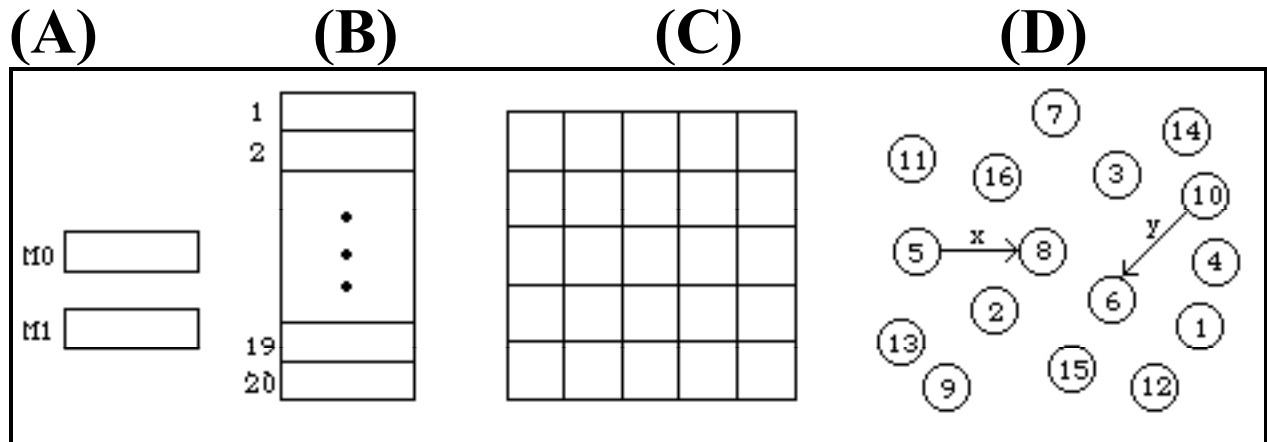


MEMORY IN GP

DIFFERENT APPROACHES TO MEMORY AND STATE



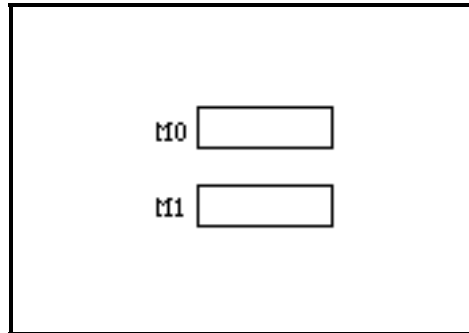
(A) Named memory (settable variables) using terminals M0 and M1 and functions (SETM0 X) and (SETM1 Y) (Koza 1992)

(B) Indexed memory similar to linear computer memory (Teller 1994) using functions (READ K) and (WRITE X K)

(C) Matrix memory and memory isomorphic to world (Andre 1994)

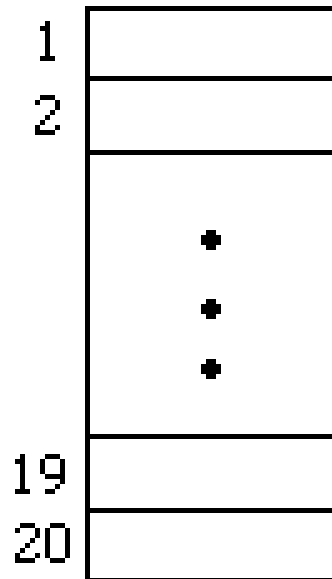
(D) Point-labeled, line-labeled directed graphs (Brave 1995, 1996)

SETTABLE VARIABLES AND SETTING FUNCTIONS (KOZA 1992)



- **FUNCTIONS (Writing)**
 - SETM0 (arg1)
 - SETM1 (arg1)
- **TERMINALS (Reading)**
 - M0
 - M1

LINEAR INDEXED MEMORY (TELLER 1994)

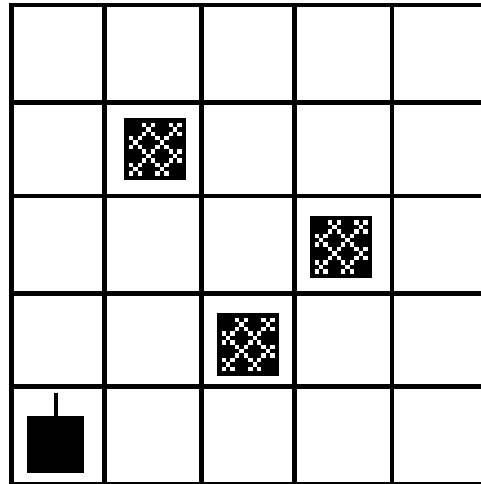


• FUNCTIONS FOR READING AND WRITING

- WRITE(expression, address-arg)
- READ(address-arg)

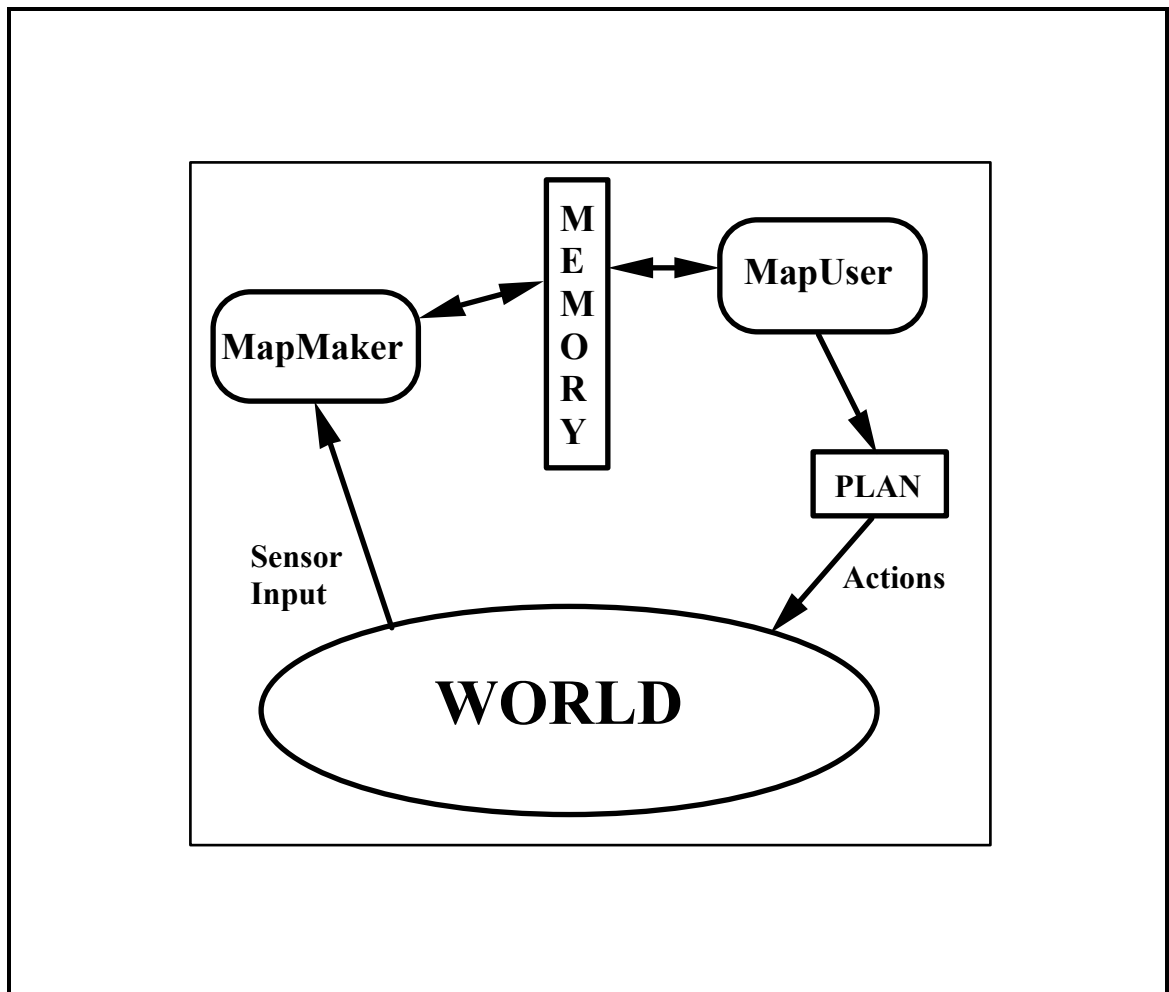
LINEAR INDEXED MEMORY (TELLER 1994)

TWO-DIMENSIONAL ARRAY



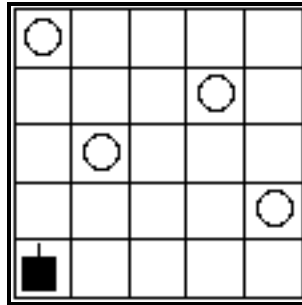
MATRIX MEMORY — MEMORY ISOMORPHIC TO WORLD (ANDRE 1994)

GOLD-DIGGER WORLD WITH “MAP-MAKER” AND “MAP-USER”



MATRIX MEMORY — MEMORY ISOMORPHIC TO WORLD (ANDRE 1994)

THE 5 x 5 GOLD-DIGGER WORLD



5 x 5 MEMORY

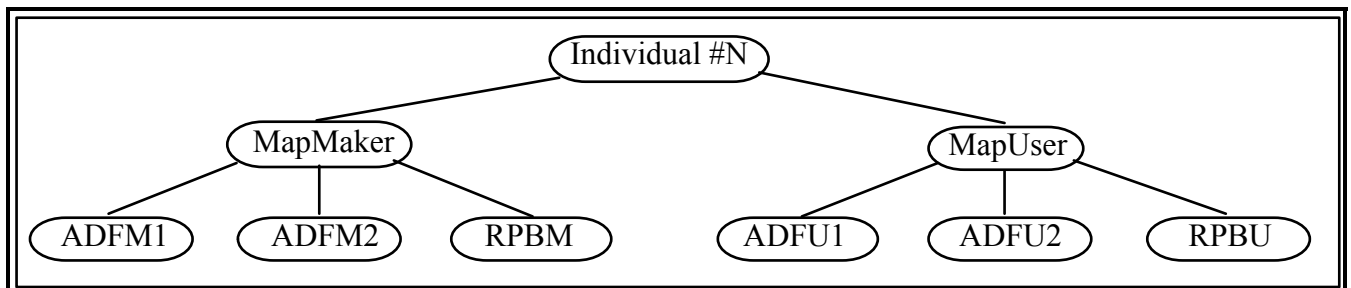
1				
			1	
	1			
				1

FUNCTIONS

- WRITE(expression, address-arg)
- READ(address-arg)

MATRIX MEMORY - MEMORY ISOMORPHIC TO WORLD (ANDRE 1994)

MAP-MAKER AND MAP-USER BRANCHES OF MULTI-PART PROGRAM

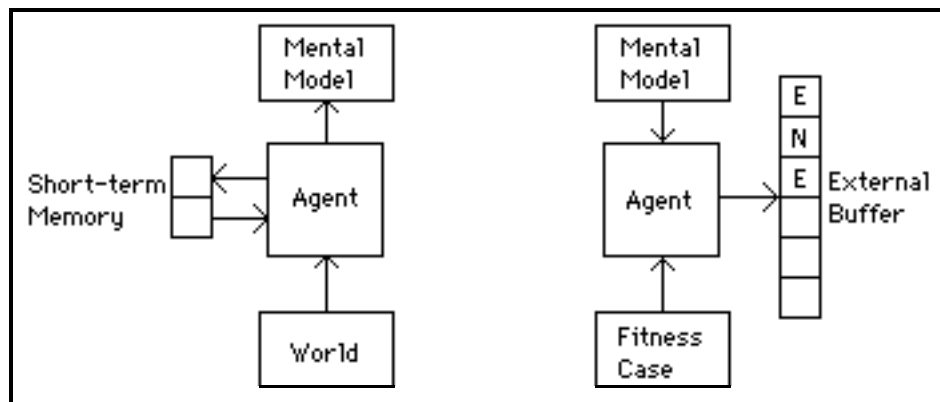
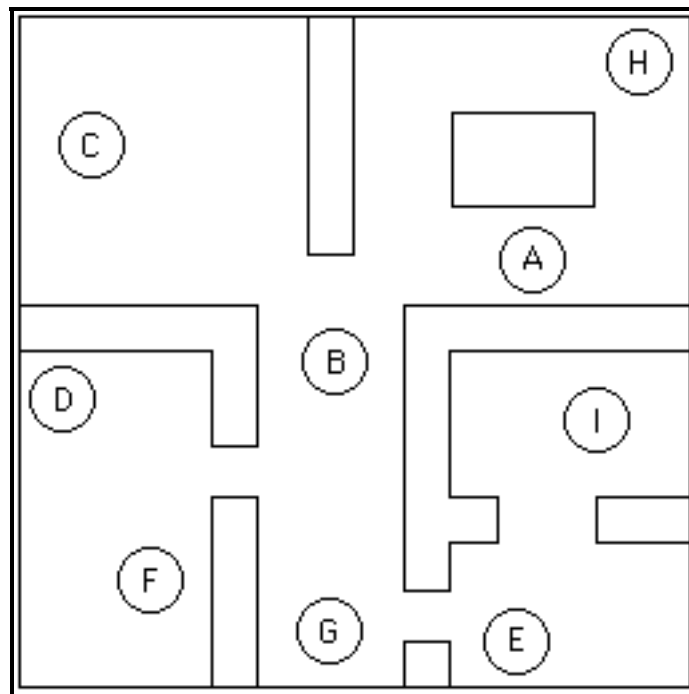


MEMORY ISOMORPHIC TO WORLD (ANDRE 1994)

TYPICAL MEMORIES PRODUCED BY MAP-MAKER

a)	<table border="1"><tr><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr></table>	1	0	1	1	1	1	0	0	1	0	1	1	1	0	1	0	b)	<table border="1"><tr><td>11</td><td>1</td><td>11</td><td>11</td></tr><tr><td>11</td><td>11</td><td>1</td><td>1</td></tr><tr><td>11</td><td>1</td><td>11</td><td>11</td></tr><tr><td>11</td><td>1</td><td>11</td><td>1</td></tr></table>	11	1	11	11	11	11	1	1	11	1	11	11	11	1	11	1
1	0	1	1																																
1	1	0	0																																
1	0	1	1																																
1	0	1	0																																
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11	1	11	11																																
11	1	11	1																																

EVOLUTION OF MENTAL MODELS FOR A PATH-PLANNING TASK (BRAVE 1995, 1996)



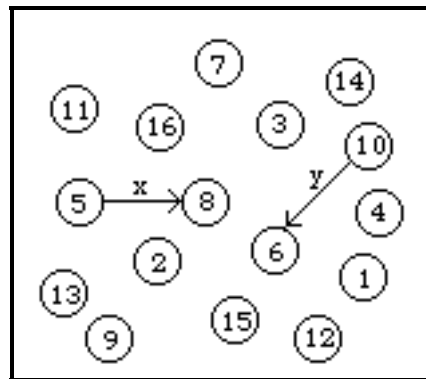
EVOLUTION OF MENTAL MODELS – CONTINUED

THE WORLD — 16 ITEMS

A	B	C	D
E	F	G	H
I	J	K	L
■	N	O	P

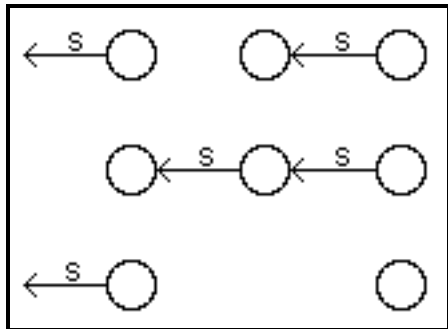
EVOLUTION OF MENTAL MODELS – CONTINUED

**MEMORY CONSISTING OF PALLET OF
ISOLATED NODES WITH
DYNAMICALLY CREATED LABELLED
DIRECTED CONNECTIONS**

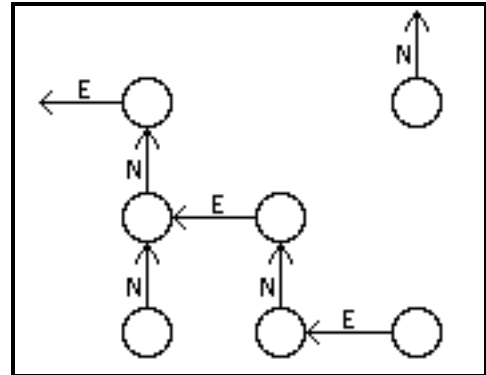


EVOLUTION OF MENTAL MODELS – CONTINUED

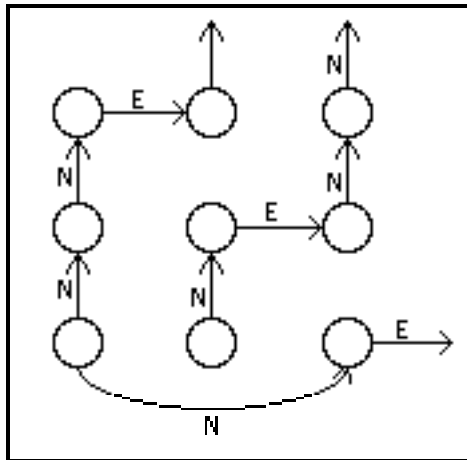
GENERATION 12



GENERATION 16



GENERATION 24



GENERATION 32

