**Asymmetric selectivity function:**

Let and be two linear functions intersecting at a point . We have that and . We can express the intercepts as:

We define a continuous piecewise linear function

,

,

We are seeking to smooth over the discontinuity of this model. Taking the first derivative of this model yields a step function:

,

,

The step function is piecewise constant with a discontinuity at . We can replace this function with a smooth (e.g. derivable) version. We can replace it using a scaled logistic function,

, where

where is a scaling factor controlling how rapidly the function changes from to . Taking the integral of this function yields a smooth version of the function.