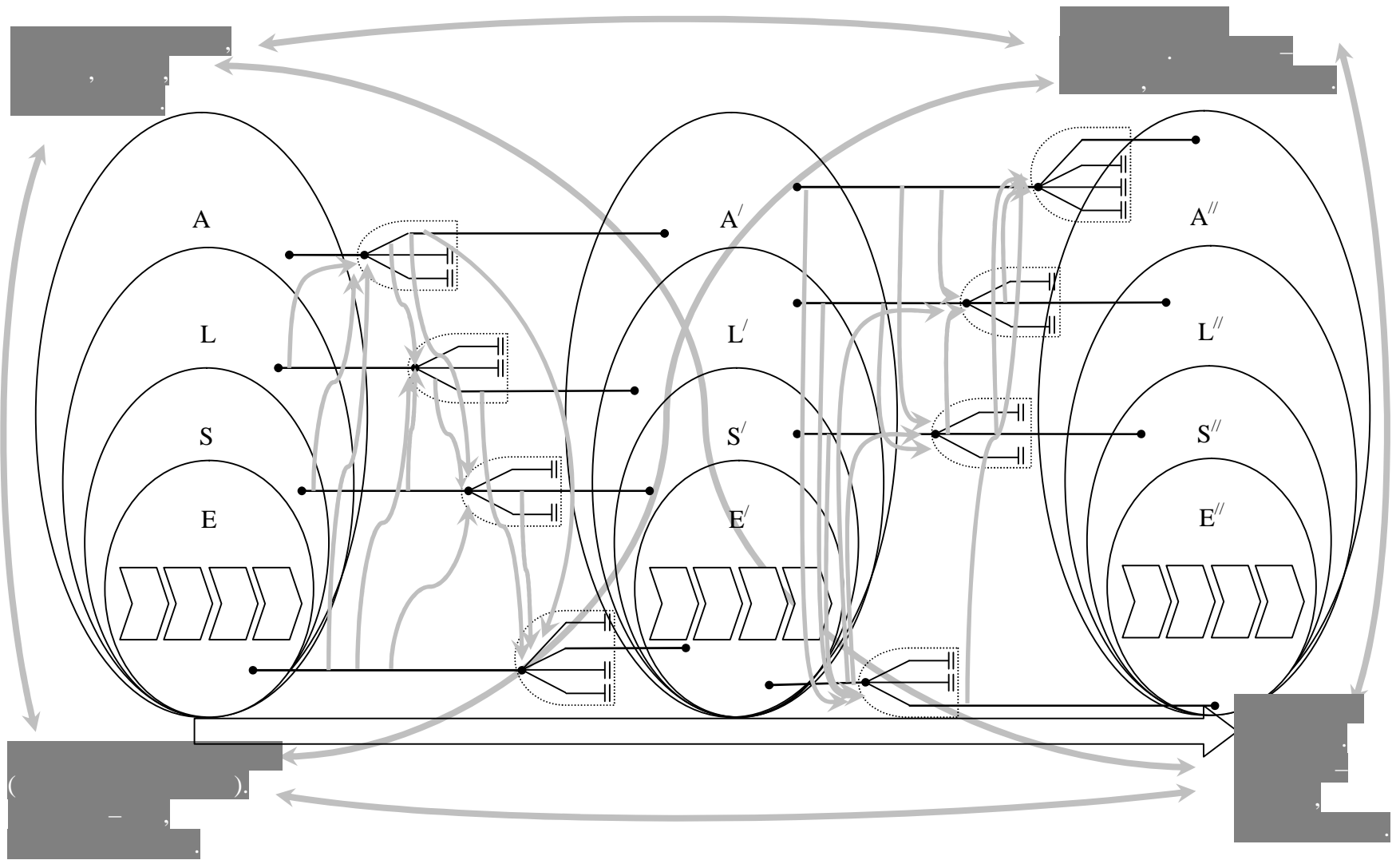
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$$\frac{dN_i}{dt} = N_i \left( \varepsilon_i - \sum_{j=1}^n \gamma_{ij} N_j \right), \quad (1)$$

$N_i$  -

;

$N_j$  -

;

$\varepsilon_i$  -

(1)

$$\left\{ \begin{aligned} \frac{dA_i}{dt} &= A_i (\varepsilon_i^A + \gamma^L L_j + \gamma^S S_q + \gamma^E E_k) \\ \frac{dL_j}{dt} &= L_j (\varepsilon_j^L + \gamma^A A_i + \gamma^S S_q + \gamma^E E_k) \\ \frac{dS_q}{dt} &= S_q (\varepsilon_q^S + \gamma^L L_j + \gamma^A A_i + \gamma^E E_k) \\ \frac{dE_k}{dt} &= E_k (\varepsilon_k^E + \gamma^L L_j + \gamma^S S_q + \gamma^A A_i) \end{aligned} \right. \quad (2)$$

$$\gamma^A, \gamma^L, \gamma^S, \gamma^E \in [0, +\infty],$$

$A_i, L_j, S_q, E_k$  -

;

$\varepsilon_i^A, \varepsilon_j^L, \varepsilon_q^S, \varepsilon_k^E$  -

$\gamma^A, \gamma^L, \gamma^S, \gamma^E$  -

$$\left\{ \begin{aligned} \frac{dA_i}{dt} &= A_i (\varepsilon_i^A + \gamma^L L_j + \gamma^S S_q + \gamma^E E_k) \\ \frac{dL_j}{dt} &= L_j (\varepsilon_j^L + \gamma^A A_i + \gamma^S S_q + \gamma^E E_k) \\ \frac{dS_q}{dt} &= S_q (\varepsilon_q^S + \gamma^L L_j + \gamma^A A_i + \gamma^E E_k) \\ \frac{dE_k}{dt} &= E_k (\varepsilon_k^E + \gamma^L L_j + \gamma^S S_q + \gamma^A A_i) \end{aligned} \right. \quad (3)$$

$$\lim_{t \rightarrow \infty} (\gamma^A, \gamma^L, \gamma^S, \gamma^E) \rightarrow 0.$$

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