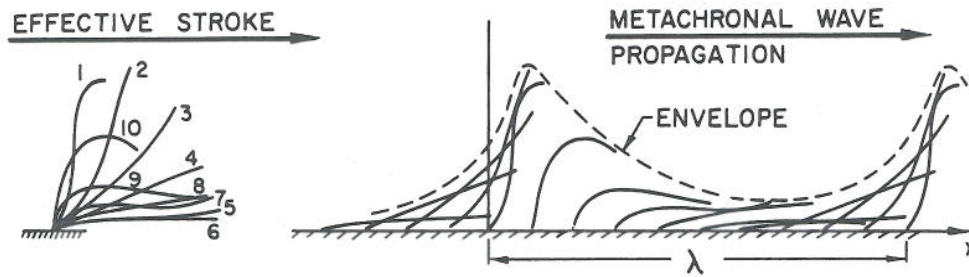


OPALINA , SYMPLECTIC METACHRONISM



PARAMECIUM , ANTIPLECTIC METACHRONISM (APPROXIMATION)

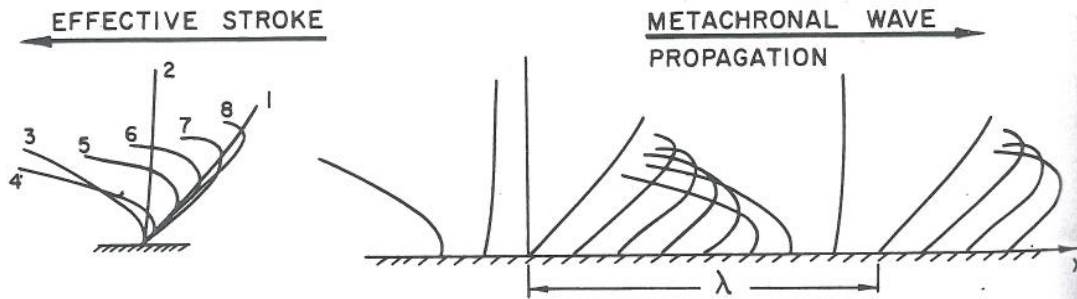


Figure 16 Approximate beat patterns for *Opalina* and *Paramecium* with the positions of an individual cilium at equal intervals in time on the left and the positions of an array of cilia at a given time on the right, showing the symplectic metachronism of *Opalina* and an antiplectic approximation to the metachronism of *Paramecium*.

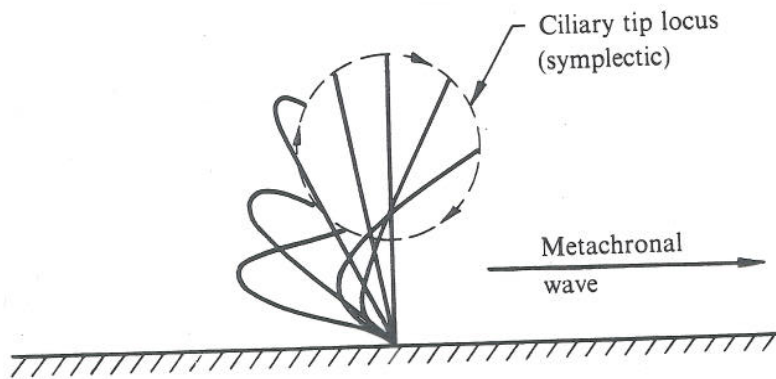


Figure 18 Variations of arbitrary elliptical ciliary tip loci with the parameters K and θ . The figure is correlated with the cell surface horizontal, the fluid above it and the metachronal waves travelling to the right. An example of a ciliary tip locus (symplectic) is indicated in the lower part of the figure.