Three Microworlds

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A Logo Example

The Logo turtle is what we call a 'transitional object' in a 'microworld'. The turtle has been used often in the way we are interested in using transitional objects. It is a small triangle which can be directed about the screen leaving a trace of its travels. Communication with the turtle happens in everyday language and the images which it produces on the screen can be simple or very complex:

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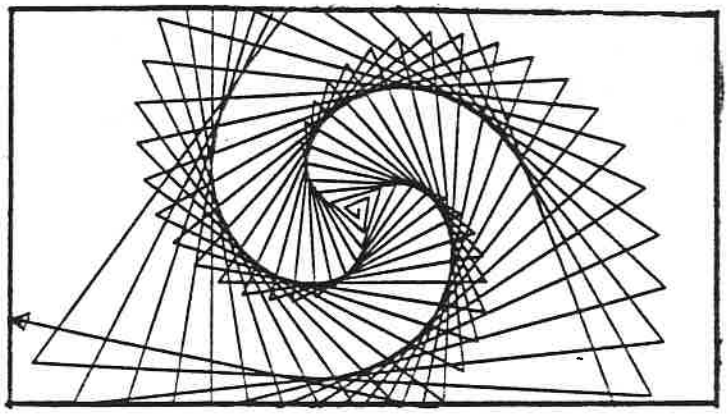
MAKE "SIZE 5
REPEAT 100 [FORWARD :SIZE RIGHTTURN 123 MAKE "SIZE :SIZE + 5]
```



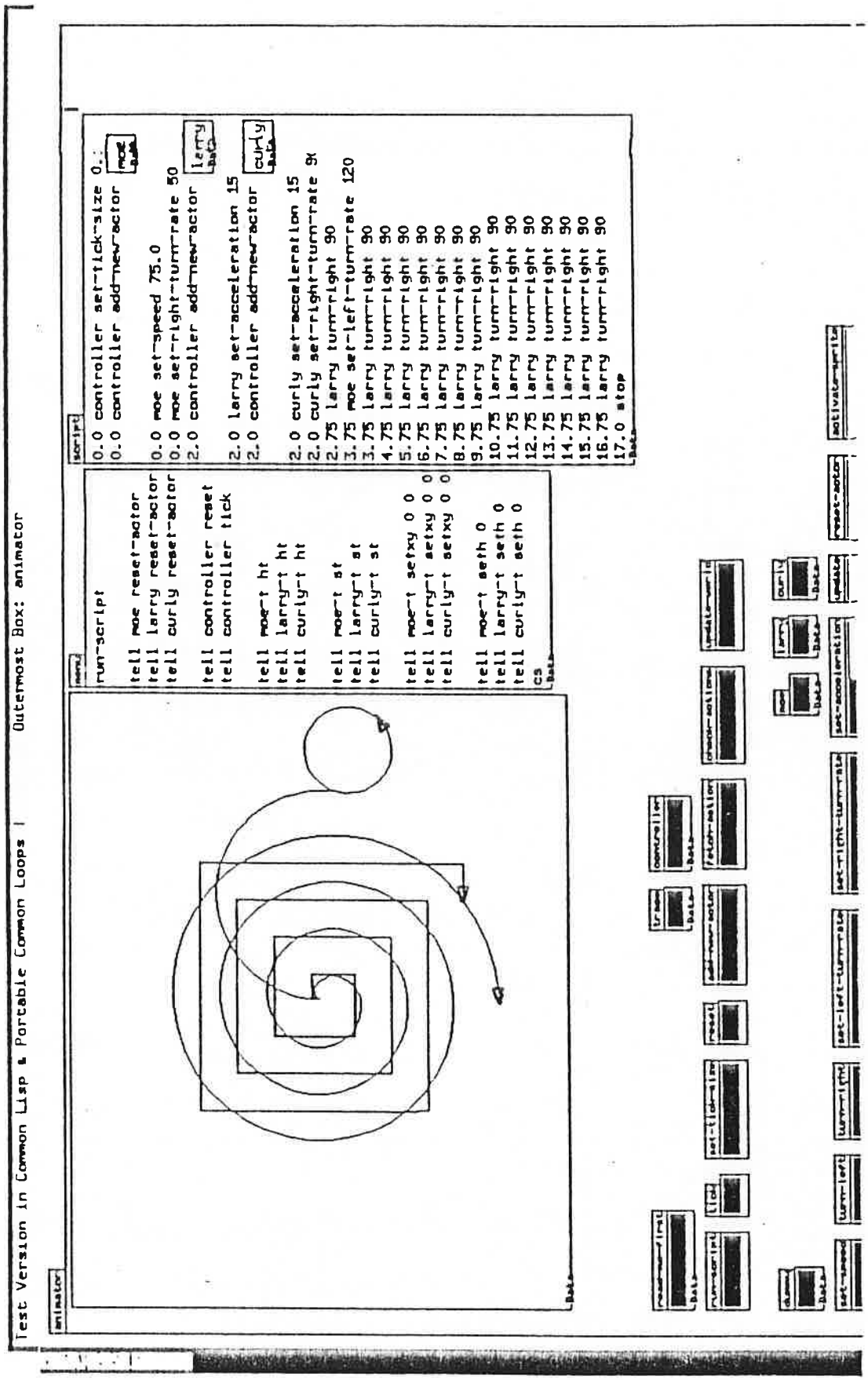
At any time a list of commands can be named and the new name is incorporated into the language. In this way complex actions can be constructed from the original set of 'primitives' (Abelson and diSessa,1981).

Two Boxer Examples

Professor diSessa is building a physics 'microworld' within Boxer with some children. He is looking particularly at how the Boxer medium allows the children to represent their knowledge, how they use it to integrate and refine their understanding of physics, what they understand physics to be in the light of their empirical observation of the physical world and their representations of it in the Boxer environment, and how well they learn traditional physics having had these experiences. The final design of Boxer will be informed by this research (diSessa, 1989).

Gigante wanted to help some students with the concept of time. He introduced the place of time in kinematics in the context of actors participating in a play:

The actors are a number of turtles whose motions are controlled by different parameters: Curly is told how far forward to go, Mog has constant velocity so is told for how long to go, Larry has constant acceleration and another turtle has constant velocity and turn. 'Controller' has a script and directs the actors about the screen merely by nominating the times at which they are to start and stop acting. All the turtles can be given the same commands with respect to time and they retain their 'intelligence' about their position on the screen and how to perform other commands


Test Version in Common Lisp & Portable Common Loops |
Outermost Box: animator
animator
menu
runscript
tell moe reset-actor
tell larry reset-actor
tell curly reset-actor
tell controller reset
tell controller tick
tell moe ht
tell larry ht
tell curly ht
tell moe st
tell larry st
tell curly st
tell moe setxy 0 0
tell larry setxy 0 0
tell curly setxy 0 0
tell moe seth 0
tell larry seth 0
tell curly seth 0
cs
script
0.0 controller set-tick-size 0.
0.0 controller add-new-actor moe
0.0 moe set-speed 75.0
0.0 moe set-right-turn-rate 50
2.0 controller add-new-actor larry
2.0 larry set-acceleration 15
2.0 controller add-new-actor curly
2.0 curly set-acceleration 15
2.0 curly set-right-turn-rate 9
2.75 larry turn-right 90
3.75 moe set-left-turn-rate 120
3.75 larry turn-right 90
4.75 larry turn-right 90
5.75 larry turn-right 90
6.75 larry turn-right 90
7.75 larry turn-right 90
8.75 larry turn-right 90
9.75 larry turn-right 90
10.75 larry turn-right 90
11.75 larry turn-right 90
12.75 larry turn-right 90
13.75 larry turn-right 90
14.75 larry turn-right 90
15.75 larry turn-right 90
16.75 larry turn-right 90
17.0 stop