First User Experiences with nViZn

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nViZn Background (1)

- See Dan Rope's talk at 8:30am
- In short: a Java-based package for visualization on the Web
- URL: http://www.spss.com/nViZn/

nViZn Background (2)

- Based on Graphics Production Library (GPL).
- Ideas behind graphics based on Wilkinson's "Grammar of Graphics" book.
- nViZn described in Wilkinson, Rope, Carr, Rubin: "The Language of Graphics", JCGS 9(3), 2000.

Default Working Environment

- nViZn, Version 1.0.1, Sep 29, 2000
- Netscape Communicator 4.5
- Dell Inspiron 7000
- Java 2 SDK, Standard Edition Version 1.3.0 (jdk1.3)
- Equal behavior if “Norton AntiVirus 2001” is running or not

General Use: Problems

- Installation on a new machine:
  - Problems with jdk1.2
  - Problems on SGI (Iris)
  - Problems using Internet Explorer

Problems with Provided Examples

- From 18 examples, only 4 fully operational in default setting (CamCorder, AutoData, HexBin, Cluster) under VM option
- Some start, but most produce errors, e.g., AnimatedMap “Applet HelloAnimation class HelloAnimation got a security violation: method verification error”
- Most examples do not even start under plugin option, e.g., CPITimeSeries “Applet HelloCPI notinited”

Problems with Compilation (1)

- How to set classpaths?
  - Either in autoexec.bat
  - Or in scripts:

```
@echo off
set JAVA_HOME=c:\jdk1.3
set JARS=c:\NSF\ccmapjar
set ILLUMITEK=c:\NSF\CCmap
set CLASSPATH=%JAVA_HOME%\lib\tools.jar
set
  CLASSPATH=%CLASSPATH%;%JARS%\dpl_client.jar;%JARS%\dpl_server.jar
  ;%JARS%\gpl_animate.jar;%JARS%\gpl_brush.jar
set
  CLASSPATH=%CLASSPATH%;%JARS%\gpl_builder.jar;%JARS%\gpl_client.ja
  r;%JARS%\gpl_filter.jar;%JARS%\gpl_manipulate.jar
set
  CLASSPATH=%CLASSPATH%;%JARS%\gpl_meta.jar;%JARS%\gpl_navigate.jar
  ;%JARS%\gpl_picker.jar;%JARS%\gpl_server.jar
set
  CLASSPATH=%CLASSPATH%;%JARS%\gpl_widgets.jar;%JARS%\taskserver.ja
  r;%JARS%\taskclient.jar;%JARS%\ccmap.jar
```

Problems with Compilation (2)

- How to compile/execute?
  - Either DOS via javac FileName.java & java FileName
  - Or in scripts:

Compile:

```
@echo off
echo Compiling %1
set CODE=%ILLUMITEK%\Jueplanets.java
%JAVA_HOME%\bin\javac -O -deprecation -classpath
   %CODE%\classes;.;colorxforms -sourcepath .;colorxforms %1
```

Run:

```
@echo off
%JAVA_HOME%\bin\java -cp %CLASSPATH%;colorxforms;. Jueplanets
```

Ease of Graphics

- Simple Examples from “Grammar of Graphics” can be directly implemented in nViZn
- Demo and Examples provided with nViZn sufficient for implementation of basic features
- No advanced JAVA knowledge required

Example 1 (1)

FRAME: **birth*death**
GRAPH: *point*(*size*(0), *label*(**country**))
GRAPH: *contour.density.kernel.epanechnikov.joint*(*color.hue*())
GUIDE: *form.line*(*position*((0,0),(30,30)), *label*("*Zero Population Growth*"))
GUIDE: *axis1*(*label*("Birth Rate"))
GUIDE: *axis2*(*label*("Death Rate"))

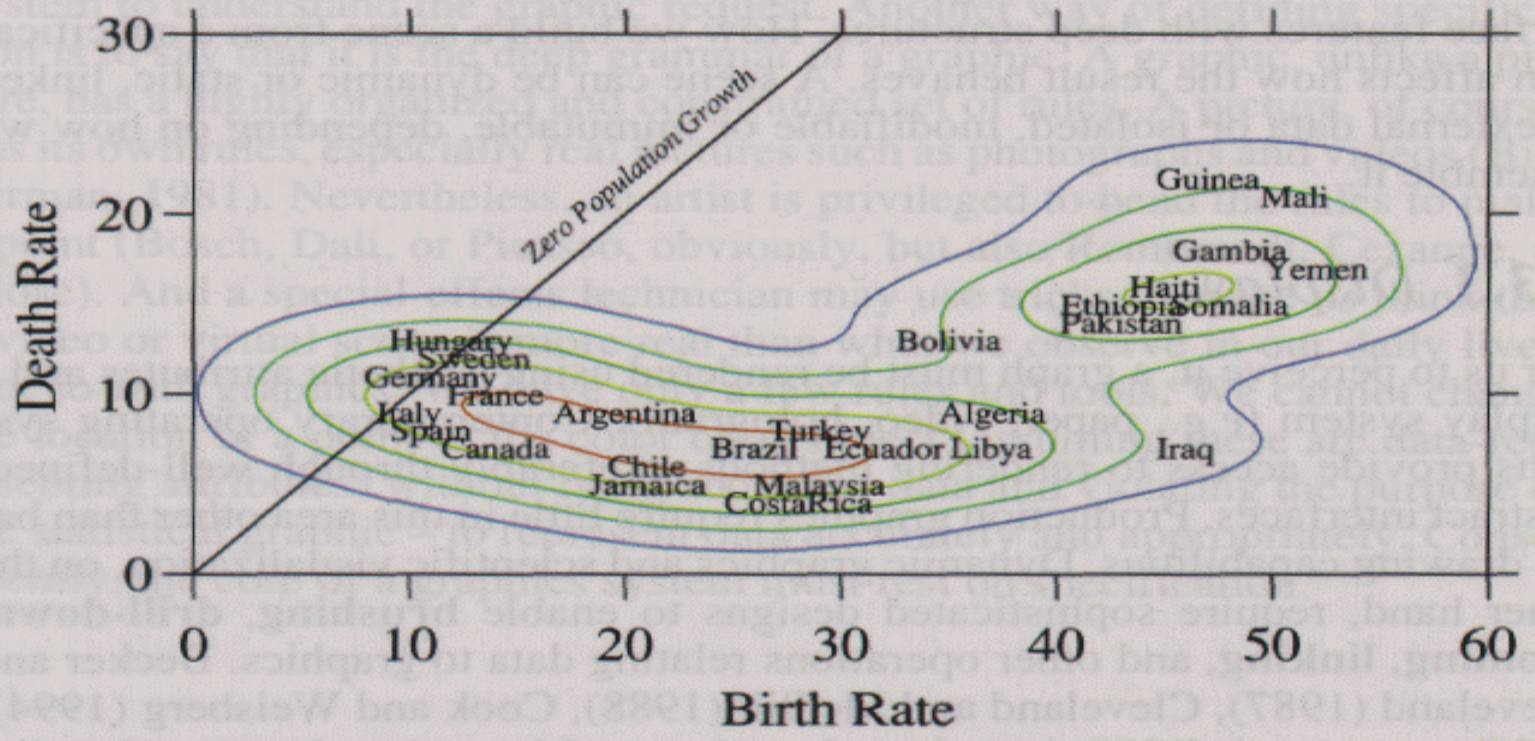


Figure 1.1 *Plot of death rates against birth rates for selected countries.*

Example 1 (2)

```
//Create the Java Frame to hold the graph
Frame frame = new Frame();
frame.setSize(600, 300);
frame.setLayout(new BorderLayout());

dataView = new FlatFileDataView();
FlatFileSourceSpecification source = new
    FlatFileSourceSpecification("ourworld");
dataView.setSource(source);

//Create the Graph, set the expression, and set the graph's Title
graph = new GPLGraph();
graph.setExpression("BIRTH_RT*DEATH_RT");
graph.setTitle("Figure 1.1: Plot of death rates against birth rates for
    selected countries.");
```

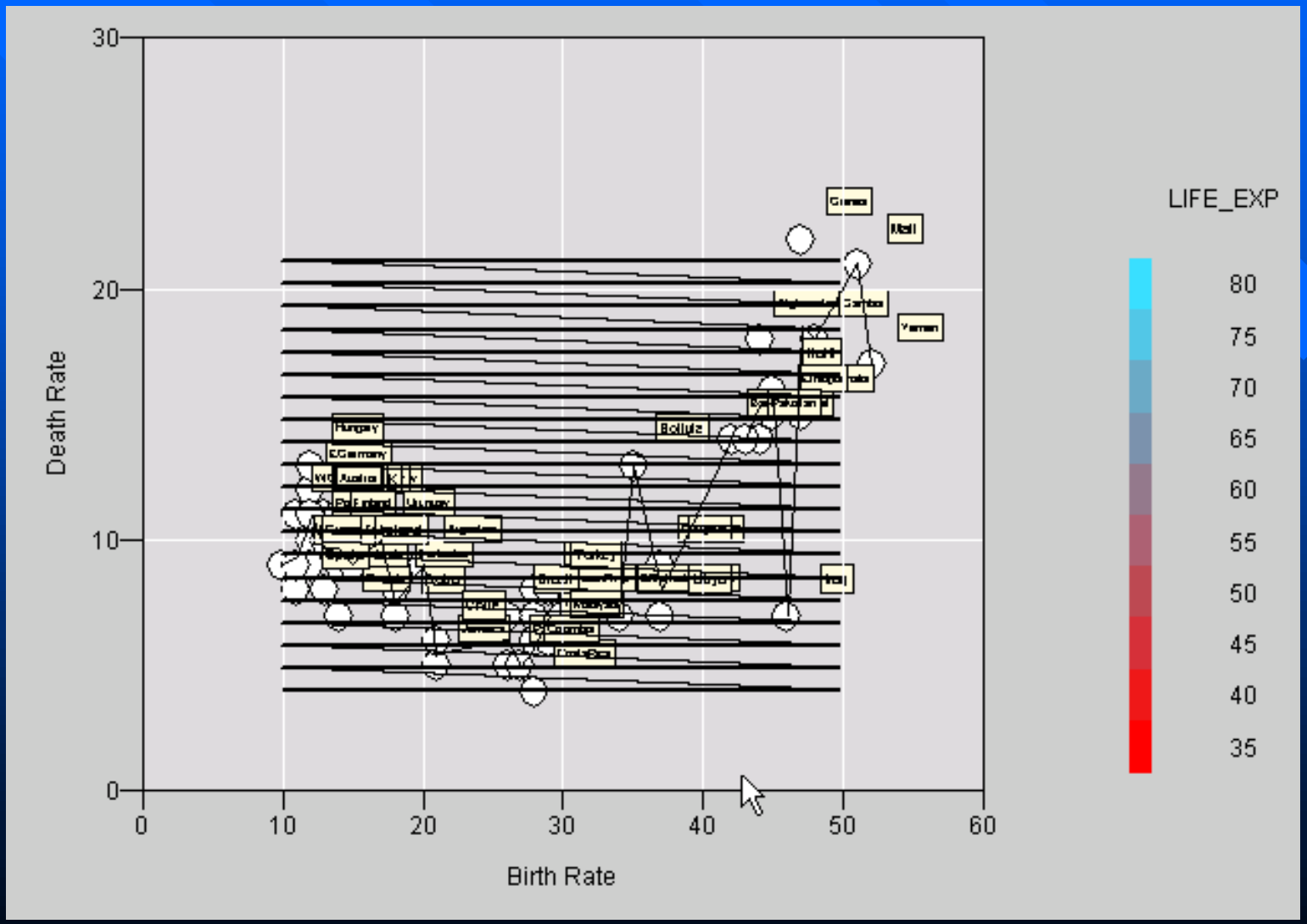
Example 1 (3)

```
//Layout settings
DefaultLayout layout = new DefaultLayout(false);
AxisLayout axis1Layout = layout.getAxisLayout(1);
AxisLayout axis2Layout = layout.getAxisLayout(2);

axis1Layout.setMin(0);
axis2Layout.setMin(0);
axis1Layout.setMax(60);
axis2Layout.setMax(30);

axis1Layout.setLabel("Birth Rate");
axis2Layout.setLabel("Death Rate");
graph.setFrameLayout(layout);
```

Example 1 (4)

```
Points point = new Points();
point.setLayer(2);
point.setLabel("COUNTRY");
graph.addElement(point);

//Add the Path element, split by GOV$ and use a polynomial smoother
//  Note, you can use:
//    line.setPositionFunction(new SmoothParameters
    (SmoothParameters.LINEAR));
//  for linear regression line
Path line = new Path();
SmoothParameters smoother = new
    SmoothParameters(SmoothParameters.EPANECHNIKOV);
line.setPositionFunction(smoother);
line.setColor("LIFE_EXP");
line.setDefaultSize(.01f);
graph.addElement(line);
```

Example 1 (5)


30
20
10
0
Death Rate
0
10
20
30
40
50
60
Birth Rate
LIFE_EXP
80
75
70
65
60
55
50
45
40
35

Example 2 (1)

FRAME: **distance*temperature**
SCALE: *log*(*dim1*, 10)
SCALE: *log*(*dim2*, 10)
GRAPH: *point*(*size*(**albedo**), *label*(**planet**))

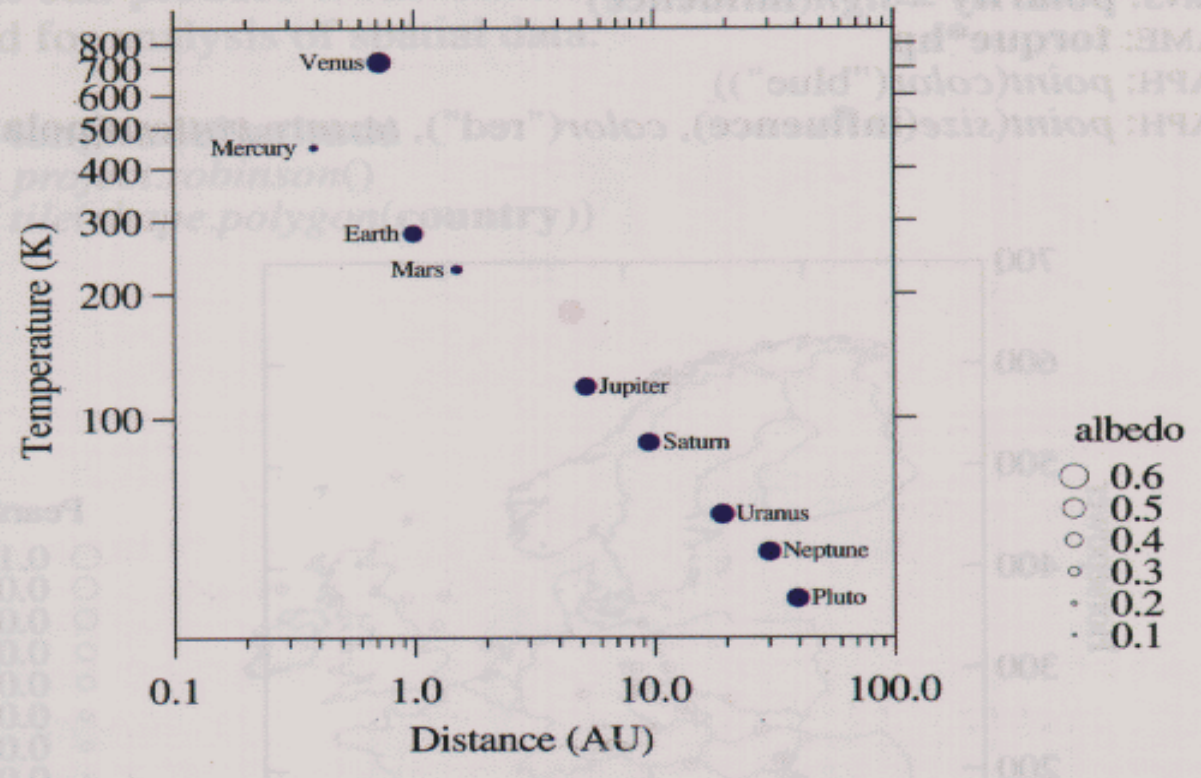


Figure 7.38 *Bubble plot of planet reflectivity (albedo)*

Example 2 (2)

```
//Create the Graph, set the expression, and set the graph's Title
graph = new GPLGraph();
graph.setExpression("Distance*Temperature");
graph.setTitle("Figure 7.38: Bubble plot of planet reflectivity
    (albedo).");
...

//Log the "x" axis (dimension #1)
ScalingSpecification logx = new ScalingSpecification(1, new
    LogParameters());
graph.addScaling(logx);

//Log the "y" axis (dimension #2)
ScalingSpecification logy = new ScalingSpecification(2, new
    LogParameters());
graph.addScaling(logy);
```

Example 2 (3)

```
axis1Layout.setMin(0.1);
axis1Layout.setMax(100.0);
axis2Layout.setMin(10);
axis2Layout.setMax(1000);

axis1Layout.setLabel("Distance (AU)");
axis2Layout.setLabel("Tempereture (K)");
graph.setFrameLayout(layout);

Points point = new Points();
point.setLabel("Name");
point.setSize("Albedo");
graph.addElement(point);
```

Example 2 (4)

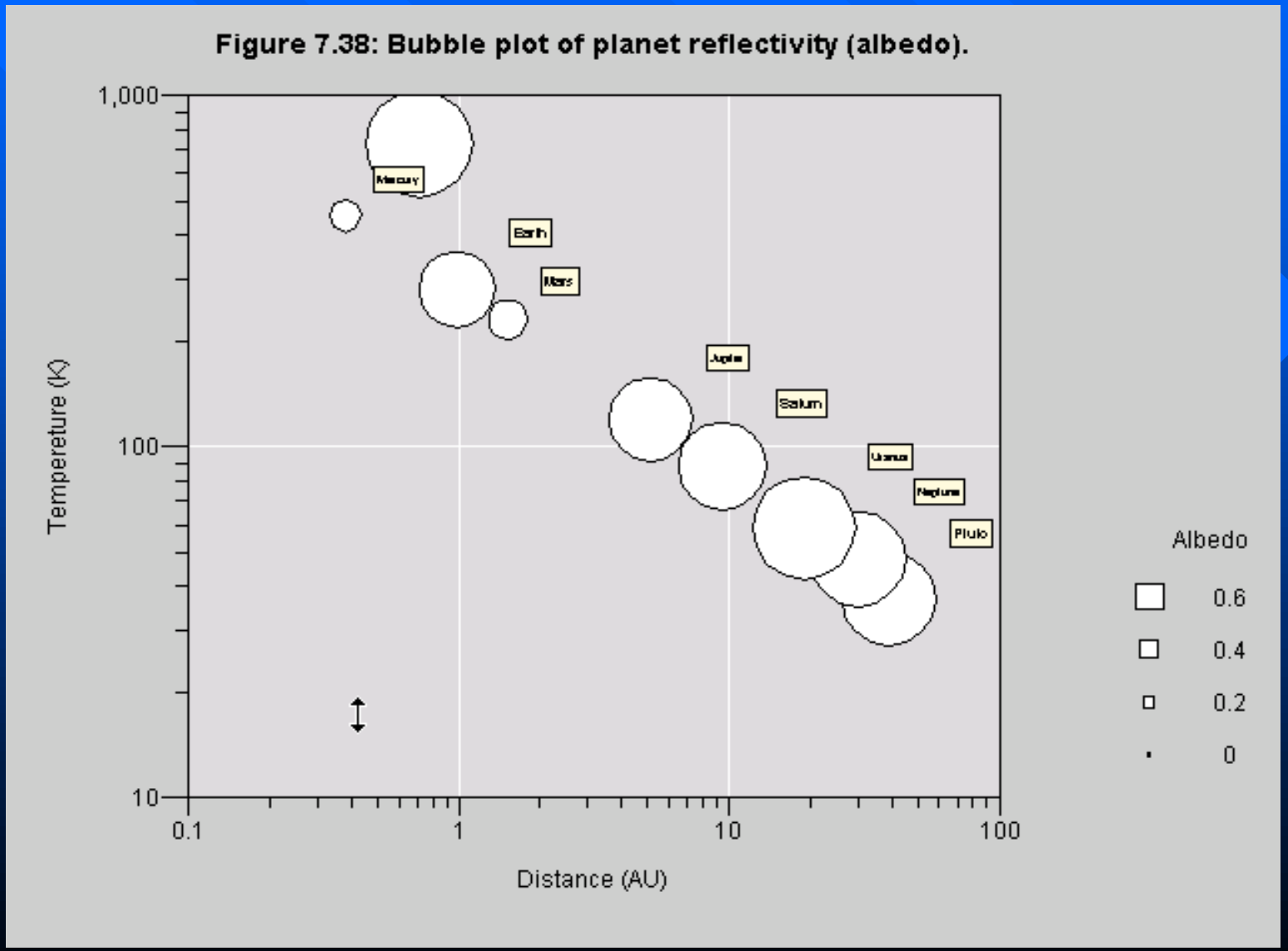


Figure 7.38: Bubble plot of planet reflectivity (albedo).
1,000
100
10
Temperature (K)
0.1
1
10
100
Distance (AU)
Earth
Mars
Saturn
Albedo
0.6
0.4
0.2
0

Example 2 (5)

- **BUT !!!**

FRAME: **distance*temperature**
SCALE: *log*(*dim1*, 10)
SCALE: *log*(*dim2*, 10)
GRAPH: *point*(*size*(**albedo**), *label*(**planet**))

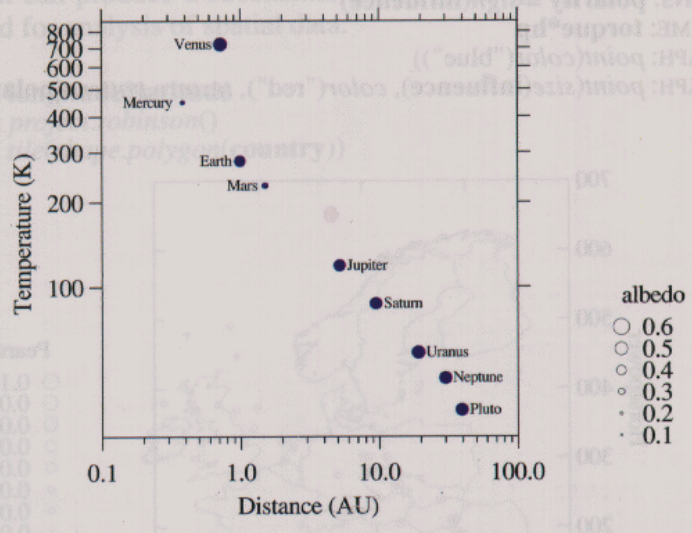
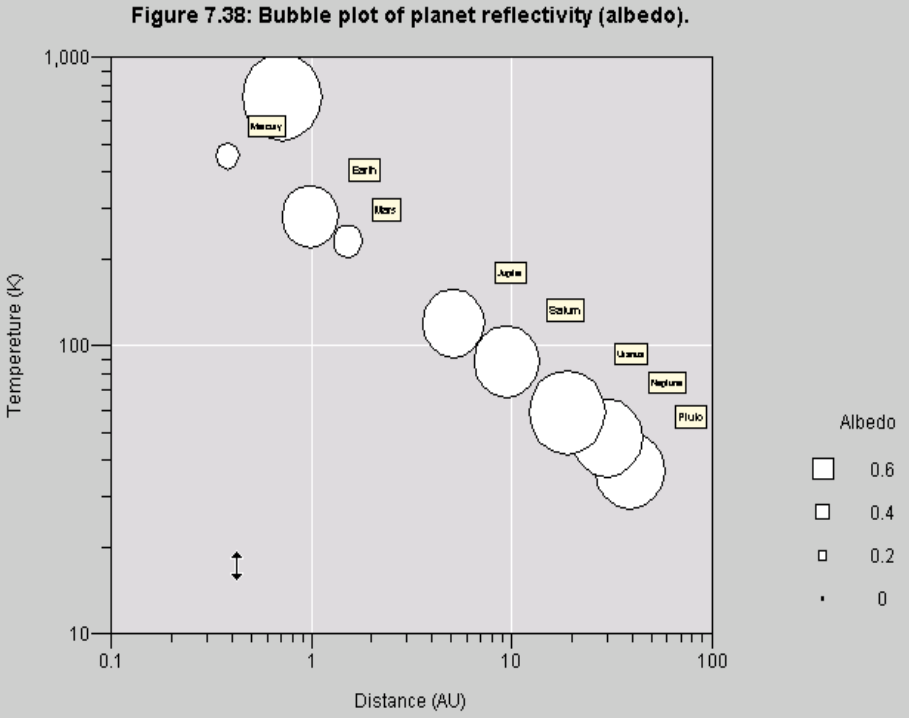


***Figure 7.38** Bubble plot of planet reflectivity (albedo)*



Conclusion

Who can hide in secret places so that I cannot see them? Do I not fill heaven and earth?
Jeremiah 23.24

Cleave a piece of wood, I am there; lift up the stone and you will find me there.
Gospel of Thomas 77

God hides in the smallest pieces.
Caspar Barlaeus

God hides in the details.
Aby Warburg

God is in the details.
Ludwig Mies van der Rohe

The devil is in the details.
George Shultz

Bad programmers ignore details. Bad designers get lost in details.
Nate Kirby

Wishlist

- Provide precise info how to
  - Install
  - Compile/Run
  - Minimum System Requirements
  - How to set up as an Applet
- “nViZn Beginner’s Guide” desperately needed