# Phenomic Landscape Editor Documentation

# Disclaimer & Legal Information

**The Phenomic Landscape Editor for SpellForce is provided 'as is'. Phenomic Game Development or JoWooD Productions AG can not be held responsible for any damage caused by installing or using the Editor. Use at your own risk.**

The SpellForce Editor is an unsupported product intended for enthusiastic SpellForce users to create additional deathmatch (PvP) and free game (cooperative) maps. You can not load or modify existing Single Player Campaign maps, or create a new Single Player Campaign.

**For the editor to work you need to have installed:**

1. The „Breath of Winter“ SpellForce Add-On.
2. The SpellForce (Breath of Winter) patch to v1.35.

The editor will not work with SpellForce alone (no Breath of Winter Add-On) or without the v1.35 patch!

No guarantees can be made regarding the use of certain functions, the correctness of this document or the editor itself.

**The editor is NOT supported by Phenomic or JoWooD!**

**NOTE:**
Maps created with the Phenomic Landscape editor or the editor itself may not be sold or distributed commercially without prior written permission from JoWooD Productions AG.

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## 6. Units, Buildings & Objects



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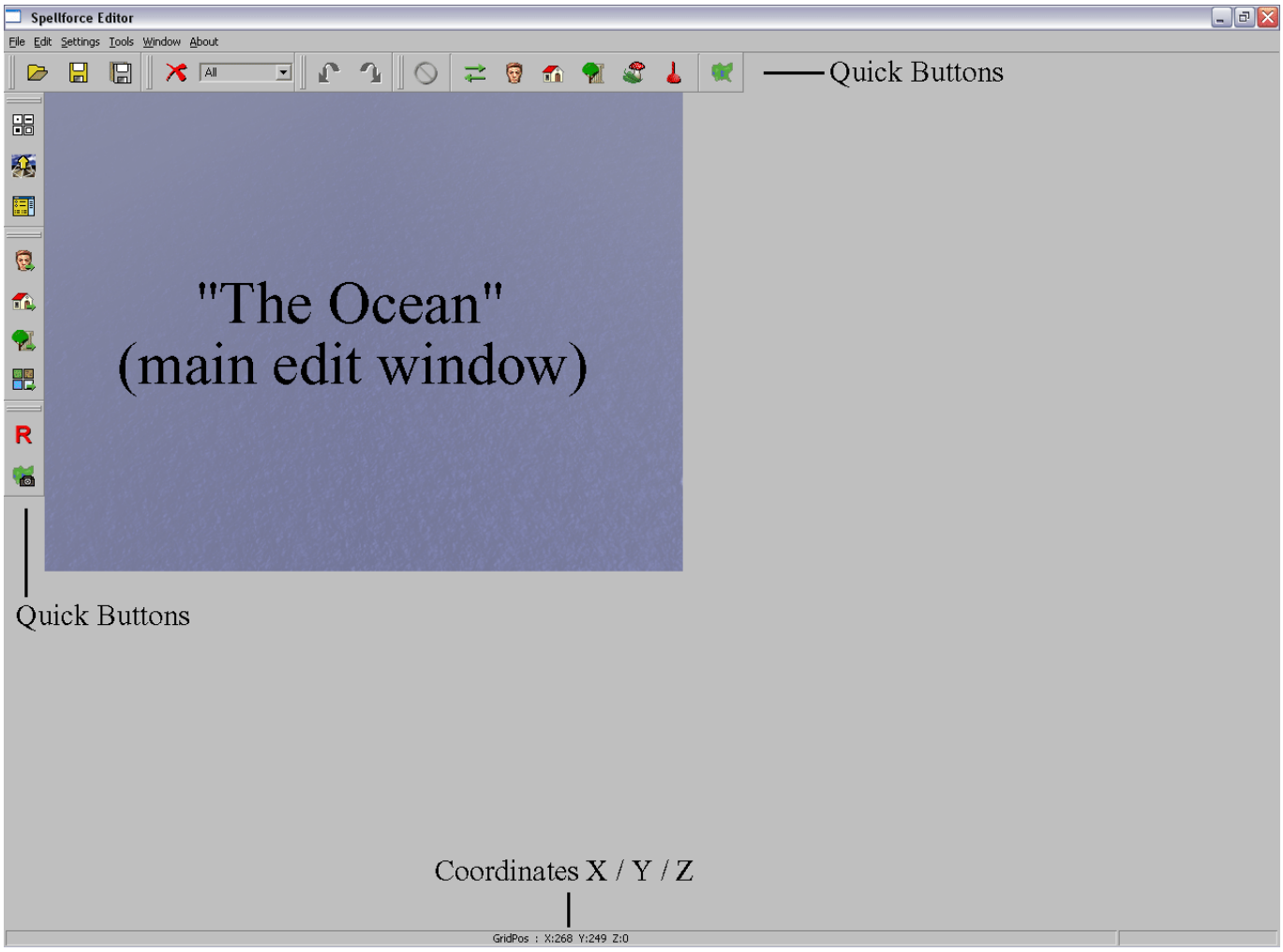
# 1. Introduction

## 1.1. First Start

If you start the Editor the first time your screen should look something like this:




**The Ocean** is the main edit window.

The **Quick Buttons** and the new windows they open can be moved around **The Ocean**, just drag them wherever you want. If you close the Editor the positions of the **Quick Buttons** and the windows will be saved. That means you don't have to rearrange them everytime you start the Editor.

The coordinates show the position of your cursor in the map.

**Note:** All icons have Tool Tips which contain detailed information about their function.

## 1.2. Movement and shortcut keys


Use the cursor keys to move the camera up, down, left, right

**Insert** = Rotate camera left

**Delete** = Rotate camera right

**Home** = Tilt camera angle up

**End** = Tilt camera angle down

**Page up** = Zoom camera out

**Page down** = Zoom camera in
You can also use the mousewheel to zoom.

**W** = Toggle grid on/off
Pressing **W** once toggles grid with textures
Pressing **W** twice toggles grid without textures
Pressing **W** three times toggles back to normal mode
Distance between grid points is equal to 1,4 meters in real life.

**C** = Center view on Map

**R** = Redraw Map
Sometimes the landscape contour will lose detail if you move the camera around too fast or zoom out too much. Press **R** to fix this problem.
It is also useful to get rid of the shadows buildings leave behind when you delete them.

**Num + / -** = Toggle screen size

**Space** = Open Quick Selection Window

# 1.3. Toolbar Icons

Load Map

Save Map

Save Map as

Brush Settings

Modify Height (Toggle)

Height Settings

Place units

Place Buildings

Place Objects

Place Textures

Recalculate Map

Map Screenshot

Delete

Undo / Redo

Toggles Drawing mode (hide all | invert settings - show/hide: Units - Buildings - Objects - Adorns - Flags)

Toggle Textureblocking

# 2. Crash course: My first map

Note: This will only describe the necessary steps to create a map. You may want to read Point 3 - 7 to get detailed information about how each feature works.

## 2.1. How do I create the landscape?

- Select **New** from the File menu and choose the size of your map (256x256 or 512x512)

- Select **Heightmap Tool** from the Tools menu and create your heightmap

- Select **Texture Mixer** from the Tools menu and create or load a Textureset if needed.

- Select **Auto Texturer** from the Tools menu to perform a quick texturing to your map.

- Use brushes to modify your map (texturing, smoothing, landscape)

- Place objects on the map

**Note:** Remember the **Block Texture** feature in the **Texture Mixer** to block areas of your map (blocks movement of all ingame characters).

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## 2.2. What kind of objects do I need?

- **Coop Spawn Points** (in Coop Mode only!)

- **Monuments** (for player races and heroes, most maps have at least one or the other)

- **Bindstone(s)** (at least one must exist on every map for every player)

- **Ressources** (wood, stone, iron... unless you don't have player race monuments on the map)

- **NPC Animals** (for food, if needed)

**Note:** Remember to block objects manually if they do not block the occupied area by themselves.

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## 2.3. What else do I need to play?

- in **Deathmatch Mode** and **Coop Mode** you must assign the **Bindstones** to player start positions and teams.

- in Coop Mode you must define (a) **Coop Spawn Point(s)**

## 2.4. Where do i save the map?

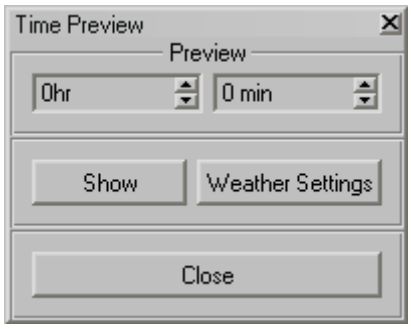
- in **Deathmatch Mode** the map has to be saved to the **\map\LAN** folder
- in **Coop Mode** the map has to be saved to the **\map\LANFreeGame** folder

The map folder has to be a subfolder in the folder where SpellForce is installed, for example save deathmatch maps to: **C:\Program Files\SpellForce\map\LAN** if SpellForce is installed in C:\Program Files\SpellForce

# 3. Settings

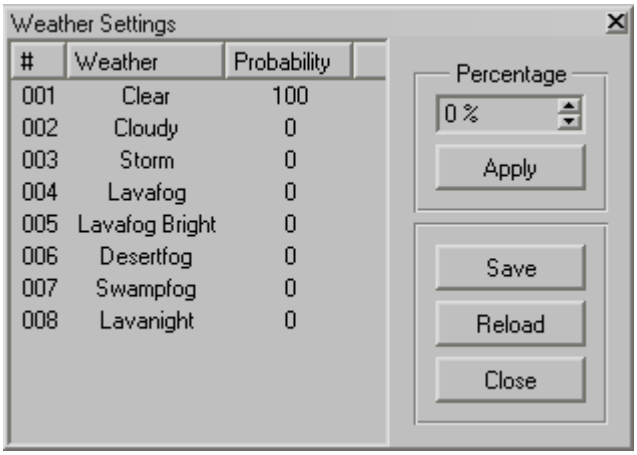
## 3.1.Time & Weather Settings

The Time Settings are a preview of the different daytimes you have in Spellforce.
If you want to get an impression of what your map will look like at 7o'clock in the evening then set the time to 19.00 and press **Show**.




**Note:** Time changes are **NOT** saved within the map, it's just a preview. Maps always start at 10:30 in the morning.

Press **Close** to leave the Time Settings or press **Weather Settings** to go on.

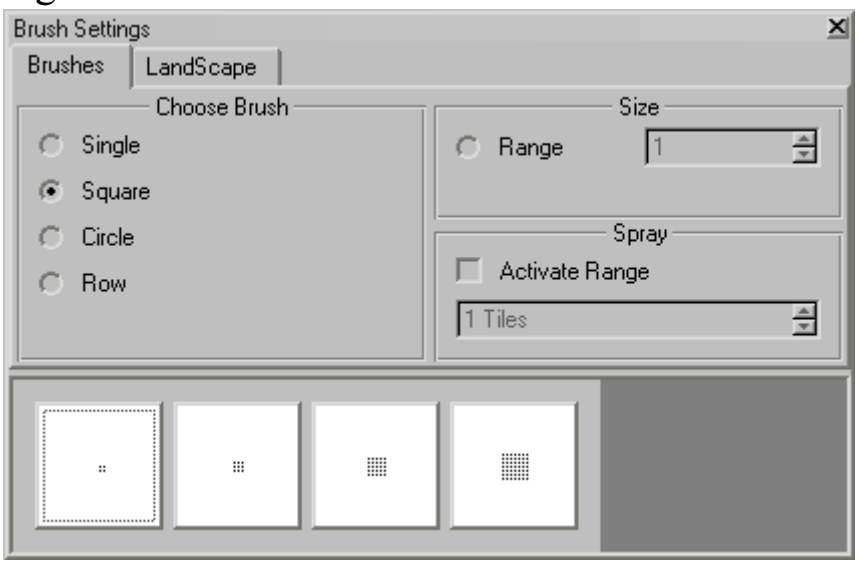



In opposition to **Time Settings** the **Weather Settings** are saved into the map.
Default weather is100% clear.
The probability of the different weather types must be 100% all together.
For example, if you want 80% clear you have to set another weather type to 20%. Or set two weather types to 33% and the third to 34% to get a sum of 100%.
In game the weather will change by chance depending on the percentage of the weather types.

Press **Apply** to set the percentage of the current weather type.
Press **Save** to store your settings into the map.
Press **Reset** to set weather type „Clear“ to 100%.
Press **Close t**o get back to the **Time Settings** window.

**Note:** Save only stores the weather into the map, not the map itself.
If you close the Weather Settings without saving the map all changes to weather settings will be lost.

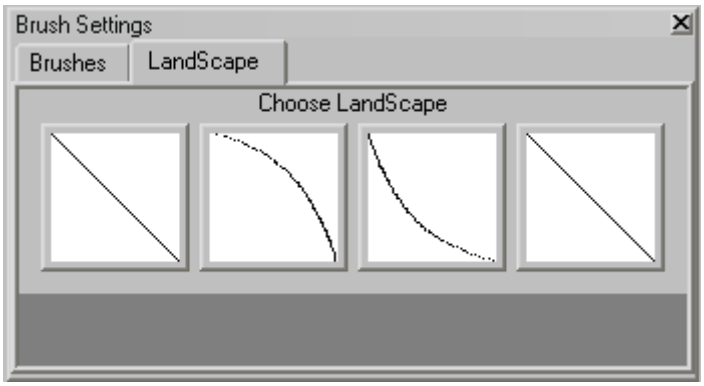
# 3.2. Brush Settings



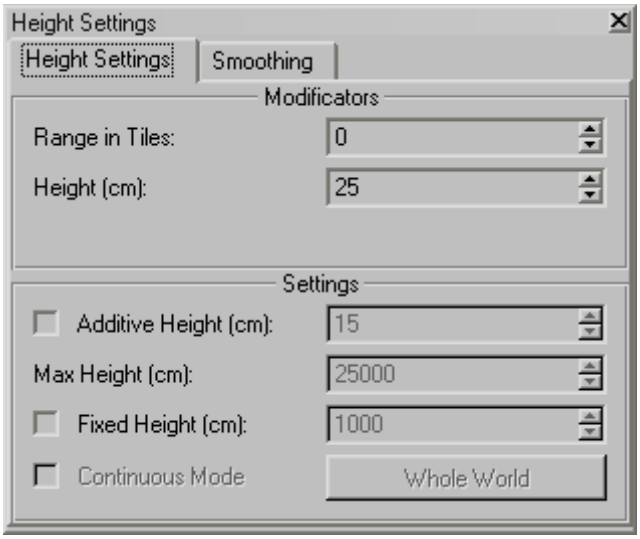

There are several brushes to work with, single, squares, circle or row. User defined brush types can be added by editing qtbrush.des (make a backup before making any changes to qtbrush.des).
Leftclick on a brush to select it. If you want to make your brush bigger than by defaults select **Range** to increase / decrease its size. Use the arrows, type in a number or press **STRG** and use the mousewheel. The maximum range size is 20.

**Spray** describes the range the selected brush will affect the world, up to a maximum size of 20.
This can be used for placing Adornments or trees.
Try setting the range to 20, pick a tree and keep pressing the left mouse button.

If you switch to **Landsscape** you will find some pre-defined curves which can be useful to create different types of landscape.



## 3.3. Height Settings




Here you can set parameters to raise / lower the landscape with a brush.

**Range In Tiles** = This is the range of how much squares around the brush will be affected. The maximum is 10 tiles.

**Height (cm)** = This is how much cm the brush will raise / lower the landscape.

**Note :** If you only enable the two parameters above it is only possible to modify the height by keeping the left mousebutton pressed and moving the mouse up and down.
If you want a more comfortable way change the parameters below.

**Additive Height (cm)** = This stands for how much cm of the landscape will be raised / lowered with each mouseclick.

**Note:** Selecting **Additive Height** will set **Height Modificators** above out of function.

**Max Height** = This is the maximum height the landscape can be raised to.
You shouldn't change this parameter.

**Fixed Height** = This will set the brush to raise or lower the landscape to a fixed height when you move it.

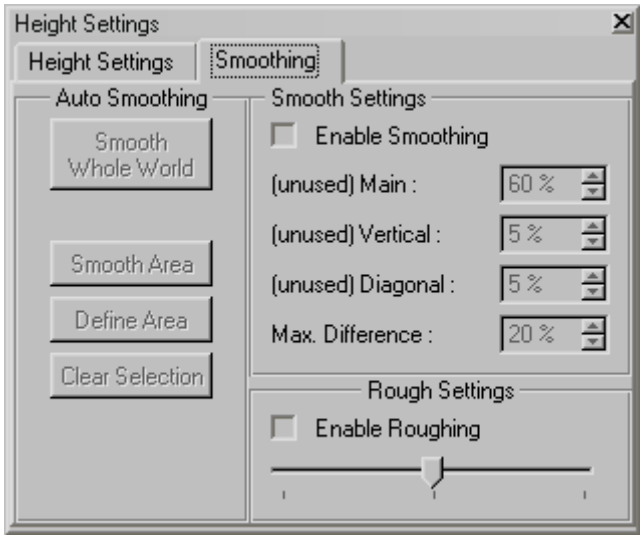
**Continous Mode** = This toggles the continous mode which means you can keep the mouse button pressed to raise / lower the landscape.

**Note:** Left mousebutton will raise landscape, right mousebutton will lower landscape.

**Whole World** = This will raise / lower the whole map (relative).
If you want to raise the map about 5 meters then enter 500 cm in **Additive Height** and press **Whole World**.
If you want to lower it enter -500 cm.

Note: Toggle **Modify Height** to get into the Height Edit Mode.

**Enable Smoothing** will toggle the smoothing function.
You can now use a brush to smooth out hard edges.




**Smooth Whole World** = This will smooth the whole world at once.

**Smooth Area** = This will smooth the selected area.

**Define Area** = This will define an area to smooth.
You need to select 3 points at least.

**Clear Selection** = This will clear the defined selection.

**Max. Difference** = This is the intensity the smoothing will be.

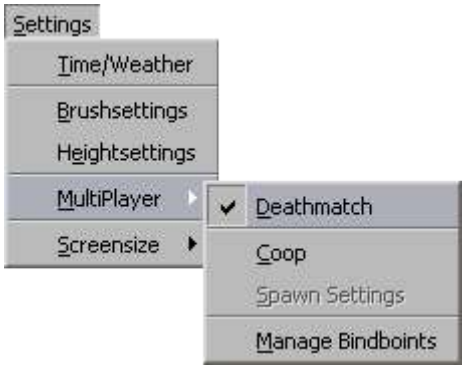
**Enable Roughing** = Enable this to rough your map (opposite to smoothing).

## 3.4. Multiplayer Settings

Choose which type of map you want to edit:

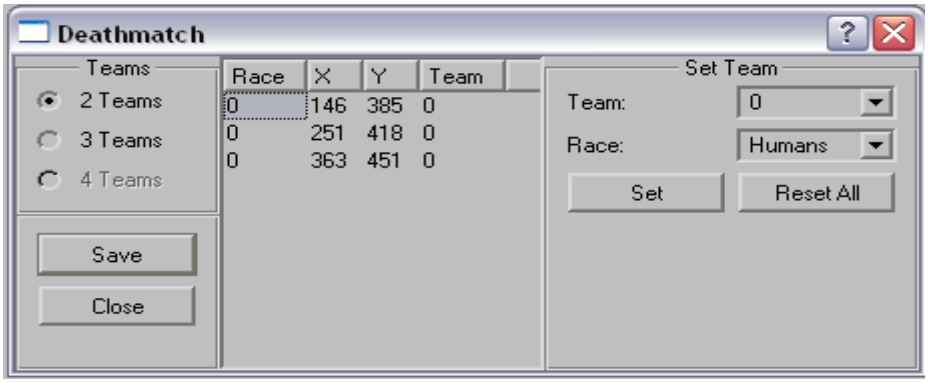
**Deathmatch** = player vs player, up to 8 players distributed over 4 teams are allowed
**Coop** = player vs computer, up to 3 players are allowed

### Deathmatch Mode:




**Note**: You have to place Monuments and Bindstones (min. 2 / max. 8) to play a Deathmatch map.

Select **Manage Bindpoints** from the menu.




Select how much teams can play on the map.

For example: **2 Teams** = 1vs1, 3vs3
For example: **3 Teams** = 1vs1vs1, 4vs2vs2
For example: **4 Teams** = 1vs1vs1vs1, 2vs2vs2vs2

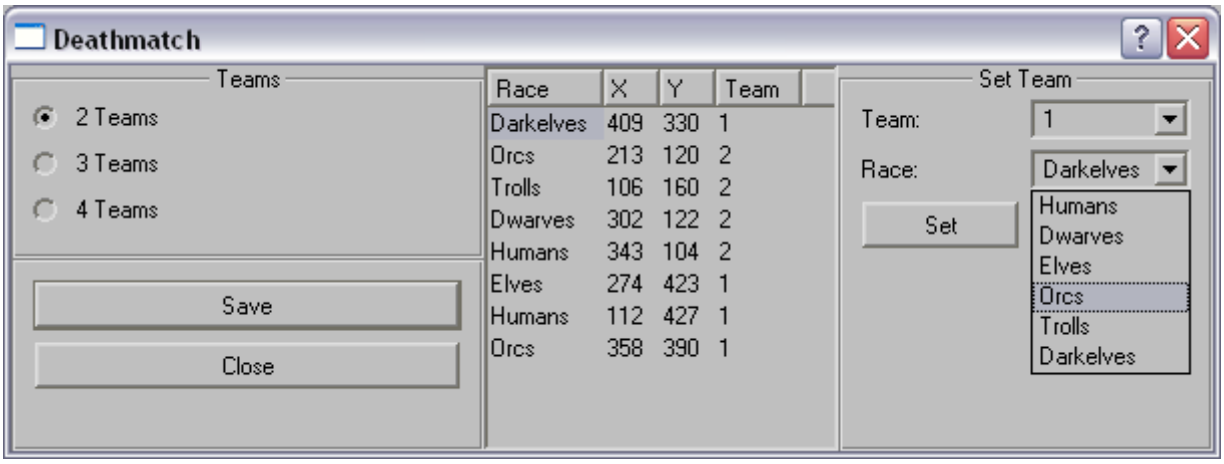
If you want to play the map with 2 and 4 teams you have to assign both Teams.

Then you need to assign a team and a race to the coordinate of each bindstone.
Doubleclick into the race chart to bring up the bindstone to the screen.
Select the Team you want the player to be and name the Bindstone.

**Team 0** = Assign the Bindstone to nobody. If you have a map with 8 Bindstones on it and want to play 3vs2vs2 assign the last Bindstone to Team 0.
**Team 1** = Assign Bindstone to Team 1 and so on.

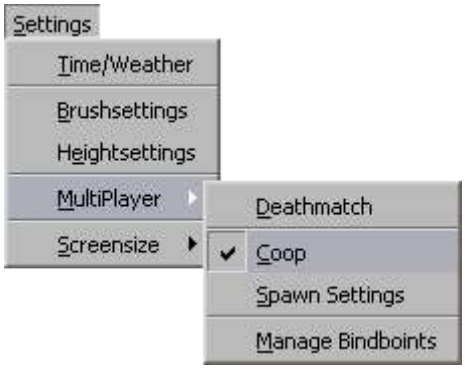
For example: Place an Orc-Monument and a Bindstone near it on the map.
Select the team the player will be in and set **"Orc"** to the Bindstone coordinates.
Press **Set** to store your settings and **Save** to save your settings to the map.

**Reset All** will restore all settings until you press **Save.**



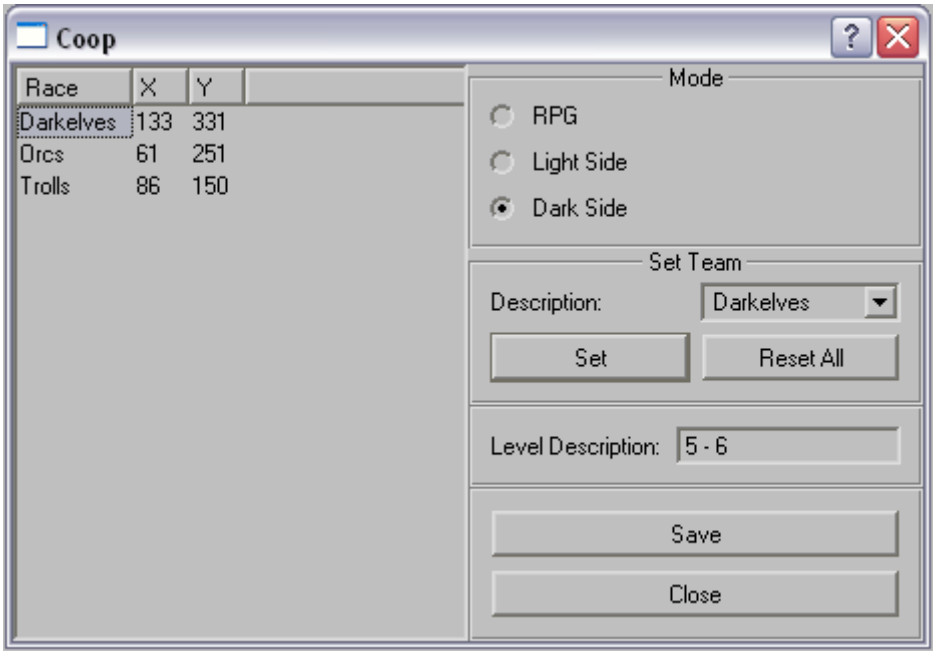

**Note:** The name of the Bindstone should reflect the name of the Race whose monument is closest to the Bindstone. There will be no random choice when you start a multiplayer match, all starting points are predefined.

## Coop Mode:




**Note**: You have to place a Monument, a Bindstone and at least 1 non static Spawn Point to play a Coop map. The maximum number of Spawn Points is 25.

Select **Manage Bindpoints** from the menu.

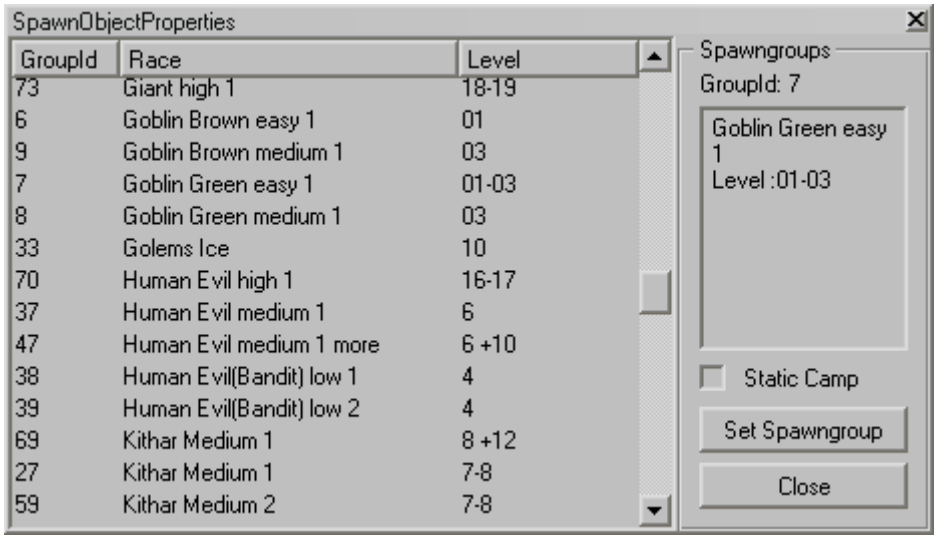



Assign a Bindstone to each team and choose the mode your map will be.

**Note:** If you place Light Side & Dark Side on the same map they will attack each other if they get too close. Since this is supposed to be cooperative play it is not recommended to mix light and dark side races on a map.

Level Description is the information of the map that will be displayed in the game menu.

Next Place a **Spawn Object** on the map and then leftclick on it. Coop **Spawn Objects** can be found in the Objects list, in the folder: „Misc > Coop > Spawn Point“

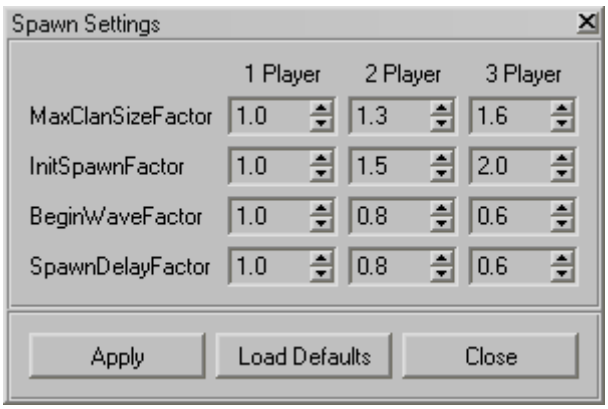



You can now choose a Race that will spawn from it. Level describes the levelrange of the Race.
Select **Static Camp** to make the camp static that means it will always be active in the game. This means everything inside the Spawn Point range will appear everytime you start the map, including enemy spawning. All other spawn points are activated by chance on every map load. Press **Set Spawngroup** to save it to the map.

Next you need to place at least one building into the range of the Spawn Point.
The building's rotation point must be inside the range (purple circle) of the Spawn Point.

**Note:** If you have only 1 Spawn Point on the map it must not be a Static Camp!
If you want 1 Spawn Point to be a Static Camp there must be at least 2 other Non Static Spawn Points on the map.

Next select **Spawn Settings** from the menu.



You can change spawn settings for one, two or three player games. A value of 1.0 is equal to 100%, meaning the default value. Default values are optimized for single player coop mode, for more players the spawn settings need to be set to increasingly higher limits (respectively lower limits for the latter two values).

**Max Clan Size Factor** = This is a multiplicator for the maximum number of enemies that can be on the map until camps „are full“. Camps which reached their max clan size will stop spawning. Usually this will not happen as enemies will continously attack the player(s) anyway, reducing the clan's size. Higher values mean higher maximum number of enemies

**Init Spawn Factor** = This is a multiplicator for how much enemies per camp are already spawned at the beginning of the map. Higher values mean more enemies.

**Begin Wave Factor** = This is a multiplicator for the delay in time before the first attack wave will begin. The smaller the number the faster the first enemies will attack the player(s). If a player has been spotted by scouts the first attack might still come earlier.

**Spawn Delay Factor** = This is a multiplicator for the delay in time before a new enemy unit spawns. The smaller the number the faster new enemies will appear and as a side effect, there will be more enemy attacks in less time.

**Apply** will save the changes to the map.

**Load Defaults** will reset everything to default values.

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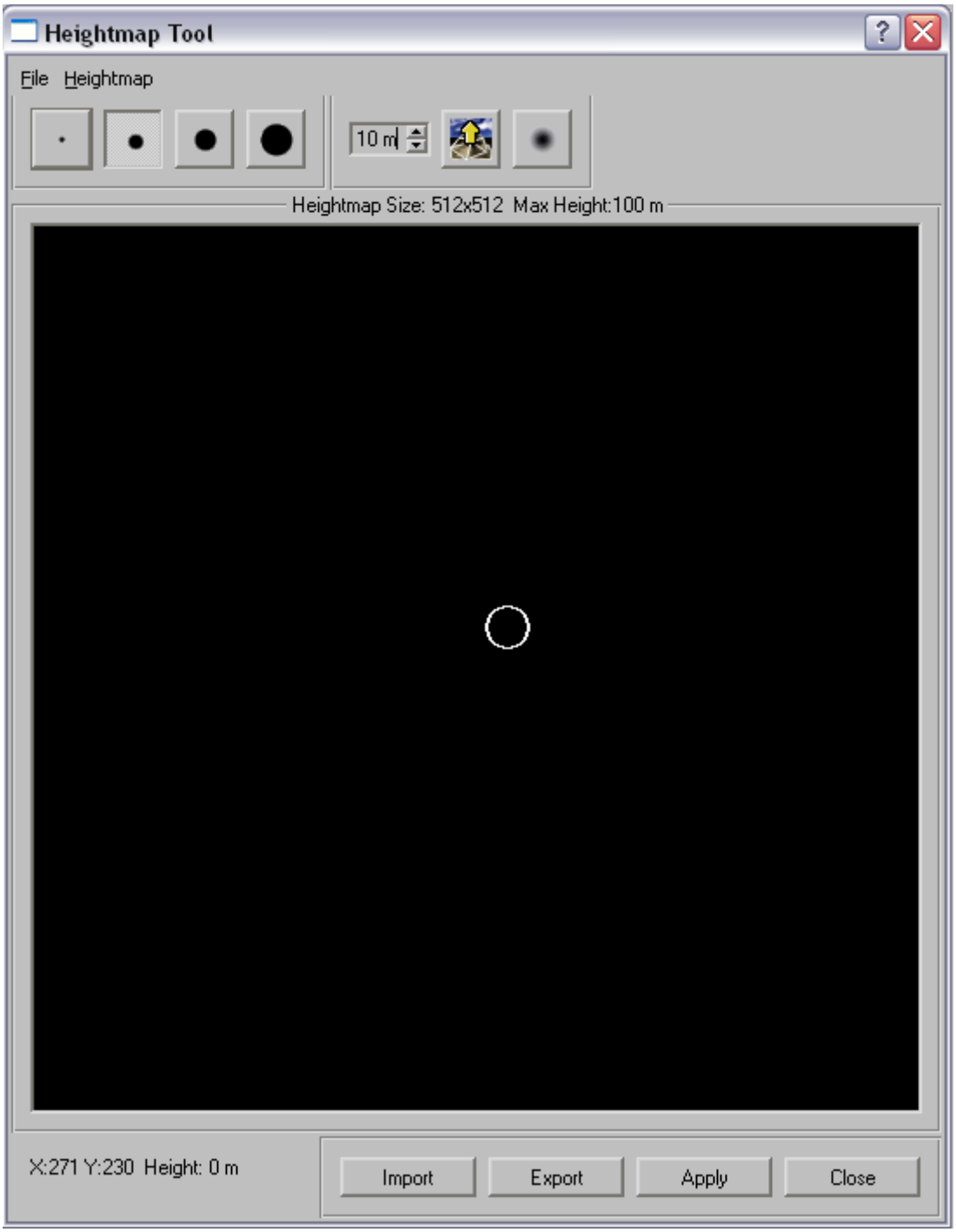
## 3.5. Screensize

This will increase / decrease the size of the main edit window.
You can also use Num +/- to change it..

# 4. Tools

## 4.1. Heightmap Tool




This is the most convenient possibility to create a landscape.
Choose a brush size and draw your landscape into the black window by pressing the left mouse. The default height is set to 10 meters, but you can increase / decrease the height by clicking on the arrows right hand of the display. Or click on the number and use the mousewheel. The maximum heigth is 100 meters. The higher the brush is the brighter it will be. X / Y is the position on the map. Left mouse will add the brush heigth to the world, right mouse will delete it and set it back to black.

**Note:** Keep the mousebutton pressed to increase / decrease the brightness of the brush.

**Toggle draw conditions:**

By default you can only draw on areas which are lower than your brush.

For example: Your base terrain is 10 meters high and you have a 20 meters mountain on it.
If you now choose a 15 meter brush only the base terrain will be affected.
If you want to do a cut into the mountain (for a river or a valley) you will have to toggle the draw conditions by clicking this button.

**Toggle smoothing:**

Use this option to smooth your heightmap.

If you have finished your creation hit **Export** to save it.
There are two file formats you can choose:

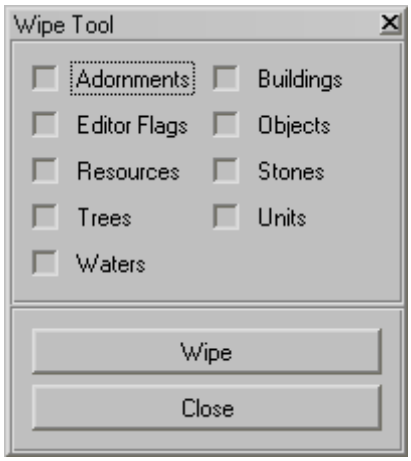
**Binary**
This is an internal editor format which stores everything you do with the Heightmap Tool.

**PNG**
If you like to further edit your heightmap with other gfx editors then use the PNG picture file format.

Press **Apply** to take over you heightmap into the world.

**Note:** All operations you do with smoothing will not be saved into the PNG file!
If you press Close before you export or apply your height map the changes made in the heightmap tool will be lost!

## 4.2. Wipe Tool




This deletes all the selected type from the map.
For example, if you want to delete all trees simply check **Trees** and press **Wipe**

**Note:** Deleted objects can be restored by using Undo

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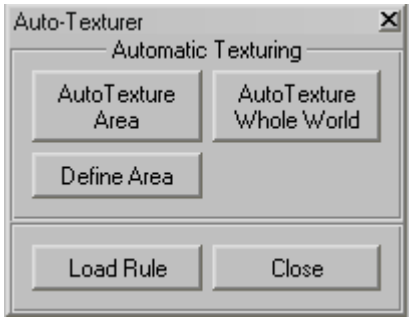
## 4.3. Auto Texturer

This will help you to perform a quick texturing to the whole map.




**Load Rule** will load a texture rule definition script file.

**Auto Texture Whole World** will apply the selected rule to the whole world. This may take a couple seconds.

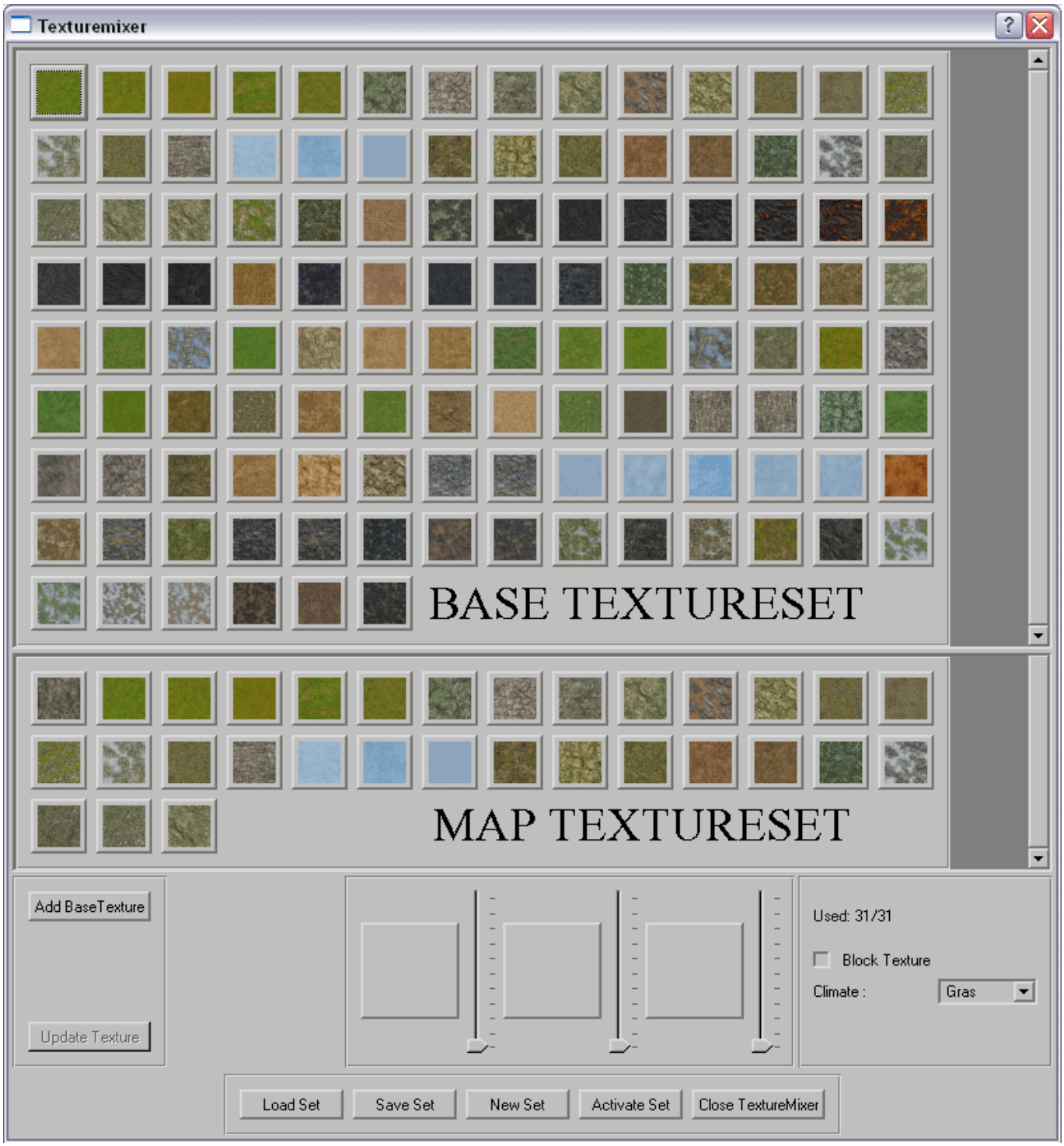
**Defina Area** will allow you to select an area to which the rule will be applied. You can select up to 20 points by clicking into the map. You need to select at least 3 points.

**Auto texture Area** will texture the area you have selected.

**Note:** You can create/modify your own texture rules. This may be helpful if you create your own textureset in wich you arrange the textures in another way like in the standart set.

Read 7**. Auto Texturer scripts** to get more information. Some familiarity with scripting languages is assumend.

## 4.4. Texture Mixer




Here you can create your own textureset by choosing from 118 base textures.
When you start the editor for the first time a default textureset is loaded.

If you want to swap textures do the following:
1. Leftclick on one of the textures in the **Base Textureset.**
2. Leftclick into one of the empty boxes in the middle.
3. Leftclick on the texture in your set you want to change.
4. Press **Update Texture**
5. Repeat steps 1-4 or press **Activate Set** to see the new textures on your map.

**Note:** If you close the Texture Mixer without pressing Activate Set all changes to texture set will be lost.

Rightclick on a texture in your **Map Textureset** to delete it.
If you want to place a texture from the **Base Textureset** to the empty place you have to press **Add Base Texture** instead of **Update Texture.**

If you want to save the set press **Save Set.** You can reload your set later with the **Load Set** button.

**Note:** You can't place the same base texture several times into the Map Textureset.
The slide bars near the boxes have no use at all.

## 4.5. Blocking Textures

What is the **Block Texture** feature?
This will add an invisible blockbit to the texture. Areas with this texture are blocked so no unit in the game can enter or walk through them. It's like an invisible wall.
There are some objects you need to block by hand. This can either be done by using the **Texture Blocking** feature or by placing **Editor Flags.**

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## 4.6. Browse

If you know you have placed one Human Monument on your map but you're not shure where it is use the browser to find it. You can browse Figures and Objects. Double click on an entry in the browse list to center the view on the object/figure.

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## 4.7. Map Statistic

Here you can gather information about how much trees or the total amount of ressources are on the map.

# 5. Textures & Adornments

## 5.1. Placing Textures

World Texture →


This is the set created by the **Texture Mixer**.
The very first texture in the upper left corner is called **World Texture.**
This texture can be used to draw directly on **The Ocean.** This is another opportunity to create landscape, but it is more tedious than using the **Heightmap Tool** because first you have to lay out the area you want to use and then raise the landscape in a seperate step.

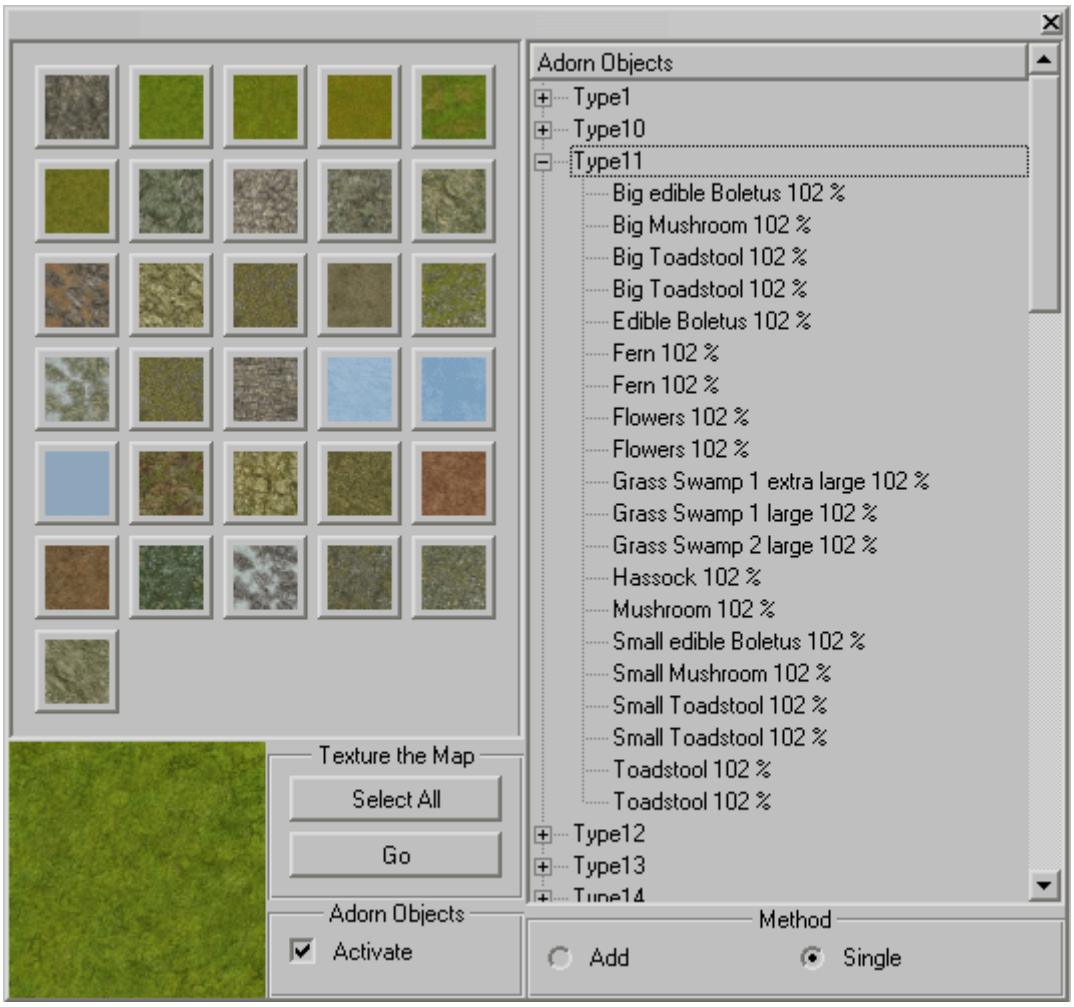
If you pick a texture it will be displayed in a preview window.

You can texture the whole map with one texture. Choose a texture, press **Simply All** and then **Go. NOT Recommended** once you have begun texturing your map.

**Note:** You can assign a different texture to each mousebutton by clicking on the desired texture with either the left, right or middle mouse button. You can then draw, for example, a grass texture by left clicking, a mud texture by right clicking and a stone texture by middle clicking. There is no visual representation which texture is assigned to which mouse button.

# 5.2. Placing Adornments

**Activate Adorns Objects** will toggle a new window with a list of plants.
They are divided into differtent types.
If you select a type with more than one adornment it will be randomly picked from the list depending on the percentage.




**Add** = This will place the selected adornments with the the selected texture.
**Single** = This will place the selected adornments without the the selected texture.

# 6. Units, Buildings & Objects

## 6.1. General Information

There are 3 different types of things you can place into your map.
Some are selfblocking and some have to be blocked by hand.
To block things by hand use either the Texture blocking Feature (Texture Mixer) or Flags (Misc Objects).

**Units** = NPCs, Enemies, Animals

**Buildings** = These are **real** Buildings of all kind.
They are selfblocking and can be attacked. They also flatten the ground if necessary.
If you want non attackable Buildings (eg for a town) use those in Misc Objects.

**Objects** = Misc stuff, Monuments, Trees, Water, everything else...
Here you will find major things like Monuments, Coop Spawn Point or Ressources.

Note: Buildings & Objects have a so-called "rotation point". This is the point where the Object is attached to the mouse. You can rotate Buildings and Objects using the mousewheel or type in a number. To rotate a Unit you must leftclick it and set it to look to one of 8 directions (0-7).

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## 6.2. Delete


Use this to delete different types of things from your map.
Simply choose the type you want to delete and press the red X-Button

**Note:** Selecting All will delete EVERYTHING under the cursor, including the world texture!
Deleted things can be restored by using Undo.

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## 6.3. Undo / Redo

This can be helpful if you have deleted / placed / textured something by mistake.
Undo / Redo is limited to 3 times. So be careful with drastic changes. Save early, save often still applies!

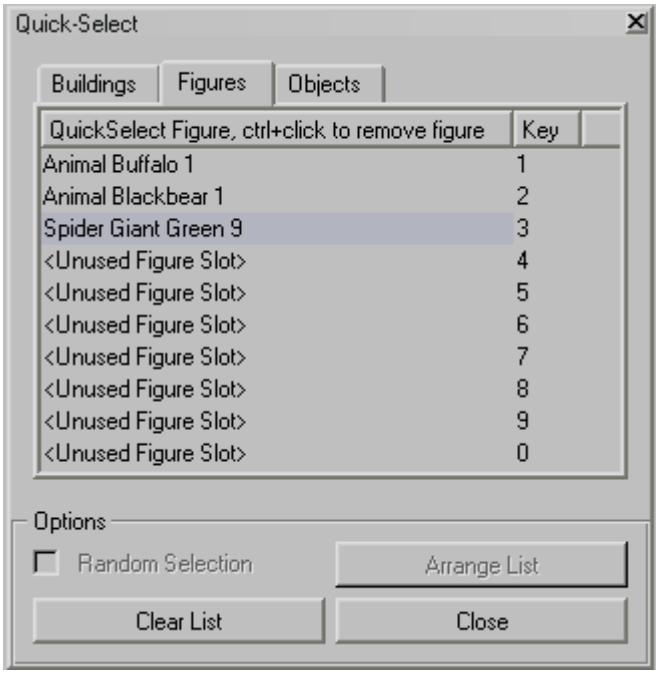
## 6.4. Hide / Unhide things / Toggle Texturblocking

This is useful to get a better survey of the map by hiding certain objects and to get a better performance. Also avoids loading of textures of the types, often for quick changes it is best to hide all objects, scroll to the target location and then enable the objects you need to see.
The first button will simply hide all objects.
The second button will invert the settings of the following five buttons.
The other buttons will toggle the selected type (units, buildings, objects, adorns, editor bits).

This will toggle the blocked textures on the map.

---

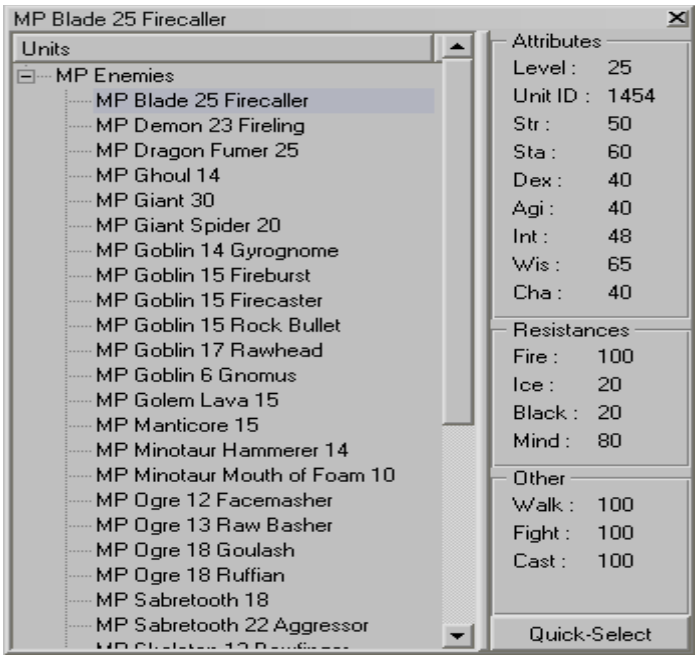
## 6.5. Quick Selection




Up to 10 Buildings, Figures or Objects that are used very often or need to be placed alternately can be stored in here.

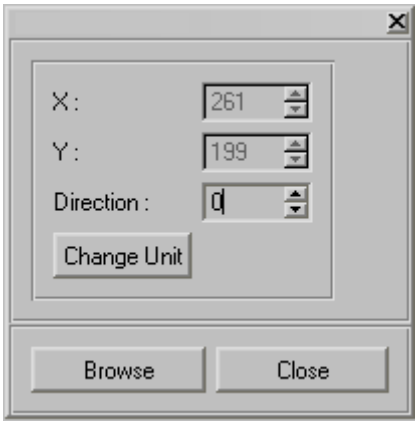
To add an item to the list simply Ctrl+click it in the standard listview for buildings, figures or objects. To quickly select an item from the quick select list press the respective button on your keyboard (keys 1-9 and 0). This is why it is called „quick select“ list.

## 6.6. Placing Units




**Quick Select** = This will open the Quick Select window.

Select a Figure and place it on the map. Leftclick on it to open the property window.




**X / Y** = The position on the map

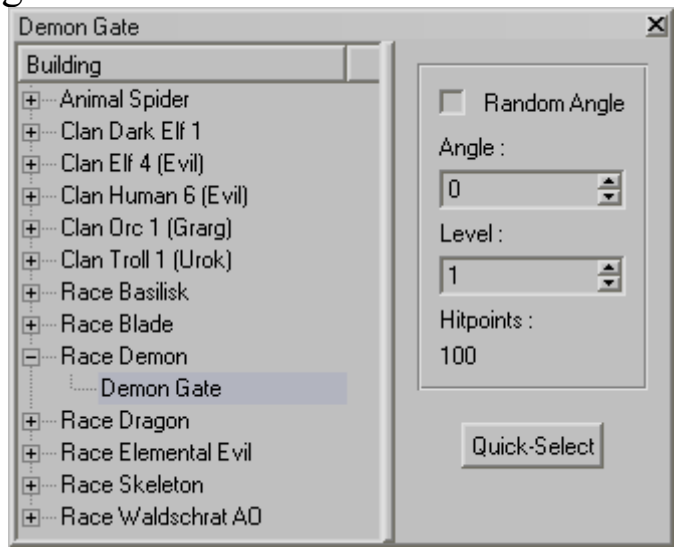
**Direction** = The direction the Unit is facing
0 = east, 1 = southeast, 2 = south and so on

**Change Unit** = This will open the Unit window to change the type of unit.

**Browse** = This will open the Browse Figure window.

**Note:** Some animals like Deer, Cow or Wildboar are neutral to everyone and will give food when hunted.

# 6.7. Placing Buildings

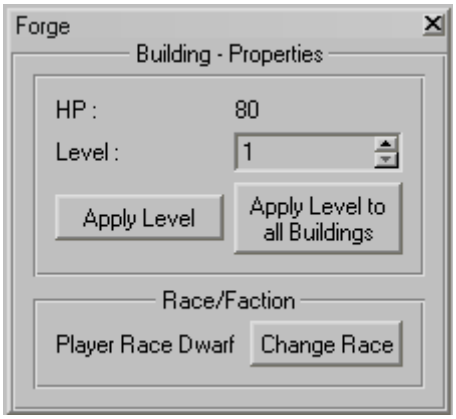



**Random Angle** = The Buildings angle will be placed with a random orientation.

You can also enter an angle manually.

Changing the level will affect the hitpoints of the building, meaning the building will be harder to destroy.

Select a Building and place it on the map. Leftclick on it to open the property window.



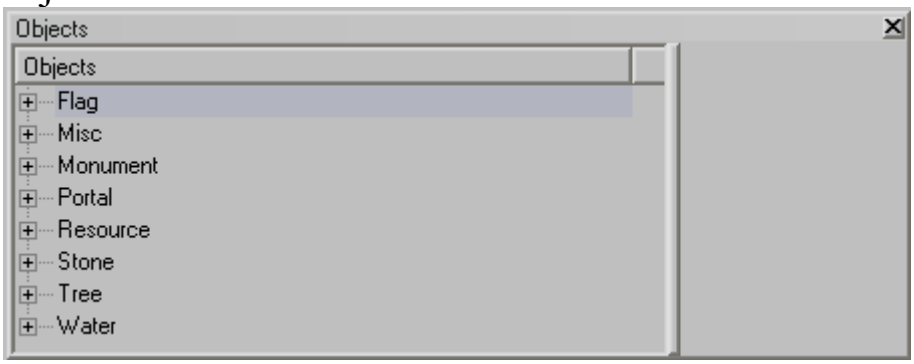

Change the level to change the hitpoints.

**Apply Level** = This will apply the level to the selected building.

**Apply Level to all Buildings** = This will apply this level to all buildings on the map.

**Change Race** = This will assign another race to the building. This way you can for example prevent Orcs from attacking a Human building.

# 6.8. Placing Objects




Objects are divided into:

**Flag:**
These Objects are only visible in the editor, not in the game.

| | | |
|---|---|---|
| Block Flag | = | Blocks the movement of all Units including player. |
| Visibility Flag | = | Blocks the view of all Units including player.<br>The Flag feigns an invisible 5 meter wall nobody can see through.<br>If you have 1 row of Visibility Flag the enemy won't see you until you step into the row.<br>The Visibilty Flag does not affect the Fog Of War . |
| Block & Visibility Flage | = | Both of the above. |
| **Misc** | = | Buildings, Walls, Loot, Rocks and such<br>Most Misc things are not selfblocking, they have to be blocked by Textures or Flags.<br>Compared to real Buildings Misc Buildings are not attackable.<br><br>**Noteworthy:**<br>The Coop Spawn Point and Loot can be found here. |
| **Monument** | = | Player Monuments, Hero Monument & Bindstone.<br>Monuments are selfblocking. |
| **Portal** | = | This is the Portal through which you can leave a CoopMap to get back to the menu. The Portal is not selfblocking. |
| **Resource, Stone** | = | All kind of ressources |
| **Tree** | = | All kind of trees. |
| **Random Angle** | = | The Objects orientation will be set by chance. |

**Lakes**
There are 4 lake types you can place: Water, Swamp, Lava & Ice.

You can walk through water and swamp until a depth of about 50cm.

**Note:** You can't place Buildings or Trees into water or swamp.
You can directly click on any „water“ surface to change its height or type.

# 7. Auto Texturer scripts

## 7.1. Technical Notes

The Autotexturer Converter is a LUA script and uses LUA Technology.
For more information on LUA and documentation about its syntax and features go to: http://www.lua.org

The autotexturer script files can be found in the editor subfolder \Files\TextureRules.

**General Note on Texturing:**

It is generally NOT ADVISABLE to spray too many textures in one viewscreen (the screen area the user actually sees from the zoomed out ISO perspective). The engine takes a performance hit for every texture that lies directly next to another, and the more different textures are surrounding a single tile the more fill rate is needed to keep the graphics fluid in that particular area, so especially slower gfx cards which lack in raw fill rate speeds will take a serious performance hit while modern gfx cards will not be affected as much.
However you can still experience a serious frame rate drop on any machine if you spray 20-30 different textures in one visible area. Go ahead an try it in the editor, take a blank map, texture it with a single texture and scroll over it. Now spray a small area with as many different textures as possible using the spray feature, then scroll over the area .... your framerate might even drop to below 10 fps
(on a reasonably fast machine, 2 GHz and GF4) just by over-texturing the terrain. Now try to imagine what would happen if you add details like adornments, objects and play the map with lots of buildings placed and units created...☺)

**The first rule of Autotexturer Club is...**

KISS == “Keep it simple, stupid!” (no offense intended)

Use only basic functionality. Don’t go overboard with details using the autotexturer. It will take you lots of time to get it right and will never look as good as doing it manually. The autotexturer is great for quickly applying textures to the map so it looks decent. Anything beyond is a time grave. At Phenomic we rarely invest more than 2-3 hours for an autotexturer script for a new map. Fill in the details yourself.

Really complex autotexturer scripts also tend to go slow because for every layer of complexity you add another iteration (an iteration means the computer is performing a simple calculation for every tile there is in the map). So with 4-5 iterations (BeginRuleSet() functions) it will take 4 to 5 times the time of a very simple autotexturer script. If you are going too much into details you might end up with 20 or more iterations. That might not sound like much but waiting increasingly longer, say 20 seconds, before you see the effect also slows you down in seeing what you actually did last time, so every tiny error on your side always costs you the full 20 seconds to actually see it! The process interactivity decreases and so does your work on the script.

If you would like to understand why i explicitly stress “interactivity” and why i it is so important I highly recommend the book “The Art of Interactive Design” by Chris Crawford.

**The second rule of Autotexturer Club is...**

... i think you get it! ☺

## 7.2. Examples – “If this is your first time ....”

There is an example map called AutoTextureExample.map
Load the map and apply the AutoTextureExample01.des through 05 to see what you can do with autotexturer scripts.

Even the 5th script isn’t really complicated (although almost all new users will still find it hard to understand, don’t get me wrong, it takes a while to get accostumed to this script format). At Phenomic we rarely had scripts much more complicated than that used on production maps. It really helps you get started but the details are better left to a human eye than trying to teach a computer how (detailed) texturing should look like (you might notice that the computer does not judge on his own what things might look awkward, he really only looks at some values but does not add any aesthetic values to his calculations, which is a real let down ☺).

For everyone new to this I highly recommend to just stick to texturing by steepness values alone! Maybe later add some special texturing by steepness function that is only applied to a certain height range (for example put snow on mountains). You can already achieve decent results with such basic rules.

---

## 7.3. Converting scripts

To convert an autotexturer script from LUA script to .DES format create a batch file that calls:
tool_lua.exe -f nameofautotexturerfile.lua

A "missing parameter" error might be the case when you use variable names for parameters but did not initialize the variable. A simple:

print(tostring(variablename))

inside a function will reveal wether the variable in question is initialized or "nil". As a beginner you will run into lots of errors messages, most of which will not really help you much. That is also why creating autotexturer scripts is left for the experts.

## 7.4. Default values

**Height = 1, 255**
-- Height should NEVER be 0 or the ocean will be textured!
-- If Height is 1,255 everything within 1 and 255 meters will be textured.

**Steep = 0, 90**
-- Steepness in degrees, a steepness of 0 is totally flat,
-- 90 degrees is actually not possible to achieve in any map
-- usually there's hardly any tile steeper than 70-80 degrees.

**Percent = 10000**
-- Percentages go from 0 to 10000 to allow for real numbers using
- an integer. That means 10000 = 100% and 100 = 1% and 10 = 0.1%

**Range = 0**
-- Range is in Tiles, Range = 0 means the current tile, Range = 1
-- also includes the 8 surrounding tiles and so on up to a Range of 10.

**Condition = 0**
-- Condition is the ID of a texture marker, if this marker is set
-- on the current tile the condition is met. All textures with IDs
-- 224-255 are considered markers and not actual textures!

**ExposureMin = 0**
-- condition for negative exposure (e.g. a hole or "dent" in the ground)
-- the condition is met if the current tile's height difference to the
-- surrounding tiles is greater than ExposureMin (unless it is 0)
-- ExposureMin and ExposureMax are exclusive and can not be used together!

**ExposureMax = 0**
-- condition for exposure (e.g. a "bump" or elevated tile)
-- the condition is met if the current tile's height difference to the
-- surrounding tiles is greater than ExposureMax (unless it is 0)
-- ExposureMin and ExposureMax are exclusive and can not be used together!

**ObjectMin = 0**
-- lowest Object Id of Object Range to check for
**ObjectMax = 0**
-- highest Object Id of Object Range to check for
-- if ObjectMin and ObjectMax are the same, only that object is included in the check
-- get Object IDs from the editor's Object Placement window

**Marker = 0**
-- a Marker Id, Markers are Texture Ids in the range from 224 to 255

**Texture = 1**
-- Texture Id of the Texture to use, 0 is not a valid texture, 1 is the base texture.
-- Texture IDs 1 to 31 are normal textures, higher texture IDs stand for mix
-- textures. The textured map will look blurry if you autotexture with a
-- Texture ID that is not defined in the map/texture mixer.
-- To find out which texture has which ID, open the "Place Textures" Menu and
-- hover the mouse cursor over a texture. Note that the texture IDs in the upper
-- panel of the texture mixer are global IDs and not for use with the autotexturer.

## 7.5. Function reference

**BeginRuleSet**()
**IncreasePriority**()  -- exactly the same as above, just a synonym
Use either one of these functions at the beginning of every "rule set".
A "rule set" is a rule or set of rules that are applied to the whole map
in a single iteration. Usually in a detailed autotexturer there are several
iterations over the whole map with different rules. For example, at first
texture everything above 100 meters with stone & snow (mountains) (rule set #1),
then texture 80% of the world between 80 and 100 meters with fewer snow but more
stones (rule set #2), then apply textures simply by looking at the steepness
(rule set #3). This is an abstract description of how you can "read" the rules.
To understand the iterations you need to know that once a tile has been assigned
a texture, it will keep this texture even if a following iteration tells it to
use a different texture. That's why the details of the autotexturing process,
for example roads or spraying mountain tops with snow must be processed FIRST.
Whereas functions like AT_BySteepness() must be the last one called.

**SetDefaults**  ()
set all autotexturing values to safe default values:

**CreateRule()**
finishes a rule
a rule is the minimum amount of information required to create a rule for texturing tiles
for example, using all default values and then using CreateRule() will create a rule that textures the whole map with the base texture. However it makes more sense to at least change the Texture (let's say we want a grass texture) and then maybe also say that we want to texture only flat areas from 0-10 degrees. Then use CreateRule() and all flat areas will have the grass texture applied. Of course, to texture the whole range of degrees from 0-90 with different textures you would create a rule for every range of steepness and also change the texture for each rule. In most cases this is already enough to give your map an adequate look, at least it will still save you a lot of work then if you would texture everything manually.

With these utility functions you can change the default values to specific values:

**SetHeight(HeightMin, HeightMax)**
set height range from HeightMin to HeightMax meters. HeightMin must be smaller than or equal to HeightMax. setting HeightMin to 0 will result in a square map because then even the "ocean tiles" will be textured, so avoid setting HeightMin to 0.

**AddHeight(HeightAdd)**
increases both HeightMin and HeightMax from previous rule by the given amount.

**SetHeightRel(HeightMax)**
Increases height range relative to the previous height. This is very useful!
What it does is when you have set height to 1 to 10 meters and then call SetHeightRel with 20 meters you actually do the same as calling SetHeight with parameters 10, 20. Why is this so useful? Because if you need to adjust one rule to include 1 to 15 meters now, you don't need
to update the second rule because it will automatically adjust (15 to 20 meters now), unless you break the rules and try to SetHeightRel with a height smaller than the last HeightMax.

**SetSteep(SteepMin, SteepMax)**
set the steepness range in angles from 0-90 degrees. SteepMin must be smaller than or equal to SteepMax.

**AddSteep(SteepAdd)**
increases both SteepMin and SteepMax from previous rule by the given amount.

**SetSteepRel (SteepMax)**
Increases steepness range relative to the previous steepness. This is very useful!
What it does is when you have set steepness to 0 to 10 degrees and then call SetSteepRel with 20 degrees you actually do the same as calling SetSteep with parameters 10, 20.
Why is this so useful? Because if you need to adjust one rule to include 0 to 15 degrees now, you don't need to update the second rule because it will automatically adjust (15 to 20 degrees now), unless you break the rules and try to SetSteepRel with a steepness angle smaller than the last SteepMax.

**SetPercent(Percent)**
set the percentage (chance) with which the texture is applied. Percentage is in the range 0 to 10000, whereas 10000 would be 100%, 100 = 1% and 10 = 0.1% ... Note that a rule using percentages will leave some tiles untextured (actually they remain textured with the ugly, grey stone base texture 1).
To avoid logical "gaps" in your rules, it is best to copy the rule using a percentage lower than 10000 and applying another texture with 10000 percentage right after that. For example, say you want to have a 50% chance of applying either texture 10 or 14, so you set percentage to 5000 (50%) with texture id 10 and copy the rule and paste it just after this one, setting percentage to 10000 (100% because 50% of tiles have already been textured and will NOT change!) and texture to 14 to get the desired result.
Another example with 3 textures, you want each texture 10, 14 and 17 to be applied with equal chances of 33%. So you create the first rule with texture id 10 and percentage of 3333 (33.33%), good.
The next rule uses texture id 14 and percentage of ... (i'll keep you thinking here) ...
No, don't use a percentage of 33333! ;)
Why? Because 33% of all tiles have already been textured and will not change, so with the second texture you actually have to texture with a percentage of 5000 (50% of the remaining untextured tiles!), while the last texture id 17 gets a percentage of 10000 (100% .. because there are only 33% tiles left untextured).

**SetMarker(Marker)**
Sets a marker with the Id of 224 to 255. A tile "textured" with a marker does not count as textured and thus you can use markers to flag certain tiles in one rule or rule set and check for these markers in later rules and then actually apply a texture to a marked tile. With markers you can make spots with fringes, for example.

**SetTexture(Texture)**
Set a texture Id to texture tiles with. Texture 0 is not a valid texture. Texture IDs 1-31 are the basic textures and texture IDs 32 and above are the mix textures (2 or 3 textures mixed into one).

**SetCondition(Texture)** -- or Marker
Checks for Texture or Marker with the given Id. Also takes into account the Range Parameter.
For example you could check whether one of the surrounding tiles (Range = 1) has been textured with the given texture or marker Id and if so, the current texture or marker will be applied to the current tile.

**SetRange(Range, Type)** -- Type is either 'Rectangle' oder 'Circle' (without quotation marks)
Checks for condition (e.g. a marker, texture, object…) in Range tiles. By default Range is 0 which means check only the current tile whether it meets the condition(s). Range can be up to 10 tiles and of type Rectangle or Circle.
Note that there is a glitch with Range and Objects, if you look for objects in Range 1 or higher the actual position of the object is not included and must be seperately checked with Range set to 0.

**SetExposMin(ExposureMin)**
Checks for negative exposure (holes, dents, or what you'd call it) of a tile.
the condition is met if the current tile's height difference to the surrounding tiles is greater than
ExposureMin and ExposureMax are exclusive and can not be used together!

**SetExposMax(ExposureMax)**
Checks for exposure (holes, dents, or what you'd call it) of a tile.
condition for exposure (e.g. a "bump" or elevated tile) the condition is met if the current tile's height difference to the surrounding tiles is greater than ExposureMax (unless it is 0)
ExposureMin and ExposureMax are exclusive and can not be used together!

**SetObjRange(ObjectIdMin, ObjectIdMax)**
Checks whether there is an object with Object ID between Min and Max in the range.

**SetObject(ObjectId)**
Checks whether there is the object with Object ID in the range (same as above with Min and Max set to same Id). This is usually more useful than the above function since often object Ids are not in neatly ascending order.

**SetComment(Comment)**
Simply creates a comment that appears in the .DES file for the rule.
Not really useful since we don't look into the .DES files anymore and LUA comments are more convenient. Might help the curious user in debugging and understanding.

## 7.6. Example script template

```
-----------------------------------------
-- INITIALIZATION OF AUTOTEXTURER SCRIPT --
-----------------------------------------

-- DO NOT REMOVE THIS LINE !!
-- REQUIRED AT THE BEGINNING OF EVERY AUTOTEXTURER SCRIPT:
dofile("AutoTexturerTools.lua")
InitAutoTextureHelper()

---------------------------------
-- DEFINE GLOBAL VARIABLES HERE --
---------------------------------

-- variable declaration is optional but helps readability
-- you can assign texture numbers to descriptive names like
-- texGreenGrass = 10
-- texGrassStoneTransition = 11
-- and use these names instead of fixed numbers in SetTexture()

-- this also helps in globally replacing textures, e.g. if you
-- rather want to have a different type of grass texture then you
-- would only have to change the texture number in this place, instead
-- of in every call to SetTexture()

texGrass = 3
texStone = 10
texSnow1 = 17
texSnow2 = 18

-----------------------------------
-- DEFINE AUTOTEXTURING FUNCTIONS --
-----------------------------------

-- each function should cover a specific use
-- for example texturing a specific height, or simply by steepness,
-- or texturing roads, or creating spots of snow in flat areas, ...

function Test()

        -- dummy

end

-- simply apply textures by steepness, no other special rules here
-- this usually suffices to get a decent texturing for most maps
-- also makes sure that every tile in the map is not left untextured
function AT_BySteepness()

        -- dummy

end
```

```
-- special functions here:


--------------------------------------------------
-- CALL AUTOTEXTURING FUNCTIONS IN DESIRED ORDER --
--------------------------------------------------

-- the call order is most important!
-- begin with detailed texturing of certain areas of the map
-- and finish with globally applicable but general rules!


-- texturing by steepness should always be called last,
-- to make sure that every tile in the map has been
-- textured. Unhandled tiles do not pose a problem,
-- but it does look ugly because untextured tiles
-- remain textured with the base texture (always the first
-- texture in the set). Unless you have changed the
-- first texture in the set, this will be an ugly grey
-- stone texture...
-- Usually AT_BySteepness() is already a very fine start
-- and if you prefer you can leave it at that and texture
-- the details manually, as those details are mostly harder
-- to achieve using an autotexturer if you are not comfortable
-- and/or experienced with using autotexturing scripts.
AT_BySteepness()

---------------------------------
-- EXPORT SCRIPT TO .DES FORMAT --
---------------------------------

-- and this should be called at the very end
-- this will actually create the corresponding .des file
-- that can be loaded in the editor.
-- never omit this line or you won't get a resulting .des file
-- never write anything below this line because it will be ignored
-- (at least it wouldn't change the texturing rules).
ExportAutoTexture()
```