**Modelling Fish School Behavior in CELL-DEVS**

Different animals that live in groups choose to do so for different reasons. Some may depend on each other for hunting prey, some may choose this so that finding a mate will be easier, some may enjoy one another’s company, and some find safety in numbers. Some types of fish normally live in groups to find safety in numbers.

Normally, schools of fish act as they do so that they can escape a predator. By forming a large group and confusing the predator, the fish can escape form this deadly danger. Almost all individuals in a school of fish are oriented in the same direction and normally move at the same speed. They predict their next move based on several different factors, dome of which are how their surrounding fish move and how close is the predator [1]. Such behavior has also been observed in schools of fish once they want to feed or migrate. Hubbard et al. report that the school members may have a constant speed for some time, but then remain in the same position for a while. Also they mention that in a migration motion, the school normally stays close to the warm and cold water boundary [2].

For this assignment I will be concentrating on the behavior of a school of fish when they come close to a predator. For this scenario, there can be three types of motions for a single fish. A fish can either follow its schooling behavioral pattern, try to adapt a cooperative escape, or try a selfish escape.

I will be using the following papers:

**Behavior pattern (innate action) of individuals in fish schools generating efficient collective evasion from predation** – found at: <http://www.mta.ca/~raiken/Courses/3401/Labs/Lab%20Papers/schooling%202.pdf>

**A model of the formation of fish schools and migration of fish – found at:**

<http://www.sciencedirect.com/science/article/pii/S0304380003004356>