

# User Manual

## for

### 3D WaveMaker

#### Peter Harvey

## INTRODUCTION

### What is 3D WaveMaker?

3D WaveMaker is a program for creating various, visual 3D effects. It uses the idea of a flat surface suspended in 3D space, with different "waves" or effects applied to it (for example Ripple, Bulge, etc.) The advantages that 3D WaveMaker has over other visual effects programs are:

- Speed (drawn and animated in real time)
- Uses standard and real 3D routines (the surface can be rotated and viewed from any angle)

### Requirements

Windows 95 or Windows NT 4 (or higher)

100Kb free harddrive space

OpenGL libraries (another 855Kb if not already installed)

*Win95 libraries are at: <ftp://ftp.microsoft.com/softlib/mslfiles/opengl95.exe>*

16bit (65536 colour) or higher display

### This Manual

This manual has been adapted from the printed version, which was more than 4Mb because of multiple 24bit screen snapshots (the fact that Microsoft wrote the format it was in may have also contributed :).

## INTERFACE

The interface of 3D WaveMaker follows the philosophy of a program called "Image Eye" (by F. Markus Jönsson) - keep it very, very simple. There are no scroll bars, menu bars, etc. This table describes the control for the main window (the window which is always open).

Note: LMB = Left Mouse Button, RMB = Right Mouse Button

### Method

LMB and move cursor left/right

LMB and move cursor up/down

### What it does

Rotates surface around the X (tilting) axis

Rotates surface around the Y (turning) axis

Shift, LMB and move cursor left/right	Rotates surface around the Z (tilting) axis
Shift, LMB and move cursor up/down	Zoom in/out
Click RMB	Opens menu for other choices
Ctrl, LMB and move cursor	Reposition centre of current effect

The menu which is opened when the RMB is clicked and the Advanced Settings requester are both described on the following page.

## Menu Options      Description

Effects	Moving Mountain	Select one of these effects to be applied to the surface.
	Bounce	The different effects are explained later in this manual.
	Sine Wave	
	Flap	
	Swimming Seal	
	Surf in the Pool	
	Depressing	
	Stingray	
	Stingray 2	
	Ripple	
	None	
Files	Load texture	Load a BMP file which will then be mapped on to the surface
	Default texture	Reset texture to the default (seen at startup)
	Save image	Save the image which is currently displayed as a BMP file
	Save series	Save a series of BMP files using the current settings
	<b>NB: To change the number of files created in a series, enter the number of files at the command prompt e.g. 'WaveMake 25' will create 25 images.</b>	
Control	Animated	Set mode to animated (effect moves)
	Rotating	Set mode to rotating (surface rotates around Y axis)
	Wireframe	Set drawing mode to wireframe instead of solid
	Advanced Settings	Opens the Advanced Settings requester

## Advanced Settings

Wave Height	This specifies the height of the wave. It is measured such that the wave height is the percentage of half the width of the image. (ie. the Moving Mountain effect will be half as tall as it is wide with Wave Height set to 100)
Animation Speed	This specifies the rate at which Animation occurs. It is measured in degrees per second, so that the Moving Mountain effect rotates at 30 degrees per second.
Rotation Speed	This is the rate of rotation and is measured the same as Animation Speed.
Radius A, Radius B	These are the parameters of the current effect, and the changes which they make are described later in this manual.
Viewport Size	This specifies the percentage of the application window which is drawn to. This allows the window to be maximised and yet, if the Viewport size is low enough, still be fast.
Effect Position	This shows the middle of the current effect measured in pixels from the top-left

corner of the current image which is mapped on to the surface. Measuring this in pixels allows you to centre a bulge over the exact location of a person's nose, etc.

## EFFECTS

This chapter details the various effects available which can be used on the surface. Note that you cannot, at this time, apply multiple effects at once - you cannot combine effects. In the Advanced Settings requester, the sliders "Radius A" and "Radius B" can be used to modify the effects in different ways. To gain the best idea of what these effects look like, the program should be experimented with.

**Moving Mountain** - This creates a bulge in the surface. It moves around the surface on a circle whose radius is roughly the same as "Radius A". The radius of the bulge itself is set by "Radius B". **Bounce** is basically the same as Moving Mountain, except that the bulge also oscillates up and down as it moves around it's circle.

**Sine Wave** - This effect creates a sine wave moving diagonally across the surface. "Radius A" affects the rate of change of the sine curve (the higher "Radius A" is, the more crests and troughs you will see at once). "Radius B" does not change this effect in any way.

**Swimming Seal** - This effect is similar to the Sine Wave, however two of the corners are angled downward, and at certain angles it appears that the surface is moving in the same kind of motion as a swimming seal. Neither "Radius A" or "Radius B" change this effect.

**Flap** - This effect is strange, and is supposed to give the appearance of a flapping bird. Neither "Radius A" or "Radius B" change this effect.

**Depressing** - This effect pushes down and then releases certain points on the surface. This could be described as a person jumping on a trampoline. The points are on the perimeter of a circle, the radius of which is proportional to "Radius A". The radius of the depression is changed by "Radius B" in the same way as "radius B" effects Moving Mountain.


**Stingray** - This creates the sine wave pattern on the edges of the surface, giving the same apparent movement of a stingray as it swims. "Radius A" effects the number of crests and troughs seen at once. "Radius B" has no effect. Note that when a point on the left side of the stingray is at a crest, the point on the opposite side is at a trough. **Stingray 2** is almost identical to Stingray, however when a point on one side is at a crest, the point opposite it (on the other side) is also at a crest.

**Ripple** - This creates the ripple pattern seen when a series of stones is dropped in the one spot in a pool of water, ripples radiating outwards. "Radius A" effects the number of crests and troughs seen at once, and "Radius B" effects the rate at which the waves become smaller as they move outwards. When "Radius B" is at a minimum, the waves will not diminish as they move outwards.

## SUGGESTED EFFECTS

This section describes a few effects I have found interesting:

### Facial Bulge

1. Load in a picture of persons face.
2. Select the Moving Mountain effect.
3. Centre the effect on their nose (you can set Radius A to 0 to assist in this).
4. Set the effect to be Animated.
5. Change Radius A so that the effect brushes the persons eyes, mouth, etc.
6. Show this to the person .


### Pond

1. Load in an overhead picture of water.
2. Select the Ripple effect. Note: the Wave Height should be roughly 30.

### Animal

1. Load in an overhead picture of a stingray.
2. Select either Stingray or Stingray 2

### Relaxing

1. Select the default texture.
2. Select the Stingray effect.
3. Watch, it looks nice. .

### Bouncing Nose

1. Load in a picture of persons face.
2. Select the Bounce effect.
3. Set Radius A to 0.
4. Centre the effect on their nose.
5. Set the effect to be Animated.

## KNOWN BUGS

Some of the known bugs are:

### BMP File Loading

The algorithm I use for this I had to write myself, and it doesn't quite work yet. I'm hoping to find, somewhere, the source code to load an image into a 24bit buffer.

### Radius A and B set to 0

With some effects (namely Moving Mountain and Bounce), they have an error when both Radius A and Radius B are set to 0, causing the centre of the bulge to shoot off to infinite. To fix this, simply relocate the centre of the effect (hold down Ctrl to move the

effect), and this problem is gone.

### **Save requester**

The Save requester has an option to "Open as read-only". This option isn't supported in the Open requester either. Also, when you 'Save Series' the filename you give is used as a base name without taking into account any extensions (e.g. the name 'test.bmp' results in 'test.bmp0001.bmp' being created, so users must enter just 'test' for it to work)

I would appreciate it if any unknown bugs in this program could be reported to me, by email, at:  
harvey@hunterlink.net.au

## **FUTURE**

Three options I have for the future are:

1. develop a front-end through which small programs like this and others would be used, creating a more integrated graphics manipulation environment.
2. Create a Scala/Powerpoint type presentation package which uses 3D wipes rather than the current 2D ones (eg. current page sucked backwards into new one which is gradually moving forwards would look nice).
3. Create a screensaver for it (NO!)

As it stands, this program is a novelty. It has very few applications (though you can make money out of distorting people's faces for them). If you have any suggestions for what can I make this software into, like one of the suggestions I've made, or want some help (or would like to help me) PLEASE email me.

I've read manuals like this before, had some ideas for what the program could be used for, but never sent some email because I thought the author wouldn't be interested. This is NOT true! I want to know ANYTHING ideas, half-formed concepts, delusions, etc. you have that I can use to make this program useful.

## **THE AUTHOR**

I am one Peter Harvey, 17 years old, living in Muswellbrook, NSW, Australia (about 200km west of Newcastle, pop. 15000). I have finished Year 12 and the HSC, and I'm looking to go to either Wollongong or Newcastle University to study a Bachelor of Computer Science/Mathematics combined degree.

I am using Microsoft Visual C++ 4.0 and Windows NT 4.0 SP 3, running on a P133, 32Mb ram, 1.2Gb harddrive. If you want to find me on IRC, I normally go to the Australian MPX network, and use the name Harves. My email (for suggestions, comments, bugs, etc.) is: harvey@hunterlink.net.au. I sometimes use ICQ, but find that it's been crashing often recently, and so have stopped.