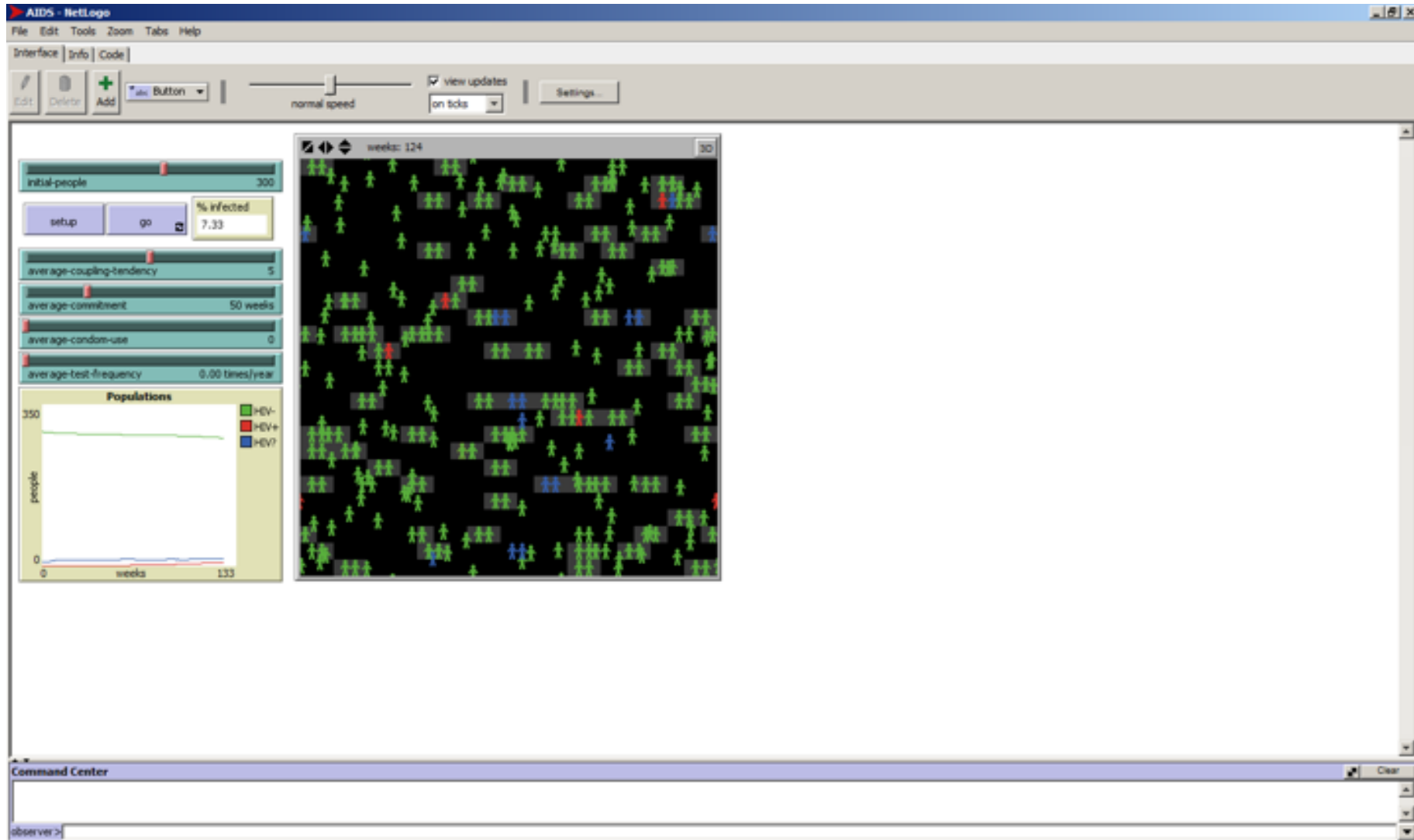


SIMULACIÓN BASADA EN AGENTES

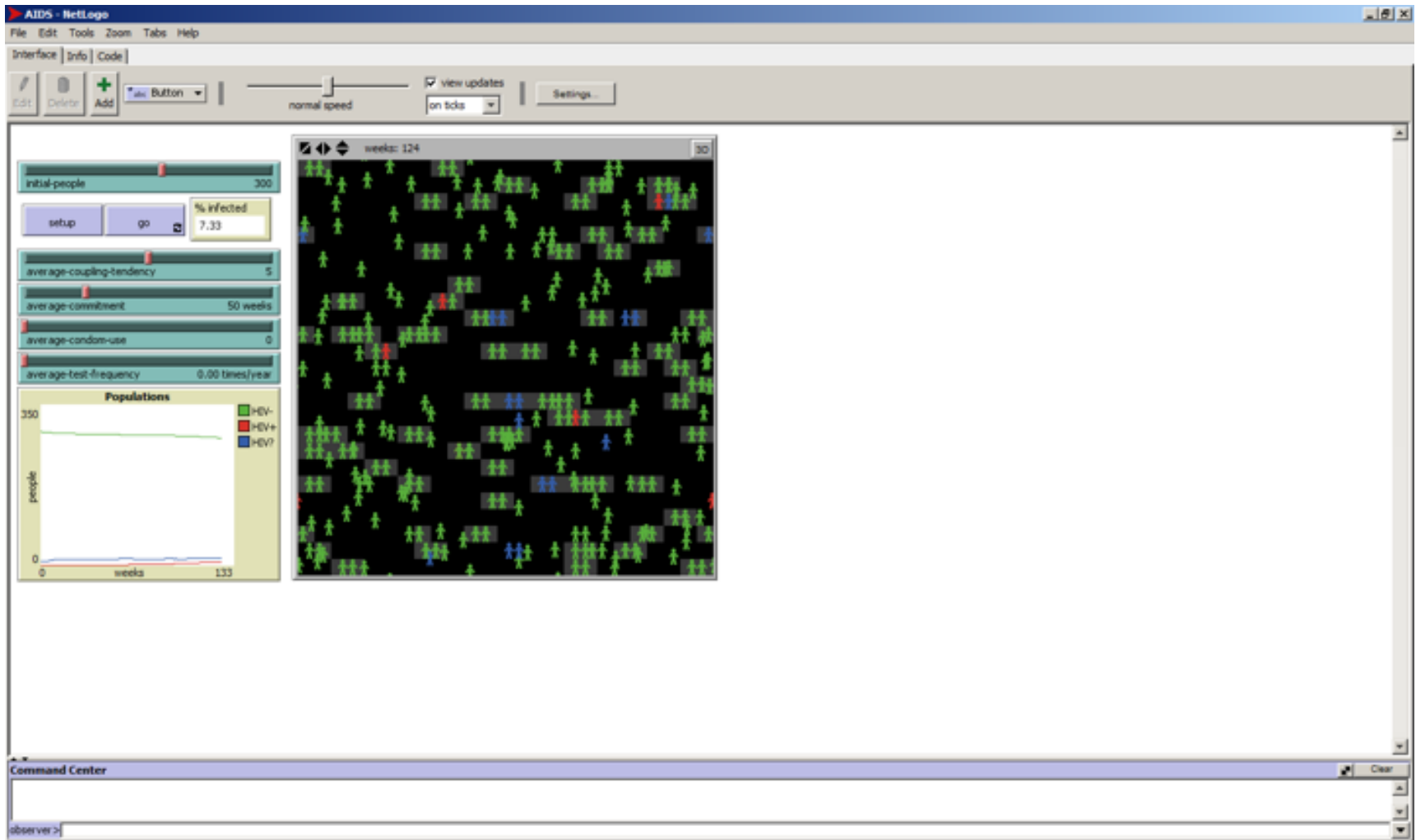
Enrique Canessa

1er Semestre 2022

Netlogo



Netlogo



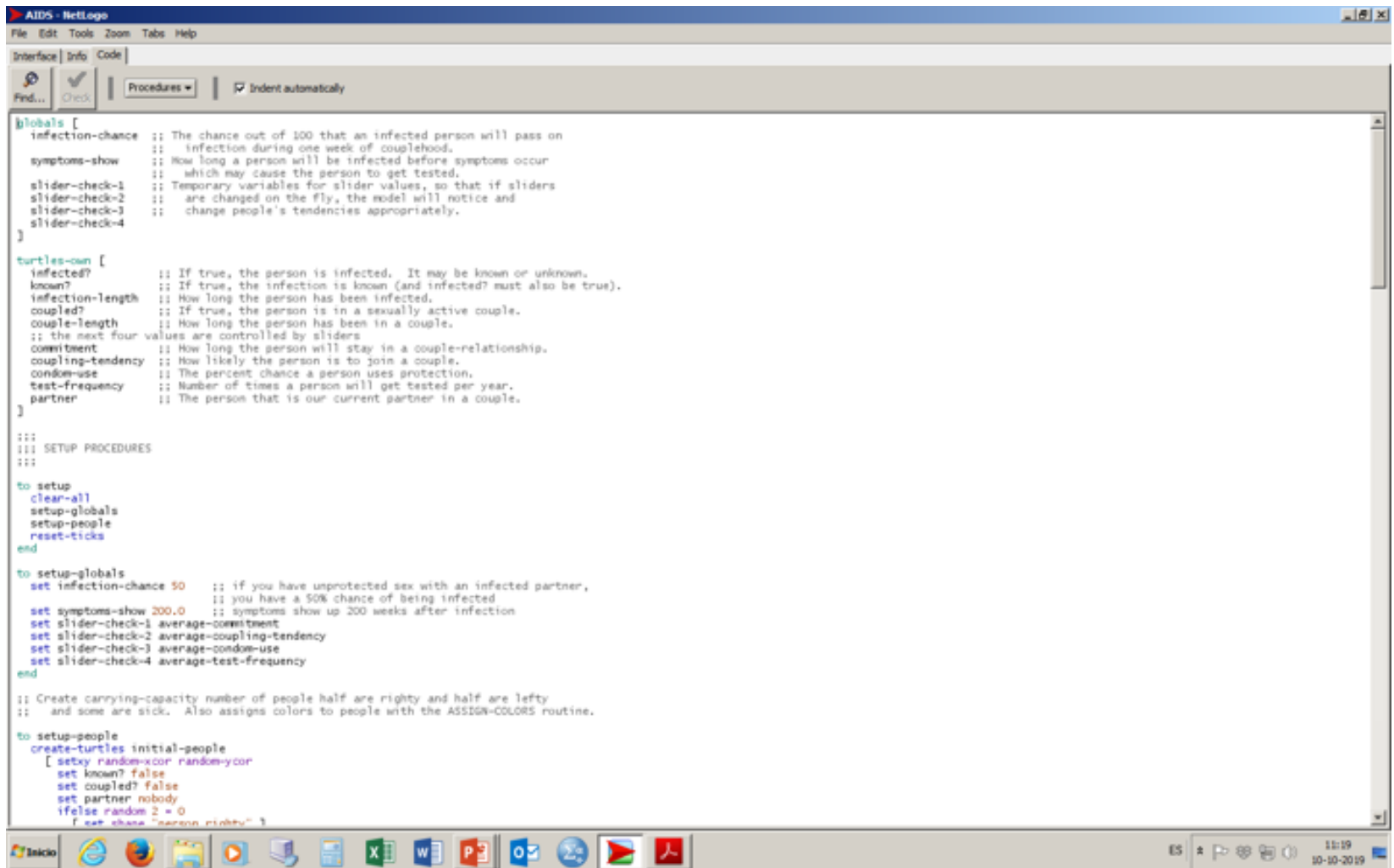
- La interfaz: es la ventana con que el programador se comunica con NetLogo para construir los modelos y ejecutarlos.

Netlogo



- La información: contiene la descripción del ABM y otra información útil para entenderlo y usarlo

Netlogo



The screenshot shows the NetLogo IDE window titled "AIDS - NetLogo". The menu bar includes File, Edit, Tools, Zoom, Tabs, and Help. The interface has tabs for Interface, Info, and Code. The Code tab is active, displaying the following code:

```
globals [
  infection-chance  ;; The chance out of 100 that an infected person will pass on
                    ;; infection during one week of couplehood.
  symptoms-show    ;; How long a person will be infected before symptoms occur
                    ;; which may cause the person to get tested.
  slider-check-1    ;; Temporary variables for slider values, so that if sliders
  slider-check-2    ;; are changed on the fly, the model will notice and
  slider-check-3    ;; change people's tendencies appropriately.
  slider-check-4
]

turtles-own [
  infected?        ;; If true, the person is infected. It may be known or unknown.
  known?          ;; If true, the infection is known (and infected? must also be true).
  infection-length  ;; How long the person has been infected.
  coupled?        ;; If true, the person is in a sexually active couple.
  couple-length    ;; How long the person has been in a couple.
  ;; the next four values are controlled by sliders
  commitment       ;; How long the person will stay in a couple-relationship.
  coupling-tendency ;; How likely the person is to join a couple.
  condom-use       ;; The percent chance a person uses protection.
  test-frequency   ;; Number of times a person will get tested per year.
  partner          ;; The person that is our current partner in a couple.
]

;;;
;;; SETUP PROCEDURES
;;;

to setup
  clear-all
  setup-globals
  setup-people
  reset-ticks
end

to setup-globals
  set infection-chance 50  ;; if you have unprotected sex with an infected partner,
                          ;; you have a 50% chance of being infected
  set symptoms-show 200.0  ;; symptoms show up 200 weeks after infection
  set slider-check-1 average-commitment
  set slider-check-2 average-coupling-tendency
  set slider-check-3 average-condom-use
  set slider-check-4 average-test-frequency
end

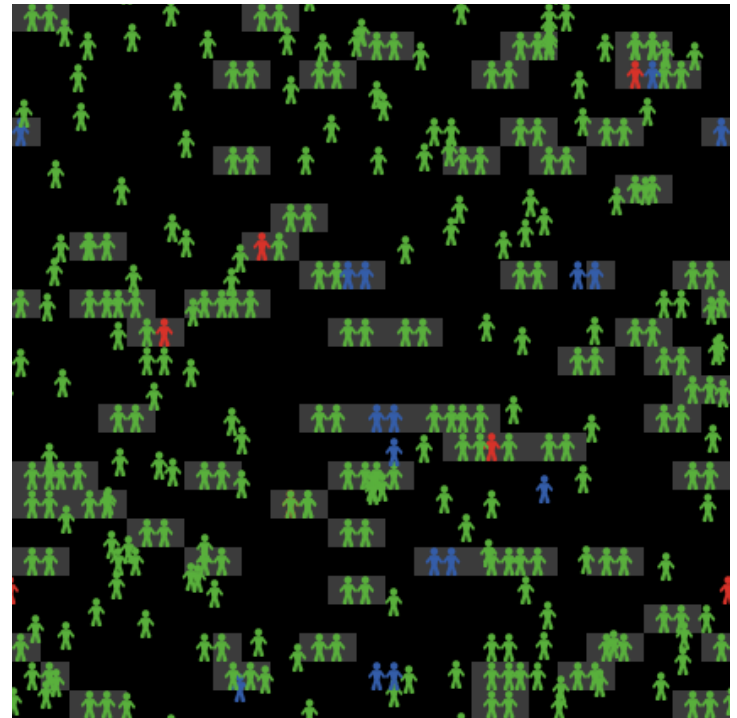
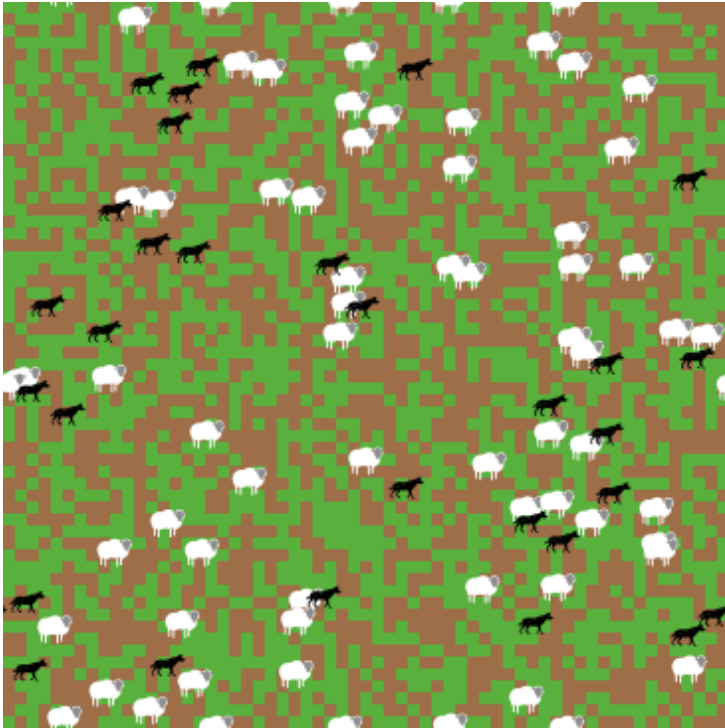
;; Create carrying-capacity number of people half are righty and half are lefty
;; and some are sick. Also assigns colors to people with the ASSIGN-COLORS routine.

to setup-people
  create-turtles initial-people
  [ setxy random-xcor random-ycor
    set known? false
    set coupled? false
    set partner nobody
    ifelse random 2 = 0
      [ set shape "person-righty" ] ]
```

The taskbar at the bottom shows various application icons and the system clock indicating 11:19 on 10-10-2019.

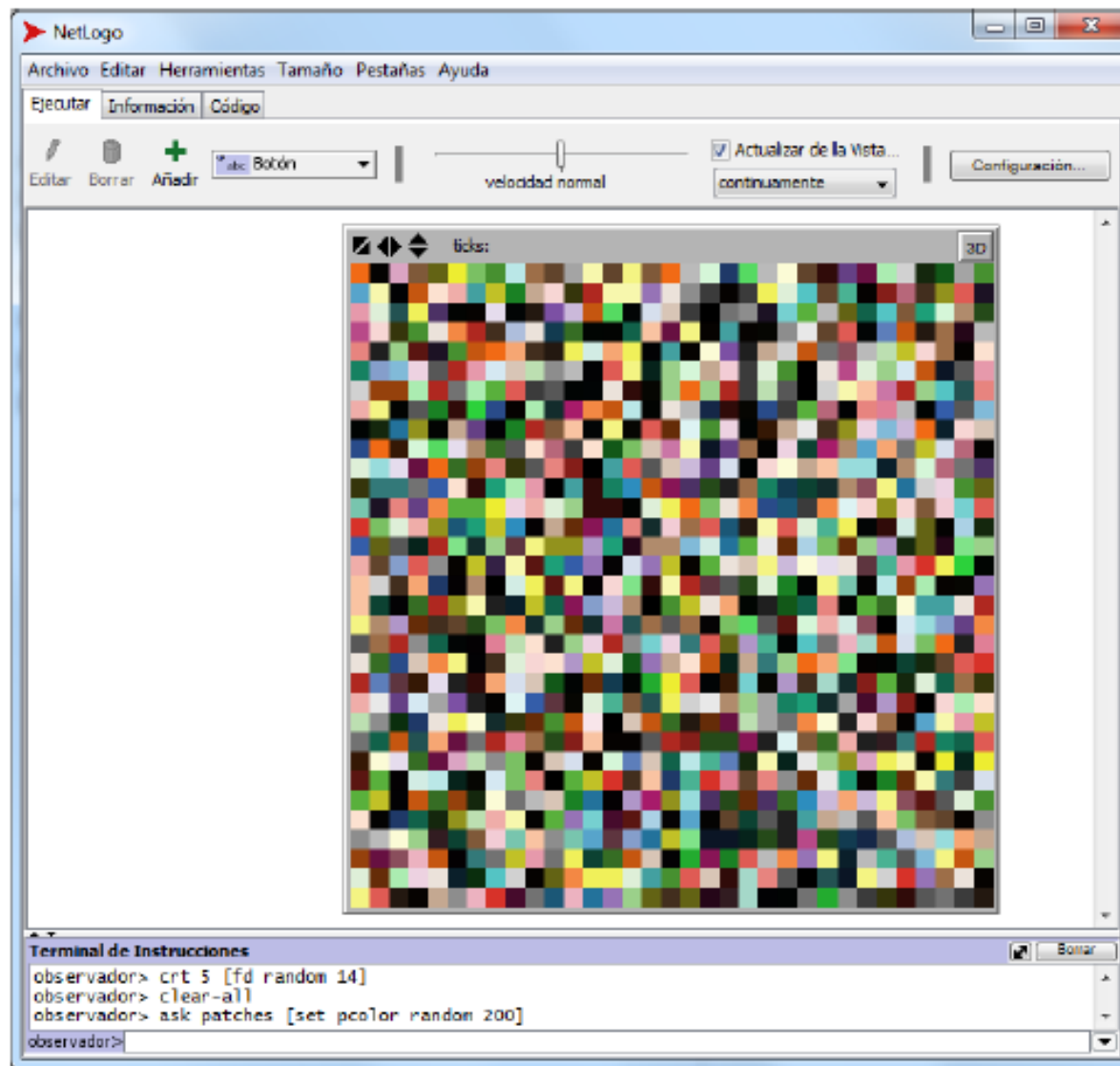
- El lenguaje: está constituido por las palabras y construcciones gramaticales con las que se construyen los programas de NetLogo.

Netlogo



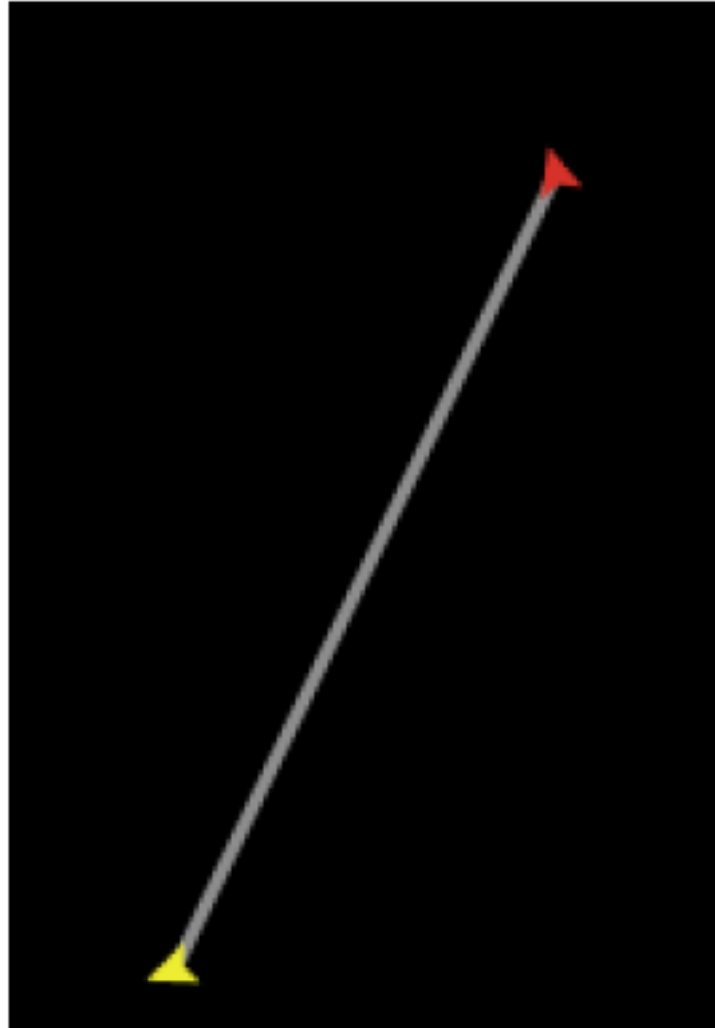
- Los agentes: Son los entes que ejecutan las acciones del programa o modelo.

Netlogo



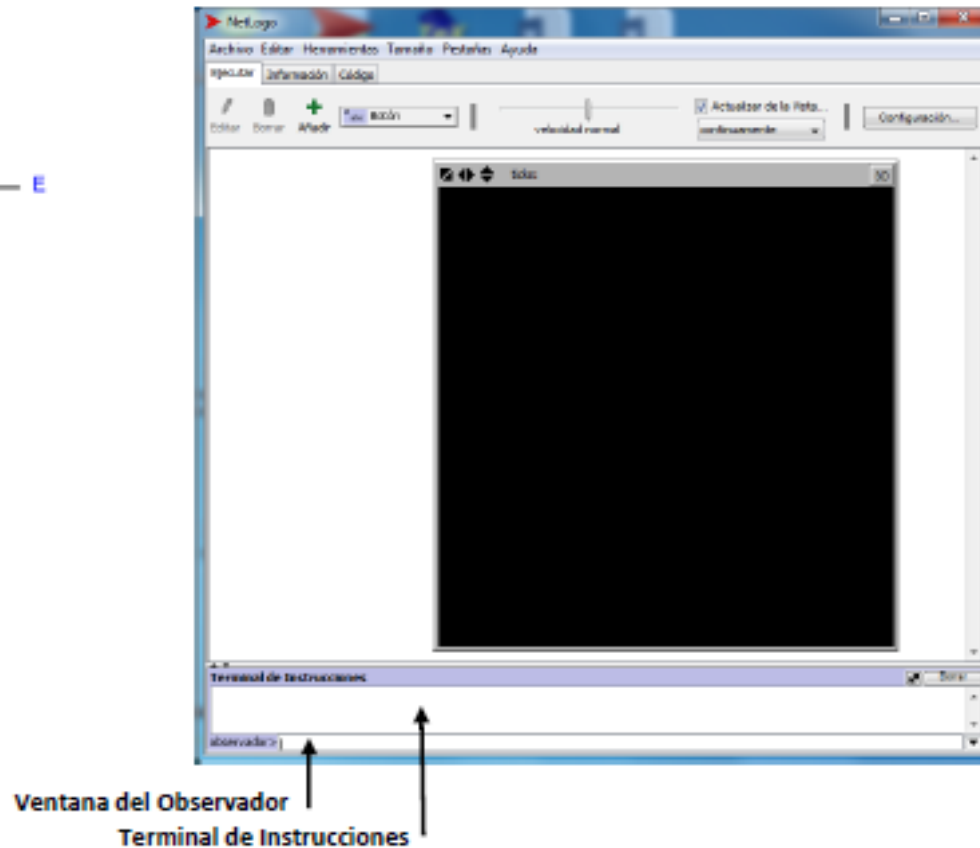
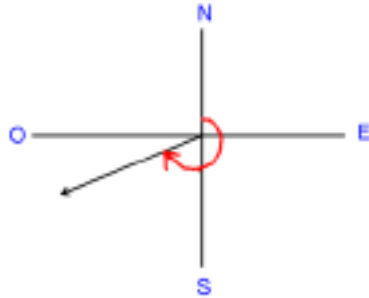
Patches (parcelas o baldosas)

Netlogo



Links (enlaces entre agentes)

Netlogo



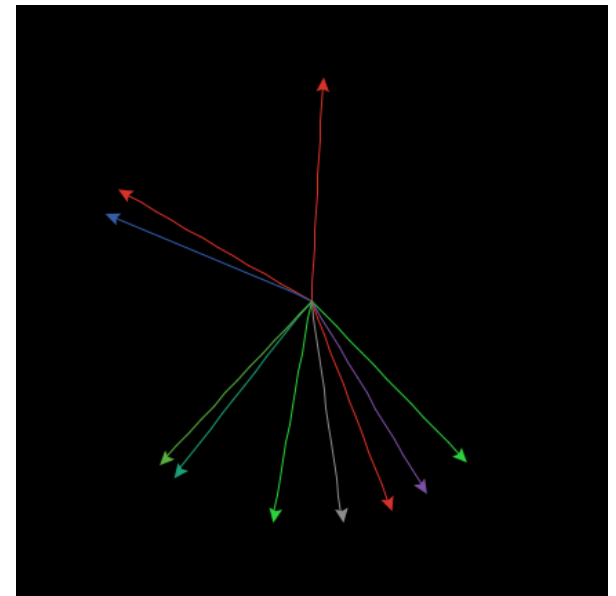
El cuarto agente es el *Observador*. Es el agente de mayor jerarquía y este agente no es visible. El Observador puede dar órdenes a los otros agentes. Nos comunicamos con el Observador a través de la “Ventana del Observador”, ubicada en la parte inferior de la interfaz.

Netlogo: Programas sencillos

Creación de agentes y pedirles que ejecuten algo

Primitivas: to (para), end (fin), create-turtles (crear-tortugas), pendown (pluma-abajo)
forward (adelante), ask (pedir, solicitar), turtles (tortugas), clear-all (limpiar-todo).

```
to diez-tortugas  
clear-all  
create-turtles 10  
ask turtles [pendown forward 12]  
end
```

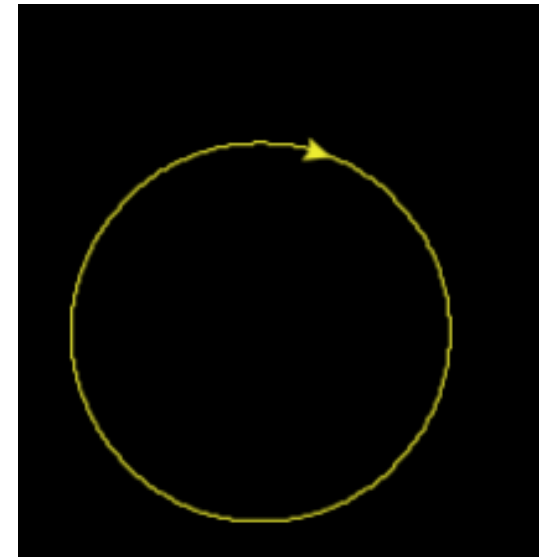


Netlogo: Programas sencillos

Dibujar con agentes (moverlos)

Primitivas: pd (abreviatura de pendown), forward (adelante), right (derecha), set (asignar), color, yellow (amarillo), repeat (repetir).

```
to círculo  
clear-all  
create-turtles 1  
ask turtle 0 [pd set color yellow repeat 360 [forward 0.1 right 1 ] ]  
end
```

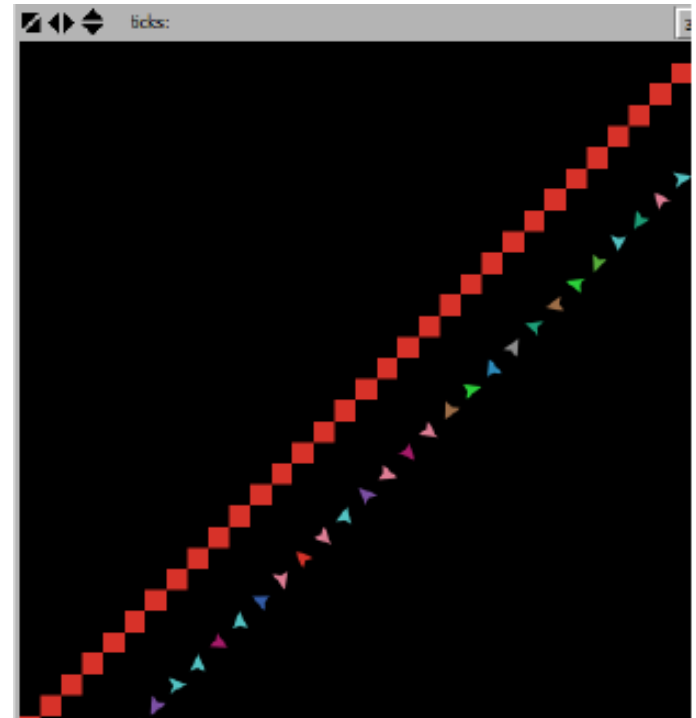


Netlogo: Programas sencillos

Parcelas (patches) y pedirles algo

Primitivas: patches (parcelas), with (con), pxcor (coordenada x de parcela), pycor (coordenada y de parcela), pcolor (color de parcela), = (signo igual), > (signo mayor que), sprout (brotar),

```
to diagonal  
clear-all  
ask patches with [pxcor = pycor] [set pcolor red]  
ask patches with [pxcor = pycor + 5] [sprout 1]  
end
```



Netlogo: Programas sencillos

Enlaces (links) entre agentes

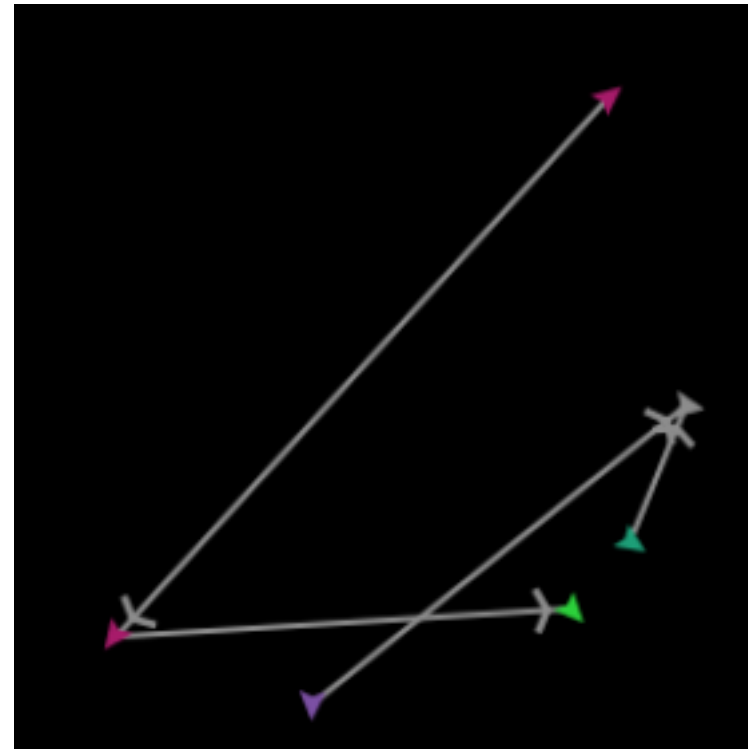
Primitivas: create-link-to (crear-enlace-hacia), create-link-from (crear-enlace-desde).

```
to elección
clear-all
crt 6 [fd 10]
ask turtle 0 [create-link-to turtle 2]
ask turtle 0 [create-link-from turtle 5]
ask turtle 3 [create-link-to turtle 4]
ask turtle 1 [create-link-to turtle 4]
end
```

to elección

```
clear-all
crt 6 [fd 10 set label who]
ask turtle 0 [create-link-to turtle 2]
ask turtle 0 [create-link-from turtle 5]
ask turtle 3 [create-link-to turtle 4]
ask turtle 1 [create-link-to turtle 4]
```

end



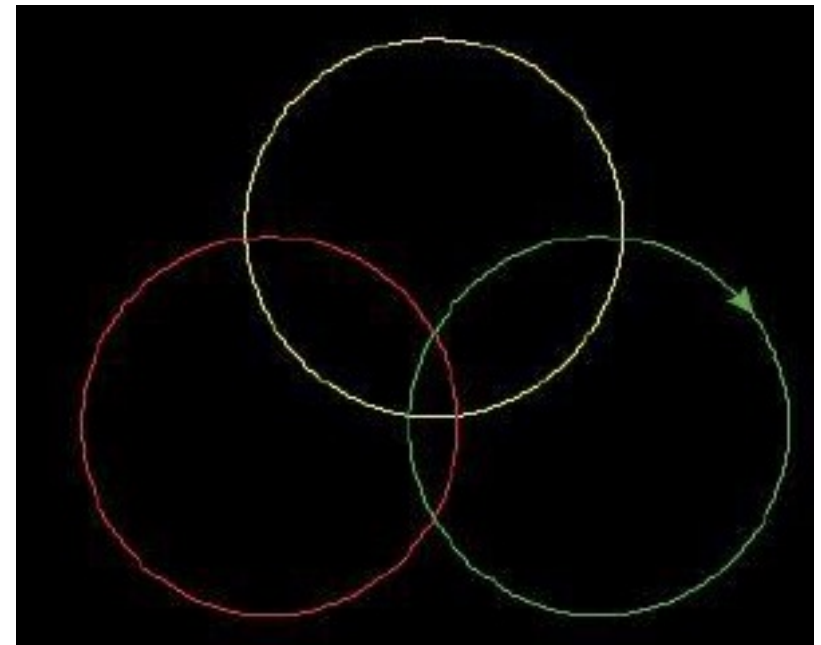
Netlogo: Programas sencillos

Procedimientos (aka “funciones”)

Primitivas: setxy (asignarxy), set (asignar), repeat (repetir), pd (abrev. de pendown, pluma-abajo), pu (abreviatura de penup, pluma-arriba), fd (abrev. de forward), rt (abrev. de right, derecha).

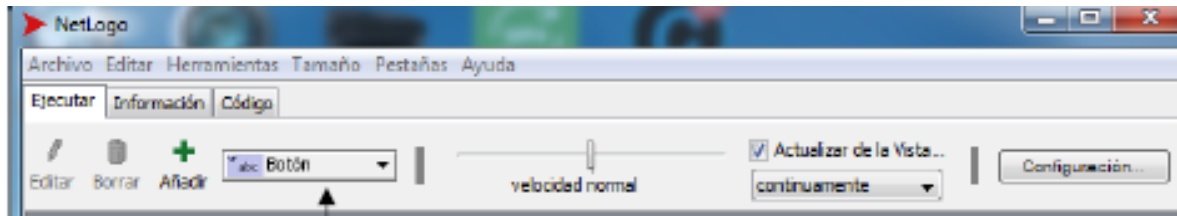
```
to tres-círculos  
  ← clear-all  
  crt 1  
  ask turtle 0 [setxy 3 2 pd set color yellow círculo  
  pu setxy 7 -2 set color red pd círculo  
  pu setxy -2 -2 set color green pd círculo ]  
end
```

```
to círculo  
  repeat 360 [fd 0.1 rt 1]  
end
```



Netlogo: Programas sencillos

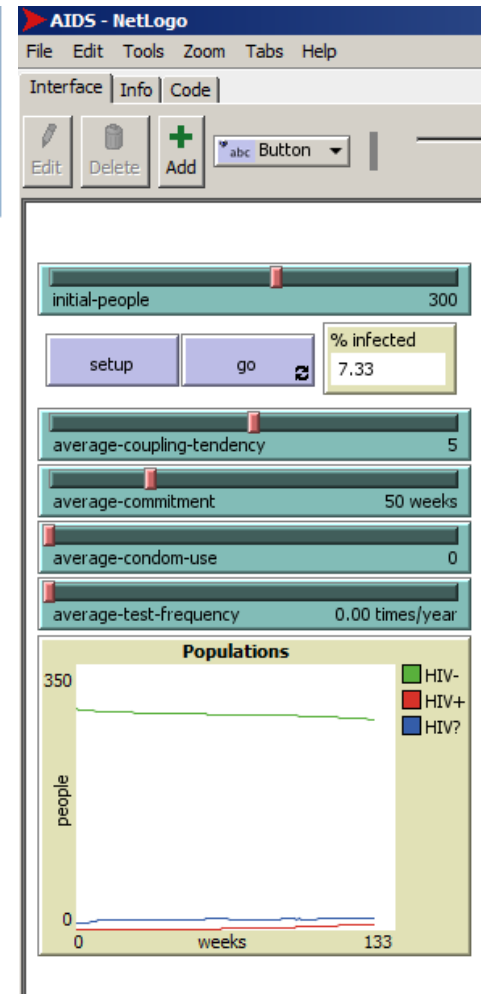
Interfaces gráficas (botones, entradas y gráficos)



Seleccionador de Objetos

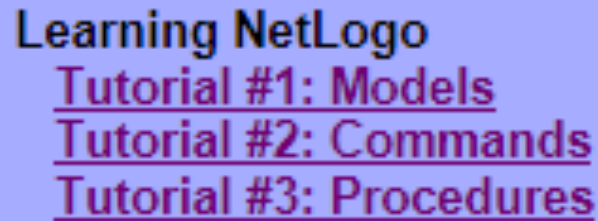
A cada botón debe corresponder un procedimiento -usualmente del mismo nombre- cuyo código se encuentra en el Editor de Código y el cual se activa haciendo clic en el botón. En la ventana del botón también es posible escribir órdenes.

```
to setup
  clear-all
  setup-globals
  setup-people
  reset-ticks
end
```



Netlogo: Programas sencillos

Ejecutar los tres tutoriales de Netlogo



Learning NetLogo
[Tutorial #1: Models](#)
[Tutorial #2: Commands](#)
[Tutorial #3: Procedures](#)

No hay entregable:

1. Recomendando hacer el tutorial 1, que enseña cómo usar los modelos a nivel básico
2. El tutorial 2 ahonda en cómo usar los modelos
3. El tutorial 3 ve la codificación en Netlogo (para aquellos que se interesen)