Workshop on World Modeling・Workshop on Methods of Human Security Studies
2005 Summer Semester

Presiding Professor: Susumu Yamakage
TA: TakutoSakamoto, KazutoshiSuzuki, Hiroyuki Hoshiro, Katsuma Mitsutsuji, Kazuya Yamamoto

Lecture Three: The Agent Moves! (May 10th)

●Outline
○Confirm proper installation
○Previous assignment: Segregation Model, Prisoner's Dilemma Model
○Create a new model
○Create a tree structure; Space, Agent and Output
○Rule: Rule Editor and Execution Order
○Grammar（「Forward」「Turn」「Substitution」「My.」「Random Number」）
○Assignment

●Confirm proper installation
Has everyone safely installed KK-MAS on their home and school PCs?
More important, are these performing properly? Make sure to report status to the professor.

●Previous assignment: Segregation Model, Prisoner's Dilemma Model
Eight reported back.（Segregation: seven students,PD; two and a half students）

●Create a new model and tree structure
＞If you activate KK-MAS, a screen to create a new model will appear automatically.
＞Let's create Space! ［Insert（right- click）＞Add Space］
　　＞Space name （reserved words,"Space"）
　　＞Space type （Grid model,Hexagon model）
　　＞Space size （X-axis,Y-axis,Layer）
　　＞End of space （Loop, Don't loop）
＞Let's create an Agent! ［Insert（right-click）＞Add Agent］

＞Agent: name “Walker”

＞Agent: number

＞Agent: property ［View（right- click）＞Property］

＞Let’s have a look at the Variables.

In creating a model, agents come with several variables.

＞X,Y,Layer Display X axis, Y axis and Layer.

＞Direction Display direction of agent.X axis 0. Anti-clockwise 360 degrees. Unit is degrees.

＞Variables: Initial value All 0.Set up by ［Settings（right-click）＞Set Initial Value］

＞Variables: Property Determine features and characteristics. ［View（right-click）＞Property］Details will follow.

＞Let’s add one new variable. ［Insert（right-click）＞Add Variable］

You are able to add variables freely. This agent（Walker）is expected to move around,so a variable indicating his speed（”Speed”）will be added.

＞Variables: Type This is type for each value of variable. Need to set type for all variables. Use real numbers.

○The tree structure is tentatively set. The picture appears as such…The tree can be redrawn whenever necessary.

●Set outputs

We have created agents and space. But without setting the outputs, we can neither see nor show them. ［Settings＞Outputs＞Add（Map）］will display space. ［Map Element List＞Add］will display agents.

＞The full cast of performers are ready.「Walker」will appear with the push of the button.

＞By setting the outputs,you can set the **Map, Time Series Graphs, Bar Graphs, Value Screen and Data Files** as well.（shown in former task）Details on such settings will follow.

●Rule: Rule Editor and Execution Order（abbreviated version）

＞With no instructions so far, the agents stand still. Once we write-in instructions, these performers or players will start to move. You can write-in rules by opening the（**Rule Editor**）［View（right click）＞Rule Editor］Double–click will also work.

Agt_Init{}	**Initial rule is executed once, when the agent is first created. Initial setting is done here and not with the tree.**
Agt_Step{}	**Execution rule which is executed at every step is written here.**

○Execution order will be explained in detail, later.（Note: this is of crucial importance）

○Now you are prepared to write-in the rules.

☆［Settings＞Run Preferences＞GC Interval］Change 10 to 1.

●Today's Grammar Tips

Basic rules in writing rules for「Forward」「Turn」and in handling numbers and variables.

Forward（　　）

　　Proceed forward, this distance.（＝forward as I see it）

e.g. Forward(1)

Turn（　　）

　　Turn left, this angle.（degrees）Change of Direction.

e.g.,Turn(1), Turn(-10)

My.

Used when agent designates his own variable.

e.g.,My.X, My.Y, My.Direction

＝

Grammar to order replacing. Replace left hand variable with right hand figure.

e.g.,My.X = 25（Switch my X axis to 25）

rnd ()

Uniform random number that is more than 0 and less than 1.

e.g.,My.Speed = rnd()*10 ( )

int( )

Round off, here. Example; If **3.1415**, it would be **3**.

e.g.,My.Speed = int(rnd()*10) ( )

●Agenda

［1］ Walker takes forward strides, one at a time towards X axis.

［2］ Walker takes forward strides, one at a time towards Y axis.

［3］ Walker takes forward strides, one at a time towards top right hand corner at 45 degrees.

［4］ Walker takes forward strides, which is turning 5 degrees left, one at a time.

［5］ Walker takes forward strides, which is turning 3 degrees right, one at a time.

［6］ Ten Walkers walk straight forward from the epicenter of the space, toward different directions.

［7］ Ten Walkers walk at different velocity, from the epicenter of the space, toward different directions.

［8］ Ten Walkers walk at different speed every time from the epicenter of the space, toward different directions.

［9］ Walker draws the biggest possible circle, without once getting out of space.

［10］ Intoxicated: totally drunk.

［11］ Skating from the origin to the epicenter of the space, how many spins can the figure skater do?