The explanation of the different consequences in behavior for the calculation models that serve as analogue geometries for Von Békésy's two-channel model, and the actually existing three-channel model, is shown in this figure.

Although the perilymph fluid on either side of the scala media moves in opposite directions as shown in (A), in simplification (B), we see that the two pressure impacts Δp on the basilar membrane, evoked by both fluid movements in scala vestibuli and scala tympani along the basilar membrane, will be identical in strength, but opposite in direction. This means they will cancel each other's stimulus impact on the basilar membrane; the basilar membrane does not have a net stimulus and will remain at rest.

Our model using three contributing compartments, as shown in (C), has a pressure stimulus Δp on both the Reissner membrane and the basilar membrane, which forces both membranes to move in outward directions relative to the scala media because the endolymph fluid in this scala media is at rest, while the perilymph fluid in both the scala tympani and scala vestibuli moves with a velocity v, directed along the core of each of these two scalae.

According to Bernoulli's law, this pressure difference on either side of both the Reissner membrane and basilar membrane is represented by:

$$\Delta p = -\tfrac{1}{2} \rho v^2$$

here ρ is the density in kg/m^3 and v the velocity of the perilymph in m/s.