NOTES ON THE FUTURE OF LOGO

A Perspective for the LOGO Users Meeting, Massachusetts Institute of Technology, August, 1977 - Seymour Papert.

1. These notes are meant as an aide-memoire for some points I shall make on Friday, p.m. and as an agenda for the meeting on Saturday, a.m.

2. The questions I want to discuss are:

    What is LOGO? i.e., of all the features of all the things we call LOGO, which one "essence", which one "accident?"

    Has the LOGO "Experiment" been successful?

    Under what conditions could LOGO have a big real-world impact? Why has it not yet been so?

3. To illustrate the sense of question 1, I shall proceed to the announcement of my personal Academy Awards:

                              AWARDS

    The Best Feature Award goes, of course, to the procedural characters of the language. This includes the ease of fefining procedures, and the benefits of the push-down structures.

    The Best Actor Award goes to the Turtle and it's derivatives. The power of successful LOGO work is born of the action orientation of turtle graphics mated with the procedural form of the language.

From the point of view of Future uses, the Award for most Anachronistic Feature goes to the linear, teletype-oriented approach to syntax in general and editing in particular.

The Most Controversial Feature Award goes to the Applicative-Functional Framework of the language (inherited from LISP and from the brain-washing produced by traditional mathematical notations.) Personally, I think it has become quite clear that the fundamental concept should be more like that of _Actors_ than like that of _Functions_.

The Booby Prize goes to the idea that the way to get a great language is to add new features:
Add graphics primitives, add dynamic graphics, add floating point, add infix operators, add arrays, add iteration statements, add multi-processing, add text editing add tree-structured riling... (Obviously, we at M.I.T. deserve to collect this prize!).

The Award for the Great Idea of which the Least Use has been Made goes to Goldstein, Lieberman and LISP LOGO.
What is needed for research is a highly flexible, modifiable extensible language (or rather language-system, and working conditions in which experience can be gained and compared in many very different uses) of it.

The Award for Heroic Attempts to Achieve some of this
purpose within an inflexible LOGO goes to the tradition
of "LOGO Subsystems" initiated by Solomon's TEACH and
continued by DiSessa, Lawler et al.

4. Has the experiment been successful? Yes!! we have learned that
    part of the LOGO complex is immensely powerful and undoubtedly
    destined to be adopted by the big world of education. Other
    parts turn out to be weak or powerful only as continuations.

5. Under what conditions can LOGO penetrate? I see two major
    pre-requisites:

    -   We learn to lead from our strengths, i.e., understand
        which parts of what we have to offer are truly potent.

    -   We manage to make intellectually solid and imaginatively
        compelling connections with important currents in the
        real world.   Let me illustrate this by its opposite:
        A standard math educator sees what he calls
        "LOGO polygons" and, let us suppose, even likes
        them.   But he does not sense them as really
        important mathematics.   They are not like SETS
        or COMMUTATIVITY or GROUPS or other "real" and
        "profound" mathematics!
        On the other hand, IF he percieved them as Differential
        Geometry and IF he knew why Differential Geometry
        is so important, then he might develop a very
        different reality sense about LOGO.

Similarly in relation to the theory of Learning. We say that LOGO work teaches "debugging", "sub-procedurising", "anthropomorphism", "objective observation of oneself" and so on. But even if these things seem "good" to the educator, they are at best minor goods as long as they do not resonate with his sense of what is REALLY IMPORTANT in learning. When he thinks about learning, he is in a universe whose stars are "BASIC SKILLS", "READINESS", "STAGES", "PIAGET", "SKINNER", "LOCUS OF CONTROL". IF LOGO does not connect with any of that, it will not inspire thim.

A final example. There is a growing number of people with a vision of computers in the fugure... home computers, personal computers, networks of computers, intelligent computers and what not. These are the ones who generate great energy. Perhaps the central question for the Future of LOGO is whether it can connect with the fantasies of a sufficiently big small fraction of these computer visionaries.

In this group we might also include the computer scientists. Does LOGO appear to them to be a serious representative of computer science? Is it in our own eyes?