Getting Started With NetLogo

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NetLogo in a Nutshell

NetLogo is a software platform for creating and running agent-based models. It was created by Professor Uri Wilensky of Northwestern University. NetLogo provides an easy-to-learn programming language and graphical-user-interface tools specifically designed for building models of complex systems.   NetLogo is is freely downloadable from to http://ccl.northwestern.edu/NetLogo/download.shtml.

1   Computer Requirements for NetLogo

NetLogo will run on Windows, Mac or Linux systems. Most modern computers will run NetLogo without any trouble.

Windows: Windows 7, Vista, 2000, and XP

Mac: Mac OS X 10.4 or newer is required. (Older version NetLogo 4.0 supports Mac OS X 10.3 and 10.2.) If you are not sure which version of Mac OS X you have, click on the Apple icon in the upper left corner of your screen and choose "About this Mac".

Linux: NetLogo should work on any platform on which Java 5 or later is installed. Java 6 or later is strongly recommended.

Smart phones and Tablets: Unfortunately NetLogo does not currently run on smart phones or on tablets such as the iPad or Galaxy.

2   Downloading NetLogo

To Download NetLogo, go to http://ccl.northwestern.edu/NetLogo/download.shtml. Fill in the short form if you want to (it's optional).
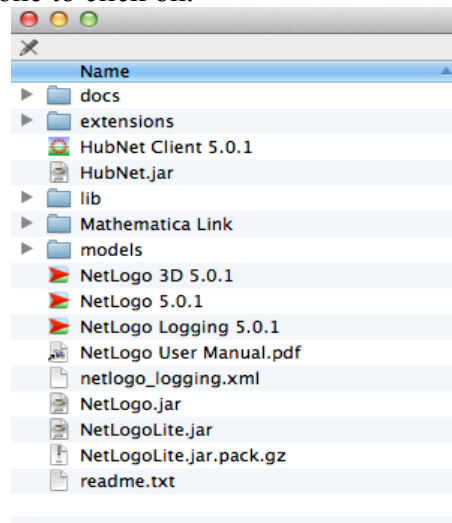
Click the Download button on the form.

Then select the correct NetLogo for your operating system

You may be asked where to download the NetLogo package (stored in its own folder), or it may be automatically put into your Downloads folder. Search your computer for NetLogo if you don't know where this is. You can put the Netlogo folder wherever you like.
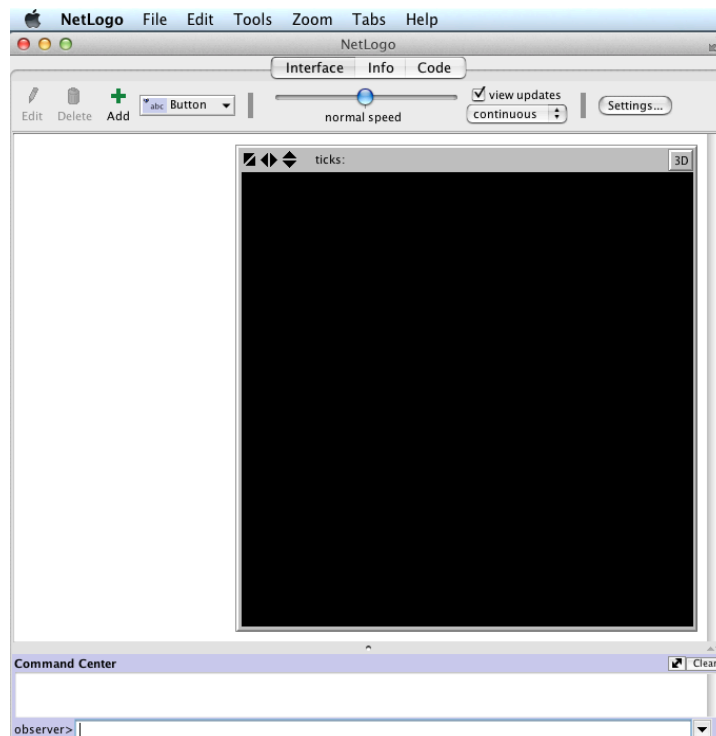
3 Starting NetLogo for the First Time

Find the file that you downloaded. Click on it to unpack it. When unpacked, a folder will be created containing files and folders. Click on NetLogo 5.x.x file (not the NetLogo 3D or NetLogo Logging file).   The picture below illustrates this for NetLogo 5.0.1.   Here, the file called "NetLogo 5.0.1" is the one to click on.

4 NetLogo Interface

When you start NetLogo you will see something like the following:

This is the NetLogo interface with no model open. From this interface you can either open an existing NetLogo model (see below) or build your own model.

The main areas that you see above are World (the black area) where a model's graphics are displayed. The World is a grid of *patches* or squares laid out on a coordinate system. The "Settings..." button allows you to change some of the properties of the world, but you will need to do this only when building your own model, not when running existing models.

The three buttons at the top of the screen, *Interface, Info*, and *Code*, let you switch between and Interface view (shown in picture above), to the Info and Code views. The Info view offers a text description of the model, and the Code view opens an editor that includes most of the software code that makes the model work. NetLogo comes with its own programming language. (The whole system is built on Java, but most users don't need to worry about that.)

The button labeled "Button" on the interface is a drop down menu that you will use frequently to add elements to the interface on models that you create.

The command line (with the observer prompt) on the bottom of the screen can be used to execute commands directly to NetLogo. The result will be displayed in the Command Center immediately above the command line.

5   Downloading NetLogo Models from the Web

Models can be downloaded from the Web (e.g., our online course website). Simply right click (or control click on Mac) the link and choose "Save As..." (or "Save Target As", depending on your browser). NetLogo model files need to have names of the form *<name>*.nlogo. Make sure that you notice *where* on your hard disk you are saving the file so that you can find it later. If you have trouble locating files that you have downloaded, save the files to the Desktop.   You can always search your computer for ".nlogo" to find NetLogo files that you have downloaded.

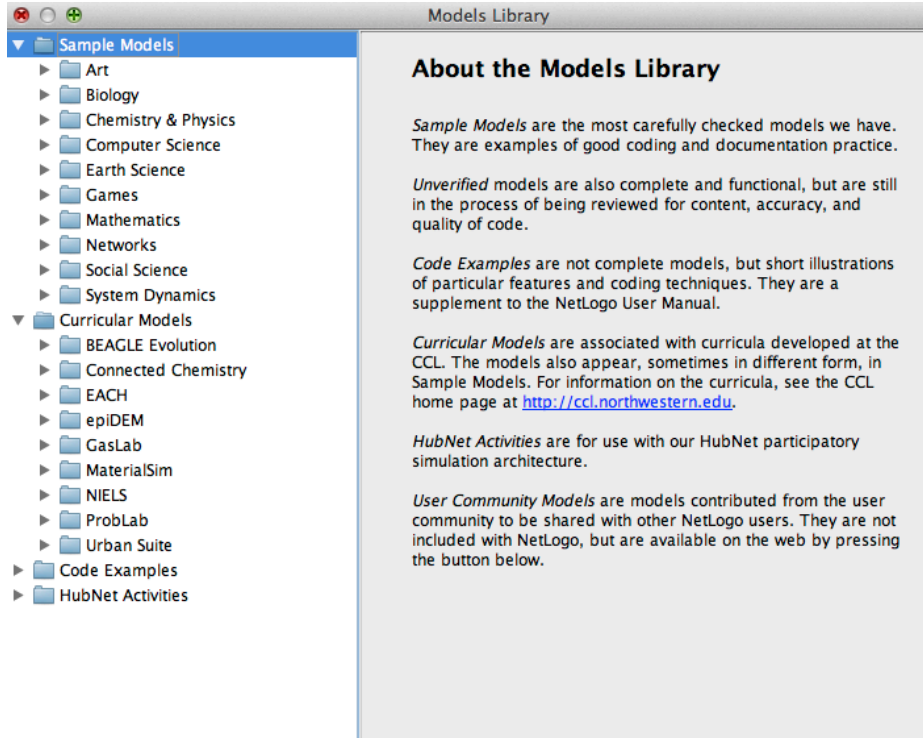## 6   Opening NetLogo Models from your Hard Drive

If you have downloaded a model from the Web or created your own, the model will be stored as a file on your hard drive in whatever folder you saved it to. To open a model in NetLogo, click on the Menu bar item "File" and browse to the file on your computer. Also, instead of starting NetLogo and then opening a model, you can simply double-click the file's icon on your computer, and NetLogo will start with that model open.

7   Running Models

Most models that you use will have a Setup and Go button on the interface. The Setup button loads (or resets) the model and the Go button runs the model. There are often Slider widgets and other interface elements that allow you to explore different settings.
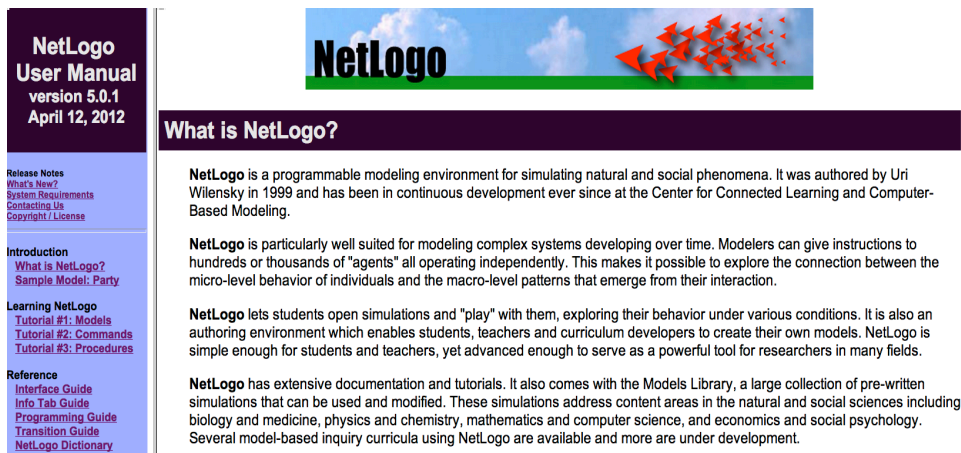
8 Library of Sample Models

NetLogo comes with a vast library of sample models from various disciplines. You can try out these models by going to File→Models Library and navigating to a model that interests you in the directory tree that you find there.

Some of the most useful resources for those new to NetLogo are included among the files that come with NetLogo. As you learn to create your own models in NetLogo, you will want to take advantage of many of the resources that are available online.

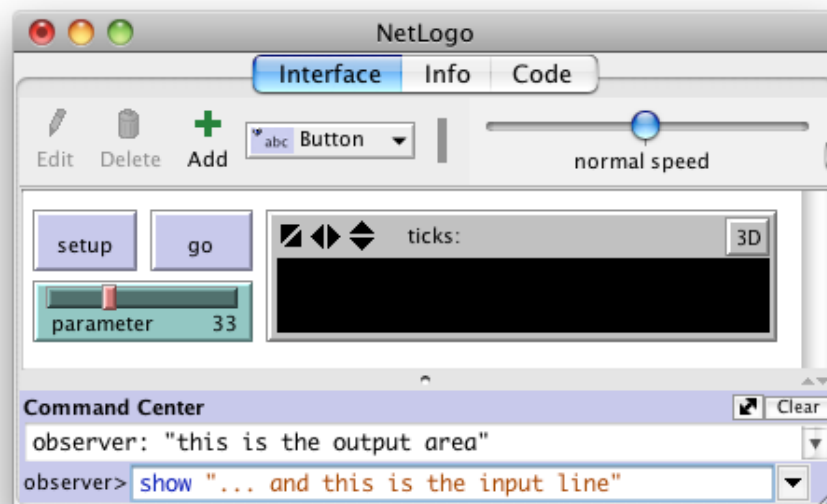# 9 NetLogo Help Menu and Users Manual

The NetLogo Help Menu offers quick links to the resource that are included with NetLogo Help →NetLogo User Manual and Dictionary.   You can also find a printable (PDF) version of the User Manual http://ccl.northwestern.edu/netlogo/docs/NetLogo%20User%20Manual.pdf

10 Quick Access to the NetLogo Dictionary

A very useful shortcut in the NetLogo code tab is to right-click on any NetLogo command or keyword.   This produces a pop-up menu that includes "Quick Help". If you select Quick Help, this will open (in your browser) the definition for this command or keyword in the NetLogo Dictionary.

11 How to Use the NetLogo Command Center

A very useful feature for NetLogo programmers is the Command Center, located at the bottom of the main window's Interface tab. The Command Center has two parts: the *output area*, where NetLogo can respond by printing text, and the *input line*, labelled by the observer> prompt. You can select and copy text from the output area, or clear it, but you can't overwrite it.

As the name implies, the Command Center is where one can issue *commands* to turtles, patches, or link agents, telling them where to go, what color to turn, etc. If you click on the input line, you should see a blinking text cursor: this is where you can write a command, to which NetLogo will respond when you press the return or enter key. Pressing the tab key will toggle between observer, turtles, patches, and links prompts: writing `set color red` at the turtles prompt is the same as writing `ask turtles [set color red]` at the observer prompt, where

one may directly "command" slider settings and many other environment features with the `set` command.

But as well as obeying commands, NetLogo can also answer certain kinds of questions by *evaluating symbolic expressions*, so you'll also want to think of the Command Center as a kind of calculator. It works as a pretty good arithmetic calculator, to begin with. Try typing the arithmetic expression `1 + 2 * 3 ^ 4` at the prompt (always typing a space between numbers and operator symbols). When you press return, you'll see your expression, and its *value* or reduction to a single number, printed in the output area. Notice that NetLogo correctly orders the evaluation.