

Guide to Destiny

To display bookmarks for navigation, click the middle button on the leftmost toolbar in your Acrobat window.



Click to display Bookmarks



Copyright © 1996
Interactive Magic

Copyright Notice

Copyright © 1996 by Interactive Magic, Inc. All rights reserved.

This manual and the computer programs on the accompanying CD-ROM are copyrighted and contain proprietary information. No one may give or sell copies of this manual or the accompanying CD or other works of Interactive Magic, Inc., to any person or institution, except as provided for by written agreement with the copyright holder. Disassembly, reverse compilation, and any other form of reverse engineering of the programs on the CD are unauthorized. No one may copy, photocopy, reproduce, translate this manual, or reduce it to machine-readable form, in whole or in part, without prior written consent of the copyright holder. Any person/persons reproducing any portion of this program, in any media, for any reason, shall be guilty of copyright violation and criminal liability as provided by law, and shall be subject to civil liability at the discretion of the copyright holder.

Limited Warranty

Interactive Magic warrants that the CD-ROM on which the enclosed program is recorded will be free from defects in materials and workmanship for a period of 60 days from the date of purchase. If within 60 days of purchase the CD proves defective in any way, you may return the CD to Interactive Magic, 215 Southport Drive, Suite 1000, Morrisville, NC, 27560, and Interactive Magic will replace the disk free of charge.

INTERACTIVE MAGIC MAKES NO OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE CD OR THE SOFTWARE PROGRAM RECORDED ON THE CD OR THE GAME DESCRIBED IN THIS MANUAL, THEIR QUALITY, PERFORMANCE, MERCHANTABILITY, OR FITNESS FOR ANY PARTICULAR PURPOSE. THE PROGRAM AND GAME ARE SOLD "AS IS." THE ENTIRE RISK AS TO THEIR QUALITY AND PERFORMANCE IS WITH THE BUYER. IN NO EVENT WILL INTERACTIVE MAGIC BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE CD, PROGRAM, OR GAME EVEN IF INTERACTIVE MAGIC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. (SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF IMPLIED WARRANTIES OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.)

What to Do If You Have a Defective CD

Should you have a defective CD, please return the CD only (keep all other parts of the game) to our Customer Support Department, along with a note describing the problem you have encountered. A replacement CD will be provided upon our receipt of the defective CD.

Always make sure to include your name, address, and daytime telephone number with any correspondence.

Questions or Problems

If you have difficulties with this game and cannot find the solution in this booklet, please call our Technical Support Line at (919) 461-0948, 9 a.m. to 9 p.m. EST Monday through Friday, and a member of our support staff will assist you. We will be best able to help you if you are at your computer when you call.

You may also obtain customer service via the major on-line services. We can be reached via email through the following services:

Internet: techsupport@imagicgames.com

CompuServe: 75162,1202

To receive a free introductory membership and software, call CompuServe at (800) 524-3388 and ask for Rep. #725.

America Online: ASKIMAGIC

GEnie: I-MAGIC

Prodigy: ZBWS92A

Interactive Magic and the Interactive Magic logo are trademarks of Interactive Magic, Inc. All other companies or products mentioned herein are the property of, and may be trademarks of, their respective owners.

Contents

Technical specifications	1
Installation	1
Modem Setup	1
Definitions	4
Tutorial	4
Getting Started.	4
Making Discoveries	5
Improving your COH	7
Starting a new game	10
Selecting the type of game	10
Local Games	11
Networked Games.	12
Single Battle.	12
Game Set Up Menu.	13
Fast Start icons.	16
Playing the game	18
Status bar	18
COH windows.	18
Changing map views.	33
Giving Orders To Your Forces.	34
Moving.	34
Attacking	34

Special Orders box	34
Support	35
Keyboard shortcuts.	41
Normal keys.	41
Function keys.	42
Battles	42
Fight Battle.	42
Retreat	43
Compute Battle	43
Siege	43
Trade window.	44
Formalized trade offers	44
Open trade offers	45
Diplomacy window	45
Formalized diplomacy	46
Open Diplomacy.	47
National Government	47
Discovery window	49
Discovery Clarifications	51
Degrees of Difficulty	52
Settings.	52
General Effects.	53
Specific Effect tick boxes	55
Diplomacy	57
Representatives	57
Background Diplomacies	58
Specific Diplomacies.	58
Spies	59
Terrorist	59
Bribes	60
Controlling the people	61
Work Force.	61
Movement of the People.	61
Population Growth	61
Level of Control.	62

Local Level of Control	62
Government Policies	63
Riot/Revolt Checks	63
Capturing COHs	64
Tribal Education	65
Menus	65
File menu	65
View menu	66
Govern menu	66
Find menu	66
Settings menu	66
Help menu	69
Toolbar	69
Game Strategies	70
A few large population COHs rather than several small COH popu- lations	70
Trade and diplomacy rather than military action	70
Culture and agriculture rather than science and industry	71
Forces	71
Units	83
Discoveries	114
Facilities	178
Resources	196
Terrain	200
Disasters	210
Governments	212
Designer's Notes	214
Credits	216

Technical specifications

To run *Destiny*, you need the following minimum system configuration:

- 486DX 66 processor
- 8 MB RAM
- Windows 95
- CD-ROM drive
- Mouse

For the most part, *Destiny* uses a standard Windows 95 interface. Exceptions are noted in this manual.

Installation

You must install *Destiny* on your hard drive. You cannot play the game directly from your CD-ROM.

Destiny is designed for Windows 95 and features an AutoPlay-enabled CD-ROM. AutoPlay simplifies installation of multimedia and gaming titles under Windows 95 by providing instant access to the most common options for a particular problem. An installation menu is displayed to guide you through the installation process.

If you prefer, you can install *Destiny* manually. To do so, select the **Start** icon, then **Settings**, then **Control Panel**. From the Control Panel window, double-click the **Add/Remove Programs** icon.

At the Install/Uninstall window, click **Install**. Insert the game CD into the CD-ROM drive. The command line should read *D:\setup.exe*. (If your CD-ROM drive is not “D”, type the letter of your CD-ROM drive.) Click **Finish**.

Follow the instructions on the screen. By default, *Destiny* is installed in *c:\Imagic\Destiny*. To install the game on a different drive or in a different directory, type the drive and directory you want.

Modem Setup

To play multi-player games via modem, you will need to make sure that your modem is installed properly and then configure certain optional settings for optimum performance. If necessary, connect and

configure your modem following the manufacturer's instructions or the Windows 95 documentation.

Once you have configured your modem, you need to turn off data compression to ensure smooth play.

You can either change these settings permanently using the Control Panel, or temporarily using the Destiny/DirectPlay menu. To make a temporary change, start with the note in step 4.

NOTE: If you want to initiate a modem-based network game, you *must* use the Control Panel to change these settings.

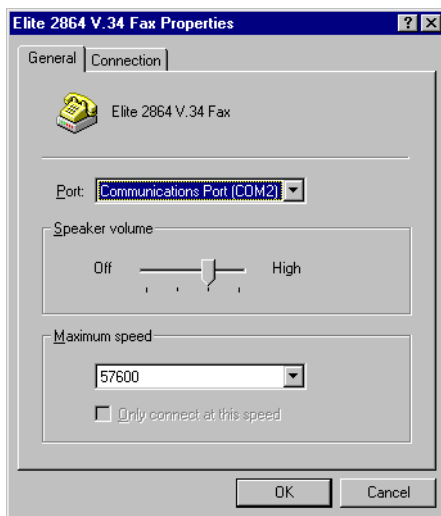
To change your data compression settings, follow these instructions:

1. Open the Control Panel.

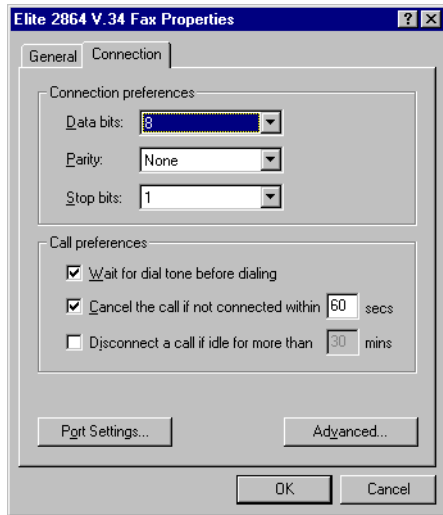
To do this, click the Windows 95 **Start** button, then select **Settings**, then **Control Panel**.

2. Double-click **Modems** to display the Modem Properties window.
3. Select the modem whose settings you want to change.
4. Click the Properties button to display the Properties window for the selected modem.

NOTE: You can also display this window by selecting **Configure Line** on the Destiny modem dialing window.



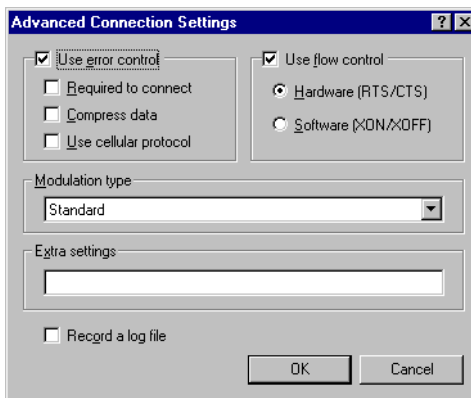
5. Select the **Connection** tab.



6. Select the **Advanced** button.

7. Make sure that **Compress data** is *not* checked.

8. Select **Hardware** for flow control. The hardware control is usually the default.



9. Select **OK** to return to the Properties window and apply the new settings.

10. If the phone line quality is poor, your modem may not be able to establish a stable connection. If this happens, re-instate the **Use error control** check mark, but be sure to disable (remove the check mark) for data compression.

Definitions

The following terms are used throughout this manual:

- **click**—Press and release the left mouse button.
- **double-click**—Quickly press and release the left mouse button twice.
- **COH**—Center of Habitation. This can be anything from a group of huts to a city.
- **force**—The basic piece that you move around. It consists of up to ten units.
- **right-click**—Press and release the right mouse button.
- **unit**—One of the components of a force. In solo or two-player games, you can fight any battles manually. In battle, the forces break down into their component units, each of which can then be moved separately.

Tutorial

This tutorial walks you through only one way of reaching the Bronze Age. Because it is impossible to predict exactly how your game will proceed, you may need to modify your strategy to your situation. If you find you cannot complete one of the tutorial steps, skip it. Try coming back to that task later.

Getting Started

1. Start up the game.
2. Exit the introductory sequence by pressing **Esc**.
3. Select **Local Game**.
4. Choose one tribe for the ultimate in easy play—no opposition! For a more complex game select one tribe for the human player (you) and up to seven computer players. Click **Next**.
5. Use the default settings for game setup. Click **Next**.

NOTE: If you do change any of the settings, the tutorial may not work correctly.

You now begin your game. The window shows your force and your COH. Here are some of the things you can do:

- To see information about a force, right-click it. Click **Properties** for further details.
- To move a force, click the force and click where you want it to go. You can also select **Move** from the Force Information window (right-click on force) and then click where you want the force to go.
- To look around you, use the right and left arrow keys on the keyboard.
- To side-step right or left, press and hold down the **Shift** key and appropriate arrow key.
- To go forward and backward, press the up and down arrows, respectively.
- To toggle between the default 3D country view and the top-down country view, press **T**.
- To see information about the terrain, right-click it. Click **Properties** to see what resources are available from this area of terrain.

Making Discoveries

The first thing you need to do is begin making discoveries.

1. Click the light bulb icon to open the Discovery window.
2. Click the arrow button (drop-down menu) next to Agriculture. This lists the classes of discoveries: agriculture, culture, industry, military, and science.
3. Select **Agriculture** and allocate one point to Domestication of Livestock. Next, select **Industry** and allocate one point to Adobe/Clay Bricks and one point to Flint Knapping. (To allocate points, highlight the discovery and then use the small up and down arrows to the right of the number to change the number of points.)

Once you make a discovery, it allows you either to discover something further or to build something. Make at least the following discoveries by allocating points to them as they appear:

Agriculture

- Chest Plow
- Domestication of the Horse
- Salting
- Selective Livestock Breeding I
- Selective Livestock Breeding II
- Selective Planting I
- Shaduf
- Slash & Burn
- Smoking/Drying

Culture

- Primitive Carving
- Primitive Painting
- Recognized Religion
- Tribal Dance
- Tribal Rituals
- Writing

Industry

- Engineering I
- Improved Timber Construction
- Metal Working I
- Mining/Quarrying I
- Mining/Quarrying II
- Papyrus
- Pottery
- Stone Cutting
- Timber Construction

Military

- Long Bow
- Simple Bow

Science

- Chemistry I
- Herbal Lore
- Mathematics I
- Medicine I
- Metallurgy I
- Metallurgy II
- Weights and Measures

The game begins with 20 percent of New Ideas on each of the five categories, but allocating specific points to specific discoveries is a more efficient use of your ideas. Exit the Discovery window—you will be notified when you make a discovery.

Improving your COH

If you have moved from the original start position and can no longer see your force or COH (Center of Habitation), do the following:

1. Click the **Find** menu, then **COH**.
2. Highlight the name of the COH, click **Locate**, then click **Okay**.

The Camera is now directly above your COH.

- To see the COH's name and properties, right-click it.
- To display the COH window, click the COH.

After Discovering Adobe/Clay Bricks...

1. Click your COH.
2. Click the Construction page.
Primitive Shelter should be highlighted.
3. Click the **Build** button until 50% of your population is employed (Administration window).

This keeps your population employed and provides shelter for the homeless.

NOTE: A high percentage of homelessness and unemployment reduces your control and makes troubles in the city more likely.

After Discovering Timber Construction...

Select the COH window and select the Construction section. Select **Timber Yard** from the Possible Facilities list and click **Build**. A timber yard produces lumber. You need lumber to build Primitive Housing. When the timber yard is built, click the Production page. Highlight **Timber Yard** and click **Start**. You are now producing lumber. Click the Storage page for an overview of the stores for your COH.

Constructing a Mine/Quarry

Mines/Quarries have different grades: scrape site, diggings, excavations, quarry, mine, deep mine, and extra deep mine. After you discover Mining/Quarrying Level I, go to the Construction section of the COH window. Select **Scrape Site** and build in the same way you built the timber yard.

To begin extracting stone, go to the Production page, highlight the Mine/Quarry, select **Scraping For Stone**, and click **Start**.

Improving Education

Once you discover Improved Timber Construction, Mathematics I, Papyrus, and Stone Cutting, and you have lumber and stone in store, you can construct Athenaeums, which are necessary to achieve an Education Level of one.

After you discover Chemistry Level I, Engineering Level I, and Medicine Level I and have an Education Level of one you can build Academies. Build at least four to increase your Education Level to two (see Administration page). If your Education Level returns to zero, it means that you no longer have enough Athenaeums for the population. Reduce the population by creating forces (Army page) or increase the number of Athenaeums (Construction page).

Improving Housing

Click the Administration page. This tells you your social statistics, including your Education Level. If you think the percentage of homeless is high (say over 30%), go to the Construction page and build the highest level of housing possible.

NOTE: Early Housing is better than Primitive Housing, which, in turn, is better than Primitive Shelter.

As you build better housing, sell off the lesser facilities. Select the Production page. Click the full list box, which will show all the facilities you have built. To sell, select the facility you want to sell and click the **Sell** button.

Reducing Unemployment

If Unemployment is high, either construct something (anything useful!) or click the Army page, highlight a potential force, such as the Stone Age Infantry Army, and build it.

Giving Orders to a Force

Once a force is built, you can give it orders on the Garrison page. At the beginning of the game, you already have a force outside the COH. To give orders to any force:

1. Go to the **Find** menu and select **Force**.
2. Highlight the ID of the force and click **Order**.
3. Highlight the force and select a mission such as **Find Enemy Force** and a method such as **Outward Spiral**.
4. Under Orders, select Report.
5. Right-click **Issue**.

If you want to watch the search, right-click on the force (quickly, before it gets away) and select **Follow**. If the force finds what it is searching for, you are notified.

Founding a COH

You can order a force to found a COH by right-clicking the force and selecting **Establish COH**.

NOTE: Remember that discoveries are tribal, but each COH needs its own facilities. If you found another COH, you will need to construct everything that you constructed for the first COH.

To go from one COH to another, right-click the background of the COH window and select a COH.

Freeing up People for Construction

You may not have enough people available to construct your facilities. At the start of the game, half your population is involved in hunting and gathering food. To free up some of these people, construct Goat, Cattle, and Primitive Farms, then start them producing in the Production page. You can use the freed-up people to help construct facilities or enable you to build army forces—the latter is an effective way of keeping the population at a manageable level.

To reach the Bronze Age, construct at least the following facilities:

- 4 Academies (to achieve Education Level 2)
- 4 Athenaeums (to achieve Education Level 1)
- 14 Early Housing units
- 1 Goat Farm (to produce food)
- 1 Local Administration
- 1 Ranch (to produce horses)
- 2 Scrape Sites (one for stone production, one for copper/tin extraction)
- 1 Timber Yard (for lumber production)
- 1 Regional Administration
- 2 Primitive Farms

NOTE: These are recommended numbers for an ending population of 80 in each COH (you will probably go over 100, but try to end up around 80).

When you discover Metallurgy II, you enter the Bronze Age.

Starting a new game

The first time you run the game, it will automatically take you to an Instant Battle, either when the introductory sequence ends or if you press **Esc** during the introductory sequence.

NOTE: This feature can be turned off for subsequent games from the Settings menu.

If you enter the Instant Battle and do not want to fight it out, you can end it quickly by pressing **Esc** to abort the battle, clicking the **White Flag** icon to surrender, or clicking the **Calculator** icon to calculate the battle. Any of these choices will display the main menu.

If you have never played before, refer to [Playing the game on page 18](#) for a quick tour of the intuitive game controls.

NOTE: Destiny includes an autosave feature. You can adjust how often it saves your game from the Settings menu.

Selecting the type of game

To skip the introduction, press **Esc** to display the Complete Game Set Up window, or click one of the fast game start icons at the top of the window.

The setup choices are:

- Quick Game

Starts a one-player game with all the defaulted settings. See [Playing the game on page 18](#).

- Single Battle

Allows you to practice battlefield mode.

- Local Game

A game played by one player on that player's computer.

Selecting this displays the **Select Tribes** menu.

- Multiplayer Game

A game with two to eight players, connected via a network or modem setup.



Select this choice to join a new game or set up a new game. See [Networked Games on page 12](#).

NOTE: You *cannot* join a game that is already in progress.

- Saved Game

Continues a previously saved game.

NOTE: If the saved game was a networked game, *all* players in that game must rejoin the game.

- High Scores

Select a game type, game name, and victory conditions to display the high scores.

Local Games



In a local game you can have one to eight tribes. Click the options arrow next to a tribe to select Human, Computer, or Unselected. In a local game, you can set only one tribe to Human. You play this tribe. You can set any of the remaining tribes as computer players, up to a maximum of seven.

You can select and de-select as many times as you like until you click the **Next** button. Clicking the **Next** button takes you to the **Game Set Up** menu (see [page 13](#)).

Networked Games

To join a game...

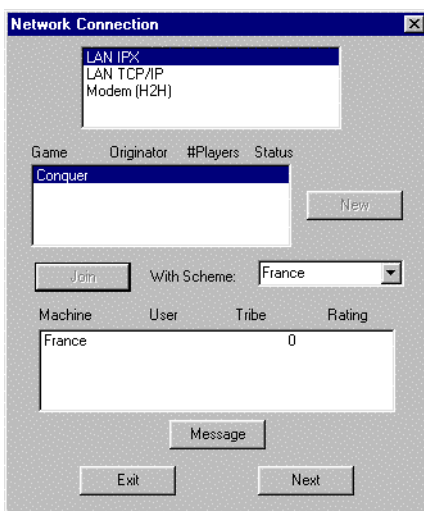
After selecting **Multiplayer** in the main menu, click the game you want to join and then the **Join** button. Now open the **Tribal Scheme** menu to select the tribe you want to play.

NOTE: Each player must have a different tribal scheme.

Click the **Next** button to open the **Game Set Up** menu.

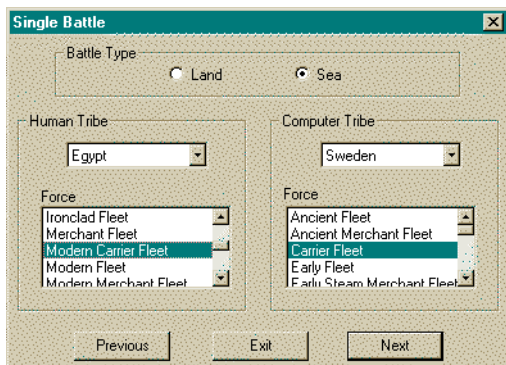
To set up a game...

Click the **New** button. Open the Tribal Scheme menu to select which tribe you wish to play. Click the **Next** button to open the **Game Set Up** menu.



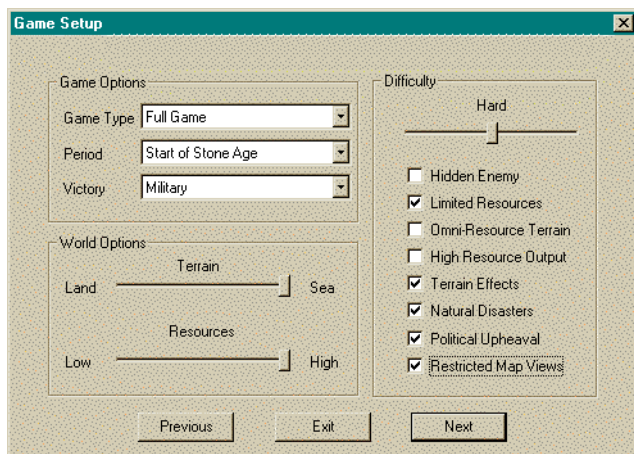
Single Battle

In Single Battle mode, you can practice Battlefield mode. Select Land or Sea Battle.



Then select a tribe and force for yourself and the computer (the tribes cannot be the same). Click **Next**. This places you directly in a battlefield scenario. For more information on Battlefield mode, see [Fight Battle on page 42](#).

Game Set Up Menu



If you are *joining* a networked game, click **Next**.

Game Options

If you are playing a *local game*, or are *setting up* a networked game, you must select a game type:

- **Full Games**

You can start at the beginning of the Stone Age, the beginning of the Bronze Age, or the beginning of the Iron Age.

- **Mini Games**

All start at the beginning of the Stone Age but end at different times (see [Victory Conditions on page 14](#)).

- **Mini-Scenario**

You can start a mini-scenario at the beginning of the Stone Age, the Bronze Age, the Iron Age, the Gunpowder Age, the Steam Age, or the Space Age.

Victory Conditions

The victory condition changes how and when the game ends.

Scientific Victory

The following table describes the victory conditions for scientific victory.

Type of game	Victory condition
Full game	Ends when the first space launch facility is built.
Mini game—Gunpowder	Ends with the building of the first early gunpowder infantry army
Mini game—Steam	Ends with the building of the first early railway station.
Mini game—Powered flight	Ends with the building of the first civil airfield.
Mini scenario	Stone Age—Metallurgy II Bronze Age—Metallurgy III Iron Age—Gunpowder Gunpowder Age—Steam Engine Steam Age—Aerodynamics III Space Age—Rocketry V

Military Victory

Ends with the total destruction of all other tribes' forces and COHs.

NOTE: The Military Victory option is not available in mini scenarios.

Optional Victory

Ends either when the correct scientific victory condition has been met, or with the total destruction of all other tribes' forces and COHs, whichever occurs first.

World Options

Terrain slider

This changes the likely ratio of land to sea, which affects the size of the continents.

Moving the Terrain slider to the left makes the game easier.

Resource slider

This changes the likely number of resource locations.

Moving the Resource slider to the right makes the game easier.

Degree of Difficulty slider

This changes several game settings.

The individual tick boxes below this slider change as you slide the bar.

Moving this bar also changes the settings for the computer tribes' abilities, which affects their aggressiveness and responsiveness.

See also [Degrees of Difficulty on page 52](#).

Tick Boxes

Instead of moving the Degree of Difficulty slider you can toggle some of the game features.

Some of these will move the Degree of Difficulty slider, because they are part of the fixed difficulty settings, but others can be toggled within the same degree of difficulty setting.

See also [Degrees of Difficulty on page 52](#).

The game features are described below:

- **Hidden Enemy**
If checked, enemy forces and COHs appear only if they are within a certain distance of one of your forces or COHs. The exact distance varies with your discoveries.
- **Limited Resources**
If checked, as you exploit resources, they may run out or require a higher level of technology for you to continue exploiting them.
- **Omnipresent Resources**
If checked, *all* terrains have *all* resources available in them.
- **High Resource Output**
If checked, resource sites output more resources per turn.
- **Terrain Effects**
If not checked, all terrain costs the same amount to cross and has no effect on combat.
If checked, each terrain type costs a different amount to cross and affects the combat values of forces attacking, firing, or bombarding *into* them.

- **Natural Disasters**

If checked, natural disasters such as earthquakes or plague can strike your COHs. See [Disasters on page 210](#).

- **Political Upheaval**

If checked, you have a chance of riots or revolts in your COHs. See [Riot/Revolt Checks on page 63](#).

- **Map View Restrictions**

If checked, the overall degree of difficulty and your discoveries will restrict which map views you can use.

See also [Degrees of Difficulty on page 52](#).

Fast Start icons

Use the Fast Start icons to start a new local game quickly, without having to set options. You choose which time period and type of game you want to play and everything else defaults or is randomly selected.

• Your Tribe	Random Selection
• Number of Tribes	Random between 2 and 8
• Degree of Difficulty	Average
• World Set Up	Average
• Victory Conditions	For full games—Optional For mini-games—Optional For mini-scenarios—Scientific

Fast Start icons



Monolith

Start a mini scenario at the beginning of the Stone Age.



Metal Casting

Start a mini scenario at the beginning of the Bronze Age.



Anvil

Start a mini scenario at the beginning of the Iron Age.

Fast Start icons (continued)

Crucible Start a mini scenario at the beginning of the Gunpowder Age.



Steam Engine Start a mini scenario at the beginning of the Steam Age.



Space Helmet Start a mini scenario at the beginning of the Space Age.



Explosion Start a mini game ending with the building of the first early gunpowder infantry army or total destruction of all other tribes.



Railway Track Start a mini game ending with the building of the first early railway station or total destruction of all other tribes.



Runway Start a mini game ending with the building of the first civil airfield or total destruction of all other tribes.



Club Start a full game at the beginning of the Stone Age.



Bronze Sword Start a full game at the beginning of the Bronze Age.



Iron Sword Start a full game at the beginning of the Iron Age.

NOTE: You cannot change your tribe type.

Click an icon to start the game in 3D Country Mode looking at a force and a COH.

Playing the game

If you have not played the game yet, we recommend you go through this quick tour of the various functions, how to move around the map, and how to order your forces.

The game play window can be enlarged by right-clicking and selecting **Maximize**.

When you first start a game you will see one of your COHs and, next to it, one of your forces. The actual force will vary with the time period of the game.

When you reach the later stages of a full game or begin playing in a later scenario, you may find it useful to use the Autopilot option (Control-Shift-A). Artificial intelligence (AI) will take over running your tribe, but you can still influence its course of action.

NOTE: The AI will countermand your orders to forces.

Status bar

The status bar at the bottom of the window shows the clock, the current speed setting, the year, the direction in which the camera is facing (after you discover the simple compass), and map information. The information tells you which land type the camera is over and the map reference in Country view. When you put the mouse pointer over a COH or force its name appears and its tribal owner is shown.

Right-click a COH or force to see its properties. Depending on your level of play, all details of enemy forces and COHs might not be available.

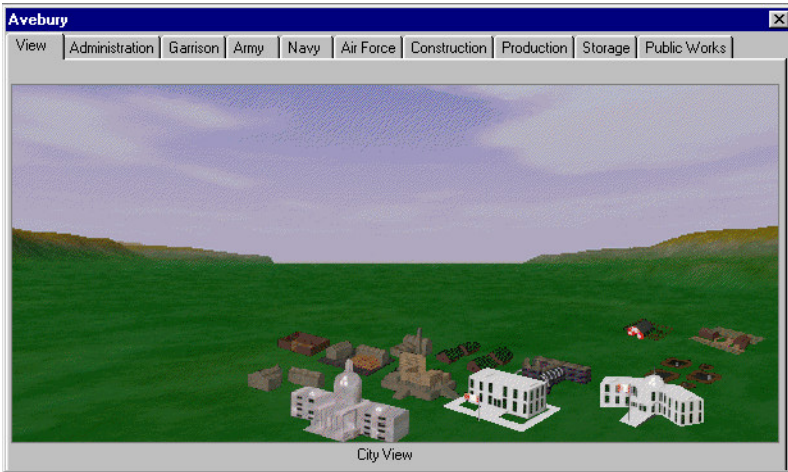
COH windows

Click the model of the COH to open its COH window or click the COH icon.

NOTE: You can use the **Find** menu to quickly locate a COH on the map.

When you first open the window, it defaults to a representative view of the city and the facilities that have been built in it. Whenever you open a COH window during the game, it will default to the last tab you used. To move between COH windows, right-click the wallpaper background and select **Next** or **Previous**.

Click any of these tabs to open that window view. The tabs are described below.



View

This shows a representative view of the COH and the facilities that have been built. It will show up to forty unique facilities. If you build more than this it will display the latest, unique facilities.

NOTE: At the start of Stone Age games, or whenever you first establish a COH, there are no facilities built, so the View tab will only show the surrounding countryside.



Administration

This shows statistical information about the COH and compares it with the national statistics.

	Local	National
Population		
Total	125	375
Unemployed	26%	28%
Homeless	9%	9%
Starving	0%	0%
Control	83%	82%
Army	1	4
Health	0	0
Culture		
Education	3	3
Religion	Pagan	
Transport		
Short Haul	1	
Long Haul	2	

Local Taxes: 16 % Apply

☒ Employ Governor: 375 Rev.

Local Control

Status: Peaceful

Largesse: Largesse

Implement

The degree of local control depends on your national government (see [page 62](#)) and is decreased by the percentage of homeless, starving, and unemployed. The following facilities (when operating if appropriate) will add to your level of control:

- Central Administration (5)
- Church (2)
- Fair (2)
- Local Administration (0)
- Mall (2)
- Market (2)
- Newspaper Office (3)
- Radio Broadcasting Station (6)
- Regional Administration (2)
- Tabernacle (1)
- Telegraph Office (3)
- TV Broadcasting Station (10)
- Temple (2)

NOTE: The numbers in parentheses show the percentage increase of control one of these facilities will give.

The army entry shows the number of forces (land, sea, and air) in this COH (local) and in all your COHs (national).

Your health level is affected by the following facilities:

- Environmental Protection Agency (5)
- Hospice (needed for Health Level 1)
- Hospital (needed for Health Level 3)
- Modern Hospital (needed for Health Level 4)
- Water Works (needed for Health Level 2)

A high health level increases the rate of growth of population (see [page 61](#)) and health counters the effect of an epidemic.

Your education level is affected by the following facilities:

- Academy (needed for Education Level 2)
- Athenaeum (needed for Education Level 1)
- High School (needed for Education Level 5)
- Modern University (2)
- Monastery (needed for Education Level 3)
- Primary School (need for Education Level 6)
- School (needed for Education Level 4)
- University (2)

With both Education and Health you will need to build several of a given facility to reach the next level. For example, in a COH with a population of 100 you will need five athenaeums to achieve an education level of 1. The bonus facilities (those with a number in brackets) give an immediate small boost to the percentage of the population being educated.

There are seven religions available at various points in the game:

- Paganism
- Judaism
- Buddhism
- Christianity
- Hinduism
- Islam
- Free Worship

For more information about religions, see [page 48](#).

The transport network shows your Short Haul and Long Haul Level.

Short Haul is the area covered in the Influence window with the bright green boxes. This means that you can extract resources from them and

store them in the COH. The area covered depends upon your level as follows:

Level 0	1 square out of 9 total	Nothing needed
Level 1	2 squares out of 16 total	Ranch
Level 2	3 squares out of 25 total	Road Builders
Level 3	4 squares out of 36 total	Major Road Constructors
Level 4	5 squares out of 49 total	Early Railway Station
Level 5	6 squares out of 64 total	Modern Railway Station
Level 6	7 squares out of 81 total	Advanced Railway Station

Long Haul is the distance you can transfer stores between COHs. If one COH is within the Long Haul range of another they can transfer stores. A chain effect can be set up: if you have three COHs, with the middle one in range of the other two, you can use the middle one to link the two that are not within range of each other directly. The distance at which two COHs can exchange stores is the combined range of distance (that is, one with 6 and one with 15 can be up to 21 apart and still transfer stores).

The ranges are done in a similar way to the influence, in that a range is the number of squares distant, including the diagonal, and are as follows:

Level 0	6 squares	nothing needed
Level 1	15 squares	Regional Admin
Level 2	20 squares	Ranch
Level 3	30 squares	Early Railway Station (to another ERS)
Level 4	50 squares	Major Road Maintenance Depot
Level 5	80 squares	Highway Maintenance Depot
Level 6	100 squares	Modern Railway Station (to another MRS)

Advanced Railway Station, Harbor, and Civil Airfield give continent-wide transport to another facility of the same type (for example, Harbor to Harbor).

Airport and Port give Global transport to another Airfield or Port respectively.

From this tab, you can:

- Vary the Local Tax Rate from the National Tax Rate.

Use the arrow icons to set the tax rate within this COH. This does not affect your national tax rate setting. Changing the local tax rate changes the amount of revenue collected in that COH and affects your control of the people in that COH.

- Implement Local Government Control Policies.

- Religious Fervor

Theocratic governments only.

Doubles the control effectiveness of religious facilities.

Effectiveness decreases gradually.

Cannot reuse until its boost falls to zero.

- Political Decree

Autocratic governments only.

Doubles the control effectiveness of political facilities.

Each time it is used there is an immediate check for riot or revolt.

- Military Repression

Not available to democratic governments.

Immediately boosts the percent control of the people dependent on the number of land units in the garrison. The calculation is the total number of people in the forces divided by the total population in the COH multiplied by 50.

Each time it is used there is an immediate check for riot or revolt.

Effectiveness decreases over time.

Cannot reuse until its boost falls to zero.

Each time it is used there is an immediate check for riot or revolt.

- Religious Repression

Any government

Immediately boosts the percent control of the people by 25 percent. The amount depends on the percentage of people whose religion is different from the tribe's current religion.

Effectiveness decreases over time.

Cannot reuse until its boost falls to zero.

Each time it is used there is an immediate check for riot or revolt.

- **Largesse**

Any government.

Immediately boosts the percent control of the people. The amount depends on the amount of revenue. Each time largesse is implemented it costs 50 Revenue and adds 5 percent control.

Effectiveness decreases over time.

See [page 61](#) for more information.

Governor

If you want your COH to be run by the governor, check the Employ Governor box. A governor will ensure that facilities are built, if possible, to house, feed, and educate your population. At average and hard levels, a governor is not available to a COH until it has a local administration. The cost of employing a governor depends upon the Age you are in and the population of your COH. At the easy level, there are no prerequisites for a governor to be employed and they do not charge for their services. At the extreme level, they are not available.

Garrison

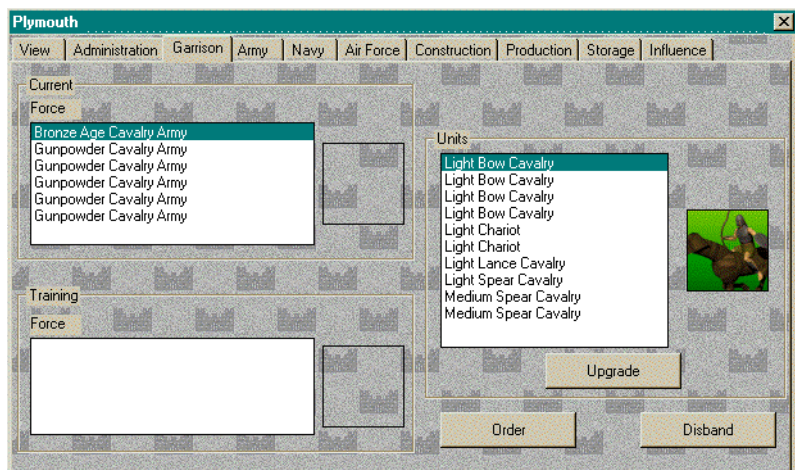
This lists what forces, if any, are currently available in the COH. It also shows what forces, if any, are currently in training and how close they are to completing the training. Click the name of a force to display what units the force consists of and show a graphic of what the force looks like.

Forces that are complete can be given orders by clicking the **Order** icon. This opens a pop-up box with a list of available orders, and closes the COH window so that you can view the map.

See also [Moving on page 34](#).

If you want to return the people in a force to your population pool, highlight the force and select the **Disband** button.

To upgrade a unit, highlight the unit and select **Upgrade**. The Unit table shows whether a unit is upgradable (Y) or not (N).



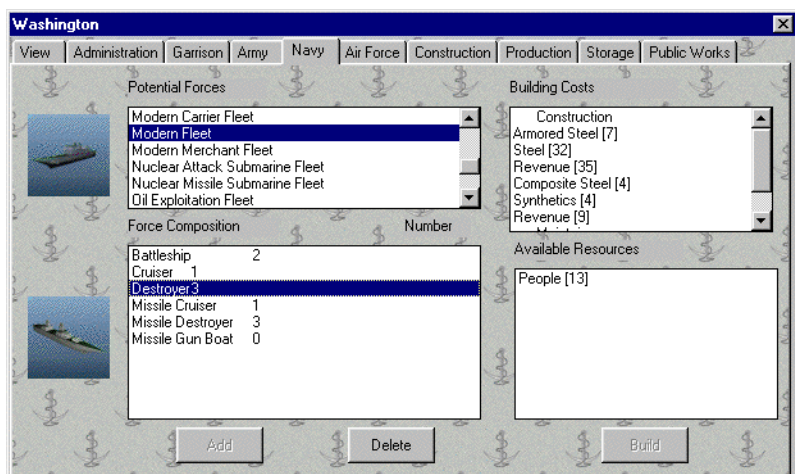
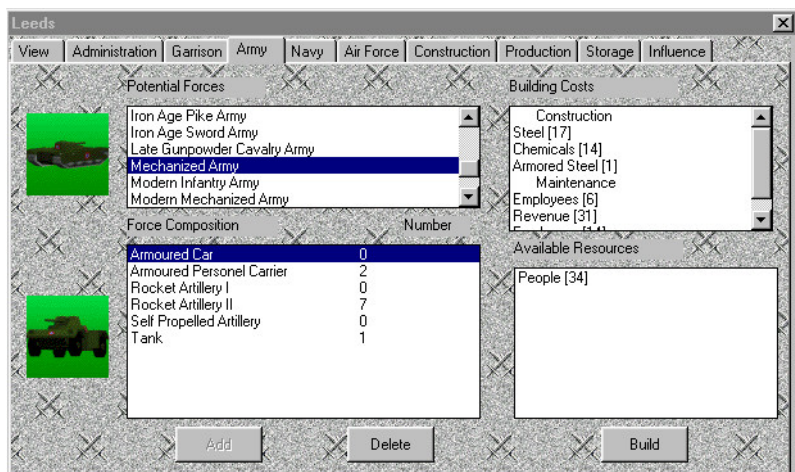
Army, Navy, and Air Force

These three tabs all work essentially the same way. Select a tab to list all the force types your current discoveries and facilities will allow you to build.

Click a force's name to see a graphic of the force marker, the cost to build it, and a list of default units that the force will consist of. Click the **Build** icon to begin construction and training of the force. It appears in the Garrison List as Training.

NOTE: The Build Icon is grayed out if you do not have the resources available for the default force. (See [Customizing your forces on page 26.](#))

Build forces to reduce high population. The earlier force take only a short time to construct and can be disbanded later on if you need builders.



If you want to display only the most recent (best) potential forces, uncheck the All Forces box.

Customizing your forces

Customizing a force is optional; it allows you to personalize your troops. When you first select a force, it is automatically allocated ten units.

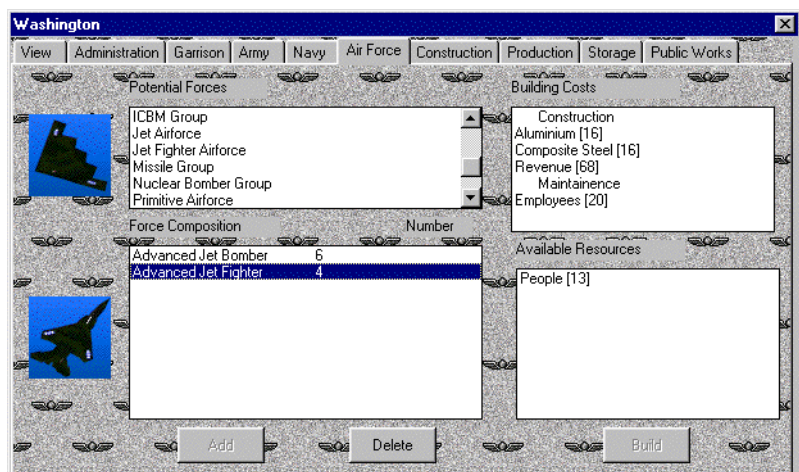
To change the force composition click one of the unit names and then on the **Delete** button. (You do not need to delete a unit if the force consists of less than ten units).

Now select a unit and click the **Add** button.

You may alter the composition of the force within the following limits:

- At least one unit in the force must be the same as the force marker.
- The computer will not let you delete the force marker unit.
- You may not have more than ten units in a force but you may have fewer.
- You must change the composition of a force *before* you click the **Build** button.

NOTE: Changing the unit in a force also changes the cost of the force, so you may be able to build a force with some units, but not others.



Construction

This lists what facilities, if any, have been built in the COH.

It also shows what facilities, if any, are currently being built and how close they are to completion.

Click a facility to see what it looks like and how much it costs to build.

Click the **Build** button to begin construction of the selected facility.

To stop building, highlight the facility in the Building list and click **Halt**.

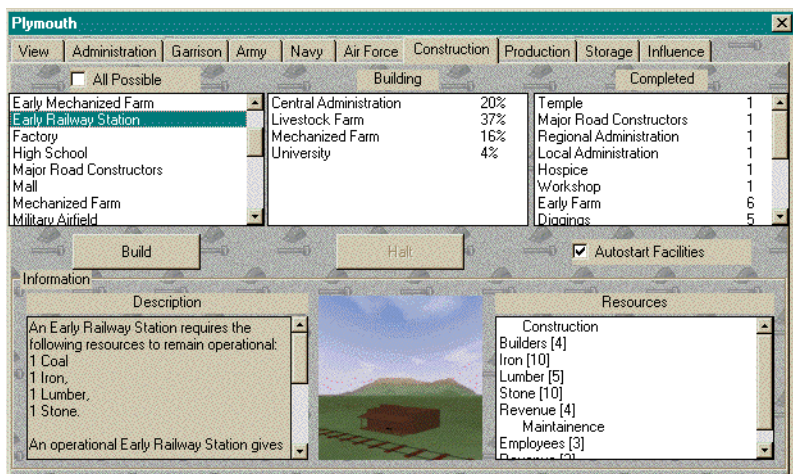
Once a facility is built, it automatically begins producing if the Autostart Facility box is checked and there is only one task for it to perform (see [Production on page 29](#)). If a facility can do multiple tasks, no production will begin until you go to the production page and tell the facility which task to do.

As the game develops, you will find that the number of facilities you can build increases. If you check the All Possible box, all those facilities that are technologically available are listed. To make this list more manageable, uncheck the All Possible box. The list now only displays the more recently available facilities.

You cannot always build a listed facility. The **Resources** menu shows the building and maintenance cost for a facility. If you do not have the required resources, you cannot build the facility. Once built, a facility may need additional resources to be operational. The Description window tells you all about a facility you highlight, including its operating costs, its effects, and its base level of production, where applicable.

Some of the facilities (Harbor, Boat builders, Boatyard, Ship Builders, Shipyard, Port, and Dockyard) can only be built in a coastal COH. A coastal COH is centered on a coastal (or inland shore) terrain tile.

NOTE: Having a sphere of influence that includes a coastal square does *not* allow you to build coastal facilities.



Production

This normally (see [Full List Option Box](#) below) shows what production facilities you have in a COH and whether they are producing anything. Click a facility to highlight it.

- Information Section

This shows how much it costs to maintain the facility and how many people are employed in it. It also allows you to do the following:

- Upgrade

Some facilities can be improved for less than the cost of building a completely new facility. If so, the **Upgrade** button is available.

- Maintain/Mothball

This allows you to either fully maintain a facility so that it can be used for production, or to place it into mothballs. Mothballing reduces the maintenance cost of revenue. The people remain employed and the facility is minimally maintained, which prevents its destruction. The facility cannot, however, be used for production.

NOTE: Unmaintained facilities are destroyed over time.

- Sell

This demolishes the facility completely. All employees become unemployed. You may receive some revenue and/or materials as a result of the demolition.

- Production Section

This shows which production tasks the selected facility can perform, the resulting output, what resources are required, and whether you have them available.

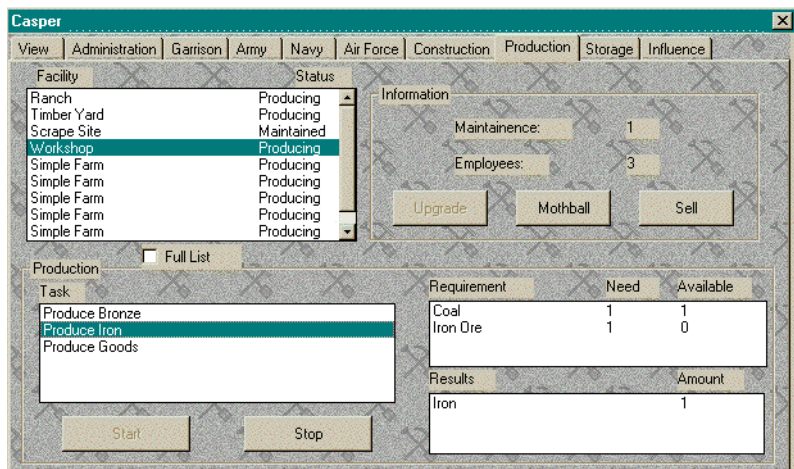
Select a task and click the **Start** or **Stop** button to begin or halt that production task.

Some facilities can perform more than one task, but they can only perform one at a time. Changing production tasks does not cost anything but may take time.

The requirements section shows what you need, and what you have available, to produce a secondary resource. The resource you will produce is shown in the Results box.

- Full List Option Box

When the Full List is turned on, the Facility Box displays all facilities in the COH, not just production facilities. This allows you to upgrade, mothball, or sell any of your facilities.

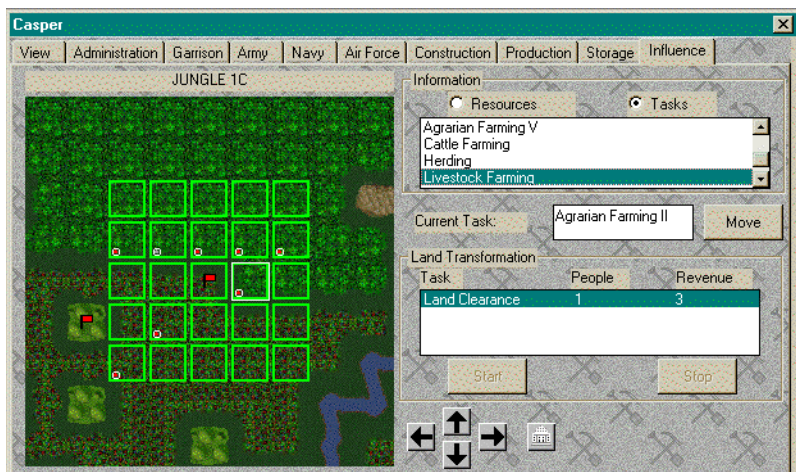


Influence

This shows a schematic map of the countryside around the COH, which is marked by a flag. The highlighted area around the flag shows the sphere of influence of the COH. This is the area within which resources can be exploited. The size of this area changes with the transport network of the COH (see [Administration on page 20](#)).

A red dot indicates areas that are currently being exploited. You can exploit only one resource at one time in one location. If another COH is exploiting an area within the sphere of influence, it has a gray dot.

NOTE: The computer will try to allocate facilities to the correct areas, but you may need to halt production temporarily at one facility to free an area for another. For example, you have several areas that contain grazing, but only one that has arable land. You may need to stop the livestock farms to free the area for the modern farm. Then restart livestock production. You can move a task to the next available location by clicking the square you want to free up and then clicking **Move**.



You can scroll the map by clicking on the arrow buttons next to the map. You can center the map on the COH by clicking the **Flag** button.

As you pass the mouse pointer over the map, it displays the terrain type in a box above the map. Click a square to display what resources are available in that area and whether or not you are currently exploiting them (current task).

NOTE: At higher degrees of difficulty you can only check on resources within the sphere of influence of the COH.

Some types of terrain may be changed by conducting tasks on them. If a terrain can be changed, the possible tasks appear in the Land Transformation box. Details of changes can be looked up in the terrain table (see [Terrain on page 200](#)).

Click a task and then on the **Start** button to instruct your people to begin changing the land.

Click a task and then on the **Stop** button to instruct your people to stop changing the land.

Land is changed when the task is complete; there are no half-changed lands.

Your ability to conduct land transformations depends on your discoveries as follows:

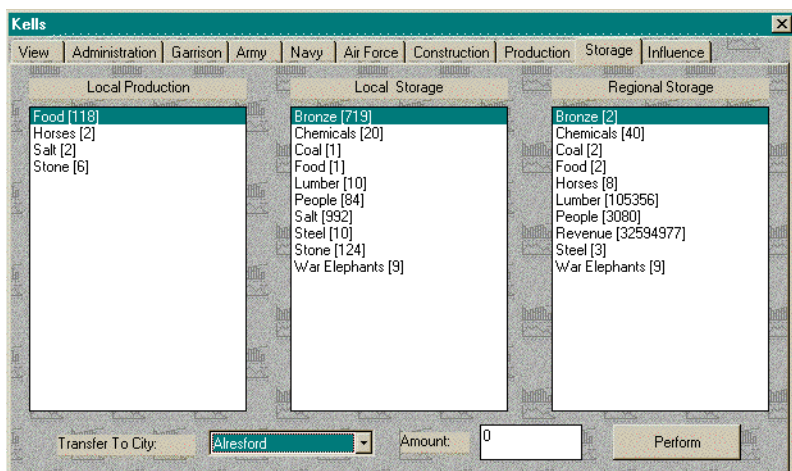
- Land Clearance—requires Metalworking II
- Deciduous Forestation—requires Selective Planting III
- Pine Forestation—requires Selective Planting III

- Irrigation—requires Shaduf
- Drainage—requires Archimedian Screw
- Fertilization—requires Artificial Fertilizer

Storage

This shows the current level of resource production for the COH, the resources that are stored in the COH and the resources that can be called upon from the region.

NOTE: The ability to use regional stores depends on the transport network and the presence of governmental administration buildings.



Transferring Resources

In addition to using resources directly from the regional store, you can transfer resources between COHs that are within transport range of each other. This allows you to move resources into range of other COHs that cannot access the resources directly.

A Transfer Resources button is also available. This allows you to move resources between friendly COHs that are not within each other's transport range by first transferring the resource to an intermediary COH. (Think of it as moving the resources from one regional storage area to another.) Select the COH you want to move the resources to, set the type and amount, and select **Perform**.

Exiting a COH window

Click the X in the top right corner of the COH window.

Changing map views

Unless you are playing at the hardest degree of difficulty, when access to certain views is restricted by discoveries, you can change views as follows.

Map view icons

The three main views—Globe, Full Continent, and Eye Level 3D Country—can be accessed directly by clicking on the required map view icon at the top of the window.

If you are zooming out, the view will remain centered on your location.

If you are zooming in, you must click the map to indicate the center point.

+ or - zoom icons

Click the + or - icon on the tool bar to change the map view in or out one level. To access close-up continent and top-down country views you must use these icons or the keyboard shortcuts.

Moving The Camera Around the 3D World

When you start a game it will default into this mode.

You can view the entire 3D world by using the camera view.

- Normal Camera Mode

Use the **Up** and **Down** arrow keys to move forwards or backwards.

Use the **Left** and **Right** arrow keys to change the direction you are facing.

Press and hold **Shift-Left** and **Shift-Right** to move the camera sideways.

Press and hold **Shift-Up** and **Shift-Down** to change the rate of travel.

- Status bar information

NOTE: Depending on your degree of difficulty and current discoveries, some information may not be displayed.

The camera's direction is displayed to the right of the status bar at the bottom of the window.

The status bar indicates what terrain the camera is currently over.

Right-click the terrain to display its type. You can access its full properties by selecting **Properties** from the pop-up box, at all but extreme levels of difficulty.

Giving Orders To Your Forces

You can order your forces while in any of the map views but not while viewing the globe. As you move the mouse pointer over the map, you will notice that it automatically detects forces and COHs that are close (shown on status bar).

NOTE: Forces that are inside a COH are ordered via the Garrison tab in the COH window, or right-click the COH and select **Order Forces**, and are not displayed on the maps.

Moving

To move one of your forces select the force by clicking whenever the force marker is displayed on the status bar. The marker starts flashing to indicate it is awaiting orders. Click the map where you want the force to move. You can scroll the map and even change map views after you select the force and before you click the map.

NOTE: Land forces cannot cross the sea without being placed on a suitable naval force. You cannot use point-and-click movement to do this. (See [Board on page 35.](#))

Attacking

To attack an enemy force or COH, click the force you want to attack with, then click the enemy force or COH you want to attack. You can scroll the map and even change map views after you select the force and before you click the enemy force. Your force moves in a straight line to attack the enemy force or COH.

NOTE: Attack means move into combat and fight a battle. If playing solo or two player you can enter Battlefield mode.

Forces can only Attack forces of the same basic type; that is, land, naval, or air, but you can order forces to Bombard any type (see below).

Special Orders box

Right-click the force marker to open a list of special orders. Select an order by highlighting it and clicking.

Make Static/Make Mobile

This toggles the force between Static mode and Mobile mode. In Static mode it receives defensive bonuses but can be the subject of a siege. In

Mobile mode the force uses its standard defense values but cannot be forced into a siege situation.

NOTE: A force cannot move while in Static mode. A force cannot establish a COH site in Mobile mode. Fishing, deep sea fishing, and oil exploitation fleets are always in Static mode to exploit the resource.

Establish COH

This instructs the force to change into Static mode, if not already in it, and begin establishing a new COH site. Eventually, the force disbands and becomes population in the new COH.

NOTE: New COHs do not have any facilities. Facilities—including housing—must be built after the site is established.

Move

This is the same as clicking on the force.

Bombard

After selecting bombard, select a target by clicking it. Anything can be a target for bombardment except the sea. Once you select a target, the force moves to within its bombardment range and opens fire. It will continue to fire until the target is destroyed or the force receives new orders.

NOTE: At lower degrees of difficulty you cannot target your own forces or COHs.

Support

After selecting **Support**, click a friendly force or COH that will receive support. The supporting force will move to within its bombardment range of the selected force or COH. If the selected force or COH is attacked, the supporting force adds its bombardment effect to the defense.

Board

Land forces only.

There are two ways to board a land force onto a naval force. You can click the land force and then click the naval force. The land force will move to the naval force and board, assuming that there are no movement restrictions (a land force cannot walk on the sea).

Alternatively, you can right-click a force and select **Orders** then select **Go to Out Force in a Straight Line, Board** and the appropriate naval

force, following by **Issue**. The naval force must be next to the coast to board a force.

The naval force must have sufficient cargo capacity to carry the land force. Right-click and select properties to see the cargo weight or capacity of a force.

Command mode/Leave Command mode

Selecting **Command mode** places you in direct control of the force. The camera view is that of the force. Move the force using the arrow keys.

You can select other forces and COHs that you can see.

While in Command Mode a hand shielding your eyes from the sun appears in the top right of the view window. Right-click the hand to access the Special Orders box.

Follow/Stop Following

Selecting **Follow** instructs the camera to follow the selected force whenever it is ordered to move.

Stop Following returns the camera to its normal operation.

You cannot operate the camera while following. Using the arrow keys will only alter the view of the force that is being followed.

NOTE: You automatically leave Follow mode if you change to Continent or Globe View.

Give Orders

This displays another box where you can give a force more specific instructions. There are five main selection areas: mission, method, orders, type, and information.

NOTE: Because the choice of mission changes the choices in the other areas, we recommend that you select the mission first.

- **Mission**

The following choices are available:

- *Find Resource*

Instructs the force to conduct a search for a specific resource.

NOTE: The choice of a force is restricted by the type of resource you want to search for. Air forces cannot conduct this mission.

Methods available: Box, Outward Spiral, or Cone.

Orders available: Report, Establish COH, Guard, Combat Guard, Combat Patrol, Patrol, Continue.

The actual resource is selected from the **Type** menu.

The **Information** section is used with the **Method** section to enter details about the search pattern.

- *Find Enemy Force*

Instructs the force to conduct a search for enemy forces.

Methods available: Box, Outward Spiral, or Cone.

Orders available: Report, Bombard, Attack, Continue, Retreat, Follow.

The **Type** menu is grayed out for this mission.

The **Information** section is used with the **Method** section to enter details about the search pattern.

- *Go To Enemy Force*

Instructs the force to move toward a known enemy force.

Methods available: Straight Line and Intercept.

Orders available: Report, Bombard, Attack, Continue, Retreat, Patrol, Follow.

The **Type** menu defaults to **Select From Map**.

You must click on the enemy force to select it.

The **Information** section is grayed out for this mission.

- *Find Coast*

Instructs the force to conduct a search for coast terrain.

Methods available: Box, Outward Spiral, Cone.

Orders available: Report, Establish COH, Guard, Patrol, Combat Patrol, Combat Guard.

The **Type** menu is grayed out for this mission.

The **Information** section is used with the **Method** section to enter details about the search pattern.

- *Go To Friendly Force*

Instructs the force to move towards a friendly force.

Methods available: Straight Line and Intercept.

Orders available: Report, Join, Found COH, Guard, Board.

The **Type** menu allows you to either **Select From Map** by clicking the friendly force to select it, or to select directly from the list displayed.

The **Information** section is grayed out for this mission.

- *Find Enemy COH*

Instruct the force to conduct a search for enemy COHs.

Methods available: Box, Outward Spiral, Cone.

Orders available: Report, Bombard, Attack, Continue, Retreat, Siege.

The **Type** menu is grayed out for this mission.

The **Information** section is used with the **Method** section to enter details about the search pattern.

- *Go To Enemy COH*

Instructs the force to move towards a known enemy COH.

Method available: Straight Line only.

Orders available: Report, Bombard, Attack, Siege.

The **Type** menu allows you to either **Select From Map** by clicking on the friendly COH to select it, or to select directly from the list displayed.

The **Information** section is grayed out for this mission.

- *Go To Friendly COH*

Instructs the force to move towards a friendly COH.

Method available: Straight Line only.

Orders available: Report, Enter, Guard, Combat Guard, Patrol, Combat Patrol.

The **Type** menu allows you to either **Select From Map** by clicking on the friendly COH to select it, or to select directly from the list displayed.

The **Information** section is grayed out for this mission.

- *Move*

Same as selecting **Move** from the main **Orders** menu.

- *Make Static/Make Mobile*

Same as selecting **Make Static** or **Make Mobile** from the main **Orders** menu.

Method

There are five different methods: Box, Outward Spiral, Cone, Straight Line, Intercept.

- **Box**
The force moves in a box pattern that encompasses the points selected in the Information section. You cannot select **Issue** until you have set the box.
- **Outward Spiral**
The force moves in an increasing spiral initially heading away from its current location in the direction set in the Information section.
- **Cone**
The force moves in an increasing cone pattern using the angles and the direction set in the **Information** Section.
- **Straight Line**
The force moves in as straight a line as terrain will allow towards the selected target.
- **Intercept**
The force initially moves in as straight a line as terrain will allow towards the selected target, but will adjust its course to allow for movement of its target.

Orders

The available orders vary with the selected mission.

- **Report**
Force notifies you when subject of search is found or if it has been searching and is unable to find it.
- **Establish COH**
Force automatically starts to found a COH when it finds the object of the search. It notifies you when it arrives.
- **Bombard**
Force automatically starts to bombard the subject of the search. It notifies you when it arrives.
- **Attack**
Force automatically attacks the subject of the search. If this is an unoccupied enemy COH, it attempts to destroy it. If occupied, there is than a siege.
- **Support**
Force will remain adjacent to target and will bombard any forces attacking the target.

- **Continue**
Notifies you of its findings and continues with its search.
- **Retreat**
Notifies you of its findings and returns to nearest friendly COH.
- **Follow**
Notifies you of its findings and attempts to follow the now discovered enemy force.
- **Join**
The ordered force will move to a friendly COH and enter it.
- **Siege**
Automatically attempts to besiege target enemy static force or occupied COH.
- **Guard**
Remains at the selected click point, COH, or friendly force. Notifies you of any other tribe's forces or COHs that it finds or that subsequently appear. Force may attack if it finds an enemy.
- **Combat Guard**
Remains at the selected click point, COH, or friendly force. Notifies you of any other tribe's forces or COHs that it finds or that subsequently appear. Force automatically attacks or bombards any enemy land or naval forces it finds.
- **Patrol**
Moves around the selected click point, COH, or friendly force. Notifies you if it finds any other tribe's forces or COHs. Force may attack if it finds an enemy.
- **Combat Patrol**
Moves around the selected click point, COH, or friendly force. Notifies you if it finds any other tribe's forces or COHs. Force attacks if an enemy comes within range.

When you have selected the options you want, click **Issue**.

Keyboard shortcuts

Normal keys

C	Opens a mini-compass window that shows the direction the camera is currently facing.
T	Toggles between Eye Level 3D Country Map and Top Down Country Map.
O	Turns off Command mode or turns off Follow mode or turns off both.
V	Reverses view from the force you are following to its destination. NOTE: You can use this only if you are already following a force.
S	Toggles the Sky effect (off increases the frame rate).
M	Opens a small map window showing all the continents and your rough location. The size of the location marker varies in continent and country mode.
G	Show victory conditions.
L	Show degree of difficulty.
Control-Shift-A	Toggles Autopilot on and off.

To record a current camera location, press **Control** and a number. When you want to return to that location, just press the number.

Function keys

- F2 Toggles Vehicle/Ship mode movement when in Command mode. If this is on, the view tilts as you move across the landscape or goes up and down if you are in a boat.
- F3 Jumps among your forces while in Command mode.
- F4 Jumps among your forces while in Top Down 3D Country mode.
- F5 Jumps among your COHs while in Top Down 3D Country mode.
- F6 Displays the last viewed COH window.
- F7 Jumps to Last Force Ordered view in Top Down 3D Country mode.

Battles

Whenever opposing forces attempt to enter the same location, there is a potential battle. If playing solo or two-player you can enter Battlefield mode or accept a computed result. There are two types of battle: normal and siege.



Fight Battle

If playing with more than two human players or in a siege, this option is not available.

Selecting **Fight Battle** freezes campaign time and opens a 3D Battlefield view. The forces are split into their constituent Units and deployed facing each other. You can give orders to each unit individually.

Supporting forces

If you have supporting forces, their units may be selected from the Off Map box. Supporting units can be used only to bombard.

Click the unit in the Off Map box, then on the target. Supporting land or naval forces never appear on the battlefield, but the effects of their bombardments are seen.

Supporting air units overfly the battlefield to bombard the enemy and then fly away. Supporting units can be targeted only by opposing supporting units, if any.

Retreat

This orders your force to stop moving before entering the disputed location or to leave it, if it was stationary when the battle was triggered.

NOTE: Retreat is not an option for forces in Static mode. Retreating forces may suffer losses but never inflict them. Essentially, **Retreat** does a calculated battle but reduces possible losses on the retreating force. If both forces opt to retreat, no losses occur.

Compute Battle

This prevents the battle going to the Battlefield mode and instead calculates the result based on the relative attack, defense, and missile strengths of the forces involved.

Remember, the strength of a force is dependent on its constituent units, *not* its force type.

Siege

The player whose force is in Static mode has two choices:

- **Accept Siege**

This option is available to forces in Static mode. Essentially, this gives a computed result, but reduces the defenders' attack value in exchange for increasing their defense value.

- **Fight Battle**

This instructs the static force to leave Static mode and fight a normal battle.



Trade window

The Trade window is opened by clicking on the **Trade** icon (money symbol) at the top of the window or via the **Govern** menu. Use the Trade window to inform other tribes of your desire to trade, what items you want, and what you are offering in return.

The chances of another tribe agreeing to trade with you depend on the diplomatic ties between you. No one can trade items they don't have, although you can request anything.

Formalized trade offers

This system is used whenever you trade with a computer tribe or for convenience. You can offer items or request them.

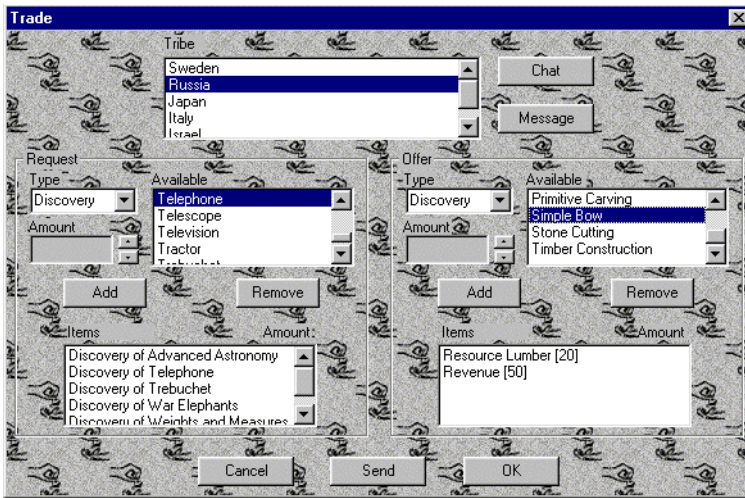
1. Select the type of offer or request (resource, revenue, or discovery).
A list of available items appears in the Available section.
2. Click one of these to highlight it.
3. Use the arrows in the Amount section to select an amount for that particular item, or highlight the amount box and type the amount directly into the box
4. Click the **Add** button to add the item to the deal package. You can have as many items as you like in the deal either as part of the offer or the request.

NOTE: You can remove an item from the deal by selecting it and clicking **Remove**.

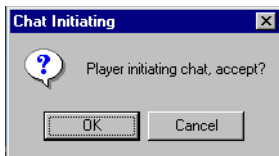
5. Select the tribe(s) to which you want to send your trade delegates.

NOTE: You can do these steps in any order. You can cancel at any time until you *send* the message.

6. Check the details, and click **Send** to dispatch your trade offer to all the selected tribes.



Open trade offers



In multi-player games, human players can use Chat mode to talk directly to each other rather than using the formalized procedure. You may offer and negotiate freely, provided that you have the items. The Formalized Trade view remains open so you can see what you have.

After reaching agreement, one player must use the formal procedure to officially make the offer.

Diplomacy window

The Diplomacy window is opened by clicking on the **Diplomacy** icon (top hat) at the top of the window or via the **Govern** menu.

At the top of the window is a list of all the tribes you are currently in contact with and what relationship, if any, you have with them.

Select one to display the following information about that tribe in the Information section:

- What treaties, if any, you have with them (seen via tick boxes)
- Their government
- Their religion

Underneath is a list of your active representatives, what they are trying to achieve, and with whom they are negotiating.

Formalized diplomacy

This system is used to send new representatives to a computer tribe or for convenience. It can also be used to adjust existing missions.

- **New Missions**

Select the country that you want to contact and click **New**.

Now, open the Type menu and click the representative you want. To increase the chances of a successful mission, you can select a bribe. You can offer resources, revenue, and discoveries as bribes. To offer an item, select the type and amount, then click **Add**. You can remove an item by selecting the item offered and clicking **Remove**.

When you are happy with your selections, click **OK** and the representative leaves on the mission.

Depending on the degree of difficulty, representatives may report immediately or take time to arrive or even not arrive. They then spend time on their mission before any result is seen.

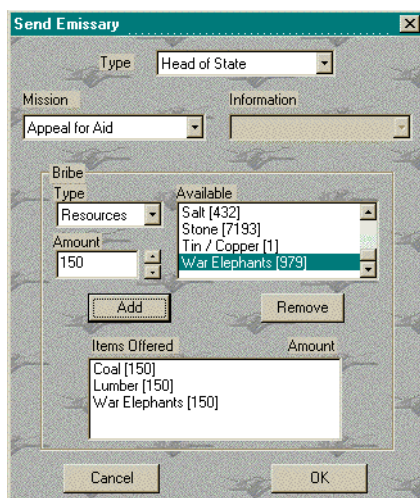
- **Recalling an Existing Mission**

Recall the mission by selecting the tribe, then the mission, and clicking the **Recall** icon.

If you recall a mission, it automatically fails, but there are no additional effects.

NOTE: Some missions are restricted to certain representative types, by current relations between the tribes, to certain government types, by the government type of the sending tribe, and/or by the government type of the receiving tribe.

You can select only those representatives, missions, and bribes that are available. See [Diplomacy on page 57](#) for a full list of diplomatic missions and representatives.



Open Diplomacy

In multi-player games human players can use Chat mode in order to talk directly to each other rather than using the formalized procedure.

The formalized diplomacy window stays open and must be used to confirm the conclusions of negotiation.

NOTE: At higher degrees of difficulty, there may be restrictions or time delays on your messages depending on discoveries. See [Degrees of Difficulty on page 52](#) and [Discoveries on page 114](#).



National Government

The Government window is displayed by clicking the **National Government** icon (capitol building) at the top of the window or via the **Govern** menu.

This window displays the national statistics, and allows you to do the following:

- Fix Tax Rates

Click the arrow icons to increase or decrease the rate of taxation.

NOTE: Full taxes are collected only within COHs that have a local government administration building; elsewhere, part of the revenue is lost.

The actual amount of revenue collected in a COH depends on the following:

- Number of employed people
- Facilities present
- Current government type
- Degree of control over the people

The financial income and budget give you an easy assessment of whether your country is likely to run out of money. If you are running a deficit, increase taxes to increase income.

- **Change Government Type**

Click to open the available Government Type list and then click a government type.

NOTE: The available government types depend on cultural discoveries. See the [Governments on page 212](#).

At higher degrees of difficulty, changing government, religion, or tax rate may result in riots or revolts. See [Degrees of Difficulty on page 52](#).

A strong controlling government will lessen the chance of a riot—see [Level of Control on page 62](#).

Change Recognized Religion

Click to open the available Religion Type list and then click a religion.

NOTE: The available religion types depend on cultural discoveries; see the table below.

The screenshot shows the 'National Government' dialog box with the 'National Statistics' tab selected. The statistics are as follows:

Category	Sub-category	Value
Population	Total	1578
	Unemployed	8%
	Homeless	2%
	Starving	0%
	Control	100%
	Army	97
Health	Health	0
	Education	4
Culture	Religion	Islam
	Income	10213
Finances	Budgeted	10143

Below the statistics, the 'Policies' section includes:

- Tax Rate: 35 %
- Government: Dictator (selected from a dropdown menu)
- Religion: Islam (selected from a dropdown menu)

Buttons at the bottom include 'Cancel', 'Apply', 'Reset', and 'OK'.

Religion	Requirements	Effects
Buddhism	Not available before 528BC	Increases control of the people
Christianity	Discovery Monotheism, Not available before 30 AD, Facility Church	None
Free Worship	Discovery recognized Religion, Facilities Church, Tabernacle, and Temple, Education Level 5	Increases control of the people
Hinduism	Discovery Polytheism, Facility Temple	None
Islam	Discovery Monotheism, Not available before 610 AD, Facility Temple	None
Judaism	Discovery Monotheism, Facility Tabernacle	None
Paganism	None	None

Changes to government type or religion do not take effect until you click the **Apply** button.

Your religion and government type affect how the other tribes view you. A tribe is more likely to trade and have favorable diplomatic ties with you if you have the same style of government and religion.

Discovery window

The Discovery window is opened by clicking on the **Discovery** icon (light bulb) at the top of the window or via the **Govern** menu.

The window shows:

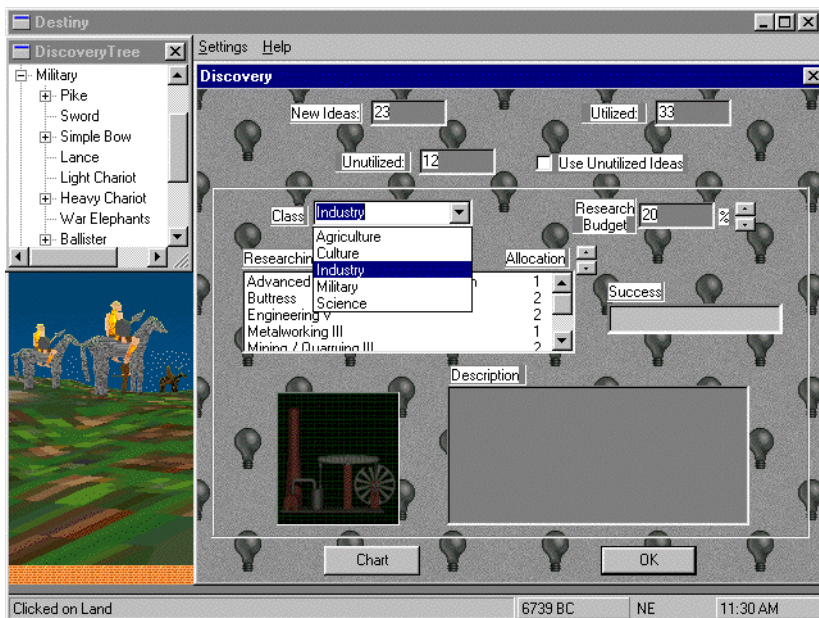
- The number of ideas that your tribe is currently generating
- How many are unutilized
- How many are being utilized

If the Use Unutilized Ideas tick box is turned on (the tick is showing), any unutilized ideas are automatically split up according to the percentage allocated to each general area (see below) or allocated randomly if no percentages are selected.

Below this information there is the Select Research Class box, which you open by clicking. Use this box to toggle between the five main areas of discovery: agriculture, culture, industry, military, and science.

Click to change the area of discovery and view the specific discoveries within that area in the Specific Research box.

Next to the Research Class Box is the general research budget for that category. This shows the percentage of the total ideas that are currently allocated within the area. To change the percentage allocated, use the small arrow icons.



In addition to general research in an area you can select specific discoveries you want to concentrate on.

Click the discovery you want in the Specific Research box and then adjust the idea allocations using the small arrow icons next to the Specific Research box.

NOTE: If you do not specify a discovery, then you make discoveries at random from within the area depending on the percentage of total ideas allocated to the area.

After a time, unutilized ideas disappear, so we recommend that you allocate a budget or tick the Use Unallocated Ideas box, unless you are keeping a firm hand on where your research is going.

Also note that the number of unutilized ideas that can be held varies with your current Education Level. The number of new ideas is directly related to your total population.

Discovery Clarifications

The discovery points (allocated) are in a queue system. If you have 86 New Ideas and 96 utilized the last 8 points you allocated will have to wait until one of the discoveries to which you allocated points earlier is discovered before it receives the points.

For example, let's say I have allocated the following Discoveries the points shown, in the order listed: Adobe/Clay Bricks 2, Flint Knapping 3, Domestication of Livestock 1, and Domestication of the Horse 3. I have 5 New Ideas each turn. On the first turn Adobe/Clay Bricks receives 2 points and Flint Knapping receives 3 points, and this having used my 5 New Ideas, none of the others receive any. This continues until I discover something—in this instance it might be the Flint Knapping.

This then changes the list to Adobe/Clay Bricks 2, Domestication of Livestock 1 and Domestication of the Horse 3. With 5 New Ideas still being given each turn Adobe/Clay bricks receives 2, Domestication of Livestock 1 and Domestication of the Horse receives 2. If Adobe/Clay bricks are now discovered, Domestication of Livestock receives 1, Domestication of the Horse 3 and 1 point is wasted.

If you allocate additional points to a discovery later on you do not change its position in the “queue.”

There are three basic ways to allocate New Ideas in the discovery window:

1. Check the Use Unutilized Ideas box.
2. Allocate a percentage of your research budget to each class of discovery.
3. Allocate points to each individual discovery.

Number 3 is more efficient than 2, which, in turn, is more efficient than 1. All three can be in use at the same time, and the most efficient method will receive New Ideas first.

Here are some examples:

Example A

I have 20 New ideas per turn.

I have checked the Use Unutilized box, I have 10% allocated to each class, and I have 10 points allocated to Steam Engine.

The computer will first allocate the 10 points to the Steam Engine, then allocate 1 point (10% of 20-10) to each of the classes. This will then leave 5 points unutilized, which are allocated randomly.

Example B

I have 30 New Ideas per turn.

I have 10% allocated in each class. I do not have the use unutilized box checked. I have 10 points allocated to Metallurgy II.

Each turn 10 points will be allocated to Metallurgy II, then 2 points (10% of 30-10) to each class and the 10 points remaining will be stored.

The total number of points that can be stored is 10 times your education level.

If in Example B, I had an education level of 1 and there had already been 10 points in store, the remaining 10 points would have been lost.

When you start a game at Easy level you will already have a 20% Research Budget allocated to each class.

The discoveries already found have asterisks (**) next to them in the Discovery Tree (click on the chart in the discovery window). The trade window also lists all your discoveries as available for you to trade.

Degrees of Difficulty

When you start a new game, you can set the degree of difficulty. (See [Starting a new game on page 10.](#)) You cannot change these settings during a game.

Settings

The following table shows the slider and default tick box settings for each degree of difficulty.

	Easy	Average	Hard	Extreme
Slider	Extreme left	Left of center	Right of center	Extreme right
Hidden Enemy	Off	Off	On	On
Limited Resources	Off	Off	On	On
Omni-Resource Terrain	On	Off	Off	Off
High Resource Output	On	On	Off	Off
Terrain Effects	Off	On	On	On
Natural Disasters	Off	Off	On	On
Political Upheaval	Off	Off	On	On
Map Views	Off	Off	Off	On

NOTE: You can toggle the tick boxes within the general slide bar setting, but some changes will change the slide bar setting.

General Effects

Easy Level

Artificial Intelligence	Computer opponents react slowly and forces are penalized in combat.
Diplomacy	Representatives always arrive and results are immediate.
Political Upheaval	Never any riots or revolts.
Resources	<ul style="list-style-type: none"> • Omni-Present Resources All land terrain types have all land resources • High Resource Output Terrain produces extra amounts • Limited Resources Never on
Hidden Enemy	Only on if turned on.
Terrain Effects	Only on if turned on.
Natural Disasters	Only on if turned on.
Map Views	Never on.

Average Level

Artificial Intelligence	Computer opponents react normally and forces are normal in combat.
Diplomacy	Representatives always arrive and results are immediate.
Political Upheaval	Only on if turned on.
Resources	<ul style="list-style-type: none"> • Omni-Present Resources Never on • High Resource Output Terrain produces extra amounts • Limited Resources Only on if turned on Resources can deplete
Hidden Enemy	Only on if turned on.
Terrain Effects	Always on.
Natural Disasters	Only on if turned on.
Map Views	Only on if turned on.

Hard Level

Artificial Intelligence	Computer opponents react quicker, forces are normal in combat.
Diplomacy	Representatives may not arrive, results take time.
Political Upheaval	Always on.
Resources	<ul style="list-style-type: none"> • Omni-Present Resources Never on • High Resource Output Never on • Limited Resources Always on
Hidden Enemy	Only off if turned off.
Terrain Effects	Always on.

Natural Disasters	Only off if turned off.
Map Views	Only on if turned on.

Extreme Level

Artificial Intelligence	Computer opponents react quicker, forces gain bonuses in combat.
Diplomacy	Representatives may not arrive, results take time.
Political Upheaval	Always on.
Resources	<ul style="list-style-type: none"> • Omni-Present Resources Never on • High Resource Output Never on • Limited Resources Always on
Hidden Enemy	Always on.
Terrain Effects	Always on.
Natural Disasters	Always on.
Map Views	Always on.

Specific Effect tick boxes

Hidden Enemy on

Enemy forces and COHs appear only if they are within a certain distance of one of your forces or COHs. This distance is 5 at the beginning of the Stone Age and increases with the following discoveries:

• Aerodynamics I	8
• Early Radar	12
• Radar	17
• Satellite Tracking	20

Limited Resources on

Whenever you exploit resources there is a chance that they will either run out completely or require a higher level of technology for you to

continue exploiting them. The chance of this occurring is affected by the level at which you are currently exploiting them (see [Resources on page 196](#)).

Terrain Effects off/on

If this is turned off, all terrain types cost the same amount to cross and have no effect on combat.

If this is turned on each terrain type will cost different amounts to cross and will affect the combat values of forces attacking, firing, or bombarding *into* them (see [Terrain on page 200](#)).

Natural Disasters on

If this is turned on, natural disasters such as earthquakes or plague can strike your COHs. The chance of them occurring and their effects can be modified by discoveries and certain facilities (see [Disasters on page 210](#)).

Political Upheaval on

If this is turned on, there is a chance of riots or revolts in your COHs whenever government or religion changes, or if levels of taxation, unemployment, homelessness, or starvation change (see [Riot/Revolt Checks on page 63](#)).

Map View Restrictions on

If this is turned on, your use of the various map views is restricted by what discoveries you have made.

- Easy

The compass is always available.

All map views and windows and the camera view are available at all times.

- Average

The Compass is always available.

You can only access 3D Country and Top Down Country Maps until you discover Mapping, when the Continent Map becomes available.

- Hard

The compass is always available.

You can access only 3D Country and Top Down Country Maps until you discover:

- Mapping—the Continent Map becomes available
- Aerodynamics III—the Globe view becomes available

You can use the Camera View all the time.

- Extreme

The compass display is not available until you discover the simple compass. You can only be in 3D Country view and you may not use top-down country view until you discover writing and simple navigation.

- Mapping—the Continent Map becomes available
- Aerodynamics III—the Globe view becomes available

Diplomacy

Diplomacy is conducted by sending representatives to the premier COH of another tribe.

NOTE: The premier COH is either the first COH built or the COH with the highest-ranked government administration building. If two equal COHs exist, the representative will travel to the closest one.

Representatives

The diplomatic representatives are described below.

Representative	Rank	Available to	Bonus or loss	Diplo-matic effect	Political effect
Emissary	Low	All	None	Little	None
Dignitary	Medium	All	Bonus if government types are the same; loss if different	Medium	None
Ambassador	High	All except dictator or deified leader	Bonus if government types are the same	High	Little
Nuncio	High	Theocratic only	Bonus if religious types are the same; loss if different	High	Medium
Head of State	Highest	All	Always bonus	High	High

There are essentially two types of diplomacy. One has a long-lasting background effect and the other has an immediate yes or no answer. A general rule is that you are more likely to have successful diplomatic dealings with governments of the same type and the religion as your own.

Background Diplomacies

- **Formal Trade Agreement (FTA)**—The AI tribes (tribes run by the computer) are more likely to offer to trade with you if you have a FTA with them.
- **Non-Aggression Pact**—The AI tribes are less likely to attack you.
- **Military Alliance**—A prerequisite before some of the specific diplomacies work.
- **Goodwill Visit**—This will last as long as the money you put into it lasts and will increase the likelihood of the AI tribes accepting a trade or diplomatic offer.
- **Threaten**—The AI tribes will be more likely to attack and less likely to trade with you.

Specific Diplomacies

- **Peace Treaty**—You must be at war with someone before it is possible to establish peace.
- **Force Withdrawal**—Once you have established a Non-Aggression Pact you can ask for forces to stop attacking you.
- **Control of COH**—The more positive towards you an AI feels, the more likely they are to allow you to “buy” one of their COHs.
- **Declare War**—If you declare war there is an immediate drop in diplomatic relations and trade.
- **Appeal For Aid**—You need to have extremely good relations with another tribe for them to assist you.
- **Help Force or Help COH**—you must have a military alliance before any help can be given.

Spies

- Specialist representatives
- Available to any government

Spies may be allocated to conduct the following missions.

NOTE: Each mission is calculated on an individual basis.

- Steal Discovery

The chance of stealing a discovery is directly related to the amount of revenue sent and the amount of revenue currently being spent on counter-espionage by the target.

- Counter-Espionage

The effect of counter-espionage is directly related to the amount of revenue allocated. The effect deteriorates over time unless the mission is reselected and new revenue allocated.

- Force Report

When successful, you will see a list of all the enemy's forces and be able to look at the units making up one of these forces.

- Intercept Transmission

This only applies to chat moded messages within networked games. The chance of intercepting a transmission is directly related to the amount of revenue sent and the amount of revenue currently being spent on counter-espionage by the target.

Terrorist

- Not available to Democratic governments

Terrorists may be allocated to conduct the following missions.

NOTE: Each mission is calculated on an individual basis.

- Political Agitation

The effect of this is to reduce the target's control of the people. The effectiveness is directly related to the amount of revenue sent and the amount of revenue currently being spent on counter-espionage by the target.

- Leader Assassination

Assassination may cause checks for riots and revolts in all the target's COHs. Assassination may be aimed against any type of government but its effects are less on those which do not rely on a single leader figure; for example, Democratic—Party Rule. The chance of success is directly related to the amount of revenue spent

and the amount of revenue currently being spent on counter-espionage by the target.

- Terrorize

Terrorize may have two effects, reduction in the control of the people of the target and destruction of facilities. The chance of success is directly related to the amount of revenue spent and the amount of revenue currently being spent on counter-espionage by the target.

- Destroy Facility

If enough revenue is spent, the other tribe will lose a facility.

- Dignitary Assassination

If you successfully assassinate an opponent's dignitary, they will be less likely to agree to any diplomatic overtures.

Bribes

The following bribes are available in the game:

- Offer Revenue Available to all governments
Makes a one-time payment of the agreed amount.
Non-returnable if mission fails.
Gives a boost to chance of success.
- Offer Discovery Available to all governments
Makes a one-time payment of the agreed discovery.
Payable only if mission succeeds.
Gives a boost to chance of success.
- Offer Resources Available to all governments.
Makes a one-time payment of the agreed amounts of resources.
Gives a boost to chance of success.

Controlling the people

Each tribe has a total population represented by a number. The population will normally increase over time, but disasters and wars can affect this.

Work Force

The number of people currently allocated to building, to facilities, to tasks, and to forces equals the number of employed people within the tribe. The remainder is unemployed. The total number of unemployed people forms the potential work force.

A percentage of the potential work force equal to your percentage control of the people can be used to build new facilities, forces, or carry out new tasks. This is the tribe's actual work force.

You can allocate the actual work force to build new facilities, forces, or carry out new tasks anywhere within any of the COHs you currently control. You can also leave them unemployed.

NOTE: Unemployed people always count towards the percentage of the people not under control.

Movement of the People

You cannot directly move people the way you move a force. Instead, you must "coerce" them into moving to where you want them. The only people within the tribe who can be moved are the actual work force and the homeless.

You move the actual work force by building facilities or forces. This places them into that facility or force and removes them from the unemployed. The homeless are "moved" by building houses in COHs that you currently control.

Population Growth

The population of a COH changes by a percentage of the existing population every year. The rate at which the population of a COH increases is calculated as follows:

$$\begin{aligned} & (50 - \text{current population number} - \% \text{ starving} + (5\% \text{ per hospice}) \\ & + (10\% \text{ per hospital}) + (15\% \text{ per modern hospital}) \\ & + (5\% \text{ per sewage/waterworks})) / \text{current education level} \end{aligned}$$

Natural disasters or bombardment can reduce the population.

Level of Control

Your national level of control over people varies during the game. The national level of control affects the likelihood of a riot/revolt occurring in one of your COHs.

The local level of control affects the chance of a riot/revolt occurring in a particular COH.

The base levels of control for each government type are shown below:

Autocratic	Tribal Chieftain	110
	Monarch	110
	Dictator	130
	One Party State	130
Aristocratic	Land Owning	125
	Wealth Owning	100
Theocratic	Deified Leader	130
	Priest Leader	120
	Divine Kingship	115
Democratic	People Rule	100
	Party Rule	95
	Proportional Representation	95

The base national level of control can be varied by implementing domestic government policies (see [Administration on page 20](#)), and by the national percentage of homeless, unemployed, and starving.

NOTE: A population point that is homeless, unemployed, *and* starving counts against control three times.

Here's an example. A dictator starts with 130% control. There are 10% starving, 25% unemployed, and 5% homeless, which adds up to 40% not under control, so the current national level of control is 90%.

Local Level of Control

The local level of control is calculated the same way as the national but is additionally affected by the presence of facilities and local government policies.

The following facilities gives bonuses to control:

- Central Administration
- Church
- Local Administration
- Regional Administration
- Tabernacle
- Temple

Government Policies

Government policies can be used to improve control in individual COHs (see [Administration on page 20](#)).

Riot/Revolt Checks

These can be turned off at lower levels of degree of difficulty.

Each of the following events triggers a riot/revolt check:

- Tax level increase
- Government change
- Religion change
- Homeless increase
- Unemployed increase

Whenever a check is required, it is made against the current national percentage control of the people.

If a riot/revolt occurs, the game checks to see where. This check always looks at COHs that are already rioting before checking any others.

Existing riots will either continue or worsen into a revolt.

Effects of Rioting

The effects of rioting vary with the government type.

- | | |
|---------------------------------|--|
| • Autocratic | Political or military facilities can be destroyed. |
| • Aristocratic
Land Owning | Political or agricultural facilities can be destroyed. |
| • Aristocratic
Wealth Owning | Political or industrial facilities can be destroyed. |
| • Theocratic | Political or religious facilities can be destroyed. |
| • Democratic | Any facility can be destroyed. |

Effects of Revolts

The effects of revolts vary with the government type:

- Autocratic Political or military facilities can be destroyed.
All garrison forces disband.
- Aristocratic Two political or agricultural facilities can be
Land Owning destroyed.
An immediate check for riot/revolt occurs in
the closest COH of the same tribe.
- Aristocratic A political or industrial facility can be destroyed
Wealth Owning plus another facility of any type.
All garrison forces disband.
- Theocratic Political or religious facilities can be destroyed.
The COH may also declare allegiance to
another tribe, often one of the same religion.
All garrison forces and the COH switch to
control of that tribe.
- Democratic Two facilities of any type can be destroyed.
All garrison forces disband.

A COH in revolt does not contribute in any way to its controller, nor can any of its facilities be used except in further calculations for riot/revolt.

Capturing COHs

This includes COHs that switch allegiance as a result of revolt. A captured COH retains the religion it had when captured.

The percentage control of the people of a captured city begins at half of what it would be normally but this gradually increases to normal. The captured COH might switch allegiance totally to its captor. If it does, its religion changes to that of the current tribe and any remaining reduction in control from the capture is removed. It is now treated exactly like any other COH belonging to the tribe.

Tribal Education

Many of the discoveries require that the tribe's national education level is at or above a certain level. In order to increase your tribe's education you must build Educational Facilities as follows:

- Athenaeum to gain Education Level 1
- Academy to gain Education Level 2
- Monastery to gain Education Level 3
- School to gain Education Level 4
- High School to gain Education Level 5
- Primary School to gain Education Level 6

Each facility can only educate a percentage of the population within a COH, so the larger the population, the more facilities are required. Also, you must maintain the lower education levels in order to keep the higher ones. For example, if you fail to maintain enough Academies to keep education level 2, then there are not enough educated people for the Monasteries to be able to train them to education level 3 and the tribe's education will fall to level 1. Once a tribe reaches level 4 it is assumed that the general education of the tribe is sufficient to maintain at least level 4 without the lower education facilities. The Education will not fall below level 4 even if the Athenaeums, Academies, and Monasteries are lost. However, failure to maintain the correct number of High Schools will drop the education to level 4 even if there are sufficient Primary Schools for level 6.

NOTE: If it seems that you have discovered all the available discoveries it is likely that you have not raised the tribe's education level enough for the higher discoveries to be made. The exception to this is if you are playing the Military Victory Conditions and have made all discoveries at level 6 education level. There are no more to be made.

Menus

File menu

Use the **File** menu to load and save games. These commands are also available from the toolbar (see [Toolbar on page 69](#)).

If you retire you automatically lose (whatever your score) and you see a summary of your achievements. You can then go to the Main menu to begin another game.

The high scores are recorded for each type of game. To view the high scores you need to select the game type and appropriate Age.

Select **Exit** to quit Destiny (or use the toolbar button).

View menu

This allows you to switch among Globe, Continent, and Country views and by change the magnification using zoom in and zoom out. The views available to you are dependent upon the level of difficulty you are playing and your discoveries. See [Map View Restrictions on page 56](#).

Govern menu

Each command has a toolbar equivalent.

Find menu

- Force

Select the force and click **Locate** to be taken to where that force is, in whatever view you are currently in.

To order a force, highlight it and select **Order**. The Orders box is displayed (see [Give Orders on page 36](#)).

- COH

To locate a COH, highlight it and select **Locate**.

To see a COH's dialog box, highlight it and select **Dialog**.

Settings menu

- Sound FX

When this is checked, the sound effects are on.

- Enhanced Terrain

When this is checked, the terrain will look better but the frame rate will decrease.

- **Battles**
When this is checked, you will be given the option to go into battlefield mode to fight any battles. If not, all battles are computed automatically.
- **Real-time Updates**
When this is checked, this will update the screen while you are in a menu. This will cause some menus to jump back to the start when you are scrolling through.
- **Instant Battle**
Uncheck this option to have the main menu appear when you start up the game and press **Escape** to skip the introductory sequence. When this is checked, you are taken straight into a Single Battle from the introductory sequence.
- **Notifications**
Enabled—when unchecked no notification messages will appear.
- **COH**
Enabled—when unchecked you will not receive any COH notifications.
Established—when unchecked you will not be notified of a COH having been built.
Rioting—when unchecked you will not be notified of any COH rioting or revolting.
- **Discoveries**
Enabled—When unchecked you will receive no discovery notification.
Advance—When unchecked you will not be notified of any discoveries you have made.
Exhausted—When this is checked you will be notified when a class of discovery has no more discoveries at your current education level.
- **Facilities**
Enabled—When unchecked you will not receive any facility notifications.
Built—When this is checked you are notified of a facility having been constructed
Destroyed—When this is checked you will be notified if any of your facilities are destroyed

Production Halted—When this is checked, you will be notified when a facility can no longer operate.

- Forces

Enabled—When unchecked you will receive no information regarding your forces.

Created—When this is checked you will be told when a force has completed its training.

Stopped—When this is checked you will be told when a force has stopped, either because it has reached impassable terrain or it has arrived at its destination.

Reporting—When this is checked you will be notified of a force having completed a mission, such as finding a resource.

- General

Animations—when unchecked you will not be shown the animation notifying you of reaching the next Age.

- Time-out

The length of time a notification stays up.

- Speed

Turnbased—When selected the stop/go icon appears on the tool bar. When you have completed your instructions click on this icon

Slow, Medium and Fast—Fast is three times the speed of slow. Medium is twice as fast as slow.

Pause—When this is checked the game is paused, uncheck to continue the passage of game time. Clicking the **Pause** icon will also pause the game and clicking it will start time again. Pausing allows you to give all the normal game instructions but time remains frozen until you unpause.

- Autosave

Disabled—when this is checked the game will not autosave.

3 Mins, 5 Mins, or 10 Mins—which ever of these is checked is the length of time between each autosave.

- Music

You can play the music in order of listing or randomly. You can also choose to listen to one particular track. When the CD is accessed during the game the music will skip a track.

- Game Status

This lists the basic setup options you chose and your current score. You can access the opposition's score by selecting the appropriate tribe name in the menu.

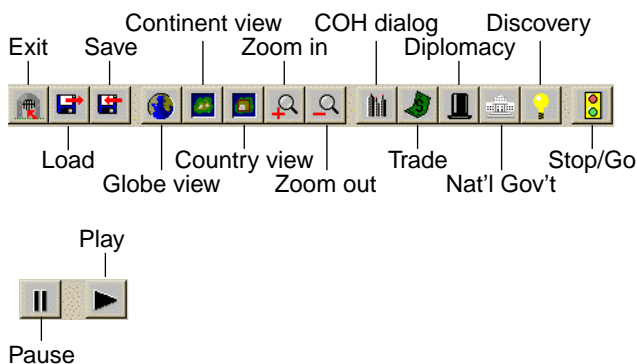
Help menu

Online Manual—To access the online manual you need to install the Adobe Acrobat reader, which is available on the CD. To install the reader, you must type `D:\manual\windows\acoread.exe` at the DOS prompt, assuming that D is the letter of your CD-ROM drive. After the reader is installed you can return to the CD and open the Destiny online manual. The manual is located at `D:\manual\destiny.pdf`.

Encyclopedia—For those who are interested in the tribal history and the actual development of items found in the game, the encyclopedia covers everything from a Shaduf to the Atomic Bomb.

Toolbar

The shortcut icons available on the toolbar are labeled in the picture below.



Game Strategies

A few large population COHs rather than several small COH populations

Advantages

Less to keep an eye on. You may spend more time on other features of the game such as the Discovery window or military campaigns.

The population growth of a large COH is generally less than that of a small COH all other things such as health, housing, and unemployment being equal. This means they involve less work to keep balanced.

Disadvantages

Harder to maintain control of the people. Once a COH gets over 40 population it becomes more unmanageable. You will need to build facilities to help keep control or try to manage with lower taxes.

Vulnerable to Military Attack. This particularly applies in the later ages where an attacking force can bombard and thus damage the facilities that your forces, transport network, and sphere of influence rely on for maintenance.

If your opponent has nuclear weapons and is willing to lose them, this strategy could be a Game Losing Disaster.

Trade and diplomacy rather than military action

Advantages

Less expensive in terms of revenue and resources. This allows you to concentrate on facilities which give control of the people and discovery bonuses.

Reduces the number of things you have to control and therefore gives you more time to concentrate on other issues.

Disadvantages

No guarantee that you will get what you want, when you want it.

No guarantee that you will not be attacked at some time.

Culture and agriculture rather than science and industry

Although the way the discovery tree is set up prevents you from concentrating entirely in one area you can choose which order you do things. A lot here depends on your overall strategy, the age you are currently in, and the aggressiveness of any opponents you may have, but these are some general pointers.

Advantages

Better agriculture produces more food for less expenditure. This frees the population for other uses and is likely to increase population growth. The more population, the more ideas are generated

Culture brings control of the people and a larger choice of governments, which gives you more choice of strategies.

Disadvantages

A lack of an industrial base will restrict you in your construction of facilities and armed forces.

A lack of science will prevent you from increasing your education and health levels. The first will reduce the rate of discovery while the second will slow the growth of the population and make you more susceptible to some of the natural disasters.

Forces

To understand the force table, you need to understand the following terms.

- **Discovery Requirements**

These are the discoveries that you must have made before the force is available. You may think some of the discoveries slightly obscure, but the discovery charts use key discoveries as cross links to others, thus doing away with huge lists for each force.

NOTE: Some of the force's units may require additional discoveries. These discoveries will be listed separately in the Unit list. If you have not made these additional discoveries, those units are not available to you.

- **Facility Requirements**

This lists what facilities (if any) must be operational for the force to function.

This is very important, because if all facilities of a certain type are destroyed within your empire, then *all forces that require that facility will be disbanded*. We therefore recommend that you build more than one facility within your empire, preferably in more than one COH.

- Maintenance

This is the amount of revenue that is spent every time period to maintain a force.

Unmaintained forces are disbanded.

- Revenue

Revenue should not be thought of in purely cash terms. It is also an opportunity cost value that a society needs to expend. This is why some forces appear very expensive in comparison to others and also why there is little difference in revenue terms between a force from the Bronze Age or the Space Age.

There is also no difference in this cost whether a force has one unit or ten. Revenue reflects the cost of organization, which changes little with the number of units involved.

- Force Marker

This is the marker that appears on the Strategic Map to designate this type of force.

NOTE: Any force *must* include at least one unit of the force marker type at the type you build it. If the “base” unit is subsequently destroyed, the force retains the type.

- Other Possible Units

This lists all the unit types that can be placed within the force. This may vary during the game as you make more discoveries. See the note under [Discovery Requirements](#) above about unit-specific discoveries.

- Upgrade Possible

This indicates whether the force can take of advantage of new discoveries via an upgrade rather than having to be disbanded and rebuilt.

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Advanced ICBM Group	Hydrogen Bomb, Rocketry Level V	Missile Silo	5	Advanced ICBM Launcher	N/A	N
Advanced Jet Airforce	Advanced Computers, Aerodynamics Level VII, Jet Engine, Metalworking Level VI, Rocketry Level IV	Airbase	3	Advanced Jet Bomber	Advanced Jet Fighter	N
Advanced Jet Fighter Airforce	Advanced Computers, Aerodynamics Level V, Jet Engine, Metalworking Level VI, Rocketry Level IV	Airbase	3	Advanced Jet Fighter	Jet Fighter	N
Advanced Strategic Bomber Group	Hydrogen Bomb, Advanced Computers, Aerodynamics Level VII, Jet Engine, Metalworking Level VII, Rocketry Level IV	Airbase	4	Advanced Strategic Bomber	N/A	N
Air Mobile Force	Aerodynamics Level IV, Metalworking Level V, Petrol Engine	Military Airfield	3	Transport Helicopter	N/A	N
Airforce	Aerodynamics Level III, Metalworking Level IV, Petrol Engine	Military Airfield	2	Bomber	Fighter	Y
Ancient Fleet	Wooden Ship Construction, Ballister, Vertical Loom	Boat Builders, Harbor	1	Trireme	Bireme	N

Force	Discovery Requirements	Facility Requirements	Maintenance	Force Marker Unit	Other Possible Units	Upgr
Ancient Merchant Fleet	Wooden Ship Construction, Vertical Loom	Boat Builders, Harbor	1	Ancient Merchant Vessel	Bireme	N
Attack Helicopter Force	Advanced Computers, Aerodynamics Level VI, Jet Engine, Metalworking Level VI, Rocketry Level IV	Military Airfield	3	Attack Helicopter	N/A	N
Bronze Age Cavalry Army	Metalworking Level II, Selective Horse Breeding Level I	Ranch	1	Medium Spear Cavalry	Light Spear Cavalry, Light Bow Cavalry, Light Chariot, Light Lance Cavalry, Medium Bow Cavalry, Medium Lance Cavalry	Y
Bronze Age Pike Army	Pike	None	1	Light Pikemen	Ballister, Bronze Age Light Spearmen, Composite Bow, Elephants, Light Chariot, Light Spearmen, Longbowmen, Simple Bowmen, Slinger	Y
Bronze Age Sword Army	Sword	None	1	Light Swordsmen	Ballister, Bronze Age Light Spearmen, Composite Bow, Elephants, Light Chariot, Light Spearmen, Longbowmen, Simple Bowmen, Slinger	Y

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Carrier Fleet	Advanced Metal Ship Construction, Aerodynamics Level III, Steam Turbine, Metallurgy V, Modern Cannon	Dockyard, Port	3	Aircraft Carrier	Battleship, Cruiser, Destroyer	N
Cavalry Army	Breech Loading, Modern Cannon, Selective Horse Breeding Level III	Ranch	2	Mounted Infantrymen	Congreve Rockets, Early Machine Gun, Lancers, Machine Gun, Modern Cannon	Y
Deep Sea Fishing Fleet	Advanced Navigation, Advanced Metal Ship Construction, Electronics Level V, Marine Diesel Engine	Dockyard, Fishing Harbor	1	Factory Ship	None	N
Early Fleet	Advanced Wooden Ship Construction, Early Cannon, Vertical Loom	Harbor, Ship Builders	1	Carrack	Trireme	N
Early Gunpowder Cavalry Army	Arquebus, Lance, Selective Horse Breeding Level IV	Ranch	2	Heavy Lance Cavalry	Arquebus, Ballister, Bombard, Catapult, Composite Bow, Crossbow, Elephants, Heavy Halberdiers, Heavy Pikemen, Heavy Swordsmen, Longbowmen, Medium Lance Cavalry, Mongolian Rockets, Trebuchet, Heavy Bow Cavalry, Heavy Pikemen	Y

Force	Discovery Requirements	Facility Requirements	Maintenance	Force Marker Unit	Other Possible Units	Upgr
Early Gunpowder Infantry Army	Arquebus	None	1	Arquebus	Ballister, Bombard, Catapult, Composite Bow, Crossbow, Elephants, Heavy Halberdiers, Heavy Pikemen, Heavy Swordsmen, Longbowmen, Medium Pikemen, Medium Swordsmen, Mongolian Rockets, Trebuchet	Y
Early Mechanized Army	Early Tank, Artillery	Military Headquarters	1	Early Tank	Artillery, Automatic Weapons, Early Armored Car, Infantry Support Weapons, Machine Gun, Modern Cannon, Riflemen	N
Early Modern Infantry Army	Machine Gun, Magazine Rifles, Modern Cannon, Artillery	None	1	Machine Gun	Artillery, Automatic Weapons, Early Machine Gun, Infantry Support Weapons, Lancers, Modern Cannon, Mounted Infantrymen, Riflemen	N
Early Steam Merchant Fleet	Metal Ship Construction, Marine Steam Engine	Shipyard, Harbor	1	Early Steamer	Early Cruiser, Gunboat	N
Environmental Protection Fleet	Advanced Metal Ship Construction, Environmental Protection Theory, Marine Diesel Engine	Dockyard, Environmental Protection Agency, Harbor	1	Environmental Protection Vessel	N/A	N
Fighter Airforce	Aerodynamics Level III, Metalworking Level IV, Petrol Engine	Military Airfield	2	Fighter	N/A	Y

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Fishing Fleet	Advanced Navigation, Marine Diesel Engine, Wooden Ship Construction	Boat Builder, Fishing Harbor	1	Trawler	N/A	N
Fleet	Advanced Metal Ship Construction, Metallurgy Level V, Modern Cannon, Steam Turbine	Dockyard, Port	3	Battleship	Cruiser, Destroyer, Pre-Dreadnought Battleship	N
Gunpowder Cavalry Army	Early Cannon, Musket, Selective Horse Breeding Level III	None	2	Pistol Armed Cavalry	Bombard, Cannon, Congreve Rockets, Early Cannon, Medium Pikemen, Mongolian Rockets, Musketmen, Rifle-Musketmen	Y
Gunpowder Infantry Army	Early Cannon, Musket	None	1	Musketmen	Bombard, Cannon, Congreve Rockets, Early Cannon, Early Machine Gun, Rifle-musketmen	Y
ICBM Group	Atomic Bomb, Rocketry Level V	Missile Silo	5	ICBM Launcher	N/A	Y
Iron Age Cavalry Army	Metallurgy Level III, Selective Horse Breeding Level II	None	2	Heavy Spear Cavalry	Heavy Bow Cavalry, Heavy Lance Cavalry, Light Bow Cavalry, Light Lance Cavalry, Light Spear Cavalry, Medium Bow Cavalry, Medium Lance Cavalry, Medium Spear Cavalry, Mongolian Rockets	Y

Force	Discovery Requirements	Facility Requirements	Maintenance	Force Marker Unit	Other Possible Units	Upgr
Iron Age Pike Army	Metallurgy Level III, Pike	None	1	Medium Pikemen	Ballister, Catapult, Composite Bowmen, Crossbowmen, Elephants, Heavy Chariot, Light Chariot, Light Pikemen, Light Spearmen, Longbowmen, Scythe Chariot, Simple Bowmen, Slingers, Trebuchet	N
Iron Age Sword Army	Metallurgy Level III, Sword	None	1	Medium Swordsmen	Ballister, Catapult, Composite Bowmen, Crossbowmen, Elephants, Heavy Chariot, Light Chariot, Light Spearmen, Light Swordsmen, Longbowmen, Scythe Chariot, Simple Bowmen, Slingers, Trebuchet	N
Ironclad Fleet	Metal Ship Construction, Cannon, Marine Steam Engine	Harbor, Shipyard	2	Ironclad	100 Gunner, 74 Gunner, Early Cruiser, Frigate	N
Jet Airforce	Aerodynamics Level IV, Jet Engine, Metalworking Level V, Synthetics	Airbase	3	Jet Bomber	Jet Fighter	Y
Jet Fighter Airforce	Aerodynamics Level IV, Jet Engine, Metalworking Level V, Synthetics	Airbase	3	Jet Fighter	N/A	Y
Late Gunpowder Cavalry Army	Cannon, Rifled-Musket, Selective Horse Breeding Level III	Ranch	2	Hussar	Cannon, Congreve Rockets, Early Machine Gun, Lancers, Modern Cannon, Musketmen, Pistol Armed Cavalry, Rifle-musketmen	N

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Mechanized Army	Early Tank, Metalworking Level V, Artillery	Military Headquarters	2	Tank	Armored Car, Armored Personnel Carrier, Rocket Artillery Class I, Rocket Artillery Class II, Self Propelled Artillery	Y
Merchant Fleet	Advanced Wooden Ship Construction, Cannon, Vertical Loom	Harbor, Ship Builders	1	Merchant Vessel	74 Gunner, Frigate	N
Missile Group	Atomic Bomb, Rocketry Level IV	Missile Silo	3	Missile Launcher	N/A	Y
Modern Carrier Fleet	Advanced Metal Ship Construction, Aerodynamics Level V, Gas Turbine, Metallurgy Level V, Rocketry Level IV	Dockyard, Port	8	Modern Aircraft Carrier	Battleship, Missile Cruiser, Missile Destroyer, Missile Gun Boat	N
Modern Fleet	Advanced Metal Ship Construction, Gas Turbine, Metallurgy Level V, Rocketry Level IV	Dockyard, Port	4	Missile Cruiser	Battleship, Cruiser, Destroyer, Missile Destroyer, Missile Gun Boat	N
Modern Infantry Army	Automatic Weapons, Infantry Support Weapons, Artillery, Modern Cannon	None	2	Automatic Weaponsmen	Artillery, Heavy Weapons Class I, Heavy Weapons Class II, Infantry Support Weapons, Machine Gun, Modern Cannon, Riflemen, Rocket Artillery Class I, Rocket Artillery Class II	N

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Modern Mechanized Army	Early Tank, Metalworking Level VI, Rocketry Level IV, Artillery	Military Headquarters	2	Modern Tank	Modern Armored Car, Modern Armored Personnel Carrier, Modern Self Propelled Artillery, Rocket Artillery Class II	N
Modern Merchant Fleet	Advanced Metal Ship Construction, Marine Diesel Engine	Container Depot, Dockyard, Port	1	Modern Merchantmen	Destroyer, Missile Destroyer, Missile Gun Boat	N
Nuclear Attack Submarine Fleet	Advanced Metal Ship Construction, Electronics Level VII, Nuclear Engine	Dockyard, Port	4	Nuclear Attack Submarine	N/A	N
Nuclear Bomber Group	Atomic Bomb, Aerodynamics Level III, Petrol Engine, Metalworking IV	Military Airfield	3	Nuclear Bomber	N/A	Y
Nuclear Missile Submarine Fleet	Advanced Metal Ship Construction, Electronics Level VII, Hydrogen Bomb, Nuclear Engine, Rocketry Level V	Dockyard, Port	4	Nuclear Missile Submarine	N/A	N
Oil Exploitation Fleet	Advanced Metal Ship Construction, Marine Diesel Engine, Mining/Quarrying Level VI	Dockyard, Oil/ Gas Terminal, Port	6	Oil Rig	N/A	N

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Pre-Dreadnought Fleet	Marine Steam Engine, Metallurgy Level IV, Metal Ship Construction, Modern Cannon, Screw Propeller	Port, Ship Yard	3	Pre-Dreadnought Battleship	Early Cruiser, Gun Boat	N
Primitive Airforce	Advanced Timber Construction, Aerodynamics Level II, Petrol Engine	Military Airfield	1	Primitive Bomber	Primitive Fighter	Y
Primitive Fighter Airforce	Advanced Timber Construction, Aerodynamics Level I, Petrol Engine	Military Airfield	1	Primitive Fighter	N/A	Y
Primitive Fleet	Boat Building, Horizontal Loom	Boatyard	1	Outrigger Canoe	N/A	N
Rocket Group	Rocketry Level III	Rocket Site	2	Rocket Launcher	N/A	N
Sailing Fleet	Cannon, Vertical Loom, Advanced Wooden Ship Construction	Harbor, Ship Builders	1	100 Gunner	74 Gunner, Frigate	N
Steam Merchant Fleet	Marine Steam Engine, Screw Propeller, Advanced Metal Ship Construction	Port, Dock Yard	1	Steamer	Cruiser, Destroyer	N
Stone Age Cavalry Army	Domestication of Horse, Flint Knapping	None	2	Light Spear Cavalry	Light Bow Cavalry, Light Lance Cavalry	Y

Force	Discovery Requirements	Facility Requirements	Main-tenance	Force Marker Unit	Other Possible Units	Upgr
Stone Age Infantry Army	Flint Knapping	None	1	Light Spearmen	Clubmen, Elephants, Longbowmen, Simple Bowmen, Slingers, Composite Bowmen	Y
Strategic Bomber Group	Hydrogen Bomb, Aerodynamics Level IV, Jet Engine, Metalworking Level V, Synthetics	Airbase	4	Strategic Bomber	N/A	Y
Submarine Fleet	Advanced Metal Ship Construction, Electronics Level IV, Marine Diesel Engine	Dockyard, Harbor	2	Submarine	N/A	N
War Party	None	None	1	Clubmen	Simple Bowmen, Slingers	Y

Units

To understand the unit table, you need to understand the following terms:

- Available To

This lists all the possible forces in which a unit may be constructed. See [Discovery Requirements](#) below.

- Discovery Requirements

These are the specific discoveries which you must have made in order for the unit to become available for use in some forces. If you have not made these specific discoveries, those units are not available to you.

NOTE: Specific discoveries are *not* the only discoveries that may be necessary for a unit. Units also require all the discoveries listed for the force into which they will go.

- Cost

This lists all the resources, revenue, and population which will be used to construct the unit.

- Population

The population involved in a unit is not just a reflection of how many people are physically in the unit but also a measure of how many people are involved in auxiliary services to keep the unit going. This is why some units appear to require large populations.

- Revenue

Revenue should not be thought of in purely cash terms. It is also an opportunity cost value that a society needs to expend. This is why some forces appear very expensive in comparison to others and also why there is little difference in revenue terms between a force from the Bronze Age or the Space Age.

- Upgrade Possible

This indicates whether the unit can take of advantage of new discoveries via an upgrade rather than having to be disbanded and rebuilt.

- Attack Values

These is used either as the close attack value of a unit against an opposing unit of the same basic type, or when an opposing unit bombards the unit and there is a chance of hitting back.

If this number is 0, one of the following is true:

- The unit is relatively ineffective against units of that type.
- The unit can never engage that type in close combat. (See Bombardment & Missile below)

If this number is 254 (Atomic Weapons), an attack will totally destroy everything within one terrain square as it appears in the Influence section of the COH window.

If this number is 255 (Hydrogen Weapons), an attack will totally destroy everything within nine terrain squares (3x3 block), as they appear in the Influence section of the COH window.

- Defense Values

These show the Defense value of a unit against an opposing unit by basic type.

NOTE: Even if close combat can never occur between two types, the defense value is used when a bombardment or missile attack is made.

If this number is 255, the unit cannot be destroyed by that type of attack.

- Missile Attack

This is used only by units which have a distant combat value.

This is fully used only with the Battlefield option, although it is taken into account in the calculated battles.

- Missile Range

This is fully used only with the Battlefield option, although it is taken into account in the calculated battles.

- Bombardment Attack

This is used to engage forces at very long range and is the *only* type of attack that air units make against ground and naval units, naval units make against ground units, or any artillery unit can make.

- Bombardment Range

This is the distance in terrain squares (as seen in the Influence section of the COH window) over which a bombardment attack can be made. A range of 1 is an attack into an adjacent square.

- Move Rate

This is the speed at which the unit can move.

NOTE: A force moves at the speed of its slowest unit, regardless of the others' speed. Only in the Battlefield option can a unit move faster than the slowest unit in its force.

- Cargo Weight

This is the amount of cargo capacity needed to carry a unit.

NOTE: For a force to board a naval force, the naval force must have sufficient capacity for *all* the units in the boarding force. You *cannot* split up forces or units to board them.

If a unit's cargo weight is shown as "not allowed," (NA) it means that the unit can never board.

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
74 Gunner	Ironclad Fleets, Sailing Fleets, Merchant Fleets		2 Population, 2 Revenue, 2 Iron, 3 Lumber	N	0	6	0	2	6	2	10	8	2	2	5	NA	0
100 Gunner	Ironclad Fleets, Sailing Fleets		3 Population, 3 Revenue, 2 Iron, 4 Lumber	N	0	8	0	2	8	2	12	8	4	2	5	NA	0
Advanced ICBM Launcher	Advanced ICBM Groups		1 Population, 10 Revenue, 5 Composite Steel, 2 Chemicals, 1 Synthetics	N	0	0	3	255	255	255	0	0	255	255	0	255	0
Advanced Jet Bomber	Advanced Jet Airforce		2 Population, 8 Revenue, 2 Aluminum, 2 Composite Steel, 1 Synthetics	N	0	0	3	3	3	20	0	0	24	255	34	73	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Advanced Jet Fighter	Advanced Jet Fighter Airforce, Advanced Jet Airforce		2 Population, 5 Revenue, 1 Aluminum, 1 Composite Steel, 1 Synthetics	N	0	0	30	2	2	15	0	0	20	255	35	51	0
Advanced Strategic Bomber	Advanced Strategic Bomber Group		2 Population, 12 Revenue, 2 Aluminum, 2 Composite Steel 1 Synthetics	N	0	0	3	5	5	20	0	0	255	255	34	51	0
Aircraft Carrier	Carrier Fleet		4 Population, 5 Revenue, 1 Aluminum, 1 Lumber, 6 Steel	N	0	25	10	10	20	15	18	15	20	25	8	NA	0
Ancient Merchant Vessel	Ancient Merchant Fleet		2 Population, 1 Revenue, 3 Lumber	N	0	0	0	1	1	1	0	0	0	0	2	NA	2
Armored Car	Mechanized Army		2 Population, 3 Revenue, 1 Steel	Y	15	0	1	10	2	2	12	12	0	0	12	8	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity	Forces
Armored Personnel Carrier	Mechanized Army		2 Population, 3 Revenue, 1 Steel	Y	18	0	1	7	2	2	15	8	0	0	10	10	0	
Arquebus	Early Gunpowder Infantry Army, Early Gunpowder Cavalry Army		1 Population, 1 Revenue, 1 Lumber, 1 Bronze	Y	2	0	0	1	1	1	2	4	0	0	2	2	0	
Artillery	Early Modern Infantry Army, Early Mechanized Army, Modern Infantry Army		2 Population, 3 Revenue, 1 Steel, 1 Chemicals	Y	0	0	0	1	2	1	0	0	16	2	5	15	0	
Attack Helicopter	Attack Helicopter Force		2 Population, 4 Revenue, 1 Composite Steel	N	0	0	4	3	1	6	0	0	17	50	31	51	0	Guide to Destiny

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Automatic Weaponsmen	Early Modern Infantry Army, Early Mechanized Army, Modern Infantry Army	Automatic Weapons	1 Population, 2 Revenue, 1 Steel	N	3	0	0	3	1	1	12	5	0	0	3	3	0
Ballister	Bronze Age Pike Army, Bronze Age Sword Army, Iron Age Pike Army, Iron Age Sword Army, Early Gunpowder Infantry Army, Early Gunpowder Cavalry Army	Ballister	1 Population, 1 Lumber	N	0	0	0	1	1	1	2	7	0	0	1	4	0
Battleship	Fleet, Carrier Fleet, Modern Fleet, Modern Carrier Fleet		3 Population, 8 Revenue, 3 Armored Steel, 5 Steel	N	0	35	8	6	30	10	25	18	18	3	8	NA	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Bireme	Ancient Fleet, Ancient Merchant Fleet		1 Population, 1 Revenue, 3 Lumber	N	0	3	0	1	2	1	1	2	0	0	4	NA	1
Bombard	Early Gunpowder Infantry Army, Early Gunpowder Cavalry Army, Gunpowder Cavalry Army, Gunpowder Infantry Army	Bombard	1 Population, 1 Revenue, 1 Lumber, 1 Bronze, 1 Iron	Y	0	0	0	1	1	1	6	5	1	1	1	6	0
Bomber	Airforce		2 Population, 3 Revenue, 2 Aluminum, 2 Steel	Y	0	0	3	2	2	6	0	0	16	120	32	41	0
Bronze Age Thrusting Spear-men	Bronze Age Pike Army, Bronze Age Sword Army		1 Population, 1 Revenue, 1 Bronze	N	2	0	0	4	1	1	0	0	0	0	3	2	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Cannon	Cavalry Army, Gunpowder Cavalry Army, Gunpowder Infantry Army, Late Gunpowder Cavalry Army	Cannon	1 Population, 1 Revenue, 2 Iron, 1 Horses	Y	1	1	0	1	1	1	12	10	2	1	1	8	0
Carrack	Early Fleet		2 Population, 2 Revenue, 4 Lumber	N	0	4	0	1	4	1	8	7	2	2	2	NA	3
Catapult	Early Gunpowder Infantry Army, Early Gunpowder Cavalry Army, Iron Age Sword Army, Iron Age Pike Army	Catapult	1 Population, 1 Revenue, 1 Lumber	N	0	0	0	1	1	1	4	7	0	0	1	4	0
Clubmen	Stone Age Infantry Army, War Party		1 Population	Y	2	0	0	1	1	1	0	0	0	0	2	1	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity	Forces
Composite Bow	Iron Age Pike Army, Iron Age Sword Army, Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army	Composite Bow	1 Population, 1 Revenue	N	1	0	0	1	1	1	3	3	0	0	3	2	0	
Congreve Rockets	Gunpowder Infantry Army, Gunpowder Cavalry Army, Late Gunpowder Cavalry Army, Cavalry Army	Rocketry Level II	1 Population, 2 Revenue, 1 Iron	N	0	0	0	1	1	1	10	9	1	1	2	5	0	
Crossbowmen	Iron Age Pike Army, Iron Age Sword Army, Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army	Crossbow	1 Population, 1 Revenue	Y	1	0	0	1	1	1	4	4	0	0	2	2	0	
Guide to Destiny																		

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Cruiser	Carrier Fleet, Fleet, Modern Fleet, Steam Merchant Fleet	Metallurgy Level V, Modern Cannon	2 Population, 5 Revenue, 1 Armored Steel, 4 Steel	N	0	25	5	4	18	5	18	15	8	3	10	NA	0
Destroyer	Carrier Fleet, Fleet, Steam Merchant Fleet, Modern Fleet, Modern Merchant Fleet	Metallurgy Level V, Modern Cannon	1 Population, 3 Revenue, 3 Steel	N	0	12	5	2	14	2	12	12	4	3	15	NA	0
Early Armored Car	Early Mechanized Army		1 Population, 1 Revenue, 1 Steel	Y	12	0	0	6	1	1	12	10	0	0	10	8	0
Early Cannon	Gunpowder Cavalry Army, Gunpowder Infantry Army	Early Cannon	1 Population, 1 Revenue, 1 Lumber, 2 Iron, 1 Horses	Y	0	0	0	1	1	1	8	7	1	1	1	6	0
Early Cruiser	Ironclad Fleet, Pre-Dreadnought Fleet, Early Steam Merchant Fleet	Metallurgy Level IV, Modern Cannon	2 Population, 2 Revenue, 4 Steel	N	0	18	0	3	18	2	18	10	3	2	7	NA	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Early Machine-gun	Gunpowder Infantry Army, Late Gunpowder Cavalry Army, Cavalry Army, Early Modern Infantry Army	Early Machine Gun	1 Population, 1 Revenue, 1 Steel	Y	1	0	0	2	1	1	8	6	0	0	2	2	0
Early Steamer	Early Steam Merchant Fleet		2 Population, 1 Revenue, 1 Lumber, 1 Iron	N	0	0	0	2	2	2	0	0	0	0	5	NA	4
Early Tank	Early Mechanized Army		1 Population, 2 Steel, 1 Revenue	Y	15	0	0	8	1	1	16	10	0	0	3	12	0

Forces

Guide to Destiny

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Elephants	Stone Age Infantry Army, Bronze Age Pike Army, Bronze Age Sword Army, Iron Age Pike Army, Iron Age Sword Army, Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army	Elephant Handling, War Elephants	1 Population, 2 Revenue, 1 War Elephants	N	8	0	0	3	1	1	1	1	0	0	1	4	0
Environmental Protection Vessel	Environmental Protection Fleet		2 Population, 1 Revenue, 2 Steel	N	0	0	0	2	2	2	0	0	0	0	7	NA	0
Factory Ship	Deep Sea Fishing Fleet		1 Population, 1 Revenue, 2 Steel	N	0	0	0	2	2	2	0	0	0	0	5	NA	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Fighter	Airforce, Fighter Airforce		2 Population, 2 Revenue, 1 Lumber, 1 Aluminum, 1 Steel	Y	0	0	8	2	2	4	0	0	4	30	32	21	0
Frigate	Ironclad Fleet, Merchant Fleet, Sailing Fleet		1 Population, 2 Revenue, 3 Lumber, 1 Iron	N	0	5	0	1	4	1	8	6	2	2	8	NA	0
Gunboat	Early Steam Merchant Fleet, Pre-Dread-nought Fleet, Fleet		1 Population, 1 Revenue, 1 Lumber, 1 Iron	N	0	4	0	1	3	1	4	6	1	2	12	NA	0
Heavy Bow Cavalry	Iron Age Cavalry Army	Composite Bow	1 Population, 1 Revenue, 1 Iron, 2 Horses	N	2	0	0	4	1	1	4	4	0	0	6	3	0
Heavy Chariot	Iron Age Cavalry Army, Iron Age Pike Army, Iron Age Sword Army	Heavy Chariot	2 Population, 2 Revenue, 1 Lumber, 1 Iron, 2 Horses	N	6	0	0	3	1	1	3	3	0	0	5	4	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Heavy Halberdiers	Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army	Halberd	1 Population, 1 Revenue, 2 Iron	N	5	0	0	6	1	1	0	0	0	0	1	2	0
Heavy Lance Cavalry	Iron Age Cavalry Army, Early Gunpowder Cavalry Army	Lance	1 Population, 2 Revenue, 2 Iron, 2 Horses	N	12	0	0	5	1	1	0	0	0	0	5	3	0
Heavy Pikemen	Early Gunpowder Infantry Army, Early Gunpowder Cavalry Army		1 Population, 1 Revenue, 2 Iron	Y	3	0	0	6	1	1	0	0	0	0	1	2	0
Heavy Spear Cavalry	Iron Age Cavalry Army		1 Population, 1 Revenue, 1 Iron, 2 Horses	N	6	0	0	4	1	1	1	1	0	0	5	3	0
Heavy Swordsmen	Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army		1 Population, 2 Revenue, 2 Iron	N	4	0	0	4	1	1	0	0	0	0	2	2	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Heavy Weapons Class I	Modern Infantry Army	Automatic Weapons, Rocketry Level III	1 Population, 1 Revenue, 1 Steel, 1 Chemicals	Y	2	0	1	2	1	1	20	10	1	1	2	8	0
Heavy Weapons Class II	Modern Infantry Army	Automatic Weapons, Rocketry Level IV	1 Population, 1 Revenue, 1 Steel, 1 Chemicals, 1 Synthetics	N	1	0	5	4	1	2	20	18	2	1	3	10	0
Hussar	Late Gunpowder Cavalry Army		1 Population, 1 Revenue, 2 Horses	N	6	0	0	2	1	1	0	0	0	0	8	3	0
ICBM Launcher	ICBM Group		2 Population, 5 Revenue, 2 Chemicals, 2 Steel	Y	0	0	0	0	255	255	0	0	255	255	0	NA	0
Infantry Support Weapons	Early Modern Infantry Army, Early Mechanized Army, Modern Infantry Army	Infantry Support Weapons	1 Population, 1 Revenue, 1 Steel, 1 Chemicals	N	5	0	5	3	1	2	15	20	2	1	2	11	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Ironclad	Ironclad Fleet		2 Population, 2 Revenue, 1 Lumber, 1 Iron, 1 Steel	N	0	15	0	2	15	2	8	6	1	2	4	NA	0
Jet Bomber	Jet Airforce		2 Population, 3 Revenue, 1 Steel, 2 Aluminum	Y	0	0	3	3	3	10	0	0	22	200	31	51	0
Jet Fighter	Jet Airforce, Jet Fighter Airforce		2 Population, 2 Revenue, 1 Steel, 2 Aluminum	Y	0	0	15	2	2	8	0	0	10	100	34	41	0
Lancers	Cavalry Army, Late Gunpowder Cavalry Army, Early Modern Infantry Army	Lance	1 Population, 1 Revenue, 2 Horses	Y	8	0	0	2	1	1	0	0	0	0	8	3	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Light Bow Cavalry	Stone Age Cavalry Army, Bronze Age Cavalry Army, Iron Age Cavalry Army	Simple Bow	1 Population, 1 Revenue, 2 Horses	Y	2	0	0	2	1	1	2	2	0	0	7	3	0
Light Chariot	Bronze Age Cavalry Army, Bronze Age Pike Army, Bronze Age Sword Army, Iron Age Cavalry Army, Iron Age Pike Army, Iron Age Sword Army	Light Chariot	1 Population, 2 Revenue, 1 Lumber, 2 Horses	N	6	0	0	1	1	1	2	2	0	0	6	4	0
Light Lance Cavalry	Stone Age Cavalry Army, Bronze Age Cavalry Army, Iron Age Cavalry Army	Lance	1 Population, 1 Revenue, 2 Horses	Y	6	0	0	2	1	1	0	0	0	0	7	3	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Light Pikemen	Bronze Age Pike Army, Iron Age Pike Army		1 Population, 1 Revenue, 1 Bronze	Y	3	0	0	4	1	1	0	0	0	0	2	2	0
Light Spear Cavalry	Stone Age Cavalry Army, Bronze Age Cavalry Army, Iron Age Cavalry Army		1 Population, 1 Revenue, 2 Horses	Y	5	0	0	2	1	1	1	1	0	0	7	3	0
Light Spearmen	Stone Age Infantry Army, either Bronze Age Infantry Army, either Iron Age Infantry Army		1 Population, 1 Revenue	Y	2	0	0	1	1	1	1	1	0	0	3	1	0
Light Swords-men	Bronze Age Sword Army, Iron Age Sword Army		1 Population, 1 Revenue, 1 Bronze	Y	4	0	0	2	1	1	0	0	0	0	3	2	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack				Sea Attack	Air Attack	Land Defense		Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity	Forces
					1	2	3	4			1	2										
Longbow	Stone Age Infantry Army, Bronze Age Pike Army, Bronze Age Sword Army, Iron Age Pike Army, Iron Age Sword Army, Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army	Longbow	1 Population, 2 Revenue	N	1	0	0	1	1	1	4	5	0	0	3	2	0					
Machine-gun	Cavalry Army, Early Mechanized Army, Early Modern Infantry Army, Modern Infantry Army	Machine Gun	1 Population, 1 Revenue, 1 Steel	N	1	0	1	3	1	1	12	10	0	0	2	4	0					

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Medium Bow Cavalry	Bronze Age Cavalry Army, Iron Age Cavalry Army	Composite Bow	1 Population, 1 Revenue, 1 Bronze, 2 Horses	Y	2	0	0	2	1	1	4	4	0	0	6	3	0
Medium Lance Cavalry	Bronze Age Cavalry Army, Iron Age Cavalry Army, Early Gunpowder Cavalry Army	Lance	1 Population, 1 Revenue, 1 Bronze, 2 Horses	Y	8	0	0	2	1	1	0	0	0	0	6	3	0
Medium Pikemen	Iron Age Pike Army, Early Gunpowder Infantry Army, Gunpowder Cavalry Army		1 Population, 1 Revenue, 1 Iron	Y	3	0	0	5	1	1	0	0	0	0	2	2	0
Medium Spear Cavalry	Bronze Age Cavalry Army, Iron Age Cavalry Army		1 Population, 1 Revenue, 1 Bronze, 2 Horses	Y	5	0	0	3	1	1	1	1	0	0	6	3	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Medium Swords-men	Iron Age Sword Army, Early Gunpowder Infantry Army		1 Population, 1 Revenue, 1 Iron	Y	4	0	0	3	1	1	0	0	0	0	3	2	0
Merchant Vessel	Merchant Fleet		2 Population, 1 Revenue, 2 Lumber, 1 Iron	N	0	0	0	1	5	1	4	7	0	0	4	NA	4
Missile Cruiser	Modern Fleet, Modern Carrier Fleet, Modern Merchant Fleet	Rocketry Level IV, Metallurgy Level V, Gas Turbine	2 Population, 5 Revenue, 3 Steel, 1 Composite Steel, 1 Synthetics	N	0	40	12	8	20	8	40	25	24	200	12	NA	0
Missile Destroyer	Modern Fleet, Modern Carrier Fleet, Modern Merchant Fleet	Rocketry Level IV, Metallurgy Level V, Gas Turbine	2 Population, 3 Revenue, 2 Steel, 2 Composite Steel, 1 Synthetics	N	0	30	15	2	14	5	30	20	22	150	15	NA	0
Missile Gun Boat	Modern Fleet, Modern Carrier Fleet, Modern Merchant Fleet	Rocketry Level IV, Gas Turbine	1 Population, 2 Revenue, 1 Lumber, 1 Steel, 2 Synthetics	N	0	25	2	1	6	3	20	20	20	150	15	NA	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Missile Launcher	Missile Group		1 Population, 3 Revenue, 1 Composite Steel, 1 Chemicals, 1 Synthetics	Y	0	0	0	1	2	255	0	0	254	200	0	NA	0
Modern Aircraft Carrier	Modern Carrier Fleet		4 Population, 8 Revenue, 1 Lumber, 6 Steel, 1 Aluminum, 2 Composite Steel	N	0	35	20	10	20	20	20	20	24	200	8	NA	0
Modern Armored Car	Modern Mechanized Army		1 Population, 1 Revenue, 1 Steel, 1 Composite Steel	N	18	0	4	10	2	2	14	22	0	0	15	10	0
Modern Armored Personnel Carrier	Modern Mechanized Army		2 Population, 1 Revenue, 1 Steel, 1 Composite Steel	N	20	0	4	12	2	2	15	20	0	0	12	25	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Modern Cannon	Cavalry Army, Early Mechanized Army, Early Modern Infantry Army, Late Gunpowder Cavalry Army, Modern Infantry Army	Modern Cannon	1 Population, 1 Revenue, 1 Steel, 1 Chemicals	N	3	2	2	1	2	2	18	15	4	1	3	12	0
Modern Merchantmen	Modern Merchant Fleet		2 Population, 1 Revenue, 3 Steel	N	0	0	0	2	3	2	0	0	0	0	12	NA	25
Modern Self Propelled Artillery	Modern Mechanized Army		1 Population, 1 Revenue, 2 Steel, 1 Chemicals	N	0	2	2	1	2	2	0	0	18	3	12	25	0
Modern Tank	Modern Mechanized Army		2 Population, 3 Revenue, 1 Steel, 1 Composite Steel	N	30	1	1	25	6	6	24	25	5	2	12	15	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Mongolian Rockets	Iron Age Cavalry Army, Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army, Gunpowder Cavalry Army	Rocketry Level I	1 Population, 1 Revenue, 1 Horses, 1 Chemicals	N	0	0	0	1	1	1	7	4	0	0	4	4	0
Mounted Infantry	Cavalry Army, Early Modern Infantry Army	Selective Horse Breeding Level III	1 Population, 2 Revenue, 1 Steel, 2 Horses	N	6	0	0	2	1	1	7	6	0	0	5	3	0
Musketmen	Gunpowder Cavalry Army, Gunpowder Infantry Army, Late Gunpowder Cavalry Army		1 Population, 1 Revenue, 1 Iron	Y	2	0	0	1	1	1	4	4	0	0	2	2	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Nuclear Attack Submarine	Nuclear Attack Submarine Fleet		2 Population, 10 Revenue, 2 Steel, 2 Composite Steel, 1 Chemicals, 1 Synthetics	N	0	25	0	255	25	25	25	10	0	0	12	NA	0
Nuclear Bomber	Nuclear Bomber Group		2 Population, 3 Revenue, 2 Aluminum, 2 Steel	Y	0	0	3	2	2	6	0	0	254	120	32	41	0
Nuclear Missile Submarine	Nuclear Missile Submarine Fleet		2 Population, 15 Revenue, 2 Steel, 2 Composite Steel, 1 Chemicals, 2 Synthetics	N	0	0	0	255	25	25	15	10	255	255	10	NA	0
Oil Rig	Oil Exploitation Fleet		2 Population, 5 Revenue, 4 Steel, 1 Synthetics	N	0	0	0	2	2	2	0	0	0	0	3	NA	0
Outrigger Canoe	Primitive Fleet		1 Population, 1 Revenue, 1 Lumber	N	0	0	0	1	1	1	0	0	0	0	1	NA	1

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Pistol Armed Cavalry	Gunpowder Cavalry Army, Late Gunpowder Cavalry Army		1 Population, 1 Revenue, 1 Iron, 2 Horses	Y	5	0	0	3	1	1	4	2	0	0	6	3	0
Pre-Dreadnought Battleship	Pre-Dreadnought Fleet, Fleet		3 Population, 4 Revenue, 5 Steel, 3 Armored Steel	N	0	25	0	12	25	4	18	15	8	2	6	NA	0
Primitive Bomber	Primitive Airforce		1 Population, 1 Revenue, 1 Lumber, 1 Steel	Y	0	0	1	1	1	2	0	0	4	10	30	11	0
Primitive Fighter	Primitive Fighter Airforce, Primitive Airforce		1 Population, 1 Lumber, 1 Revenue	Y	0	0	2	1	1	1	0	0	2	8	31	11	0
Riflemen	Early Modern Infantry Army, Early Mechanized Army, Modern Infantry Army	Magazine Rifles	1 Population, 1 Revenue, 1 Steel	Y	3	0	0	2	1	1	8	8	0	0	3	2	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Rifle-musketmen	Gunpowder Cavalry Army, Gunpowder Infantry Army, Late Gunpowder Cavalry Army	Rifled-Musket	1 Population, 1 Revenue, 1 Iron	Y	2	0	0	1	1	1	5	5	0	0	2	2	0
Rocket Artillery Class I	Mechanized Army, Modern Infantry Army	Rocketry Level III	2 Population, 2 Revenue, 1 Steel, 2 Chemicals	Y	0	1	1	1	1	1	0	0	15	2	5	15	0
Rocket Artillery Class II	Mechanized Army, Modern Infantry Army, Modern Mechanized Army	Rocketry Level IV	2 Population, 3 Revenue, 2 Steel, 2 Chemicals	N	0	2	6	1	2	3	0	0	23	3	12	18	0
Rocket Launcher	Rocket Group		2 Population, 3 Revenue, 2 Steel, 2 Chemicals	N	0	0	0	1	2	2	0	0	24	50	0	NA	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Scythe Chariot	either Iron Age Infantry Army	Scythe Chariot	1 Population, 3 Revenue, 1 Lumber, 1 Iron, 2 Horses	N	7	0	0	1	1	1	0	0	0	0	5	4	0
Self Propelled Artillery	Mechanized Army		2 Population, 2 Revenue, 2 Steel, 1 Chemicals	Y	0	2	0	1	2	2	0	0	12	2	10	15	0
Simple Bowmen	War Party, Stone Age Infantry Army, Bronze Age Pike Army, Bronze Age Sword Army, Iron Age Pike Army, Iron Age Sword Army	Simple Bow	1 Population, 1 Revenue	Y	1	0	0	1	1	1	2	2	0	0	3	1	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Slingers	War Party, Stone Age Infantry Army, Bronze Age Pike Army, Bronze Age Sword Army, Iron Age Pike Army, Iron Age Sword Army	Flint Knapping		N	1	0	0	1	1	1	1	2	0	0	3	1	0
Steamer	Steam Merchant Fleet		2 Population, 1 Revenue, 3 Steel	N	0	0	0	1	1	2	0	0	0	0	6	NA	15
Strategic Bomber	Strategic Bomber Group		2 Population, 4 Revenue, 1 Steel, 3 Aluminum, 1 Synthetics	Y	0	0	3	3	3	10	0	0	255	200	33	51	0
Submarine	Submarine Fleet		1 Population, 2 Revenue, 1 Steel	N	0	8	0	255	12	15	5	5	0	0	5	NA	0

Unit	Available To	Discovery Requirement	Cost	Upgrade?	Land Attack	Sea Attack	Air Attack	Land Defense	Sea Defense	Air Defense	Missile Attack	Missile Range	Bombard Attack	Bombard Range	Move Rate	Cargo Weight	Cargo Capacity
Tank	Mechanized Army		2 Population, 2 Revenue, 1 Steel, 1 Armored Steel	Y	24	1	1	15	4	4	18	20	4	2	9	12	0
Transport Helicopter	Airmobile Force		2 Population, 3 Revenue, 1 Steel	N	15	15	1	5	1	2	0	0	15	30	25	41	0
Trawler	Fishing Fleet		1 Population, 1 Revenue, 1 Lumber, 1 Steel	N	0	0	0	1	1	0	0	0	0	0	4	NA	0
Trebuchet	Iron Age Pike Army, Iron Age Sword Army, Early Gunpowder Infantry Army, Early Gunpowder Cavalry Army	Trebuchet	1 Population, 1 Revenue, 1 Lumber	N	0	0	0	1	1	1	6	7	1	1	1	3	0
Trireme	Ancient Fleet, Early Fleet	Ballister	1 Population, 2 Revenue, 3 Lumber	N	0	4	0	1	4	1	1	3	0	0	3	NA	0

Discoveries

Discovery	Type	Requirements	Special Effects	Required for
Accurate Time Keeping	Scientific	Industrial Discovery Engineering Level V	None	Scientific Discovery Advanced Astronomy
Adobe/Clay Bricks	Industrial	None	Allows Construction of Primitive Shelter	Industrial Discovery Pottery Facility Primitive Housing
Advanced Astronomy	Scientific	Scientific Discovery Accurate Time Keeping Scientific Discovery Mathematics Level III Scientific Discovery Simple Astronomy Scientific Discovery Telescope	None	Scientific Discovery Advanced Navigation
Advanced Computers	Scientific	Scientific Discovery Computers Scientific Discovery Electronics Level VII	None	Forces: Advanced Jet Airforce, Advanced Jet Fighter Airforce, Advanced Strategic Airforce, Attack Helicopter Force

Discovery	Type	Requirements	Special Effects	Required for
Advanced Metal Ship Construction	Industrial	Industrial Discovery Metal Ship Construction Industrial Discovery Metalworking Level IV Industrial Discovery Engineering Level VI	None	Facility: Dockyard Forces: Carrier Fleet, Deep Sea Fishing Fleet, Environmental Protection Fleet, Fleet, Modern Carrier Fleet, Modern Fleet, Modern Merchant Fleet, Nuclear Attack Submarine Fleet, Nuclear Missile Submarine Fleet, Oil Exploitation Fleet, Submarine Fleet
Advanced Navigation	Scientific	Scientific Discovery Advanced Astronomy Scientific Discovery Mathematics Level IV Scientific Discovery Simple Navigation Tribal Education Level 4	None	Facilities: Port, Military Airfield, Civil Airfield, Airbase, Airport Forces: Fishing Fleet, Deep Sea Fishing Fleet
Advanced Timber Construction	Industrial	Industrial Discovery Improved Timber Construction Industrial Discovery Metalworking Level II Scientific Discovery Metallurgy Level III	None	Industrial Discovery Advanced Wooden Ship Construction Cultural Discovery Classical Music Military Discovery Composite Bow Military Discovery Heavy Chariot Facilities: Cannery, Freezing Plant, Housing, Modern Housing Forces: Primitive Airforce, Primitive Fighter Airforce

Discovery	Type	Requirements	Special Effects	Required for
Advanced Wooden Ship Construction	Industrial	Industrial Discovery Advanced Timber Construction Industrial Discovery Wooden Ship Construction Industrial Discovery Engineering Level IV	None	Industrial Discovery Metal Ship Construction Facility: Ship Builders Forces: Early Fleet, Merchant Fleet, Sailing Fleet
Aerodynamics Level I	Scientific	Scientific Discovery Mathematics Level V Industrial Discovery Petrol Engine Tribal Education Level 6	None	Scientific Discovery Aerodynamics Level II Facility: Military Airfield Force: Primitive Fighter Airforce
Aerodynamics Level II	Scientific	Scientific Discovery Aerodynamics Level I Tribal Education Level 6	None	Scientific Discovery Aerodynamics Level III Force: Primitive Airforce
Aerodynamics Level III	Scientific	Scientific Discovery Aerodynamics Level II Scientific Discovery Mathematics Level VI	Discovery of Aerodynamics Level III marks the start of the Space Age	Scientific Discovery Aerodynamics Level IV Scientific Discovery Rocketry Level IV Scientific Discovery Computers Military Discovery Atomic Bomb Facility: Civil Airfield Forces: Airforce, Nuclear Bomber Force, Carrier Force, Fighter Airforce

Discovery	Type	Requirements	Special Effects	Required for
Aerodynamics Level IV	Scientific	Scientific Discovery Aerodynamics Level III Scientific Discovery Computers	None	Scientific Discovery Aerodynamics Level V Facilities: Airbase, Airport Forces: Air Mobile Force, Jet Airforce, Jet Fighter Airforce, Strategic Bomber Group
Aerodynamics Level V	Scientific	Scientific Discovery Aerodynamics Level IV Scientific Discovery Advanced Computers	None	Scientific Discovery Aerodynamics Level VI Forces: Advanced Jet Fighter Airforce, Modern Carrier Fleet
Aerodynamics Level VI	Scientific	Scientific Discovery Aerodynamics Level V	None	Required For Scientific Discovery Aerodynamics Level VII Force: Attack Helicopter Force
Aerodynamics Level VII	Scientific	Scientific Discovery Aerodynamics Level VI	None	Forces: Advanced Jet Airforce, Advanced Strategic Bomber Group
Agricultural Traction Engine	Agricultural	Agricultural Discovery Horse Drawn Reaper Agricultural Discovery Horse Drawn Seed Drill Agricultural Discovery Horse Drawn Threshing Machine Industrial Discovery Steam Engine	None	Agricultural Discovery Tractor Facility: Early Mechanized Farm

Discovery	Type	Requirements	Special Effects	Required for
Alphabet	Cultural	Cultural Discovery Writing Tribal Education Level 1	None Needed to reach Education Level 2	Industrial Discovery Printing Press
Anesthetics	Scientific	Scientific Discovery Chemistry Level V Scientific Discovery Medicine Level III	Gives Health Bonus	Scientific Discovery Medicine Level V
Anatomy	Scientific	Scientific Discovery Medicine Level I Tribal Education Level 3	Gives Health Bonus	Scientific Discovery Medicine Level II
Antibiotics	Scientific	Scientific Discovery Chemistry Level V Scientific Discovery Medicine Level IV	Gives Health Bonus	Scientific Discovery Medicine Level V
Arch	Industrial	Industrial Discovery Engineering Level III Industrial Discovery Stone Cutting	None	Industrial Discovery Buttress Facilities: Major Road Constructors, Temple
Archimedian Screw	Agricultural	Industrial Discovery Engineering Level II Industrial Discovery Shaduf	Allows Land Conversion Task Drainage	Industrial Discovery Screw Propeller
Arquebus	Military	Scientific Discovery Gunpowder Industrial Discovery Metalworking Level III	Building Early Gunpowder Infantry Army marks Start of Gunpowder Age	Military Discovery Bombard Military Discovery Musket Forces: Early Gunpowder Cavalry Army, Early Gunpowder Infantry Army

Discovery	Type	Requirements	Special Effects	Required for
Artificial Fertilizer	Scientific	Scientific Discovery Chemistry V	Gives Bonus to Food Production Allows Land Conversion Task Fertilization	Nothing
Artillery	Military	Military Discovery Modern Cannon	None	Forces: Early Modern Infantry Army, Mechanized Army, Modern Infantry Army
Atomic Bomb	Military	Industrial Discovery Engineering Level VI Industrial Discovery Metallurgy Level VI Scientific Discovery Nuclear Theory Scientific Discovery Aerodynamics Level III	None	Military Discovery Hydrogen Bomb Scientific Discovery Rocketry Level V Facility: Missile Silo Forces: ICBM Group, Missile Group, Nuclear Bomber Group
Automatic Weapons	Military	Military Discovery Machine-gun	None	Force: Modern Infantry Army Units: Automatic Weaponsmen, Heavy Weapons Class I, Heavy Weapons Class II

Discovery	Type	Requirements	Special Effects	Required for
Bacteria	Scientific	Scientific Discovery Microscope	Gives Health Bonus	Industrial Discovery Canning Industrial Discovery Freezing Scientific Discovery Pasteurizing Scientific Discovery Viruses Scientific Discovery Medicine Level IV Facility: Water/Sewage Treatment Works
Ballister	Military	Industrial Discovery Improved Timber Construction Industrial Discovery Metalworking Level II Industrial Discovery Engineering Level III	None	Military Discovery Catapult Force: Ancient Fleet Unit: Ballister, Trireme
Basketwork	Industrial	None	Basketwork gives the tribe Level 1 food storage.	Agricultural Discovery Fish Farming
Battery	Scientific	Scientific Discovery Chemistry Level IV Scientific Discovery Electronics Level I	None	Scientific Discovery Electric Motor

Discovery	Type	Requirements	Special Effects	Required for
Boat Building	Industrial	Industrial Discovery Timber Construction	None	Industrial Discovery Wooden Ship Construction Facilities: Boat Builders, Boatyard, Fishing Harbor, Harbor Force: Primitive Fleet
Bombard	Military	Military Discovery Arquebus	None	Military Discovery Early Cannon Unit: Bombard
Breech-Loading	Military	Industrial Discovery Metallurgy Level IV Military Discovery Rifled-Musket	None	Military Discovery Magazine Rifles Military Discovery Modern Cannon Force: Cavalry Army
Brewing	Industrial	Industrial Discovery Pottery Agricultural Discovery Selective Planting Level I	Gives Bonus to Control of the People and to Revenue	Nothing
Buttress	Industrial	Industrial Discovery Arch Industrial Discovery Engineering Level III Industrial Discovery Stone Masonry	None	Facility: Church
Canning	Industrial	Scientific Discovery Bacteria Industrial Discovery Metalworking Level IV Industrial Discovery Engineering Level IV	Gives Food Storage Level 5	Facility: Cannery

Discovery	Type	Requirements	Special Effects	Required for
Cannon	Military	Military Discovery Early Cannon Industrial Discovery Metalworking Level IV	None	Military Discovery Modern Cannon Forces: Ironclad Fleet, Late Gunpowder Cavalry Army, Merchant Fleet, Sailing Fleet Unit: Cannon
Catapult	Military	Military Discovery Ballister Scientific Discovery Metallurgy Level III	None	Military Discovery Trebuchet Unit: Catapult
Chemical Atomic Theory	Scientific	Scientific Discovery Chemistry Level IV	None	Scientific Discovery Modern Explosives Scientific Discovery Nuclear Theory
Chemical Insecticides	Scientific	Scientific Discovery Chemistry V	Gives Bonus to Food Production	Nothing
Chemistry Level I	Scientific	Scientific Discovery Herbal Lore Cultural Discovery Primitive Painting Tribal Education Level 1	None	Scientific Discovery Chemistry Level II Facility: Academy
Chemistry Level II	Scientific	Scientific Discovery Chemistry Level I Tribal Education Level of 3	None	Scientific Discovery Chemistry Level III
Chemistry Level III	Scientific	Scientific Discovery Chemistry Level II Tribal Education Level of 4	None	Scientific Discovery Chemistry Level IV Scientific Discovery Gunpowder Industrial Discovery Concrete

Discovery	Type	Requirements	Special Effects	Required for
Chemistry Level IV	Scientific	Scientific Discovery Gunpowder Tribal Education Level of 4	None	Scientific Discovery Chemistry Level V Scientific Discovery Chemical Atomic Theory Scientific Discovery Magnetic Theory Scientific Discovery Internal Combustion Theory Scientific Discovery Battery Scientific Discovery Synthetics Industrial Discovery Printing Industrial Discovery Engineering Level V Industrial Discovery Tarmacadam Military Discovery Rocketry Level III Factory Task Produce Chemicals

Discovery	Type	Requirements	Special Effects	Required for
Chemistry Level V	Scientific	Scientific Discovery Chemistry Level IV Tribal Education Level of 5 Scientific Discovery Chemical Atomic Theory	None	Scientific Discovery Chemistry Level VI Scientific Discovery Artificial Fertilizer Scientific Discovery Chemical Insecticides Scientific Discovery Modern Explosives Scientific Discovery Antibiotics Scientific Discovery Vaccination Scientific Discovery Pasteurizing Scientific Discovery Anesthetics Industrial Discovery Freezing Military Discovery Rocketry Level IV Facility: Oil Refinery
Chemistry Level VI	Scientific	Scientific Discovery Chemistry Level V Tribal Education Level of 6	None	Scientific Discovery Chemistry Level VII Military Discovery Rocketry Level V
Chemistry Level VII	Scientific	Scientific Discovery Chemistry Level VI Tribal Education Level of 6 Scientific Discovery Advanced Computers	None	Scientific Discovery Environmental Protection Theory

Discovery	Type	Requirements	Special Effects	Required for
Chest Plow	Agricultural	Agricultural Discovery Selective Planting Level I Industrial Discovery Timber Construction	None	Agricultural Discovery Scratch Plow Facility: Primitive Farm
Classical Drama	Cultural	Cultural Discovery Early Drama Tribal Education Level 4 Cultural Discovery Classical Music	Gives bonus to control of the people and to education	Cultural Discovery Modern Drama Cultural Discovery Feudalism
Classical Music	Cultural	Industrial Discovery Advanced Timber Construction Cultural Discovery Tribal Music Tribal Education Level 4	Gives bonus to control of the people and to education	Cultural Discovery Land Enclosure Cultural Discovery Modern Music
Classical Painting	Cultural	Cultural Discovery Primitive Painting Tribal Education Level 4	Gives bonus to control of the people and to education	Cultural Discovery Modern Painting Cultural Discovery Feudalism
Classical Sculpture	Cultural	Industrial Discovery Metalworking Level II Cultural Discovery Primitive Carving Tribal Education Level 4 Industrial Discovery Stone Masonry	Gives bonus to control of the people and to education	Cultural Discovery Modern Sculpture Cultural Discovery Feudalism

Discovery	Type	Requirements	Special Effects	Required for
Composite Bow	Military	Advanced Timber Construction Military Discovery Simple Bow	None	Military Discovery Crossbow Units: Composite Bowmen, Heavy Bow Cavalry, Medium Bow Cavalry
Computers	Scientific	Scientific Discovery Aerodynamics Level III Scientific Discovery Electronics Level VI Scientific Discovery Mathematics Level V Scientific Discovery Synthetics	Gives bonus to education but a reduction in control of the people	Scientific Discovery Advanced Computers Scientific Discovery Aerodynamics Level IV Scientific Discovery Mathematics Level VII Scientific Discovery Radar Scientific Discovery Electronics Level VII Facilities: Modern University, Research Establishment
Concrete	Industrial	Scientific Discovery Chemistry Level III	None	Industrial Discovery Re-inforced Concrete Facility: Port
Crop Rotation	Agricultural	Cultural Discovery Land Enclosure Agricultural Discovery Moldboard Plow Agricultural Discovery Selective Planting III	Gives bonus to food production	Facility: Farm

Discovery	Type	Requirements	Special Effects	Required for
Crossbow	Military	Military Discovery Composite Bow Industrial Discovery Metalworking Level III	None	Unit: Crossbowmen
Diesel Engine	Industrial	Industrial Discovery Engineering Level VI Industrial Discovery Metalworking Level IV Scientific Discovery Internal Combustion Theory Tribal Education Level 5	None	Agricultural Discovery Tractor Industrial Discovery Marine Diesel Engine Facility: Modern Railway Station
Domestication of Horse	Agricultural	None	None	Agricultural Discovery Moldboard Plow Agricultural Discovery Stirrups Agricultural Discovery Selective Horse Breeding Level I Military Discovery Lance Military Discovery Light Chariot Facility: Ranch Force: Stone Age Cavalry Army

Discovery	Type	Requirements	Special Effects	Required for
Domestication of Livestock	Agricultural	None	None	Agricultural Discovery Selective Livestock Breeding Level I Agricultural Discovery Scratch Plow Agricultural Discovery Elephant Handling Facility: Goat Farm
Early Cannon	Military	Military Discovery Bombard	None	Military Discovery Cannon Forces: Early Fleet, Gunpowder Cavalry Army, Gunpowder Infantry Army Unit: Early Cannon
Early Drama	Cultural	Cultural Discovery Tribal Dance Cultural Discovery Primitive Music Tribal Education Level 3	Gives bonus to control of the people and education	Cultural Discovery Classical Drama
Early Machine-gun	Military	Military Discovery Magazine Rifles	None	Military Discovery Machine-gun Unit: Early Machine Gun
Early Radar	Scientific	Scientific Discovery Electronics Level V	Improves detection of enemy	Scientific Discovery Radar
Early Tank	Military	Military Discovery Machine-gun Military Discovery Modern Cannon Industrial Discovery Petrol Engine	None	Forces: Early Mechanized Army, Mechanized Army, Modern Mechanized Army

Discovery	Type	Requirements	Special Effects	Required for
Electric Dynamo	Scientific	Scientific Discovery Electric Motor Scientific Discovery Electronics Level II	None	Scientific Discovery Electric Lighting Scientific Discovery Radio
Electric Lighting	Scientific	Scientific Discovery Electric Dynamo	None	Facilities: Apartment Blocks, High School, Modern Library
Electric Motor	Scientific	Scientific Discovery Electronics Level II Scientific Discovery Magnetic Theory Scientific Discovery Battery	None	Scientific Discovery Electric Dynamo Industrial Discovery Freezing
Electricity	Scientific	Scientific Discovery Mathematics Level IV Tribal Education Level 4 Industrial Discovery Steam Engine	None	Scientific Discovery Electronics Level I
Electronics Level I	Scientific	Scientific Discovery Electricity Scientific Discovery Magnetic Theory Scientific Discovery Mathematics Level IV	None	Scientific Discovery Electronics Level II Scientific Discovery Battery
Electronics Level II	Scientific	Scientific Discovery Electronics Level I Tribal Education Level 4	None	Scientific Discovery Electronics Level III Scientific Discovery Electric Motor

Discovery	Type	Requirements	Special Effects	Required for
Electronics Level III	Scientific	Scientific Discovery Electronics Level II Tribal education Level 5	None	Scientific Discovery Electronics Level IV Scientific Discovery Electric Dynamo Industrial Discovery Mining/ Quarrying Level VI Facilities: Coal Generating Station, Freezing Plant, Oil/Gas Generating Station
Electronics Level IV	Scientific	Scientific Discovery Electronics Level III Tribal education Level 6	None	Scientific Discovery Electronics Level V Scientific Discovery Telegraph Scientific Discovery Telephone Force: Submarine Fleet
Electronics Level V	Scientific	Scientific Discovery Electronics Level IV Tribal education Level 6	None	Scientific Discovery Electronics Level VI Scientific Discovery Radio Scientific Discovery Television Scientific Discovery Early Radar Cultural Discovery Modern Music Facility: Modern Railway Station Force: Deep Sea Fishing Fleet

Discovery	Type	Requirements	Special Effects	Required for
Electronics Level VI	Scientific	Scientific Discovery Electronics Level V Scientific Discovery Aerodynamics Level III Tribal Education Level 6	None	Scientific Discovery Electronics Level VII Scientific Discovery Computers Scientific Discovery Radar Scientific Discovery Rocketry Level IV
Electronics Level VII	Scientific	Scientific Discovery Electronics Level VI Scientific Discovery Computers Tribal education Level 6	None	Scientific Discovery Advanced Computers Scientific Discovery Satellite Tracking Scientific Discovery Rocketry Level V Facilities: Advanced Railway Station, Modern Factory, Nuclear Generating Station, Wind Generating Station Forces: Nuclear Attack Submarine, Nuclear Missile Submarine
Elephant Handling	Agricultural	Agricultural Discovery Domestication of Livestock	None	Military Discovery War Elephants Unit: Elephants
Engineering Level I	Industrial	Scientific Discovery Mathematics Level I Industrial Discovery Timber Construction	None	Industrial Discovery Engineering Level II Industrial Discovery Horizontal Loom Industrial Discovery Mining/Quarrying Level II Agricultural Discovery Shaduf Facility: Academy

Discovery	Type	Requirements	Special Effects	Required for
Engineering Level II	Industrial	Industrial Discovery Engineering Level I Scientific Discovery Mathematics Level II Industrial Discovery Improved Timber Construction Industrial Discovery Metalworking Level II	None	Industrial Discovery Engineering Level III Industrial Discovery Wooden Ship Construction Agricultural Discovery Archimedian Screw Scientific Discovery Surveying
Engineering Level III	Industrial	Industrial Discovery Engineering Level II Scientific Discovery Mathematics Level III	None	Industrial Discovery Arch Industrial Discovery Buttress Industrial Discovery Vertical Loom Industrial Discovery Engineering Level IV Military Discovery Ballister
Engineering Level IV	Industrial	Industrial Discovery Engineering Level III Tribal Education Level 4	None	Industrial Discovery Engineering Level V Industrial Discovery Advanced Wooden Ship Construction Military Discovery Trebuchet Industrial Discovery Canning

Discovery	Type	Requirements	Special Effects	Required for
Engineering Level V	Industrial	Industrial Discovery Engineering Level IV Scientific Discovery Mathematics IV Scientific Discovery Chemistry Level IV Tribal Education Level 4	None	Agricultural Discovery Horse Drawn Reaper Agricultural Discovery Horse Drawn Seed Drill Agricultural Discovery Horse Drawn Threshing Machine Cultural Discovery Land Enclosure Military Discovery Rifled Musket Industrial Discovery Engineering Level VI Industrial Discovery Metallurgy Level IV Industrial Discovery Steam Engine Industrial Discovery Marine Steam Engine Industrial Discovery Tarmacadam Industrial Discovery Printing Press Scientific Discovery Telescope Scientific Discovery Magnetic Theory Scientific Discovery Microscope Scientific Discovery Internal Combustion Theory Scientific Discovery Pasteurizing Scientific Discovery Accurate Time Keeping

Discovery	Type	Requirements	Special Effects	Required for
Engineering Level VI	Industrial	Industrial Discovery Engineering Level V Scientific Discovery Mathematics V Tribal Education Level 6	None	Industrial Discovery Engineering Level VII Industrial Discovery Petrol Engine Industrial Discovery Steam Turbine Scientific Discovery Rocketry Level III Scientific Discovery Viruses Industrial Discovery Diesel Engine Military Discovery Hydrogen Bomb Industrial Discovery Re-inforced Concrete Scientific Discovery Rocketry Level IV Military Discovery Atomic Bomb
Engineering Level VII	Industrial	Industrial Discovery Engineering Level VI Scientific Discovery Mathematics VII	None	Industrial Discovery Nuclear Engine Industrial Discovery Nuclear Power Industrial Discovery Gas Turbine Industrial Discovery Pre-stressed Concrete Scientific Discovery Rocketry Level V Facilities: Advanced Railway Station, Missile Silo
Environmental Protection Theory	Scientific	Scientific Discovery Chemistry VII	None	Facilities: Environmental Protection Agency, Wind Generating Station Force: Environmental Protection Fleet

Discovery	Type	Requirements	Special Effects	Required for
Factory Farming	Agricultural	Agricultural Discovery Intensive Livestock Farming Facility: Modern Livestock Farm	None	Task: Factory Farming
Feudalism	Cultural	Cultural Discovery Classical Drama Cultural Discovery Classical Painting Cultural Discovery Classical Sculpture Cultural Discovery Private Ownership Tribal Education Level 4	Adds to control of the people	Cultural Discovery Land Enclosure Scientific Discovery Gunpowder Facility: Early Farm
Fired Bricks	Industrial	Industrial Discovery Pottery Industrial Discovery Engineering Level III Industrial Discovery Steam Engine Industrial Discovery Metalworking III	None	Facilities: Cannery, Factory, Freezing Plant, School, Modern Housing, Early Railway Station
Fish Farming	Agricultural	Industrial Discovery Basketwork Industrial Discovery Timber Construction Tribal Education Level 2	None	Facility: Fish Farm

Discovery	Type	Requirements	Special Effects	Required for
Flint Knapping	Industrial	None	None	Industrial Discovery Stone Cutting Industrial Discovery Timber Construction Industrial Discovery Mining/Quarrying Level I Scientific Discovery Simple Compass Cultural Discovery Primitive Carving Cultural Discovery Primitive Painting Forces: Stone Age Cavalry Army, Stone Age Infantry Army Unit: Slingers
Freedom of the Press	Cultural	Industrial Discovery Printing Press Tribal Education Level of 5	Reduces control of the people	Government: People Rule, Party Rule, Proportional Representation
Freezing	Industrial	Scientific Discovery Bacteria Scientific Discovery Chemistry V Scientific Discovery Electric Motor	Gives Food Storage Level 7	Facility: Freezing Plant
Gas Turbine	Industrial	Industrial Discovery Engineering Level VII Industrial Discovery Metalworking V Industrial Discovery Screw Propeller Scientific Discovery Internal Combustion Theory	None	Industrial Discovery Jet Engine Forces: Modern Carrier Fleet, Modern Fleet Units: Missile Cruiser, Missile Destroyer, Missile Gun Boat

Discovery	Type	Requirements	Special Effects	Required for
Genetics	Scientific	Scientific Discovery Microscope Tribal Education Level 4	Gives health bonus	Agricultural Discovery Selective Planting Level IV Agricultural Discovery Selective Livestock Breeding Level IV Scientific Discovery Medicine Level III
Gunpowder	Scientific	Cultural Discovery Feudalism Scientific Discovery Chemistry Level III Industrial Discovery Metallurgy Level III Tribal Education Level 4 Industrial Discovery Engineering IV	Discovery of Gunpowder marks the end of the Iron Age	Industrial Discovery Mining/Quarrying Level IV Scientific Discovery Chemistry Level IV Military Discovery Arquebus Military Discovery Rocketry Level I
Halberd	Military	Industrial Discovery Metalworking Level II Industrial Discovery Metallurgy Level III Military Discovery Pike	None	Unit: Heavy Halbaldiers
Heavy Chariot	Military	Industrial Discovery Advanced Timber Construction Agricultural Discovery Selective Horse Breeding Level II	None	Military Discovery Scythe Chariot Unit: Heavy Chariot

Discovery	Type	Requirements	Special Effects	Required for
Herbal Lore	Scientific	None	Gives bonus to health	Scientific Discovery Medicine Level I Scientific Discovery Chemistry Level I Cultural Discovery Primitive Painting
High Rise	Industrial	Industrial Discovery Pre-stressed Concrete	None	Facility: Apartment Blocks
Horizontal Loom	Industrial	Industrial Discovery Timber Construction Industrial Discovery Engineering Level I	None	Industrial Discovery Vertical Loom Force: Primitive Fleet
Horse Drawn Reaper	Agricultural	Agricultural Discovery Moldboard Plow Agricultural Discovery Selective Horse Breeding Level III Cultural Discovery Land Enclosure Industrial Discovery Engineering V	None	Agricultural Discovery Horse Drawn Threshing Machine Agricultural Discovery Agricultural Traction Engine
Horse Drawn Seed Drill	Agricultural	Agricultural Discovery Moldboard Plow Agricultural Discovery Selective Horse Breeding Level III Cultural Discovery Land Enclosure Industrial Discovery Engineering V	None	Agricultural Discovery Horse Drawn Threshing Machine Agricultural Discovery Agricultural Traction Engine

Discovery	Type	Requirements	Special Effects	Required for
Horse Drawn Threshing Machine	Agricultural	Agricultural Discovery Horse Drawn Reaper Agricultural Discovery Horse Drawn Seed Drill Agricultural Discovery Selective Horse Breeding Level IV	None	Agricultural Discovery Agricultural Traction Engine Agricultural Discovery Mechanized Farm Machinery Facility: Farm
Hydrogen Bomb	Military	Military Discovery Atomic Bomb Industrial Discovery Engineering Level VI Scientific Discovery Metallurgy Level VII	None	Forces: Advanced ICBM Group, Advanced Strategic Bomber Group, Strategic Bomber Group, Nuclear Missile Submarine

Discovery	Type	Requirements	Special Effects	Required for
Improved Timber Construction	Industrial	Industrial Discovery Metalworking Level I Industrial Discovery Timber Construction	None	Agricultural Discovery Moldboard Plow Industrial Discovery Advanced Timber Construction Industrial Discovery Wooden Ship Construction Industrial Discovery Mining/Quarrying Level III Industrial Discovery Printing Press Industrial Discovery Engineering Level II Military Discovery Crossbow Military Discovery Light Chariot Military Discovery Ballister Facilities: Early Housing, Athenaeum, Regional Administration, School, Salting Plant, Workshop
Infantry Support Weapons	Military	Scientific Discovery Rocketry Level III	None	Force: Modern Infantry Army Unit: Infantry Support Weapons
Inheritance	Cultural	Cultural Discovery Private Ownership Tribal Education Level 1	None	Cultural Discovery Land Enclosure Governments: Divine Kingship, Land Owning Aristocracy, Monarchy, Wealth Owning Aristocracy

Discovery	Type	Requirements	Special Effects	Required for
Intensive Livestock Farming	Agricultural	Agricultural Discovery Selective Livestock Breeding Level V Agricultural Discovery Tractor Facility: Livestock Farm	None	Agricultural Discovery Factory Farming Facility: Modern Livestock Farm
Internal Combustion Theory	Scientific	Scientific Discovery Chemistry IV Industrial Discovery Engineering V Tribal Education Level 5	None	Industrial Discovery Petrol Engine Industrial Discovery Diesel Engine Industrial Discovery Gas Turbine
Jet Engine	Industrial	Scientific Discovery Gas Turbine	None	Forces: Advanced Jet Airforce, Advanced Jet Fighter Airforce, Advanced Strategic Bomber Group, Attack Helicopter Force, Jet Airforce, Jet Fighter Airforce, Strategic Bomber Group
Lance	Military	Agricultural Discovery Domestication of Horse Agricultural Discovery Stirrups	None	Force: Early Gunpowder Cavalry Army Units: Heavy Lance Cavalry, Lancers, Light Lance Cavalry, Medium Lance Cavalry

Discovery	Type	Requirements	Special Effects	Required for
Land Enclosure	Cultural	Cultural Discovery Inheritance Cultural Discovery Feudalism Cultural Discovery Classical Music Industrial Discovery Engineering Level V Tribal Education Level 4	None	Agricultural Discovery Crop Rotation Agricultural Discovery Horse Drawn Reaper Agricultural Discovery Horse Drawn Seed Drill Facilities: Farm, Livestock Farm, Modern Mechanized Farm, Mechanized Farm
Light Chariot	Military	Agricultural Discovery Domestication of Horse Industrial Discovery Improved Timber Construction Industrial Discovery Metallurgy II	None	Unit: Light Chariot
Longbow	Military	Industrial Discovery Improved Timber Construction Military Discovery Simple Bow	None	Unit: Longbowmen
Machine-gun	Military	Military Discovery Early Machine Gun Industrial Discovery Metalworking Level V	None	Military Discovery Early Tank Military Discovery Automatic Weapons Forces: Early Mechanized Army, Early Modern Infantry Army Unit: Machine-gun

Discovery	Type	Requirements	Special Effects	Required for
Magazine Rifles	Military	Military Discovery Breech-Loading Scientific Discovery Modern Explosives	None	Military Discovery Early Machine Gun Force: Early Modern Infantry Army Unit: Riflemen
Magnetic Theory	Scientific	Scientific Discovery Mathematics Level III Scientific Discovery Simple Compass Scientific Discovery Chemistry Level IV Industrial Discovery Metallurgy Level III Industrial Discovery Engineering Level V Tribal Education Level 3	None	Scientific Discovery Electronics I Scientific Discovery Electric Motor
Manned Space Flight Theory	Scientific	Scientific Discovery Mathematics VI Scientific Discovery Rocketry Level IV	The building of the first Space Launch facility ends the scientific game.	Facility: Space Launch Base
Mapping	Scientific	Industrial Discovery Papyrus Scientific Discovery Mathematics Level II Scientific Discovery Simple Compass Scientific Discovery Surveying Tribal Education Level 3	At higher degrees of difficulty, allows use of Continent views	Facilities: Highway Maintenance Depot, Major Road Constructors, Regional Administration

Discovery	Type	Requirements	Special Effects	Required for
Marine Diesel Engine	Industrial	Industrial Discovery Diesel Engine Industrial Discovery Metalworking Level IV Industrial Discovery Screw Propeller	None	Forces: Deep Sea Fishing Fleet, Environmental Protection Fleet, Fishing Fleet, Modern Merchant Fleet, Oil Exploitation Fleet, Submarine Fleet
Marine Steam Engine	Industrial	Industrial Discovery Engineering Level V Industrial Discovery Metalworking Level IV Industrial Discovery Steam Engine	None	Forces: Early Steam Merchant Fleet, Ironclad Fleet, Pre-Dreadnought Fleet, Steam Merchant Fleet
Mathematics Level I	Scientific	Cultural Discovery Writing	None	Scientific Discovery Mathematics Level II Scientific Discovery Weights and Measures Industrial Discovery Engineering Level I Facilities: Athenaeum, Local Administration
Mathematics Level II	Scientific	Scientific Discovery Mathematics Level I Tribal Education Level 2	None	Scientific Discovery Mathematics Level III Scientific Discovery Mapping Scientific Discovery Simple Astronomy Industrial Discovery Engineering Level II

Discovery	Type	Requirements	Special Effects	Required for
Mathematics Level III	Scientific	Scientific Discovery Mathematics Level II Tribal Education Level 3	None	Scientific Discovery Mathematics Level IV Scientific Discovery Simple Navigation Scientific Discovery Advanced Astronomy Scientific Discovery Magnetic Theory Industrial Discovery Engineering Level III
Mathematics Level IV	Scientific	Scientific Discovery Mathematics Level III Tribal Education Level 4	None	Scientific Discovery Mathematics Level V Scientific Discovery Advanced Navigation Scientific Discovery Electronics Level I Industrial Discovery Engineering Level V
Mathematics Level V	Scientific	Scientific Discovery Mathematics Level IV Tribal Education Level 5	None	Scientific Discovery Mathematics Level VI Scientific Discovery Aerodynamics Level I Scientific Discovery Computers Scientific Discovery Nuclear Theory Industrial Discovery Engineering Level VI

Discovery	Type	Requirements	Special Effects	Required for
Mathematics Level VI	Scientific	Scientific Discovery Mathematics Level V Tribal Education Level 6	None	Scientific Discovery Mathematics Level VII Scientific Discovery Aerodynamics Level III Scientific Discovery Manned Space Theory
Mathematics Level VII	Scientific	Scientific Discovery Mathematics Level VI Scientific Discovery Computers Tribal Education Level 6	None	Industrial Discovery Engineering Level VII
Mechanized Farm Machinery	Agricultural	Agricultural Discovery Tractor	None	Facility: Modern Mechanized Farm
Medicine Level I	Scientific	Scientific Discovery Herbal Lore Tribal Education Level 1	Gives health bonus	Scientific Discovery Anatomy Facility: Academy
Medicine Level II	Scientific	Scientific Discovery Anatomy Tribal Education Level 4	Gives health bonus	Scientific Discovery Medicine Level III Facility: Hospice
Medicine Level III	Scientific	Scientific Discovery Genetics Scientific Discovery Medicine Level II Tribal Education Level 4	Gives health bonus	Scientific Discovery Medicine Level IV

Discovery	Type	Requirements	Special Effects	Required for
Medicine Level IV	Scientific	Scientific Discovery Bacteria Scientific Discovery Anesthetics Scientific Discovery Medicine Level III Tribal Education Level 5	Gives health bonus	Scientific Discovery Medicine Level V Scientific Discovery Antibiotics Scientific Discovery Anesthetics Facility: Hospital
Medicine Level V	Scientific	Scientific Discovery Medicine Level IV Scientific Discovery Viruses Scientific Discovery Antibiotics Tribal Education Level 5	Gives health bonus	Scientific Discovery Vaccination Facility: Modern Hospital
Metal Ship Construction	Industrial	Industrial Discovery Advanced Wooden Ship Construction Industrial Discovery Metalworking Level IV Industrial Discovery Engineering Level IV	None	Industrial Discovery Advanced Metal Ship Construction Facility: Shipyard Forces: Early Steam Merchant Fleet, Ironclad Fleet, Pre-Dreadnought Fleet, Steam Merchant Fleet
Metallurgy Level I	Scientific	Cultural Discovery Primitive Painting	None	Industrial Discovery Metalworking Level I Scientific Discovery Metallurgy Level II Exploiting Tin/Copper

Discovery	Type	Requirements	Special Effects	Required for
Metallurgy Level II	Scientific	Industrial Discovery Pottery Industrial Discovery Mining/ Quarrying Level II Scientific Discovery Metallurgy Level I Tribal Education Level 2	Discovery of Metallurgy Level II marks the end of the Stone Age	Industrial Discovery Metalworking Level II Industrial Discovery Canning Military Discovery Light Chariot Military Discovery Pike Military Discovery Sword Scientific Discovery Metallurgy Level III

Discovery	Type	Requirements	Special Effects	Required for
Metallurgy Level III	Scientific	Scientific Discovery Metallurgy Level II Tribal Education Level 3	Discovery of Metallurgy Level III marks the end of the Bronze Age	Agricultural Discovery Moldboard Plow Industrial Discovery Metalworking Level III Industrial Discovery Stone Masonry Industrial Discovery Advanced Timber Construction Industrial Discovery Mining/Quarrying Level III Scientific Discovery Gunpowder Scientific Discovery Magnetic Theory Scientific Discovery Metallurgy Level IV Military Discovery Heavy Chariot Military Discovery Halberd Exploitation of Iron Ore Forces: Iron Age Cavalry Army, Iron Age Pike Army, Iron Age Sword Army

Discovery	Type	Requirements	Special Effects	Required for
Metallurgy Level IV	Scientific	Scientific Discovery Metallurgy Level III Industrial Discovery Engineering Level V Tribal Education Level 5	None	Scientific Discovery Metallurgy Level V Industrial Discovery Re-inforced Concrete Industrial Discovery Metalworking Level IV Industrial Discovery Advanced Metal Ship Construction Military Discovery Magazine Rifles Military Discovery Modern Cannon Force: Pre-Dreadnought Fleet Unit: Early Cruiser
Metallurgy Level V	Scientific	Scientific Discovery Metallurgy Level IV Tribal Education Level 5	None	Scientific Discovery Metallurgy Level VI Industrial Discovery Metalworking Level V Exploitation of Bauxite Facility: Missile Silo Forces: Fleet, Modern Carrier Fleet, Modern Fleet Units: Cruiser, Destroyer, Missile Cruiser, Missile Destroyer

Discovery	Type	Requirements	Special Effects	Required for
Metallurgy Level VI	Scientific	Scientific Discovery Metallurgy Level V Tribal Education Level 6	None	Scientific Discovery Metallurgy Level VII Industrial Discovery Metalworking Level VI Industrial Discovery Nuclear Power Military Discovery Atomic Bomb Force: Modern Mechanized Army
Metallurgy Level VII	Scientific	Scientific Discovery Metallurgy Level VI Scientific Discovery Computers Tribal Education Level 6	None	Industrial Discovery Metalworking Level VII Military Discovery Hydrogen Bomb
Metalworking Level I	Industrial	Scientific Discovery Metallurgy Level I	None	Industrial Discovery Improved Timber Construction Industrial Discovery Metalworking Level II Industrial Discovery Metallurgy Level II Military Discovery Pike

Discovery	Type	Requirements	Special Effects	Required for
Metalworking Level II	Industrial	Industrial Discovery Metalworking Level I Industrial Discovery Metallurgy Level II	None	Industrial Discovery Stone Masonry Industrial Discovery Engineering Level II Industrial Discovery Improved Timber Construction Industrial Discovery Mining/Quarrying Level III Industrial Discovery Metalworking Level III Industrial Discovery Wooden Ship Construction Military Discovery Ballister Military Discovery Sword Military Discovery Halberd Scientific Discovery Simple Astronomy Scientific Discovery Surveying Cultural Discovery Classical Sculpture Facility: Monastery Force: Bronze Age Cavalry Army

Discovery	Type	Requirements	Special Effects	Required for
Metalworking Level III	Industrial	Industrial Discovery Metallurgy Level III Industrial Discovery Metalworking Level II	None	Agricultural Discovery Selective Horse Breeding Level IV Industrial Discovery Metalworking Level IV Military Discovery Crossbow Military Discovery Scythe Chariot Military Discovery Ballister Military Discovery Arquebus Scientific Discovery Rocketry Level I Scientific Discovery Microscope Scientific Discovery Telescope Facility: School

Discovery	Type	Requirements	Special Effects	Required for
Metalworking Level IV	Industrial	Industrial Discovery Metalworking Level III Industrial Discovery Metallurgy Level IV	None	Industrial Discovery Metalworking Level V Industrial Discovery Advanced Metal Ship Construction Industrial Discovery Steam Engine Industrial Discovery Petrol Engine Industrial Discovery Diesel Engine Industrial Discovery Marine Steam Engine Industrial Discovery Marine Diesel Engine Industrial Discovery Metal Ship Construction Industrial Discovery Screw Propeller Industrial Discovery Canning Industrial Discovery Tarmacadam Military Discovery Rifled-Musket Military Discovery Rocketry Level II Military Discovery Breech Loading Military Discovery Cannon Forces: Airforce, Fighter Airforce Facility: Early Railway Station

Discovery	Type	Requirements	Special Effects	Required for
Metalworking Level V	Industrial	Industrial Discovery Metallurgy Level V Industrial Discovery Metalworking Level IV	None	Industrial Discovery Metalworking Level VI Industrial Discovery Steam Turbine Industrial Discovery Gas Turbine Military Discovery Machine Gun Military Discovery Modern Cannon Forces: Air Mobile Force, Jet Airforce, Jet Fighter Airforce, Mechanized Army, Modern Mechanized Army, Strategic Bomber Group
Metalworking Level VI	Industrial	Industrial Discovery Metallurgy Level VI Industrial Discovery Metalworking Level V	None	Industrial Discovery Metalworking Level VII Industrial Discovery Nuclear Engine Forces: Advanced Jet Airforce, Advanced Jet Fighter Airforce, Attack Helicopter Force, Advanced Strategic Bomber Group
Metalworking Level VII	Industrial	Industrial Discovery Metalworking Level VI Industrial Discovery Metallurgy Level VII	None	Task: Produce Composite Steel

Discovery	Type	Requirements	Special Effects	Required for
Microscope	Scientific	Industrial Discovery Engineering Level V Industrial Discovery Metalworking Level III	None	Scientific Discovery Bacteria Scientific Discovery Genetics
Mining/Quarrying Level I	Industrial	Industrial Discovery Flint Knapping	None	Industrial Discovery Mining/Quarrying Level II Facility: Scrape Site
Mining/Quarrying Level II	Industrial	Industrial Discovery Mining/Quarrying Level I Industrial Discovery Timber Construction Industrial Discovery Engineering I	None	Industrial Discovery Mining/Quarrying Level III Scientific Discovery Metallurgy Level II Facility: Diggings
Mining/Quarrying Level III	Industrial	Industrial Discovery Improved Timber Construction Industrial Discovery Metalworking Level II Industrial Discovery Mining/Quarrying Level II Scientific Discovery Metallurgy Level III Industrial Discovery Engineering III	None	Industrial Discovery Mining/Quarrying Level IV Facility: Excavations

Discovery	Type	Requirements	Special Effects	Required for
Mining/Quarrying Level IV	Industrial	Industrial Discovery Mining/Quarrying Level III Scientific Discovery Gunpowder Industrial Discovery Engineering IV	None	Industrial Discovery Mining/Quarrying V Facility: Quarry
Mining/Quarrying Level V	Industrial	Industrial Discovery Mining/Quarrying Level IV Industrial Discovery Steam Engine Industrial Discovery Engineering V Industrial Discovery Metalworking IV	None	Industrial Discovery Mining/Quarrying VI Facilities: Mine, Oil Derrick Force: Oil Exploitation Fleet
Mining/Quarrying Level VI	Industrial	Industrial Discovery Mining/Quarrying Level V Scientific Discovery Electronics Level III Scientific Discovery Modern Explosives Industrial Discovery Engineering VI	None	Industrial Discovery Mining/Quarrying VII Facilities: Deep Mine, Drilling Rig
Mining/Quarrying Level VII	Industrial	Industrial Discovery Mining/Quarrying VI Industrial Discovery Engineering VII	None	Facilities: Extra Deep Mine, Deep Drilling Rig

Discovery	Type	Requirements	Special Effects	Required for
Modern Cannon	Military	Military Discovery Cannon Military Discovery Breech Loading Scientific Discovery Modern Explosives	None	Military Discovery Artillery Military Discovery Early Tank Forces: Cavalry Army, Early Mechanized Army, Early Modern Infantry Army, Pre-Dreadnought Fleet, Fleet Units: Cruiser, Destroyer, Early Cruiser, Modern Cannon
Modern Drama	Cultural	Cultural Discovery Classical Drama Cultural Discovery Modern Music Tribal Education Level 6	Gives bonus to control of people and to education	Nothing
Modern Explosives	Scientific	Scientific Discovery Chemical Atomic Theory Scientific Discovery Chemistry Level V	None	Industrial Discovery Mining/Quarrying Level VI Military Discovery Magazine Rifles Military Discovery Modern Cannon Facility: Early Railway Station
Modern Music	Cultural	Cultural Discovery Classical Music Scientific Discovery Electronics Level V Tribal Education Level 6	Gives bonus to control of people and to education	Cultural Discovery Modern Drama
Modern Painting	Cultural	Cultural Discovery Classical Painting Tribal Education Level 6	Gives bonus to control of people and to education	Nothing

Discovery	Type	Requirements	Special Effects	Required for
Modern Sculpture	Cultural	Cultural Discovery Classical Sculpture Tribal Education Level 6	Gives bonus to control of people and to education	Nothing
Moldboard Plow	Agricultural	Agricultural Discovery Domestication of Horse Industrial Discovery Improved Timber Construction Scientific Discovery Metallurgy Level III Agricultural Discovery Scratch Plow	None	Agricultural Discovery Crop Rotation Agricultural Discovery Horse Drawn Reaper Agricultural Discovery Horse Drawn Seed Drill Facility: Early Farm
Money System	Cultural	Scientific Discovery Weights and Measures Scientific Discovery Mathematics Level II Cultural Discovery Private Ownership Facility: Central Administration	Gives a bonus to revenue	Cultural Discovery Paper Money Facility: Market
Monotheism	Cultural	Cultural Discovery Polytheism Tribal Education Level 2	None	Religions: Christianity, Islam, Judaism
Musket	Military	Military Discovery Arquebus	None	Military Discovery Rifled Musket Forces: Gunpowder Cavalry Army, Gunpowder Infantry Army

Discovery	Type	Requirements	Special Effects	Required for
Nuclear Engine	Industrial	Industrial Discovery Engineering Level VII Industrial Discovery Metalworking Level VI Industrial Discovery Gas Turbine Scientific Discovery Nuclear Theory	None	Forces: Nuclear Attack Submarine, Nuclear Missile Submarine
Nuclear Power	Industrial	Industrial Discovery Engineering Level VII Scientific Discovery Metallurgy Level VI Scientific Discovery Nuclear Theory	None	Facility: Nuclear Generating Station
Nuclear Theory	Scientific	Scientific Discovery Chemical Atomic Theory Scientific Discovery Mathematics Level V Tribal education Level 6	None	Military Discovery Atomic Bomb Industrial Discovery Nuclear Power Industrial Discovery Nuclear Engine
Paper	Industrial	Industrial Discovery Papyrus Industrial Discovery Improved Timber Construction Tribal Education Level 3	Gives a bonus to ideas and education	Industrial Discovery Printing Cultural Discovery Paper Money

Discovery	Type	Requirements	Special Effects	Required for
Paper Money	Cultural	Cultural Discovery Money System Industrial Discovery Printing Press Tribal Education Level 4 Facility: Central Administration	Gives a bonus to revenue	Facility: Mall Government: Wealth Owning Aristocracy
Papyrus	Industrial	Cultural Discovery Writing	Gives a bonus to ideas and education	Scientific Discovery Surveying Scientific Discovery Mapping Cultural Discovery Private Ownership Industrial Discovery Paper Facility: Athenaeum
Pasteurizing	Scientific	Scientific Discovery Bacteria Scientific Discovery Chemistry Level V Industrial Discovery Engineering Level V Tribal Education Level 4	Gives Level 6 food storage and give a bonus to the health level.	Nothing
Petrol Engine	Industrial	Industrial Discovery Engineering Level VI Industrial Discovery Metalworking Level IV Scientific Discovery Internal Combustion Theory Tribal Education Level 5	None	Agricultural Discovery Tractor Military Discovery Early Tank Forces: Air Mobile Force, Airforce, Fighter Airforce, Nuclear Bomber Group, Primitive Airforce, Primitive Fighter Airforce

Discovery	Type	Requirements	Special Effects	Required for
Pike	Military	Scientific Discovery Metallurgy Level II Industrial Discovery Metalworking Level I	None	Military Discovery Halberd Forces: Bronze Age Pike Army, Iron Age Pike Army
Poly-theism	Cultural	Cultural Discovery Recognized Religion		Cultural Discovery Mono-theism Religion: Hinduism
Pottery	Industrial	Agricultural Discovery Selective Planting Level I Industrial Discovery Adobe/Clay Bricks	Gives Level 3 food storage	Agricultural Discovery Brewing Industrial Discovery Fired Bricks Scientific Discovery Metallurgy Level II Task: Produce Goods
Pre-fabrication	Industrial	Industrial Discovery Re-inforced Concrete Industrial Discovery Engineering Level V	None	Facilities: Apartment Blocks, Container Depot, Highway Maintenance Depot, Modern factory
Pre-stressed Concrete	Industrial	Industrial Discovery Engineering Level VII Industrial Discovery Re-inforced Concrete	None	Industrial Discovery High Rise
Primitive Carving	Cultural	Industry Discovery Flint Knapping	Gives a bonus to control of the people and to education	Cultural Discovery Writing Cultural Discovery Primitive Music Cultural Discovery Classical Sculpture

Discovery	Type	Requirements	Special Effects	Required for
Primitive Music	Cultural	Cultural Discovery Primitive Carving	Gives a bonus to control of the people and to education	Cultural Discovery Early Drama Cultural Discovery Tribal Music
Primitive Painting	Cultural	Scientific Discovery Herbal Lore Industrial Discovery Flint Knapping	Gives a bonus to control of the people and to education	Scientific Discovery Metallurgy Level I Scientific Discovery Chemistry Level I Cultural Discovery Classical Painting Cultural Discovery Writing
Printing	Industrial	Scientific Discovery Chemistry Level IV Industrial Discovery Paper Cultural Discovery Writing	Gives a bonus to control of the people and to education	Industrial Discovery Printing Press
Printing Press	Industrial	Cultural Discovery Alphabet Industrial Discovery Advanced Timber Construction Industrial Discovery Printing Industrial Discovery Engineering V	Gives a bonus to control of the people and to education	Cultural Discovery Paper Money Facilities: Library, Modern Library, Newspaper Office
Private Ownership	Cultural	Industrial Discovery Weights and Measures Cultural Discovery Tribal Ownership Tribal Education Level 3	Gives a bonus to revenue but reduces control of the people	Cultural Discovery Feudalism Cultural Discovery Inheritance Cultural Discovery Money System
Racial Equality	Cultural	Tribal Education Level 4	Gives bonus to control of the people. Prevents use of slavery by tribe	Nothing

Discovery	Type	Requirements	Special Effects	Required for
Radar	Scientific	Scientific Discovery Early Radar Scientific Discovery Electronics Level VI Scientific Discovery Computers	Increases spotting range	Facilities: Airbase, Airport
Radio	Scientific	Scientific Discovery Electric Dynamo Scientific Discovery Electronics Level V	Gives bonus to education	Scientific Discovery Television Facility: Radio Broadcasting Station
Recognized Religion	Cultural	Cultural Discovery Tribal Rituals Tribal Education Level 1	Gives bonus to control of the people	Cultural Discovery Poly-theism Facilities: Church, Monastery, Temple Religion: Freedom of Worship
Reinforced Concrete	Industrial	Industrial Discovery Concrete Industrial Discovery Engineering Level VI Scientific Discovery Metallurgy Level IV	None	Industrial Discovery Pre-stressed Concrete Industrial Discovery Pre-fabrication Facilities: Airbase, Airport, Highway Maintenance Depot, Mall, Modern Factory
Rifled-Musket	Military	Military Discovery Musket Industrial Discovery Metalworking Level IV Industrial Discovery Engineering V	None	Military Discovery Breech Loading Force: Late Gunpowder Cavalry Army Unit: Rifled-musketmen
Rocketry Level I	Scientific	Scientific Discovery Gunpowder Industrial Discovery Metalworking Level III	None	Scientific Discovery Rocketry Level II Unit: Mongolian Rockets

Discovery	Type	Requirements	Special Effects	Required for
Rocketry Level II	Scientific	Scientific Discovery Rocketry Level I Industrial Discovery Engineering Level V Scientific Discovery Modern Explosives Industrial Discovery Metalworking Level IV	None	Scientific Discovery Rocketry Level III Unit: Congreve Rockets
Rocketry Level III	Scientific	Scientific Discovery Rocketry Level II Scientific Discovery Chemistry IV Industrial Discovery Engineering Level VI	None	Scientific Discovery Rocketry Level IV Military Discovery Infantry Support Weapons Facility: Rocket Site Force: Rocket Group Units: Heavy Weapons Class I, Rocket Artillery Class I

Discovery	Type	Requirements	Special Effects	Required for
Rocketry Level IV	Scientific	Scientific Discovery Chemistry Level V Scientific Discovery Electronics Level VI Scientific Discovery Rocketry III Scientific Discovery Aerodynamics Level III Industrial Discovery Engineering Level VI	None	Scientific Discovery Rocketry Level V Scientific Discovery Manned Space Flight Theory Scientific Discovery Satellite Tracking Facility: Space Launch Base, Missile Site Forces: Advanced Jet Airforce, Advanced Jet Fighter Airforce, Attack Helicopter Force, Advanced Strategic Bomber Group, Missile Group, Modern Carrier Fleet, Modern Fleet, Modern Mechanized Army Units: Heavy Weapons Class II, Missile Cruiser, Missile Destroyer, Missile Gunboat, Rocket Artillery Class II
Rocketry Level V	Scientific	Military Discovery Atomic Bomb Scientific Discovery Chemistry Level VI Scientific Discovery Electronics Level VII Scientific Discovery Engineering Level VII Scientific Discovery Rocketry Level IV	Rocketry Level V may never be reached in the Scientific game	Facility: Missile Silo Force: Advanced ICBM Group, ICBM Group, Nuclear Missile Submarine

Discovery	Type	Requirements	Special Effects	Required for
Salting	Agricultural	None	Gives bonus to food storage	Facility: Salting Plant
Satellite Tracking	Scientific	Scientific Discovery Electronics Level VII Scientific Discovery Rocketry Level IV Facility: Space Launch Base	Increases the range at which enemy forces are detected	Nothing
Scratch Plow	Agricultural	Agricultural Discovery Chest Plow Agricultural Discovery Selective Livestock Breeding II Agricultural Discovery Selective Planting Level II	None	Agricultural Discovery Moldboard Plow Facility: Simple Farm
Screw Propeller	Industrial	Scientific Discovery Archimedian Screw Scientific Discovery Metalworking Level IV	None	Industrial Discovery Marine Diesel Engine Industrial Discovery Steam Turbine Industrial Discovery Gas Turbine Industrial Discovery Nuclear Engine Forces: Pre-Dreadnought Fleet, Steam Merchant Fleet
Scythe Chariot	Military	Military Discovery Heavy Chariot Industrial Discovery Metalworking Level III	None	Unit: Scythe Chariot

Discovery	Type	Requirements	Special Effects	Required for
Secret Elections	Cultural	Tribal Education Level 5 Central Administration Facility	Reduces control of the people	Governments: Proportional Representation, Party Rule
Selective Horse Breeding Level I	Agricultural	Agricultural Discovery Domestication of Horse Facility: Ranch Industrial Discovery Metalworking II	None	Agricultural Discovery Selective Horse Breeding Level II Agricultural Discovery Stirrups Force: Bronze Age Cavalry Army
Selective Horse Breeding Level II	Agricultural	Agricultural Discovery Selective Horse Breeding Level I Scientific Discovery Metallurgy Level III Facility: Ranch	None	Agricultural Discovery Selective Horse Breeding Level III Military Discovery Heavy Chariot Force: Iron Age Cavalry Army
Selective Horse Breeding Level III	Agricultural	Agricultural Discovery Selective Horse Breeding Level II Tribal Education Level 3 Facility: Ranch	None	Agricultural Discovery Selective Horse Breeding Level IV Agricultural Discovery Horse Drawn Reaper Agricultural Discovery Horse Drawn Seed Drill Forces: Cavalry Army, Gunpowder Cavalry Army, Late Gunpowder Cavalry Army Unit: Mounted Infantrymen

Discovery	Type	Requirements	Special Effects	Required for
Selective Horse Breeding Level IV	Agricultural	Agricultural Discovery Selective Horse Breeding III Industrial Discovery Metalworking Level III Tribal Education Level 3 Facility: Ranch	None	Agricultural Discovery Horse Drawn Threshing Machine Force: Early Gunpowder Cavalry Army
Selective Livestock Breeding Level I	Agricultural	Agricultural Discovery Domestication of Livestock Tribal Education Level 1 Facility: Farm	Gives bonus to food production	Agricultural Discovery Selective Livestock Breeding Level II
Selective Livestock Breeding Level II	Agricultural	Agricultural Discovery Selective Livestock Breeding Level I Tribal Education Level 1 Facility: Goat Farm	None	Agricultural Discovery Selective Livestock Breeding Level III Facility: Cattle Farm
Selective Livestock Breeding Level III	Agricultural	Agricultural Discovery Selective Livestock Breeding Level II Tribal Education Level 3 Facility: Cattle Farm	Gives bonus to food production	Agricultural Discovery Selective Livestock Breeding Level IV
Selective Livestock Breeding Level IV	Agricultural	Agricultural Discovery Selective Livestock Breeding Level III Scientific Discovery Genetics Facility: Cattle Farm	None	Agricultural Discovery Selective Livestock Breeding Level V Facility: Livestock Farm

Discovery	Type	Requirements	Special Effects	Required for
Selective Livestock Breeding Level V	Agricultural	Agricultural Discovery Selective Livestock Breeding Level IV Facility: Livestock Farm Tribal Education Level 4	Gives bonus to food production	Agricultural Discovery Intensive Livestock Farming
Selective Planting Level I	Agricultural	Agricultural Discovery Slash and Burn	None	Agricultural Discovery Selective Planting Level II Agricultural Discovery Chest Plow Industrial Discovery Pottery Facility: Primitive Farm
Selective Planting Level II	Agricultural	Agricultural Discovery Selective Planting Level I Tribal Education Level 1 Facility: Primitive Farm	None	Agricultural Discovery Selective Planting Level III Industrial Discovery Brewing Agricultural Discovery Scratch Plow
Selective Planting Level III	Agricultural	Agricultural Discovery Scratch Plow Agricultural Discovery Selective Planting Level II Tribal Education Level 3	None	Agricultural Discovery Selective Planting Level IV Agricultural Discovery Crop Rotation
Selective Planting Level IV	Agricultural	Scientific Discovery Genetics Agricultural Discovery Selective Planting III	None	Facilities: Early Mechanized Farm, Mechanized Farm, Modern Mechanized Farm
Sexual Equality	Cultural	Tribal Education Level 4	Adds to control of the people	Nothing

Discovery	Type	Requirements	Special Effects	Required for
Shaduf	Agricultural	Industrial Discovery Engineering Level I Industrial Discovery Timber Construction	None	Agricultural Discovery Archimedian Screw Task: Irrigation
Simple Astronomy	Scientific	Scientific Discovery Mathematics Level II Scientific Discovery Weights and Measures Industrial Discovery Metalworking Level II	None	Scientific Discovery Simple Navigation Scientific Discovery Advanced Astronomy
Simple Bow	Military	Industrial Discovery Flint Knapping	None	Military Discovery Composite Bow Military Discovery Long Bow Units: Light Bow Cavalry, Simple Bowmen
Simple Compass	Scientific	Industrial Discovery Flint Knapping Tribal Education Level 2	Allows use of Compass window at higher degrees of difficulty	Scientific Discovery Mapping Scientific Discovery Simple Navigation Scientific Discovery Magnetic Theory
Simple Navigation	Scientific	Scientific Discovery Mathematics Level III Scientific Discovery Simple Astronomy Scientific Discovery Simple Compass	Allows top down country maps at higher degrees of difficulty	Scientific Discovery Advanced Navigation Facility: Harbor

Discovery	Type	Requirements	Special Effects	Required for
Slash and Burn	Agricultural	None	Gives bonus to food production	Agricultural Discovery Selective Planting Level I
Smoking/Drying	Agricultural	None	Gives the tribe Level 2 food storage	Nothing
State Ownership	Cultural	Tribal Education Level of 3 Central Administration Facility	Adds to control of the people but reduces revenue	Government: One Party State
Steam Engine	Industrial	Industrial Discovery Engineering Level V Industrial Discovery Metalworking Level III	Discovery of Steam Engine marks the start of the Steam Age	Agricultural Discovery Agricultural Traction Engine Industrial Discovery Mining/Quarrying Level V Industrial Discovery Marine Steam Engine Industrial Discovery Steam Turbine Industrial Discovery Fired Bricks Facilities: Cannery, Early Railway Station, Factory
Steam Turbine	Industrial	Industrial Discovery Engineering Level VI Industrial Discovery Metalworking Level V Industrial Discovery Screw Propeller Industrial Discovery Steam Engine	None	Facilities: Coal Generating Station, Nuclear Generating Station, Oil/Gas Generating Station Forces: Carrier Fleet, Fleet

Discovery	Type	Requirements	Special Effects	Required for
Stirrups	Agricultural	Agricultural Discovery Selective Horse Breeding Level I	None	Military Discovery Lance
Stone Cutting	Industrial	Industrial Discovery Flint Knapping	None	Industrial Discovery Stone Masonry Industrial Discovery Arch Facilities: Athenaeum, Housing, Regional Administration, Road Builders
Stone Masonry	Industrial	Industrial Discovery Metalworking Level II Industrial Discovery Stone Cutting	None	Industrial Discovery Buttress Cultural Discovery Classical Sculpture Facilities: Monastery
Surveying	Scientific	Industrial Discovery Papyrus Scientific Discovery Weights and Measures Industrial Discovery Metalworking Level II Industrial Discovery Engineering Level II	None	Scientific Discovery Mapping Facilities: Highway Maintenance Depot, Monastery, Regional Administration, Road Builders
Sword	Military	Scientific Discovery Metallurgy Level II Industrial Discovery Metalworking Level II	None	Forces: Bronze Age Sword Army, Iron Age Sword Army

Discovery	Type	Requirements	Special Effects	Required for
Synthetics	Scientific	Scientific Discovery Chemistry Level V	None	Scientific Discovery Computers Facility: Mall Forces: Jet Airforce, Jet Fighter Airforce, Strategic Bomber Group
Tarmacadam	Industrial	Industrial Discovery Chemistry Level IV Industrial Discovery Engineering Level V Industrial Discovery Metalworking Level IV	None	Facility: Major Road Constructors
Telegraph	Scientific	Scientific Discovery Electronics IV	Gives bonus to control of the people	Facility: Early Railway Station, Telegraph Office
Telephone	Scientific	Scientific Discovery Electronics Level IV Scientific Discovery Telegraph	Gives bonus to control of the people	Facility: Military Headquarters
Telescope	Scientific	Industrial Discovery Engineering Level V Industrial Discovery Metalworking Level III	None	Scientific Discovery Advanced Astronomy
Television	Scientific	Scientific Discovery Electronics Level V Scientific Discovery Radio	Gives bonus to control of the people	Facility: Television Broadcasting Station

Discovery	Type	Requirements	Special Effects	Required for
Timber Construction	Industrial	Industrial Discovery Flint Knapping	None	Agricultural Discovery Chest Plow Agricultural Discovery Shaduf Agricultural Discovery Fish Farming Industrial Discovery Paper Industrial Discovery Improved Timber Construction Industrial Discovery Boat Building Industrial Discovery Mining/ Quarrying Level II Industrial Discovery Horizontal Loom Industrial Discovery Engineering Level I Cultural Discovery Tribal Music Facilities: Harbor, Primitive Housing, Primary School, Ranch, Tabernacle, Timber Yard
Tractor	Agricultural	Agricultural Discovery Agricultural Traction Engine Industrial Discovery Diesel Engine Industrial Discovery Petrol Engine	None	Agricultural Discovery Mechanized Farm Machinery Agricultural Discovery Intensive Livestock Farming Facility: Mechanized Farm
Trebuchet	Military	Military Discovery Catapult Industrial Discovery Engineering IV	None	Unit: Trebuchet

Discovery	Type	Requirements	Special Effects	Required for
Tribal Dance	Cultural	None	Gives bonus to control of the people	Cultural Discovery Early Drama Cultural Discovery Tribal Rituals Cultural Discovery Tribal Ownership
Tribal Music	Cultural	Cultural Discovery Primitive Music Industrial Discovery Timber Construction Tribal Education Level 1	Gives bonus to control of the people	Cultural Discovery Classical Music
Tribal Ownership	Cultural	Cultural Discovery Tribal Dance Cultural Discovery Tribal Music Cultural Discovery Tribal Rituals	Gives bonus to control of the people	Cultural Discovery Private Ownership Cultural Discovery Recognized Religion
Tribal Rituals	Cultural	Cultural Discovery Tribal Dance	None	Cultural Discovery Tribal Ownership Facility: Tabernacle
Vaccination	Scientific	Scientific Discovery Chemistry Level V Scientific Discovery Medicine Level V	Gives bonus to health	Nothing
Vertical Loom	Industrial	Industrial Discovery Horizontal Loom Industrial Discovery Improved Timber Construction Industrial Discovery Engineering Level III	None	Facility: Ship Builders Forces: Ancient Fleet, Ancient Merchant Fleet, Early Fleet, Merchant Fleet, Sailing Fleet

Discovery	Type	Requirements	Special Effects	Required for
Viruses	Scientific	Scientific Discovery Bacteria Industrial Discovery Engineering Level VI	Gives bonus to health	Medicine Level V
War Elephants	Military	Agricultural Discovery Elephant Handling	None	Unit: Elephants
Weights and Measures	Scientific	Scientific Discovery Mathematics Level I Tribal Education Level 2	None	Scientific Discovery Surveying Scientific Discovery Simple Astronomy Cultural Discovery Money System Facility: Market
Wooden Ship Construction	Industrial	Industrial Discovery Boat Building Industrial Discovery Improved Timber Construction Industrial Discovery Engineering Level II Industrial Discovery Metalworking Level II	None	Industrial Discovery Advanced Wooden Ship Construction Facility: Boatbuilders Forces: Ancient Fleet, Ancient Merchant Fleet, Fishing Fleet
Writing	Cultural	Cultural Discovery Primitive Carving Cultural Discovery Primitive Painting Cultural Discovery Tribal Rituals	Gives a bonus to ideas	Scientific Discovery Mathematics Level I Industrial Discovery Papyrus Industrial Discovery Printing Cultural Discovery Alphabet Facility: Central Administration

Facilities

To understand the facilities table, you need to understand the following terms:

- **Type**

This gives you a general idea of what the facility might be useful for, and which ones might be targeted by riots. It is also used by the computer opponents to determine attacks, defenses, and long-term strategies.

- **Requirements**

This lists what you must already have for the facility to appear in the Available Construction lists. Requirements can be other facilities, discoveries, or an overall education level for your tribe.

- **Building Cost**

This lists:

- The number of population points needed to construct the facility. These return to the unemployed list when the facility is built.
- The amount and types of resources that are needed.

- **Running Cost**

- The number of population points that will be employed by that facility. These are deducted as soon as the facility is ordered; they go into training for their new employment. They can be returned to the unemployed pool by selling the facility.
- The amount and types of resources that are needed over time to keep the facility maintained and operating.

NOTE: Unmaintained facilities deteriorate over time and are eventually destroyed unless maintenance resumes.

- **Effects**

This lists any special effects or advantages that owning the facility gives your tribe.

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Academy	Educational	Athenaeum, Education Level 1, Chemistry Level I, Engineering Level I, Medicine Level I	2 Builders, 8 Lumber, 10 Stone, 2 Revenue	3 Employees, 2 Revenue	Required for Education Level 2, Increases Idea Generation
Advanced Railway Station	Industrial	Electronics VII, Engineering VII, Metalworking IV, Modern Explosives, Synthetics	3 Builders, 10 Steel, 5 Synthetics, 10 Revenue	6 Employees, 3 Revenue, 3 Power, 1 Steel	Continent-wide transport network possible
Airbase	Military	Advanced Navigation, Aerodynamics IV, Radar, Re-inforced Concrete	3 Builders, 10 Lumber, 10 Stone, 10 Steel, 10 Revenue, 4 Petroleum Products	6 Employees, 3 Power, 1 Chemicals, 3 Petroleum Products, 10 Revenue	Allows operation of Advanced Jet Airforce, Advanced Jet Fighter Airforce, Advanced Strategic Bomber Group, Jet Airforce, Jet Fighter Airforce, and Strategic Bomber Group
Airport	Industrial	Advanced Navigation, Aerodynamics IV, Radar, Re-inforced Concrete	3 Builders, 10 Lumber, 10 Stone, 8 Steel, 10 Revenue, 4 Petroleum Products	6 Employees, 3 Power, 3 Petroleum Products, 8 Revenue	Intercontinental transit network possible
Apartment Blocks	Housing	Electric Lighting, High Rise, Pre- fabrication	3 Builders, 4 Revenue, 6 Lumber, 6 Stone, 1 Steel, 1 Synthetics	3 Revenue	Each unit houses 12 population

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Athenaeum	Educational	Improved Timber Construction, Mathematics Level I, Papyrus, Stone Cutting	1 Builder, 3 Revenue, 5 Lumber, 5 Stone	2 Employees, 2 Revenue	Required for Education Level 1. Increases ideas
Boat Builders	Industrial	Wooden Ship Construction, Coastal COH	2 Builders, 5 Lumber, 1 Revenue	4 Employees, 1 Revenue, 1 Lumber	Required for construction of Ancient Fleet, Ancient Merchant Fleet, and Fishing Fleet
Boatyard	Industrial	Boat Building, Engineering I	1 Builder, 1 Revenue, 2 Lumber	1 Employee, 1 Revenue, 1 Lumber	Required for construction of primitive fleet
Cannery	Industrial	Advanced Timber Construction, Canning, Fired Bricks, Steam Engine	1 Builder, 5 Lumber, 5 Stone, 2 Revenue	3 Employees, 2 Revenue, 1 Tin/ Copper, 1 Coal, 1 Steel	Increases food storage
Cattle Farm	Agricultural	Selective Livestock Breeding II, Grazing Land	1 Builder, 2 Revenue, 1 Lumber	4 Employees, 1 Revenue	Produces 15 Food
Central Administration	Political	Writing	2 Builders, 3 Revenue, 5 Lumber, 5 Stone	4 Employees, 3 Revenue	Improves control, improves revenue collection, required for some government types
Church	Religious	Buttress, Recognized Religion	3 Builders, 3 Revenue, 4 Lumber, 6 Stone	2 Employees, 2 Revenue	Improves control of the people

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Civil Airfield	Industrial	Advanced Navigation, Aerodynamics III	2 Builders, 5 Revenue, 5 Lumber, 5 Stone, 2 Petroleum Products	3 Employees, 3 Revenue, 1 Petroleum Products, 1 Power	Continental transit network possible
Coal Generating Station	Industrial	Electronics III, Electric Dynamo	2 Builders, 5 Revenue, 5 Lumber, 5 Stone, 10 Iron	3 Employees, 2 Revenue, 3 Coal	Generates 8 Power
Container Depot	Industrial	Prefabrication	3 Builders, 3 Revenue, 5 Lumber, 5 Stone, 5 Steel	3 Employees, 2 Revenue, 1 Lumber, 1 Steel, 2 Power, 1 Petroleum Products	Required for Modern Merchant Fleet
Deep Drilling Rig	Industrial	Mining/Quarrying VII, Synthetics, Metalworking IV	5 Builders, 10 Revenue, 10 Steel, 2 Synthetics	3 Employees, 5 Revenue, 2 Power, 1 Petroleum Products	Allows deep drilling for oil/gas
Deep Mine	Industrial	Mining/Quarrying Level VI	3 Builder, 5 Revenue, 10 Lumber, 3 Steel, 1 Chemicals	3 Employees, 3 Revenue, 1 Lumber, 1 Steel, 1 Chemicals, 1 Petroleum Products, 1 Power	Allows deep mining for various primary resources
Diggings	Industrial	Mining/Quarrying Level II	1 Builder, 1 Revenue, 4 Lumber	3 Employees, 1 Revenue	Allows digging for various primary resources

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Dockyard	Industrial	Advanced Metal Ship Construction, Coastal COH	3 Builders, 5 Revenue, 10 Lumber, 12 Stone, 10 Iron	4 Employees, 2 Revenue, 2 Power	Allows construction of Carrier Fleet, Deep Sea Fishing Fleet, Environmental Protection Fleet, Fleet, Modern Carrier Fleet, Modern Fleet, Modern Merchant Fleet, Nuclear Attack Submarine, Oil Exploitation Fleet, Steam Merchant Fleet, Submarine Fleet
Drilling Rig	Industrial	Mining/Quarrying Level VI	4 Builders, 8 Revenue, 8 Steel, 1 Synthetics	3 Employees, 4 Revenue, 1 Power	Allows drilling for oil/gas
Early Farm	Agricultural	Arable Land, Moldboard Plow, Feudalism	2 Builders, 1 Lumber, 1 Revenue	5 Employees, 1 Revenue	Produces 30 Food
Early Housing	Housing	Improved Timber Construction	1 Builder, 2 Revenue, 2 Lumber	1 Revenue	Each unit houses 6 population
Early Mechanized Farm	Agricultural	Arable Land, Agricultural Traction Engine, Land Enclosure, Selective Planting IV	2 Builders, 5 Lumber, 5 Stone, 5 Revenue	3 Employees, 2 Revenue, 1 Coal	Produces 40 Food

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Early Railway Station	Industrial	Steam Engine, Fired Bricks, Metalworking Level IV, Modern Explosives, Telegraph	4 Builders, 4 Revenue, 5 Lumber, 10 Stone, 10 Iron	3 Employees, 2 Revenue, 1 Lumber, 1 Stone, 1 Iron, 1 Coal	Gives Level 4 COH sphere of influence, gives Level 3 transport network
Environmental Protection Agency	Industrial	Environmental Protection Theory	2 Builders, 5 Revenue, 3 Lumber, 3 Stone, 3 Steel, 3 Synthetics	3 Employees, 5 Revenue, 2 Power, 1 Chemicals	Improves health level, reduces risk of some natural disasters
Excavations	Industrial	Mining/Quarrying Level III	2 Builders, 1 Revenue, 5 Lumber	4 Employees, 1 Revenue	Allows excavation for various primary resources
Extra Deep Mine	Industrial	Mining/Quarrying Level VII	3 Builder, 8 Revenue, 10 Lumber, 5 Steel, 2 Chemicals	3 Employees, 4 Revenue, 1 Lumber, 1 Steel, 1 Chemicals, 1 Petroleum Products, 1 Power	Allows extra deep mining for various primary resources
Factory	Industrial	Fired Bricks, Steam Engine	2 Builders, 3 Revenue, 5 Lumber, 5 Stone, 5 Iron	4 Employees, 2 Revenue, variable resources depending on task	Allows manufacture of secondary resources (Aluminum, Armored Steel, Chemicals, manufactured Goods, Steel, Synthetics)
Fair	Commercial	Private Ownership	1 Builder, 1 Revenue, 1 Lumber	1 Employee, 1 Goods	Increases control of the people

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Farm	Agricultural	Arable Land, Horse Drawn Threshing Machine, Land Enclosure, Crop Rotation	2 Builders, 5 Lumber, 2 Revenue	4 Employees, 1 Horses, 2 Revenue	Produces 35 Food
Fish Farm	Agricultural	Fish Farming, Basket Work, Boat Building	1 Builder, 1 Revenue, 5 Lumber, 2 Stone	2 Employees, 2 Revenue	Produces 10 Food
Fishing Harbor	Industrial	Boat Building, Coastal COH	2 Builders, 2 Revenue, 5 Lumber	2 Employees, 1 Revenue Primary resource fish allows fishing Primary resource sea fish allows sea fishing with fishing fleet Primary resource deep sea fish allows deep sea fishing with deep sea fishing fleet	Produces 8 Food when fishing, 12 Food when sea fishing, 15 Food when deep sea fishing
Freezing Plant	Industrial	Advanced Timber Construction, Electronics III, Fired Bricks, Freezing	2 Builders, 3 Revenue, 4 Lumber, 4 Stone, 4 Steel, 1 Synthetics	3 Employees, 2 Revenue, 1 Chemicals, 1 Power	Increases food storage

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Goat Farm	Agricultural	Domestication of Livestock	1 Builder, 1 Revenue	2 Employees	Produces 10 Food
Harbor	Industrial	Simple Navigation, Boat Building, Coastal COH	2 Builders, 5 Revenue, 3 Lumber, 8 Stone	3 Employees, 1 Revenue, 1 Lumber	Continent-wide transit net possible, increases ideas, gives bonus to revenue Required for construction of Early Fleet, Early Steam Merchant Fleet, Environmental Protection Fleet, Ironclad Fleet, Merchant Fleet, Sailing Fleet, and Submarine Fleet
High School	Educational	Electric Lighting, Education Level 4, Fired Bricks	2 Builders, 2 Revenue, 5 Lumber, 4 Stone	3 Employees, 3 Revenue	Required for Education Level 5
Highway Maintenance Depot	Industrial	Mapping, Surveying, Reinforced Concrete, Pre-fabrication, Modern Explosives	4 Builders, 8 Revenue, 5 Lumber, 8 Stone, 2 Steel	4 Employees, 3 Revenue, 3 Stone, 1 Steel	Level 5 transit net
Hospice	Health	Medicine Level II	1 Builder, 3 Revenue, 4 Lumber, 4 Stone	3 Employees, 1 Revenue	Required for Health Level 1
Hospital	Health	Medicine Level IV	2 Builders, 4 Revenue, 5 Lumber, 5 Stone, 1 Chemicals	4 Employees, 2 Revenue, 1 Chemicals	Required for Health Level 3

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Housing	Housing	Advanced Timber Construction, Stone Cutting	2 Builders, 3 Revenue, 2 Lumber, 2 Stone	1 Revenue	Each unit houses 8 population
Library	Educational	Printing Press	2 Builders, 3 Revenue, 5 Lumber, 8 Stone	2 Employees, 2 Revenue	Increases ideas, required to build university
Livestock Farm	Agricultural	Selective Livestock Breeding IV, Land Enclosure, Grazing Land	2 Builders, 2 Revenue, 2 Lumber	3 Employees, 1 Revenue, 1 Horses	Produces 20 Food
Local Administration	Political	Mathematics Level I	1 Builder, 2 Revenue, 5 Lumber, 5 Stone	3 Employees, 2 Revenue	Increases control of the people, improves revenue collection
Major Road Constructors	Industrial	Arch, Mapping, Tarmacadam	3 Builders, 6 Revenue, 5 Lumber, 5 Stone, 2 Iron	3 Employees, 2 Revenue, 2 Stone, 1 Iron	Gives Level 3 sphere of influence, gives Level 4 transit net
Mall	Commercial	Paper Money, Re-inforced Concrete, Synthetics	3 Builders, 3 Revenue, 2 Lumber, 2 Stone, 2 Steel, 1 Synthetics	5 Employees, 2 Revenue, 2 Manufactured Produce, 2 Electronic Goods	Increases control of the people, increases revenue
Market	Commercial	Money System, Weights and Measures	1 Builder, 1 Revenue, 2 Lumber	1 Employee, 1 Revenue, 2 Manufactured Produce	Increases control of the people, increases revenue

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Mechanized Farm	Agricultural	Arable Land, Tractor, Land Enclosure, Selective Planting IV	1 Builders, 5 Lumber, 5 Stone, 5 Revenue	2 Employees, 1 Power, 1 Chemicals, 1 Petroleum Products, 3 Revenue	Produces 45 Food
Military Airfield	Military	Advanced Navigation, Aerodynamics Level I	2 Builders, 4 Revenue, 6 Lumber, 4 Stone, 2 Petroleum Products	4 Employees, 2 Revenue, 1 Chemicals, 2 Petroleum Products, 1 Power	Allows operation of Air Mobile Force, Airforce, Attack Helicopter Force, Fighter Airforce, Nuclear Bomber Group, Primitive Airforce, and Primitive Fighter Airforce
Military Headquarters	Military	Early Tank, Telephone	3 Builders, 3 Revenue, 4 Lumber, 4 Stone, 2 Steel	4 Employees, 4 Revenue, 3 Chemicals, 2 Petroleum Products, 2 Power	Allows operation of all mechanized forces
Mine	Industrial	Mining/Quarrying Level V	2 Builders, 4 Revenue, 8 Lumber, 2 Iron, 1 Chemicals	3 Employees, 2 Revenue, 1 Lumber, 1 Iron, 1 Coal	Allows mining for various primary resources
Missile Silo	Military	Atomic Bomb, Engineering Level VII, Metallurgy Level V, Rocketry Level V	5 Builders, 10 Revenue, 1 Lumber, 10 Stone, 10 Steel, 10 Armored Steel, 5 Synthetics	6 Employees, 2 Power, 1 Petroleum Products, 1 Chemicals	First Operation of Space Launch Facility wins a scientific victory. Allows use of Satellite Tracking.

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Modern Factory	Industrial	Electronics Level VII, Re-inforced Concrete, Pre-fabrication	2 Builders, 3 Revenue, 4 Lumber, 5 Steel, 4 Stone, 1 Synthetics	1 Employee, 3 Revenue, variable resources depending on task	Allows production of Composite Steel and Electronic Goods
Modern Mechanized Farm	Agricultural	Arable Land, Mechanized Farm Machinery, Land Enclosure	1 Builders, 5 Lumber, 5 Stone, 1 Synthetics, 8 Revenue	2 Employees, 2 Power, 1 Chemicals, 2 Petroleum Products, 3 Revenue	Produces 50 Food
Modern Hospital	Health	Medicine Level V	3 Builders, 5 Revenue, 4 Lumber, 4 Stone, 5 Steel, 2 Chemicals, 2 Synthetics	4 Employees, 3 Revenue, 1 Chemicals, 3 Power	Required for health level 4
Modern Housing	Housing	Advanced Timber Construction, Fired Bricks	1 Builder, 3 Revenue, 5 Lumber, 5 Stone	1 Revenue	Each unit houses 10 population.
Modern Library	Educational	Electric Lighting, Printing Press, Computers	2 Builders, 4 Revenue, 5 Lumber, 4 Stone, 4 Steel, 1 Synthetics	2 Employees, 4 Revenue	Increases ideas, required for modern university
Modern Livestock Farm	Agricultural	Intensive Livestock Farming	2 Builders, 5 Revenue, 2 Lumber, 3 Stone, 3 Steel, 1 Synthetics	1 Employee, 2 Revenue, 1 Chemicals, 1 Power, 1 Petroleum Products	Task Intensive Livestock Farming produces 25 Food Task Factory Farming produces 30 Food

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Modern Mechanized Farm	Agricultural	Land Enclosure, Mechanized Farm Machinery, Arable Land, Selective Planting IV	2 Builders, 8 Revenue, 5 Lumber, 5 Stone, 2 Steel, 1 Synthetics	2 Employees, 3 Revenue, 1 Chemicals, 2 Power, 2 Petroleum Products	Produces 50 Food
Modern Railway Station	Industrial	Diesel Engine, Electronics Level V, Modern Explosives	4 Builders, 5 Revenue, 5 Lumber, 5 Stone, 2 Steel	4 Employees, 3 Revenue, 1 Stone, 1 Steel, 1 Power, 1 Petroleum Products	Gives Level 5 sphere of influence, gives Level 6 transit net
Modern University	Educational	Education Level 6, Modern Library, Computers	3 Builders, 8 Revenue, 8 Lumber, 8 Stone, 5 Steel, 3 Synthetics	4 Employees, 6 Revenue	Increases ideas, boosts education
Monastery	Religious	Education Level 2, Recognized Religion, Stone Masonry, Surveying	4 Builders, 5 Revenue, 10 Lumber, 10 Stone	2 Employees, 3 Revenue	Increases ideas, required for Education Level 3
Newspaper Office	Political	Education Level 4, Printing Press	1 Builder, 1 Revenue, 5 Lumber	1 Employee, 1 Revenue, 1 Chemicals, 1 Lumber	Increases control of the people
Nuclear Generating Station	Industrial	Electronics Level VII, Nuclear Power	5 Builders, 10 Revenue, 4 Lumber, 8 Stone, 8 Steel, 4 Synthetics, 4 Composite Steel	2 Employees, 3 Revenue, 2 Power, 2 Chemicals, 1 Synthetics	Produces 20 Power

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Oil/Gas Generating Station	Industrial	Electronics Level III, Steam Turbine, Metalworking IV, Synthetics	4 Builders, 6 Revenue, 4 Lumber, 4 Stone, 5 Iron, 5 Steel, 1 Synthetics	3 Employees, 3 Revenue, 1 Oil/Gas	Generates 10 Power
Oil/Gas Terminal	Industrial	Mining/Quarrying Level V, Coastal COH, Metalworking IV, Synthetics	4 Builders, 6 Revenue, 3 Lumber, 4 Stone, 3 Iron, 8 Steel, 1 Synthetics	4 Employees, 4 Revenue, 2 Power	Allows operation of oil exploitation fleet
Oil Derrick	Industrial	Mining/Quarrying Level V, Metalworking IV	4 Builders, 5 Revenue, 8 Steel	3 Employees, 2 Revenue, 1 Power	Allows boring for oil/gas
Oil Refinery	Industrial	Engineering Level V, Chemistry Level V, Metalworking IV, Synthetics	4 Builders, 6 Revenue, 4 Lumber, 4 Iron, 8 Steel, 2 Synthetics	3 Employees, 3 Revenue, 1 Chemicals, 1 Oil/Gas, 2 Power	Produces petroleum products

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Port	Commercial	Advanced Navigation, Concrete	4 Builders, 4 Revenue, 5 Lumber, 15 Stone	6 Employees, 2 Revenue, 1 Stone	World-wide transit net possible, adds to ideas, adds to revenue Required for construction of Carrier Fleet, Fleet, Modern Carrier Fleet, Modern Fleet, Modern Merchant Fleet, Nuclear Attack Submarine Fleet, Nuclear Missile Submarine Fleet, Oil Exploitation Fleet, Pre-Dreadnought Fleet, and Steam Merchant Fleet
Primary School	Educational	Education Level 5, Timber Construction	2 Builders, 4 Revenue, 3 Lumber	3 Employees, 2 Revenue	Required for Education Level 6
Primitive Farm	Agricultural	Arable Land, Chest Plow, Selective Planting I	2 Builders, 1 Revenue	7 Employees, 1 Revenue	Produces 20 Food
Primitive Housing	Housing	Adobe/Clay Bricks, Timber Construction	1 Builder, 1 Revenue, 2 Lumber	1 Revenue	Each unit houses 4 population
Primitive Shelter	Housing	Adobe/Clay Bricks	1 Builder, 1 Revenue	1 Revenue	Each unit houses 2 population
Quarry	Industrial	Mining/Quarrying Level IV	2 Builders, 2 Revenue, 5 Lumber	4 Employees, 2 Revenue	Allows quarrying for various primary resources
Radio Broadcasting Station	Political	Radio	1 Builder, 3 Revenue, 3 Lumber, 3 Stone, 1 Steel, 1 Synthetics	2 Employees, 2 Revenue, 2 Power	Increases control of the people

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Ranch	Agricultural	Domestication of Horse, Timber Construction, Grazing Land	1 Builder, 1 Revenue, 3 Lumber	3 Employees, 1 Revenue	Produces Horses, required for Livestock Farm, gives transit net level 2, gives sphere of influence level 1
Regional Administration	Political/ Industrial	Timber Construction, Stone Cutting	2 Builders, 4 Revenue, 5 Lumber, 5 Stone	3 Employees, 2 Revenue	Gives transit net level 1, improves control of the people, increases revenue collection, required to enable COH to use transit net for regional resources
Research Establishment	Industrial	Computers, Modern University	3 Builders, 10 Revenue, 5 Lumber, 4 Stone, 5 Steel, 2 Synthetics	4 Employees, 6 Revenue, 2 Chemicals, 1 Petroleum Products, 3 Power, 2 Synthetics	Increases ideas
Road Builders	Industrial	Stone Cutting, Surveying	3 Builders, 2 Revenue, 5 Stone	3 Employees, 1 Revenue, 1 Stone	Gives level 2 sphere of influence
Rocket Site	Military	Rocketry Level III, Aerodynamics III	3 Builders, 2 Revenue, 5 Stone, 3 Steel	3 Employees, 4 Revenue, 3 Chemicals, 2 Petroleum Products, 2 Power	Gives level 2 sphere of influence
Salting Plant	Industrial	Improved Timber Construction, Salting	2 Builders, 2 Revenue, 4 Lumber, 2 Salt	2 Employees, 1 Revenue, 1 Salt	Gives Food Storage Level 4

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
School	Educational	Advanced Timber Construction, Mathematics Level III, Paper, Chemistry Level II, Metalworking Level III	2 Builders, 3 Revenue, 5 Lumber, 5 Stone	3 Employees, 2 Revenue	Required for Education Level 4
Scrape Site	Industrial	Mining/Quarrying Level I	1 Builder, 1 Revenue	3 Employees, 1 Revenue	Allows scraping for various primary resources
Ship Builders	Industrial	Advanced Wooden Ship Construction, Vertical Loom, Coastal COH	2 Builders, 3 Revenue, 10 Lumber	4 Employees, 1 Revenue, 2 Lumber	Allows construction of Early Fleet, Merchant Fleet, Sailing Fleet
Shipyards	Industrial	Metal Ship Construction	3 Builders, 5 Revenue, 8 Lumber, 5 Stone, 10 Iron	6 Employees, 2 Revenue, 1 Iron, 1 Lumber	Allows construction of Ironclad Fleet, Early Steam Merchant Fleet, Pre-Dreadnought Fleet
Simple Farm	Agricultural	Arable Land, Scratch Plow	2 Builders, 1 Revenue	6 Employees, 1 Revenue	Produces 24 Food
Small Boat Builders	Industrial	Boat Building	1 Builder, 1 Revenue, 1 Lumber	1 Employee, 1 Revenue	Required for Freshwater Fishing

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Space Launch Base	Industrial	Rocketry Level IV, Manned Space Flight Theory	10 Builders, 20 Revenue, 5 Lumber, 8 Stone, 15 Steel, 5 Chemicals, 8 Synthetics, 5 Composite Steel	6 Employees, 10 Revenue, 5 Power, 5 Petroleum Products, 3 Chemicals	First operation of space launch facility wins a scientific victory, allows use of Satellite Tracking
Tabernacle	Religious	Timber Construction, Tribal Rituals	1 Builder, 2 Revenue, 8 Lumber	2 Employees, 2 Revenue	Increases control of the people
Telegraph Office	Political	Telegraph	1 Builder, 2 Revenue, 4 Lumber, 1 Tin/ Copper, 1 Iron, 1 Synthetics	1 Employee, 1 Revenue, 1 Lumber, 1 Tin/Copper	Increases control of the people
Television Broadcasting Station	Political	Television	2 Builders, 6 Revenue, 3 Lumber, 4 Stone, 2 Steel, 2 Synthetics	3 Employees, 3 Revenue, 3 Power	Increases control of the people
Temple	Religious	Arch, Recognized Religion	4 Builders, 6 Revenue, 10 Lumber, 10 Stone	2 Employees, 3 Revenue	Increases control of the people
Timber Yard	Industrial	Timber Construction	1 Builder, 1 Revenue	2 Employees, 1 Revenue	Produces Lumber
University	Education	Education Level 5, Library	3 Builders, 5 Revenue, 8 Lumber, 10 Stone	4 Employees, 3 Revenue	Increases ideas, gives bonus to educational level

Facility	Type	Requirements	Building Cost	Operating Cost	Effects
Water/Sewage Treatment Works	Health	Discovery of Bacteria, Steam Engine	2 Builders, 3 Revenue, 4 Stone, 5 Iron, 2 Chemicals	2 Employees, 1 Revenue, 1 Coal, 1 Chemicals	Required for Health Level 2
Wind Generating Station	Industrial	Electronics Level VII, Environmental Protection Theory	2 Builders, 5 Revenue, 2 Steel, 1 Aluminum, 3 Synthetics, 1 Composite Steel	1 Employee, 1 Revenue	Generates 5 Power
Workshop	Industrial	Improved Timber Construction	1 Builder, 1 Revenue, 4 Lumber, 4 Stone	3 Employees, 1 Revenue, variable resources depending on task	Allows production of Bronze, Goods, Iron

Resources

To understand the resources table, you need to understand the following terms:

- **Type**

This can either be

- Primary, which means you get it directly from the terrain
- Secondary, which means you need to perform a task on another resource to produce it

- **Where Found**

This will either be a terrain type or another resource.

NOTE: Some resources must go through more than one task before you can get them; for example, iron ore deposits produce iron ore, which is then used to produce iron.

- **Task/Facility Requirement**

This lists the tasks and the facilities that are needed in order to exploit or produce the resource.

- **Discovery Requirement**

Some Resources require you to have made certain discoveries before you can exploit or produce them, if so it is listed here.

These are the discoveries that you must have made before you can exploit or produce the resource.

Resource	Type	Where found	Facility requirement	Discovery requirement
Aluminum	Secondary	Produced from Bauxite	Produce Aluminum/Factory	Metalworking Level V
Arable Land	Primary	Cleared Land, Coastal, Cultivated, Deciduous Woods, Grassland, Jungle, River, Prairie, Veldt	Primitive Farm, Simple Farm, Early Farm, Farm, Early Mechanized Farm, Mechanized Farm, Modern Mechanized Farm	None
Armored Steel	Secondary	Man-made	Produce Armored Steel/Factory	Metalworking Level V
Bauxite	Secondary	Bauxite Deposits	Mining/Quarrying Level IV or higher	Metallurgy Level V
Bauxite Deposits	Primary	Mountains	Mining/Quarry Level IV or higher	Metallurgy Level V
Bronze	Secondary	Produced from Tin/Copper	Produce Bronze/Workshop	Metallurgy Level II
Chemicals	Secondary	Chemical Deposits or Man-made	Mining/Quarrying or Produce Chemicals /Factory	Appropriate Mining/Quarrying level or Chemistry Level IV
Chemical Deposits	Primary	Rain Forests, Salt Marshes, some Cleared Lands	Mining/Quarrying	Appropriate Mining/Quarrying level
Coal	Secondary	Coal Deposits	Mining/Quarrying	Appropriate Mining/Quarrying level
Coal Deposits	Primary	Hills, Jungles, Rain Forests, Tundra, some Cleared Lands	Mining/Quarrying	Appropriate Mining/Quarrying level
Composite Steel	Secondary	Man-made	Produce Composite Steel/Modern Factory	Metallurgy VII
Deep Sea Fish	Primary	Open Sea	Deep Sea Fishing Fleet, Fishing Harbor	None
Electronic Goods	Secondary	Man-made	Produce Goods/Modern Factory	None

Resource	Type	Where found	Facility requirement	Discovery requirement
Elephants	Primary	Jungles	Cattle Farm	Elephant Handling
Fish	Primary	Coastal	Fishing Harbor	None
Food	Secondary	Produced	Herding, any Farming, Fishing	Varies
Freshwater Fish	Primary	Lakeshore, Major Lakes, Major Rivers	Small Boatbuilders	None
Game/Berries	Primary	Almost anywhere	Automatically collected if population available	None
Gem Bearing Rock	Primary	Hills, Jungles, Mountains, Rain Forests, Rock Deserts, some Cleared Lands	Mining/Quarrying	Appropriate Mining/Quarrying level
Gold/Silver Veins	Primary	Hills, Mountains	Mining/Quarrying	Appropriate Mining/Quarrying level
Goods	Secondary	Man-made	Produce Goods/Workshop	None
Grazing Land	Primary	Almost anywhere	Animal Farms, Ranches	Domestication of Livestock, Domestication of Horse
Iron	Secondary	Produced from iron ore	Produce Iron/Workshop	Metallurgy Level III
Iron Ore	Primary	Hills	Mining/Quarrying	Appropriate Mining/Quarrying level
Lumber	Secondary	Produced from Timber	Forestry/Timber Yard	Timber Construction
Manufactured Goods	Secondary	Man-made	Produce Manufactured Goods/Factory	None

Resource	Type	Where found	Facility requirement	Discovery requirement
Oil/Gas Deposits	Primary	Jungles, Rain Forests, Sand Deserts, Shallow Sea, Tundra, some Cleared Lands	Boring, Drilling, Deep Drilling/Oil Derricks, Oil Rigs, Oil Exploitation Fleet	Appropriate Mining/Quarrying level
Petroleum Products	Secondary	Produced from Oil/Gas	Produce Petroleum Products/Oil Refinery	None
Power	Secondary	Man-made	Any Generating Station	Varies with type of power being produced
Rocky Outcrops	Primary	Hills	Mining/Quarrying	Appropriate Mining/Quarrying level
Salt	Secondary	Salt Pans	None	None
Salt Pans	Primary	Salt Marsh, Coastal	Scrape Site	Salting
Sea Fish	Primary	Shallow Sea	Sea Fishing/Fishing Fleet, Fishing Harbor	None
Steel	Secondary	Produced from iron ore	Produce Steel/Factory	Metallurgy Level IV
Stone	Secondary	Rocky Outcrops	Mining/Quarrying	Appropriate Mining/Quarrying level
Synthetics	Secondary	Produced Chemicals	Produce Synthetics/Factory	Chemistry Level V
Timber	Primary	All Woods, Forests, and Rain Forests	Forestry/Timber yard	Timber Construction
Tin/Copper Deposits	Primary	Hills	Mining/Quarrying	Appropriate Mining/Quarrying level

Terrain

To understand the terrain table, you need to understand the following terms:

- **Possible Resources**

This lists which primary resources can be found.

NOTE: Primary resources can only be exploited within the sphere of influence of your COHs. You might need certain discoveries, facilities, or specialized forces to exploit them.

NOTE: Only one primary resource can be exploited at one time in each terrain square. (see [page 30](#)).

- **Land Management Task**

Some terrain can be converted to other terrain by the actions of your tribe. The actions are listed here, along with the resulting terrain (Converts To).

NOTE: Land can only be converted within the sphere of influence of you COHs and will require certain discoveries.

- **Movement Loss**




At higher degrees of difficulty, the terrain affects your forces' movement rate. This indicate the percentage loss in movement rate for this terrain.






- **Movement Restrictions**





Some force types are prohibited from crossing some terrain types.




- **Defense Bonus**






At some degrees of difficulty, your forces gain this bonus when defending within this type of terrain.






Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus	
	Alpine/Tundra	Although these two occur at very different geographic locations, they both have a cold climate allowing for very little vegetation, with any animals surviving on lichen, mosses, and dwarfed plants. Oil and coal can be found and exploited in certain locations.	Oil/Gas Deposits (Tundra only), Grazing Land, Coal Deposits	None	N/A	50%	Land and Air units only	50
	Built-up	Minor human habitations such as a single farm or shack, only visible on the battlefield scenario.	N/A	None	N/A	10%	Land and Air units only	10
	Cleared Land	Areas that have been cleared by human hands to allow cultivation or afforestation.	Arable and Grazing Land plus any leftover primary resources depending on the original terrain type	Deciduous Forestation Pine Forestation Fertilization	Deciduous Wood Pine wood Cultivated Land	None	Land and Air Forces only	None






	Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus
	Coastal and Inland Shore	Coastal areas allow coastal fishing and the collection of shell-fish for food. Some places are suitable for rough grazing. Salt is available if you know how to extract it from sea water.	Salt Pans, Fish, Grazing Land	None	N/A	None	Land and Air Forces only	None
	Cratered	A Battle field—only occurrence, when a piece of land has been destroyed by fighting forces.	N/A	None	N/A	40%	Land and Air units only	40
	Cultivated	A perfect agricultural area where maximum yields result from farming or afforestation—but beware of over-exploitation.	Arable Land	Deciduous Forestation Pine Forestation	Deciduous Wood Pine wood	10%	Land and Air Forces only	10
	Deciduous Forest	As you would expect, the main resource of this area is timber but there is also some grazing and hunting available in virgin forest.	Grazing Land, Timber	Land Clearance	Deciduous Wood	50%	Land and Air Forces only	50
	Deciduous Wood	A cornucopia of grazing, hunting, farming, and timber is available in this bounteous area.	Arable Land, Grazing Land, Timber	Land Clearance	Cleared Land	30%	Land and Air forces only	30





Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus	
	Destroyed	Only visible in the battle field scenario, this represents those built-up areas that have been destroyed during a conflict between warring factions.	N/A	None	N/A	75%	Land and Air units only	75
	Dust-bowl	Over-intensification of agriculture will result in this farming disaster.	None	Irrigation	Veldt	None	Land and Air forces only	None
	Grass Land	Lush grazing land is also suitable for exploitation as arable land and with wildlife abounding the pot should never be short of a deer or rabbit.	Arable Land, Grazing Land	Deciduous Forestation Pine Forestation Irrigation	Deciduous Wood Pine Wood Prairie	None	Land and Air forces only	None
	Hills	Hilly areas tend to support a small amount of grazing and with a little delving the minerals of the earth can be exploited. There be gold in them there hills!! (but which ones??)	Coal Deposits, Rocky Outcrops, Tin/Copper Deposits, Gem Bearing Rock, Gold/Silver Veins, Grazing Land, Iron Ore Deposits	N/A	N/A	30%	Land and Air forces only	30



Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus
	<p>Ice cap</p> <p>The Arctic and Antarctic regions of the world are cold, empty, barren lands where no one can survive.</p> <p>In the game you cannot enter the polar regions. An ice wall will appear if you are in 3D mode; the map will stop moving and a warning message appears if you are in Top Down Country Mode.</p>						
	<p>Jungle</p> <p>This dense tropical growth of thickets, brushwood, and elephant grass contains a little grazing land, allows some arable farming and, in places, provides meat for the hunt. Look out for the minerals available in certain areas.</p>	<p>Coal, Elephants, Gem Bearing Rock, Grazing Land, Arable Land, Oil/Gas Deposits</p>	<p>Land Clearance</p>	<p>Cleared Land</p>	<p>50%</p>	<p>Land and Air forces only</p>	<p>50</p>
	<p>Lake Shore</p> <p>From the shore of a lake you can fish for your supper or build a harbor from which a fleet can be sent to exploit the inner waters</p>	<p>Freshwater Fish</p>	<p>None</p>	<p>N/A</p>	<p>70%</p>	<p>Land and Air forces only</p>	<p>None</p>

	Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus
	Major Lake	A lake will support a good supply of fish, but beware of over-fishing.	Freshwater Fish	None	N/A	None	Air forces only	None
	Major River	The river bank provides grazing, with deposits from annual flooding providing rich soil for arable farming. Don't forget the fishing tackle.	Freshwater Fish, Grazing Land, Arable Land	None	N/A	22%	Land and Air forces only	None
	Marsh	This soggy producer of poor grazing can be drained for improvement.	Grazing Land	Drainage	Grassland	50%	Land and Air forces only	50
	Mountain Peaks	Why <i>do</i> people climb them?	None	None	N/A	95%	Land and Air forces only	95
	Mountains	These high hills contain minerals and provide some grazing land.	Bauxite Deposits, Gem Bearing Rock, Grazing Land, Gold/Silver Veins	None	N/A	60%	Land and Air forces only	60

	Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus
	Oasis	A fertile spot in the desert, an oasis provides grazing, which can be irrigated for improvement.	Grazing Land	Irrigation	Grassland	None	Land and Air forces only	None
	Open Sea	Thar she blows—need we say more?	Deep Sea Fish	None	N/A	None	Naval and Air forces only	None
	Pine Forest	Timber, hunting, and grazing can be exploited in virgin forests.	Grazing Land, Timber	Land Clearance	Pine Wood	60%	Land and Air forces only	60
	Pine Wood	The woods provide less timber than the forests but also contain grazing land and wild animals for hunting.	Grazing Land, Timber	Land Clearance	Cleared Land	35%	Land and Air forces only	35
	Prairie	This is the richest of the plains. Full of animals grazing at the start, over-killing will deplete the population. The rich soil is eminently suitable for farming, providing high yields.	Arable Land, Grazing Land	Deciduous Forestation Pine Forestation Fertilization	Deciduous Wood Pine wood Cultivated Land	None	Land and Air forces only	None

Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus	
	Rain Forest	Tropical forest with a heavy rainfall, which results in a high density of trees, providing timber and hunting. Exploitation of mineral deposits is possible in certain areas.	Chemical Deposits, Coal Deposits, Gem Bearing Rock, Grazing Land, Oil/Gas Deposits, Timber	Land Clearance (Because of the denseness of the rain forest, several land clearance tasks may be needed.)	Cleared Land	Varies	Land and Air forces only	Varies
	River	Only visible in the battle field scenario, this represents rivers too small to appear at the campaign level.	N/A	None	N/A	50%	Land and Air units only	50
	Rock Desert	The hostile exterior can conceal valuable objects, such as gemstones.	Gem Bearing Rock	None	N/A	None	Land and Air units only	None
	Salt Marsh	Chemicals may be available in this area, as well as salt.	Chemical Deposits, Salt Pans	None	N/A	70%	Land and Air units only	70
	Sand Desert	Not a lot can be found in a desert until the on-shore drilling rigs go up.	Oil/Gas	None	N/A	None	Land and Air units only	None

	Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus	Terrain
	Shallow Sea	Send your fleets out to catch fish. Watch out for oil and gas deposits, which can be exploited with off-shore drilling rigs.	Oil/Gas, Sea Fish	None	N/A	None	Naval and Air units only	None	Terrain
	Stream	A small river on the battle field.	N/A	None	N/A	25%	Land and Air units only	25	
	Swamp	Extremely wet land with some hunting.	None	None	N/A	70%	Land and Air units only	70	
	Tidal	An area usually covered with sea water that allows the passage of ships and prevents land movement.	None	None	N/A	None	Naval and Air units only	None	

	Terrain Type	Description	Possible Resources	Land Management Task	Converts To	Movement Loss	Movement Restrictions	Defense Bonus
	Veldt	Open, unforested, or thinly forested grassland providing grazing land and hunting. Farming is possible, although it would be prudent to improve the land through irrigation first.	Arable Land, Grazing Land	Irrigation	Grassland	10%	Land and Air units only	10
	Volcano	The center of eruption of subterranean matter. The lava and ash accumulations allow nothing to grow on the site of an active volcano.	None	None	N/A	60%	Land and Air units only	60

Disasters

Disaster	Likely Occurrence	Likely Location	Effect	Effects reduced by
Crop Abundance	Moderate	Arable Land, Grazing Land	Increases in food production	Nothing
Drought	Moderate	Arable Land, Grazing Land	Reduction in food production	Engineering
Earthquake	Rare	Anywhere	Facility destruction, population reduction	Engineering
Epidemic	Rare	Any COH	Population reduction	Local health level
Flood	Common	Major Rivers, Lake Shores, Coastal	Facility destruction, population reduction	Engineering
Nuclear Disaster	Rare	Nuclear Generating Station	Total destruction of COH	Nothing
Major Oil Spill	Moderate	Oil Exploitation Fleet, Oil/Gas Terminal	Loss of control of people, loss of fish	Environmental Protection Vessel
Military Uprising	Moderate	Any government	Riots/revolts	Control of the people
Religious Schism	Moderate	Theocratic governments only	Riots/revolts	Control of the people
Sudden Death of Leader	Moderate	Following government types: Dictatorship, Tribal Chieftain, Deified Leader, Priest Leader, Divine Kingship, Monarchy	Riots/revolts	Control of the people

Disaster	Likely Occurrence	Likely Location	Effect	Effects reduced by
Tsunami	Rare unless earthquake or volcanic eruption occurs	Coastal	Facility destruction, population reduction	Engineering
Tornado	Moderate	<i>Not</i> Mountains, Forests, Jungles, Rain Forest	Facility destruction, population reduction	Radio Station, Television station
Volcanic Eruption	Rare	Vicinity of volcano	Facility destruction, population reduction	Engineering

Governments

Government Type	Base % of Control	Requirements	General Effects	Riot Effects	Revolt Effects
Tribal Chieftain	110	None	None	Political or Military Facility Destroyed	Same as Riots, plus all garrisoned forces disband
Monarch	110	Discovery Inheritance and Facility Central Administration	None	Political or Military Facility Destroyed	Same as Riots, plus all garrisoned forces disband
Dictator	130	Facility Central Administration	Decreases New Ideas	Political or Military Facility Destroyed	Same as Riots, plus all garrisoned forces disband
One Party State	130	Discovery State Ownership and Facility Central Administration	Decreases New Ideas and revenue collection	Political or Military Facility Destroyed	Same as Riots, plus all garrisoned forces disband
Land Owning	125	Discoveries Inheritance and Private Ownership, Facility Local Administration	Increases New Ideas	Either a political or an agricultural facility is destroyed	Two political or agricultural facilities are destroyed and a riot/revolt check is done on the nearest friendly COH
Wealth Owning	100	Discoveries Inheritance, Paper money and Private Ownership, Facility Local Administration	Increases New Ideas and revenue collection	Either a political or an agricultural facility is destroyed	Same as Riots plus one other facility is destroyed and all garrison forces disband
Deified Leader	130	Discovery Recognized Religion, Facility Tabernacle	Decreases New Ideas	Political or Religious facility destroyed	Same as Riots plus the COH may switch allegiance to another tribe of the same religion
Priest Leader	120	Discovery Tribal Rituals, Facility Temple	Decreases New Ideas	Political or Religious facility destroyed	Same as Riots plus the COH may switch allegiance to another tribe of the same religion

Government Type	Base % of Control	Requirements	General Effects	Riot Effects	Revolt Effects
Divine Kingship	115	Discoveries Inheritance and Recognized Religion, Facility Central Administration	Decreased New Ideas	Political or Religious facility destroyed	Same as Riots plus the COH may switch allegiance to another tribe of the same religion
People Rule	100	Discovery Freedom of the Press, Facility Local Administration, Education Level 5	Increases New Ideas and decreases revenue collection	One facility is destroyed	Two facilities are destroyed plus all your garrisoned forces disband
Party Rule	95	Discoveries Freedom of the Press, Secret Elections, Facility Central Administration, Education Level 3	Increases New Ideas	One facility is destroyed	Two facilities are destroyed plus all your garrisoned forces disband
Proportional Representation	95	Discoveries Freedom of the Press, Secret Elections, Facility Central Administration, Education Level 3	Increases New Ideas	One facility is destroyed	Two facilities are destroyed plus all your garrisoned forces disband

Designer's Notes

Several decisions early in the project had major effects on the design. The game would be:

- Designed as a multi-player game via network/modem
- In 3D and real time
- A Windows 95 project

Designing for a multi-player environment has several advantages in a strategy game of this type:

- I was able to give trade and diplomacy a far greater role than is usually possible in a solo game by making use of chat modes. Players are no longer restricted in what they say or how they negotiate. In addition, introducing an active spy system, which allows hidden eavesdropping, gives the opportunity for intentional deception, and the potential use of code systems between allied players (not included in the game) for those who really want to get involved.
- As it is highly unlikely that your “country” will contain all the resources you require, you will have to either trade for them or conquer the area you need. Trade, like diplomacy, has a chat mode in the multi-player version. The players can decide exactly what they consider the value of each resource at any time during the game, and can even attempt to set up brokerage deals among multiple players.
- The use of 3D and real time is unusual in strategy games, but I felt that I could add not just a degree of realism but also an extra degree of difficulty. The shock of walking over a hill and finding an unexpected enemy is usually reserved for the action player. The continuous pressure of having to make decisions for me adds to the game environment; even the decision to do nothing has significance. However, a lot of strategy players like sitting back and thinking, and the pressure of a real-time environment prevents this. We have therefore added a Pause button (for use in solo games), and the option to play a turn-based game.
- The 3D environment is tied into the degrees of difficulty of the game and to a tribe's scientific progress. For example, at the extreme level, access to the top down view maps and the directional compass window is not available until the tribe discovers surveying and the compass. This limits you to seeing what your forces see as

they move around. It is surprising how difficult it becomes to plan long term when your view of the world is limited to the next range of mountains or the distance your ships can safely sail away from land. Is there a more advanced enemy over there or not? Do I dare take a look or should I wait until I have built something bigger and better? On the other hand, they may have just the trade items I need!

- The decision to use Windows 95 forced the interface into a particular pattern, and although I wanted to maintain the recognizable Windows feel so that Windows users would feel at home with the interface, I also wanted to produce a “game” rather than a “work” environment. I think that we have been successful in this by maintaining the dockable tool bars and Windows-style icon and box layouts, but with a whole range of game-based wallpapers and borders.
- The use of variable victory conditions allows a player to win by taking different approaches to the game. There are two basic victory options: military and scientific.

Under the Scientific option the game ends when any tribe achieves the scientific discovery goals required by the chosen scenario. Under this option, the player does not necessarily win by exterminating his opponents although conquest may help. If you do not win, a rating system shows you how you did compared to the other tribes.

Under the Military option the game ends when only one tribe is left. You also get a rating based on how long it took to wipe out your opponents and how many opponents there were.

Finally, for those of you who just can't make up your minds whether you are the “bloodthirsty kill 'em all” type or the “peace love and the greater glory of mankind” type, you can pick the optional victory condition, which allows you to win either way.

Credits

Interactive Magic gratefully acknowledges the cooperation of Harper Collins in allowing the use of sections of *Past Worlds: The Times Atlas of Archaeology* (Times Books Ltd, 1988) and *The Times Atlas of World History* (Times Books Ltd, Fourth Edition, 1993) in the making of the online encyclopedia.

<i>Game Designer/Producer</i>	Adrian Earle	Dagger Interactive Technologies Ltd.
<i>Producers</i>	Joe Rutledge	Interactive Magic
	Doug Kubel	Interactive Magic
<i>Programming Team</i>	Jeff Kiel	Interactive Magic
	Chris Wall	Dagger Interactive Technologies Ltd.
<i>Artwork Team</i>	James Mather	Dagger Interactive Technologies Ltd.
	Marco Garcia	Interactive Magic
	John Dupree	Interactive Magic
<i>Game Cartography</i>	Sara Ley	Dagger Interactive Technologies Ltd.
<i>Music</i>	Donald S. Griffin	
<i>Encyclopedia Artwork</i>	Robb Shandroff	Interactive Magic
<i>Encyclopedia Research & Compilation</i>	John Davies	Dagger Interactive Technologies Ltd.
	Sara Ley	Dagger Interactive Technologies Ltd.
	Adrian Earle	Dagger Interactive Technologies Ltd.
<i>Programming Support</i>	Ann Sprague	Interactive Magic
	Elliot Kim	Interactive Magic
<i>Multimedia Support</i>	Robert Stevenson	Interactive Magic

Manual

Adrian Earle

Dagger Interactive
Technologies Ltd.

Sarah O'Keefe

Scriptorium
Publishing Services*Internal Playtesters*

Joe Allen

Ismini Boinodiris

Michael Shane Brewer

Brian Davis

Carlin Gartrell

Mariselle Mulero

Ted Wagner

External Playtesters

Steven J. Chmura

Frederic Dankoff

Drew Fudenberg

Douglas Gehlsen

Walt Graham

Gary Hagen

Erez Lieberman

Ignacio McGuire

Scott Minnier

Evan D. Nau

Dave G. Pastula

Jim Pedicord

Jean-Francois Prieu

Dean Robb

Tim Russo

Barry A. Spikes

Todd Strobl

Michael Subelka

Dwight Woodard

Terry Yingling