The sum of V_A and V_B is not the same as the total genotypic value V_{ijkl}

$$\Rightarrow V_A + V_B \neq V_{ijkl}$$

$$\Rightarrow V_{ijkl} - (V_A + V_B) = I_{AB}$$

→ Interaction effect between Loci A and B

⇒ Decomposition:

$$V_{ijkl} = V_A + V_B + I_{AB}$$

$$= \mu_A + BV_A + D_A + \mu_B + BV_B + D_B + I_{AB}$$

$$= \mu_A + \mu_B + BV_A + BV_B + D_A + D_B + I_{AB}$$

$$= \mu + BV + D + I_{AB}$$

BV → important for selection

$$= \mu + BV + \varepsilon^*$$

$$BV_A = \begin{cases} 2q_A\alpha_A & A_1A_1 \\ (q_A - p_A)\alpha_A & A_1A_2 \\ -2p_A\alpha_A & A_2A_2 \end{cases}$$

$$BV_B = \begin{cases} 2q_B\alpha_B & B_1B_1 \\ (q_B - p_B)\alpha_B & B_1B_2 \\ -2p_B\alpha_B & B_2B_2 \end{cases}$$

$$BV = BV_A + BV_B$$