

# The Evolution of a Programming Language

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## Abstract

There are hundreds of programming languages, some of them live long without any modification, but others evolve together with the changes in the software environment. Like human languages there are dead and live programming languages. This presentation discusses one specific family of languages, the Logo family, and one specific Logo dialect within this family – Elica, the Educational Logo Interface for Creative Activities.

Since the birth of the first Logo a few decades ago more than 150 different dialects of Logo were developed. Almost all of them are incompatible with each other. Nowadays there are several active streams of Logo development and Elica is one of them.

The evolution of Elica led to the situation that it is a unique and iconoclastic language. It combines features from the Logo/Lisp languages and languages for professional programming.

The core of the system is based on 11 reserved words upon which a set of libraries has been built. This makes Elica a very flexible environment for creating other applications and for experimenting with CS concepts and ideas. It is possible to use Elica to get a taste of other programming languages, like Lisp, Prolog, Squeak, Assembler; and other environments like Boxer and Functional Machines.

From user point of view the biggest advantage of Elica is that it brings OO programming to non-professional by the introducing NOOP (Natural OOP). NOOP is a method of applying OOP thinking and ideas without changing the syntax of the underlying language. Based on NOOP Elica provides the possibility of 3D graphics, modeling and animation to user as young as middle school age. This makes the system stand out of the crowd of Logo dialects and be a helpful tool for students, teachers and researchers.

## Keywords

Elica, Logo, NOOP, 3D modeling