- One locus : G, 2 alleles G_1, G_2 with $f(G_1) = p$, $f(G_2) = q = 1-p$

Genotypes	V_{ij}	BV_{ij}
G_1G_1	a	$2q\alpha$
G_1G_2	d	$(q-p)\alpha$
G_2G_2	$-a$	$-2p\alpha$

with $\alpha = a + (q-p)d$

- Relationship between BV :

$$BV_{11} - BV_{12} = BV_{12} - BV_{22} = \alpha$$

- Difference between genotypic values (V_{ij}) and the breeding values (BV_{ij})

For G_1G_1 : $V_{11} - BV_{11} = a - 2q\alpha$

$$= a - [2q(a + (q-p)d)]$$
$$= a - 2qa - 2q^2d + 2pqd$$
$$= q(1-2q) + (2pq - 2q^2)d = \mu - 2q^2d$$