



RepGrid • RepSocio • RepNet
RepServe • RepScript

Rep 5

Conceptual Representation Software

Introductory Manual for Version 1.0

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Centre for Person-Computer Studies

3635 Ocean View, Cobble Hill, BC V0R 1L1, Canada

<mailto:cpcs@shaw.ca>

<http://repgrid.com>

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1 What is *Rep 5*?

Rep 5 is a suite of tools supporting research into, and applications of, a range of conceptual representation techniques using conversational constructivist methodologies based on George Kelly's (1955) *Personal Construct Psychology* (PCP)—see also the International Handbook of Personal Construct Psychology (Fransella, 2003). In its various versions, it aims to provide personal, professional and research support for promoting understanding of individual and communal psychological and social processes. It provides conversational tools for constructing and analyzing *grids* (*RepGrid*), and *nets* (*RepNet*). Grids are a generalization of Kelly's *conceptual grids* for eliciting construct networks through examples of their application, and nets are a generalization of visual syntactic structures used for representing *construct networks* directly in visual languages. It supports the use of grid and net tools separately and in combination, including integration between those tools and other applications such as word processors, spread sheets and knowledge representation and inference systems.

The *RepGrid* tool is the most recent in a series of grid tools originating in 1975 on the PDP12 as part of Mildred Shaw's research on repertory grid elicitation and analysis through conversational interaction with personal computers. Previous versions of the software include *PLANET*, *RepGrid 2*, *KSS0*, *NEXTRA* and *WebGrid*. The *RepNet* tool is the most recent in a series of programs for drawing the nodes and arcs of networks originating in 1965 on the PDP7 as part of Brian Gaines' research on interactive automata simulation and its application to modeling and emulating human skills. Previous versions of the software include the inductive modelers, *MA*, *CHERIE* and *ATOM*, the semantic network systems, *KMap* and *KNet*, and various other visual language tools. These tools have been widely used in areas such as education, psychology, management studies, artificial intelligence, knowledge acquisition, market research and personnel assessment.

In addition to the *RepGrid* and *RepNet* conceptual representation tools, *Rep 5* includes three other major components, *RepSocio*, *RepServe* and *RepScript*, that support and enhance these tools. These components provide an open architecture framework for *Rep 5* enabling users to re-purpose it and tailor it to their own applications.

RepSocio is a tool for managing and analyzing collections of grids created by *RepGrid*. It enables composite grids to be created, *SocioNets* showing the commonality between grids to be mapped, *Mode grids* to be created which extract this commonality, and pairwise comparisons to be made among grids in the collection.

RepServe is an Internet server programmed through a set of *RepScripts* that enables *RepGrid* and *RepNet* capabilities to be made available through the Internet. For example, the *WebGrid* server operation is managed by a set of *RepScripts* that program *RepServe* to offer *RepGrid* and *RepNet* capabilities through the World Wide Web. The scripts can be customized by users to support their specific purposes, including interaction in other languages.

RepScript is a programming language allowing users of *Rep 5* to script the operations of *RepGrid* and *RepNet* using a modern object-oriented language and framework. *RepScript* has full access to the grid and net data structures and can be used to enhance the functionality of *Rep 5* with additional computations and interactions. For example, the elicitation dialogs in *RepGrid* are written in *RepScript* and can be modified by users to suit different applications, including supporting interaction in other languages. The expert system inference engine provided as an

example of interactive programming of Kelly's construct networks in *RepNet* is written in *RepScript* and its object-oriented design illustrates the use of the more powerful features of the language. The import/export scripts provided illustrate how *RepScript* can also be used in a simple fashion to enhance the other tools.

There are three versions of *Rep 5*: the *Personal* version which supports elicitation and simple analysis of grids with up to 15 elements and 15 constructs; the *Research* version which supports grids of any size, full analyses of single and multiple grids, and access to an integrated *RepServe* web server providing *WebGrid* access on the same computer; and the *Enterprise* version which supports categorical and numeric data in grids and a *RepServe* web server accessible through intranets or the Internet supporting remote data collection. *RepNet* is supported in all versions, and *RepServe* in the *Research* and *Enterprise* versions.

This manual is an introduction to getting started with *Rep 5* functionality in all versions. It does not cover how to apply grids and nets—a list of useful background materials is provided at the end of the relevant manuals.

1.1 *Rep 5* history

The Centre for Person-Computer Studies (CPCS) was formed in the UK in 1968 as a not-for-profit organization to support research and development in interactive computers and their application. One objective of CPCS is to promote understanding and application of personal construct psychology by making constructivist psychological techniques as widely available as possible. We have made repertory grid elicitation and analysis available for the last decade as interactive web services through a freely accessible *WebGrid* server at the University of Calgary (<http://tiger.cpsc.ucalgary.ca>). This has been used by tens of thousands of colleagues world-wide, most of whom we do not know personally, and has supported research resulting in numerous graduate theses and research papers as well as classroom and personal studies.

The various versions of *Rep 5* further this endeavor by making high quality grid and net tools available for professional use. We have included a range of standard elicitation and analysis techniques for repertory grids, and made them extensible through scripts so that the user community can add additional capabilities to them without reprogramming *Rep 5*. We have made available a powerful, open-architecture tool for defining, developing, editing and applying representation nets, and again made it extensible through scripts so that it can be integrated with other applications. We have made a simplified *Personal* version of *Rep 5* freely available for student use, data collection, and so on, so that *Rep 5* may be incorporated in classes and field studies.

1.2 What is new in *Rep 5*

Some major new features in *Rep 5* are:-

- 1 The *RepServe* web server is now an integral component of *Rep 5* enabling *WebGrid* functionality to be offered on the local machine in the *Research* version and across the Internet in the *Enterprise* version. In particular, this supports grid elicitation through web clients taking full advantage of the widespread experience of using web browsers, their multimedia capabilities, and their support for remote data collection across the web. The grid files saved from web elicitation are compatible with all the *Rep 5* editing and analysis tools. The web server is scriptable in the *RepScript* programming language, and users can modify

the supplied *WebGrid* scripts, translating them into other languages and customizing them for their own purposes.

- 2 The *RepScript* scripting language used in previous versions to support interactive grid elicitation has been standardized and documented to provide an open-architecture application program interface (API) to *Rep 5* functionality for grid and net elicitation and analysis.
- 3 Three-dimensional plotting capabilities have been added for the graphic output of the *PrinGrid* principal components analysis and the *CrossPlot* presentation tool.
- 4 The capability has been added to collect additional data items and store them in grid files.
- 5 In the *Enterprise* version additional data types are supported in grids, including labeled categories, integers and numbers providing richer capabilities for knowledge representation, modeling and management.
- 6 The *RepNet* visual language component has been substantially enhanced with additional link types, the ability to represent a node's state with visual markers, and a scripting language enabling interaction with nets of nodes and links to be programmed. A sample script supporting 'expert system' inference through deductive and abductive reasoning modeling anticipatory processes in construct net conceptual models is provided.

2 What you need to run *Rep 5*

There are two programs implementing each version of *Rep 5*, one running under Microsoft Windows XP and Vista, and the other under Apple OS X 10.3 and later versions.

Increasingly users move back and forth between machines using different operating systems, concerned only to use whatever is available to perform a task. We have attempted to make the Windows and Mac versions of *Rep 5* as similar as possible while respecting the look-and-feel of the different operating systems. Fortunately Microsoft and Apple have already done much to make this possible and reasonable.

Rep 5 supports use of a two-button mouse (designed originally for Windows) on a Mac if available. Otherwise the “control” key may be used as in other applications to mimic a right-button click if the cursor has a menu icon appended showing that a popup menu is available.

Two of the modifier keys are named slightly differently between Windows and Mac, but modern keyboards are double-labeling them to overcome this problem. This manual uses the prefixes: “ALT” to indicate that the “alt” key (Windows) or “option” key (Mac) should be depressed at the same time as another key; “CMD” to indicate that the command (or apple) key (Mac) or control key (Windows); and “SHIFT” to indicate that the shift key on either platform should be used in this way.

2.1 Getting started

Windows: *Rep 5* is distributed as a “setup.exe” file for Windows XP which contains an installer program. Download this file and an installer wizard will take you through a conventional installation sequence and install the *Rep 5* program files in your “Program Files” directory, and a “Rep 5 Support” directory containing example data and the manual in your “MyDocuments” directory. It also installs an uninstaller that can be used to remove the files it has installed.

The *Rep 5* application may be started in the usual way from the “Rep 5” directory under the Windows “Start” menu, by double-clicking on the “Rep 5” shortcut on the desktop or by dragging a data file to it, or by clicking on a grid or net file.

Macintosh: *Rep 5* is distributed as a “installer.dmg.gz” compressed disk image file for OS X 10.3 and up. Download this file and run the installer from your downloads folder. The installer wizard will take you through a conventional installation sequence and install the *Rep 5* program files in your “Applications” folder, and a “Rep 5 Support” directory containing example data and the manual in your “Documents” directory. It also installs an uninstaller that can be used to remove the files it has installed.

The *Rep 5* application may be started in the usual way by double-clicking on it, by dragging a data file to it or by double-clicking on a grid or net data file.

Registration: A license key is required to activate all the features of the Research and Enterprise versions, and this should be entered when *Rep 5* is first run. Section 3.2 illustrates the procedure.

2.2 Data compatibility

Rep 5 recognizes and supports all the data formats we have used in previous grid and net programs. It will read the files generated by *PLANET*, *RepGrid 1,2* and *3*, *KSS0*, *NEXTRA*, *Rep IV*, *WebGrid*, and *KMap*, as well as importing data from spreadsheets in the format we defined

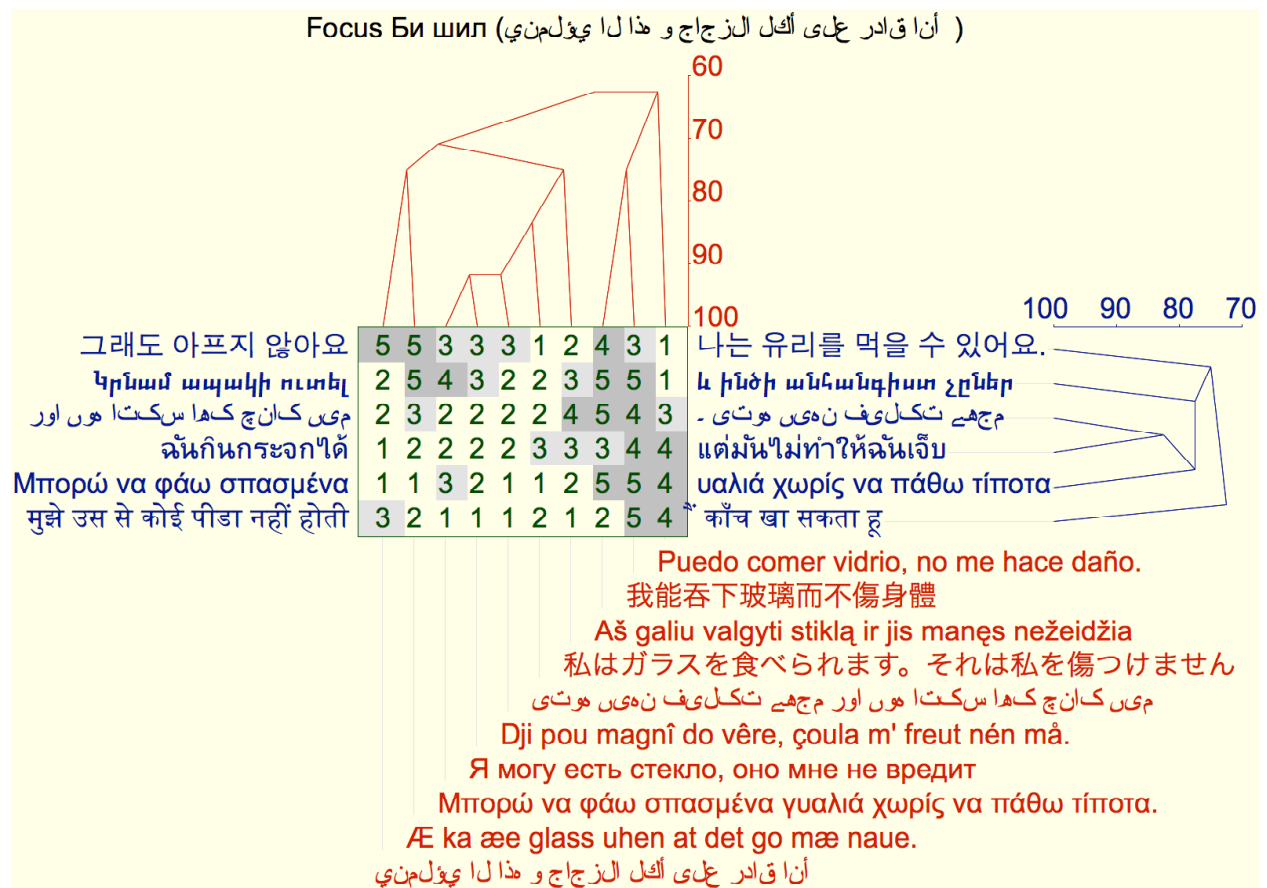
for *Repgrid 2*. It also provides import and export facilities for grids in the XML format supported by *GridSuite* and *Enquire Within*.

Since *PLANET* source code was distributed widely and its data format was adopted in other repertory grid analysis packages, *Rep 5* may also read data prepared for some of them. The simple format used is one of the most rapid ways of coding manually elicited grids as datasets for computer analysis, and *Rep 5* supports it being pasted or dragged from a text editor (including the built-in text editor) into *RepGrid*.

A scripting facility with full access to *RepGrid* and *RepNet* internal data structures enables scripts to be written that can import data from, and export data to, other applications. *Rep 5* includes an integrated script language compiler so that users may develop new scripts for import, export and data analysis, and add them to extend *Rep 5* functionality at any time.

2.3 Unicode and the support of the language scripts of the world

Rep 5 manages data in both grids and nets in Unicode (UTF-8) representation so that it will support their use in the wide range of language scripts of the world available in Unicode (provided your computer has been configured to do so). An illustration of grid analysis with element and construct labels pasted in from samples of non-English languages is shown below.



Unicode support illustration

The extent of Unicode support depends on the operating system and the fonts installed. The Windows XP and Vista operating systems have comprehensive support, and Microsoft Office

2003 onwards installs the font *Arial Unicode MS* which has the most comprehensive coverage of the Unicode character set that is available. The Macintosh OS X operating system from 10.4 onwards supports the full Unicode character set. Under both operating systems some applications do not support Unicode, or only partially support it. *Rep 5* provides the capability to paste bitmap images based on its own Unicode support into such applications.

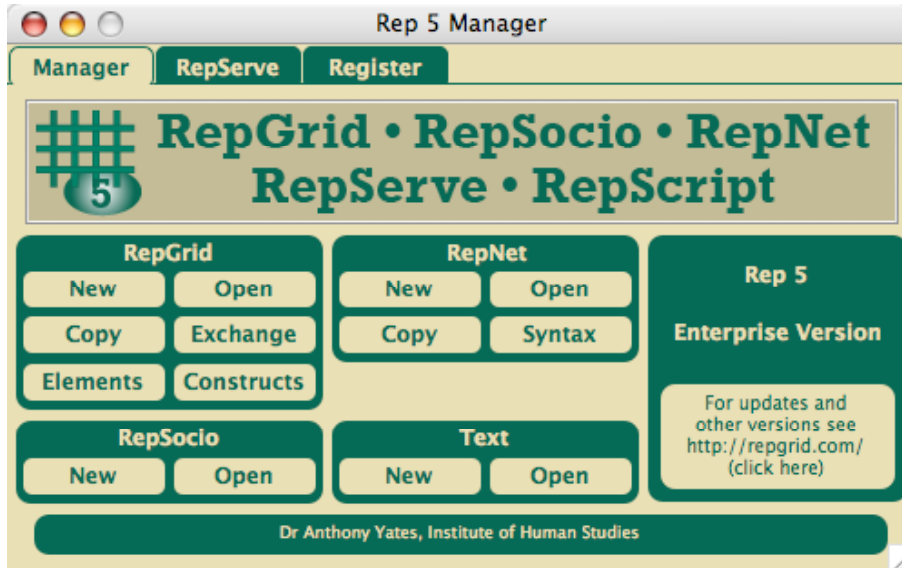
2.4 Integration with other applications

All *Rep 5* files are text files that are distinguished in type by their contents not by operating system conventions. This makes them portable across platforms and also readily generated or opened by other applications.

Rep 5 also supports cut-and-paste and drag-and-drop between its own components and other applications, so that grids and nets can be developed from a variety of sources with the minimum of typing.

3 The Rep 5 Manager window

When you start *Rep 5* by clicking on its icon you will first see the *Rep 5* manager window shown below. This window may be closed at any time, and reopened as needed from the “Window” menu or by keying CMD-R.



The *Rep 5* manager window—Manager pane

The tab ribbon along the top allows you to select one of the panes: “Manager,” “RepServe” or “Register.” Initially the *Rep 5* manager window opens with “Register” pane alone showing for entry of the license key and registration details as described in the Section 3.3. Once registered, it opens with the “Manager” pane showing, and clicking on one of the other tabs brings its pane into view. The following sections describe the functions of each pane.

Files and text may be dragged to the *Rep 5* manager window and will open in appropriate *Rep 5* windows as if they had been opened through the “Open” command in the “File” menu. The RepNet manual illustrates this and the RepGrid manual describes some of the file formats in greater detail.

3.1 Manager pane

The buttons on this pane, in various groupings, may be used to activate all the major functionality of *Rep 5*. Some of this can also be done from the “File” menu but the panel is usually more convenient.

RepGrid functions (RepGrid Manual): The group of six buttons on the upper left allows you to create a new grid (see Section 3.3), open an existing one in a file for editing, copy an existing one as a new version, or copy it without ratings for exchange grid studies, or with only elements or only constructs. An error message is shown if the file selected is not a grid. All of the copy functions set the “Note” fields of elements and constructs to be an asterisk, “*”, so that if additional items are added it is possible to distinguish them from the initial ones. The “Note” field of the copied grid is also annotated to indicate how the grid was derived.

RepSocio functions (RepSocio Manual): The group of two buttons on the lower left allows you to create a new empty RepSocio window, or to open all the grid files in a directory in a RepSocio window.

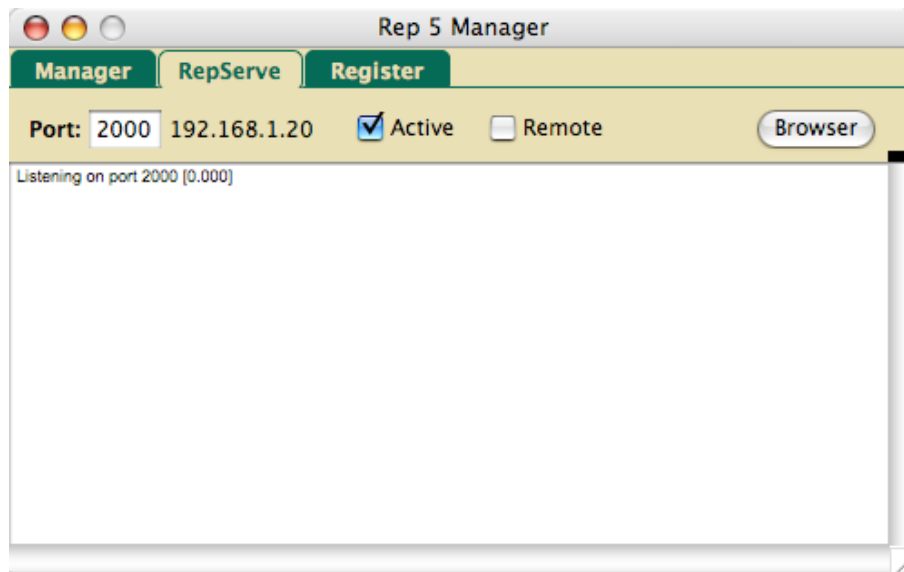
RepNet functions (RepNet Manual): The group of four buttons in the upper center allows you to create a new net (see Section 3.3), open an existing one in a file for editing, copy of an existing one as a new version, or copy just its syntactical structure of node and line types. An error message is shown if the file selected is not a net.

Text functions: The group of two buttons in the lower center allows you to create a new text editing window or open any existing file for editing in a text editing window (including grids and nets which can be useful if you wish to look at the file formats).

Version information: The large button on the right shows you the version of *Rep 5* that you are using. If your computer is connected to the Internet then clicking on this button will cause your web browser to access the page at <http://repgrid.com> covering *Rep 5*, its versions and updates.

3.2 RepServe pane

Rep 5 includes *RepServe*, a web server that supports access to its functionality through standard web clients communicating by http protocols through the local machine (*Research* version), an intranet or the Internet (*Enterprise* version). The server interaction is scriptable by user-modifiable text files in the Rep 5 scripting language, *RepScript*. A set of sample scripts is provided implementing *WebGrid* services. The *RepServe* pane controls the web server and shows a log of its activity. The server operation is discussed in detail in the *RepServe* Manual



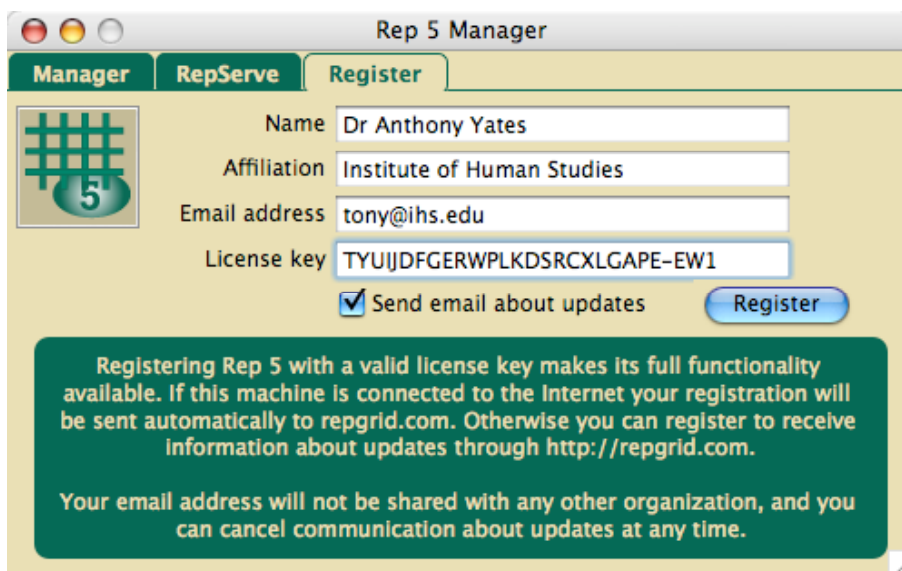
The Rep 5 manager window—RepServe pane

3.3 Register pane

When you install *Rep 5* initially you need to register it using the license key supplied to you in the process of acquiring a *Rep 5* license. Clicking on the “Register” tab brings up the pane shown below. This provides a form with fields for the name, affiliation and email address of the person owning *Rep 5*, the unlock code, and a checkbox to indicate whether you want update notices sent

to the email address. Fill in the fields in the form appropriately and click on the “Register” button to register your copy of Rep 5 and unlock its full functionality.

The name and affiliation will appear at the bottom of the “Manager” pane. The information supplied will be used only to communicate about *Rep 5* updates if requested and will not be shared with third parties.



The *Rep 5* manager window—Register pane

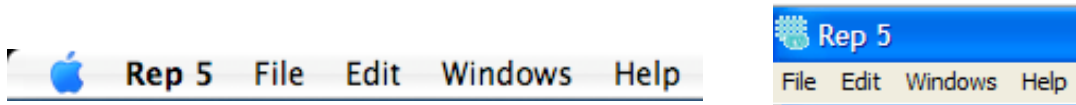
3.4 Default new grid and net files

When you click on the “New” button under the RepGrid or RepNet functions, *Rep 5* checks whether there is a file in the “Rep 5” directory called “Default.rgrid” or “Default.rnet” respectively and, if so, opens a copy of this as the new grid or net file rather than using its own defaults. This enables a facilitator to use the “New” buttons to create initial grids or net preset to their own preferences. *Rep 5* looks for a directory named “Rep 5” in the “Documents” directory of the current user under OS X, and in the “My Documents” directory of the current user under Windows XP.

You can set up such default files by saving a grid or net under the name “Default” in your “Rep 5” directory, creating such a directory in your “Documents” or “My Documents” directory if one does not already exist.

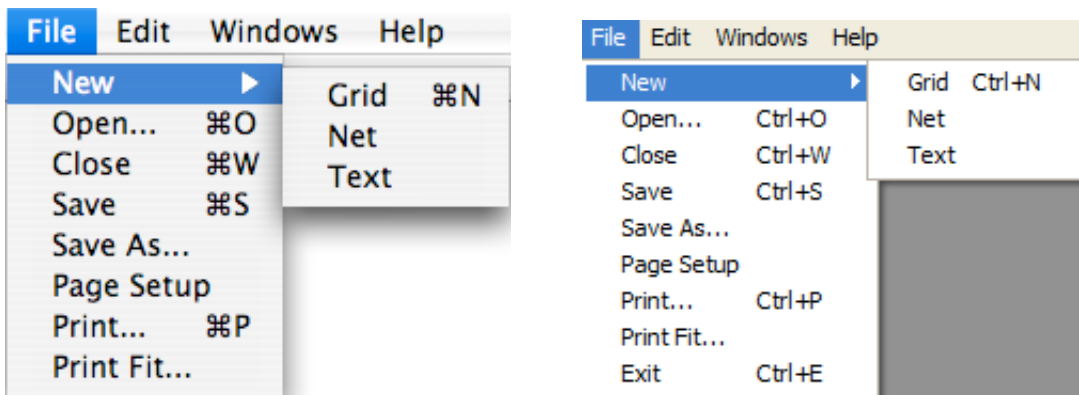
4 The Rep 5 menus

Below is shown the *Rep 5* menu bar with menus: “File,” “Edit,” “Windows,” “Help.”



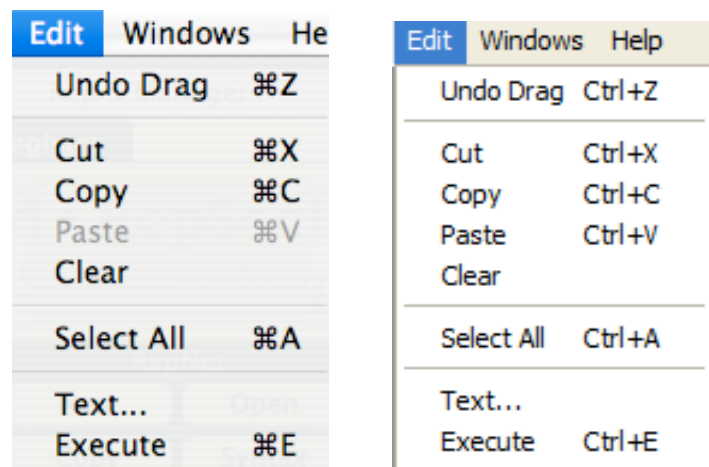
Rep 5 menu bar on Mac and Windows

Below is shown the *Rep 5* “File” menu with the “New” sub-menu to the right that can be used to create new grid, net or text files. The “Open...” command, or CMD-O, will open any grid, net or text file, treating an unrecognized file as if it were text. The “Print Fit...” will scale the image of a net to fit the available page size.



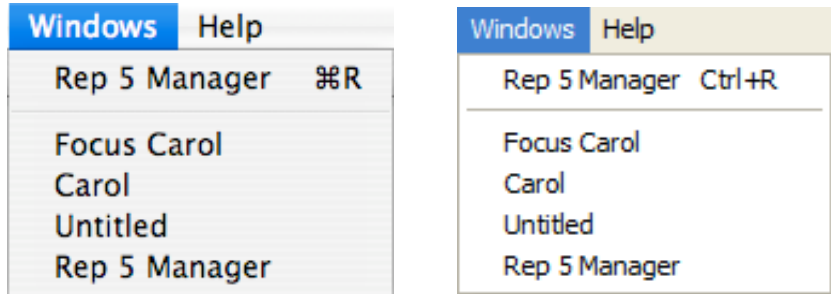
Rep 5 “File” menu on Mac and Windows (with “New” clicked)

Below is shown the *Rep 5* “Edit” menu. “Text” opens a font/style dialog for text windows. “Execute” executes text in a text window as a RepScript script.



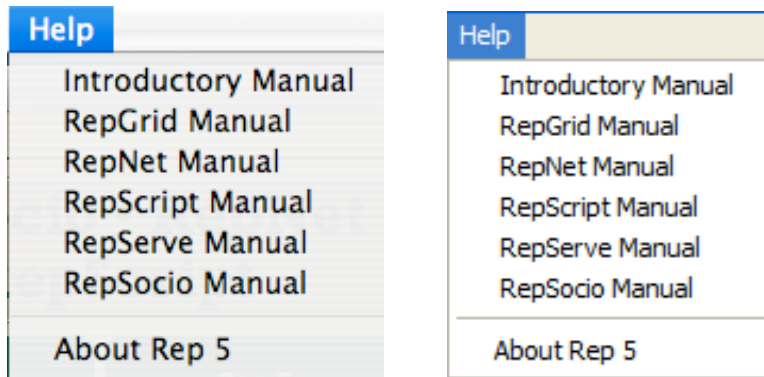
Rep 5 “Edit” menu on Mac and Windows

Below is shown the *Rep 5* “Windows” menu. At the top “Rep 5 Manager” opens the “Rep 5 Manager” window as shown in Section 3. The open windows are listed below and each may be selected to bring it to the front.



***Rep 5* “Windows” menu on Mac and Windows**

Below is shown the *Rep 5* “Help” menu. It provides access to the Rep 5 manuals in PDF format and to an “About Rep 5” dialog window. Selecting a manual will open it in the default PDF reader.



***Rep 5* “Help” menu on Mac and Windows**

5 Example data and other files

The *Rep 5* release comes with a set of example files that may be used to become familiar with the operations of the various programs. Many of these are related to published research which describes their origins and provides a background to their analysis. This section describes these files and others briefly with links to any background material.

5.1 Net examples

Novak.rnet: “concept map” example based on (Novak and Gowin, 1984, p.16)—RepNet Manual.

Toulmin.rnet: “argument diagram” example based on (Toulmin, 1958, p.105)—RepNet Manual.

Toulmin-master.rnet: “argument diagram” master.

Research.rnet: graduate research program planning example from (Shaw and Gaines, 1998)—RepNet Manual.

Research-master.rnet: graduate research program planning master.

5.2 Net with associated grid examples

OKA.rnet: elements elicited in organizational knowledge acquisition brainstorming (Gaines, 2003).

OKA.rgrid: grid based on the elements dragged into RepGrid (Gaines, 2003).

5.3 Net with associated URLs examples

Presidents.rnet: concept map with White House URL’s example (PNG and HTML included)—RepNet Manual.

Geog.rnet: concept map with Geog grid data URL’s example—RepNet Manual

5.4 Nets with associated inference script examples

ContactLens7-abduct.rnet & ContactLens7-assimilate.rnet: construct nets providing an expert system for contact lens prescription literature (Cendrowska, 1987)—RepNet Manual.

The NetScripts directory contains the inference script CNet.Txt.

5.5 Grid examples

Jim Car Choice.rgrid: decision support grid from (Shaw and McKnight, 1981, Ch.6)—RepGrid Manual.

Carol.rgrid: decision support grid from (Shaw and McKnight, 1981, Ch.5)—RepServe Manual.

Test Unicode.rgrid: Unicode test grid of material in different scripts—Manual Section 2.3.

Soft Machines.rgrid: manufacturing study grid from (Gaines and Shaw, 1994).

OBAP-60.rgrid: personnel assessment grid from (Shaw, 1980, p.130).

OBAP-exchange: therapy progress grid from (Shaw, 1980, p.144).

Clinical: some grids from (Slater, 1977, pp.32, 110)

Clinical-Exchange: therapy progress grids from Leach (2001) for comparison.

Learning Situations: grids with common elements/constructs for comparison—RepGrid Manual.

Computing-Same Elements: information technology grids from (Shaw and Gaines, 1996) for comparison.

5.6 RepSocio examples

Geog: Sequence of grids from study in (Shaw and Gaines, 1989)—RepSocio Manual.

BIAIT: Set of grids with common elements from (Shaw and Gaines, 1983) for use with SocioGrids.

CPSC547: Set of grids with common elements from (Shaw and Gaines, 1996) for use with SocioGrids.

5.7 Data transfer formats

Arthur.txt: One of the learning situations grids in a basic grid format—Manual Section 11.1

Arthur.xcl: One of the learning situations grids in tab-delimited spreadsheet format—Manual Section 11.2

Pets.xcl: Showing how several grids may be entered from tab-delimited spreadsheet data—Manual Section 11.2

5.8 ServerData directory for RepServe/WebGrid

The RepServe/WebGrid ServerData directory contains some of the grids described above for use from WebGrid.

5.9 ServerDocs directory for RepServe/WebGrid

The RepServe/WebGrid ServerDocs directory contains files needed by the server, including the WebGrid context help files.

favicon.ico: An icon used by web browsers to indicate the site.

robots.txt: A file to tell visiting robots not to load the server by indexing the site.

index.html: The home page for WebGrid. You need to customize this for your applications.

WG directory: Images used by WebGrid, its cascading style sheet and javascript files and its help system.

5.10 Rep 5 Manuals directory

The Manuals directory in the Rep 5 applications folder contains all the Rep 5 manuals. Rep 5 looks for this directory when it starts, and puts links to any manuals present in its “Help” menu so that they are readily available. If you wish to retain this facility the Manuals folder should not be moved elsewhere. Any PDF documents you put in the Manuals folder will also be shown in the “Help” menu.

6 Versions of Rep 5

There are three versions of *Rep 5* based on the same tools and interfaces.

6.1 Personal version of Rep 5

The *Personal* version of *Rep 5* is intended to make basic RepGrid and RepNet tools freely available for personal and educational (non-commercial) use. We have simplified the functionality as much as possible to make it easy to use, and hope that it will find a place in schools and in courses introducing students to personal construct psychology and the representation of construct networks through grids and nets. It should also allow anyone interested in the techniques to explore them personally as they see fit. The greater functionality of the other versions is built on the same foundations with similar user interfaces, so that this version may also be used to explore potential applications of the more powerful versions. For many uses involving the individual analysis of grids with up to 15 elements and 15 constructs the *Personal* version may suffice—our intention is that it should be adequate for many applications.

6.2 Research version of Rep 5

The *Research* version extends the *Personal* version with facilities for professionals having a background in personal construct psychology who need a full range of grid analysis tools with no limitation on grid size, including the RepSocio tool extending Shaw's (1980) *SocioGrids* techniques for to analyzing multiple grids. **It supports conversational elicitation of new grids, rapid entry of existing grids, and import/export of grid data in a variety of formats, all through researcher-scriptable interaction.** For single grids, in addition to Focus and PrinGrid, it provides crossplots, statistics, sorted matches, selective analysis and weighted analysis. For multiple grids having overlapping sets of elements or constructs, RepSocio provides the capabilities to create and analyze composite grids, to compare pairs of grids, to generate a mode grid of commonly used constructs, and to output socionets linking those grids having similar patterns of construing.

The *Research* version also includes a local WebGrid server allowing a web client on the same machine to provide interactive access to much of the RepGrid functionality and combine this with the multimedia capabilities of a web browser.

6.3 Enterprise version of Rep 5

The *Enterprise* version extends the *Research* version to support knowledge management applications by providing additional data types in grids, including labeled categories, integers and numbers enhancing the capabilities for knowledge representation, modeling and management.

The *Enterprise* version also includes a networked version of RepServe supporting those wishing to operate public or private WebGrid servers. It offers the capability to elicit and analyze grids over the Internet or a local network with customized interactive dialogs, privacy of data, additional data types and multimedia integration.

The web services provided are scriptable by those managing the server, and may be extended to support specialist requirements such as those of knowledge management, clinical trials, social surveys or market research. A typical application is large-scale data collection through grids and questionnaires followed by the use of the multi-grid analysis tools to interpret the data collected.

6.4 Comparing features of versions of Rep 5

The table below shows the features of the different versions in greater detail.

Feature	Rep 5 Version		
	<i>Personal</i>	<i>Research</i>	<i>Enterprise</i>
Full color support in graphic output	Preset	Selectable	Selectable
Unicode (UTF-8) (non-Roman text in nets and grids)	Supported	Supported	Supported
Copy & Paste, Drag & Drop (transfer data to and from other applications)	Supported	Supported	Supported
XML data interchange	--	Supported	Supported
RepNet: Construct Nets (also used for grid analysis plots)	Included	Included	Included
Presets: e.g. argument forms, concept maps	Provided	Provided	Provided
Enter & edit nodes, lines and states	Nodes/lines	Included	Included
Copy and paste images to other applications	Bitmap	Vector/bitmap	Vector/bitmap
Multi-page and fit-to-page printing	1-page	Included	Included
Define net syntax of node and line types & styles	--	Included	Included
Set up a default new net	--	Included	Included
Save net as preset master for personal version	--	Included	Included
Annotate nodes	--	Included	Included
Use URL annotation to access web and local files	--	Included	Included
Save net as PNG image for display on web	--	Included	Included
Generate HTML image map (clickable image)	--	Included	Included
Scriptable import/export, interaction & analysis	--	Included	Included
RepGrid: Grid Elicit, Enter and Edit	Included	Included	Included
Rating scales	1 to 2, 3, 5, 7 or 9	Any in range -199 to +199	Any in range - 199 to +199
Rating scales with labeled points and intervals	--	Supported	Supported
Categorical ratings	--	--	Supported
Integer ratings with interval categories	--	--	Supported
Floating point numeric ratings with interval categories	--	--	Supported
Maximum size	15 by 15	Unlimited	Unlimited
Enter & edit	Included	Included	Included
Reads PLANET, RepGrid 2 and WebGrid files	To max size	Included	Included
Scriptable rapid entry of existing grid data	Included	Included	Included
Scriptable interactive elicitation (Pegasus)	Included	Included	Included
Meta-values: <i>open, any, none, not-applicable, unknown</i>	<i>Open only</i>	All	All
Set up a default new grid	--	Included	Included
Annotation of elements and constructs	--	Included	Included

Scriptable import/export	--	Included	Included
RepGrid: Grid Analysis	Included	Included	Included
Display plot	Preset	Selectable	Selectable
Focus plot (sort & hierarchical cluster analysis)	Preset	Selectable	Selectable
Principal components plot (factor analysis)	1st by 2nd	Selectable	Selectable
Three-dimensional principal components plot	--	Included	Included
Focus matches, sorts and links data as text	--	Included	Included
Principal components loadings data as text	--	Included	Included
Crossplot of elements on selected constructs	--	Included	Included
Three-dimensional crossplot	--	Included	Included
Pairwise Comparison plots (Minus & Compare)	--	Included	Included
Statistics (construct ranges, means, correlations)	--	Included	Included
Sorted element and construct matches	--	Included	Included
Analyze only selected elements and constructs	--	Included	Included
Weight elements and/or constructs	--	Included	Included
Minkowski metric with fractional powers for matches	--	Included	Included
Scriptable analysis (e.g. complexity measures)	--	Included	Included
RepSocio: Multiple Grids Analysis	--	Included	Included
Analyses can be based on common elements or on common constructs or both	--	Included	Included
Composite grids (merge grids for joint analysis)	--	Included	Included
Pairwise Comparison plots (Minus & Compare)	--	Included	Included
ModeGrid (commonly used constructs or elements)	--	Included	Included
SocioNets plot based on common elements/constructs	--	Included	Included
Interactive, incremental SocioNets plot in RepNet	--	Included	Included
ModeGrid & SocioNets data as text	--	Included	Included
Minkowski metric with fractional powers for matches	--	Included	Included
RepServe: WebGrid & WebNet	--	Included	Included
Web services run on local machine		Included	Included
Web services run on local network or Internet	--	--	Included
WebDoc: document server	--	Included	Included
WebNet: clickable nets as web images	--	Included	Included
WebGrid: web-based grid elicitation and analysis	--	Included	Included
Automatic grid cache for distributed data collection	--	Included	Included
Integration with multimedia and other applications	--	Included	Included
Scriptable for other languages and puposes	--	Included	Included
	<i>Personal</i>	<i>Research</i>	<i>Web</i>

7 References

Some of the reports cited in the manual are available through <http://repgrid.com>

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