

# Chapter 51 - Wobble, Texture Building, And Logo Motion

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A plain rotozoomer uses a static texture. The next step is to change the texture before Mode 7 samples it.

The supplied `wobble_zoom.bas` demo builds a 1024 by 512 work texture each frame. It places a logo into that texture one row at a time, with a sine offset per row. Then it feeds the work texture into the same Mode 7 blitter path used by Chapter 46.

## 51.1 The Memory Shape

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The demo uses four buffers:

Buffer	Purpose
FB	Front framebuffer.
BB	Back framebuffer.
TX	Large Mode 7 work texture.
SR	Source logo image.

The important change is TX. It is not just loaded once. It is rebuilt every frame.

## 51.2 Start Music First

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The demo starts music before the heavy visual setup:

```
100 REM START MIDI FIRST
110 SOUND PLAY "SONG.MID"
120 PRINT "MEDIA_TYPE=";PEEK32(&H000F2310)
```

That gives the audio engine time to start while the programme prepares video memory. The `MEDIA_TYPE` read proves which media player the loader selected.

## 51.3 Build The Wobbled Texture

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This is the core idea:

```

410 BLIT FILL TX,TW,TH,&H00000000,TS
420 FOR Y=0 TO 91
430 DY=0Y+Y
440 X=0X+INT(24*SIN(T+Y*0.12))
450 DX=X: SX=0: CW=640
460 IF DX<0 THEN SX=0-DX: CW=640-SX: DX=0
470 IF DX+CW>TW THEN CW=TW-DX
480 IF CW<=0 THEN GOTO 520
490 SA=SR+Y*ST+SX*4
500 DA=TX+DY*TS+DX*4
510 BLIT COPY SA,DA,CW,1,ST,TS
520 NEXT Y

```

Each source row is copied into a different horizontal position. The offset is  $\text{SIN}(T+Y*0.12)$ , so neighbouring rows move by slightly different amounts. The result is a wobbled logo inside the Mode 7 texture.

Lines 460 to 480 clip the copy so a row that moves partly off the texture does not write outside the destination.

## 51.4 Feed The Texture To Mode 7

After building the work texture, the demo uses the ordinary rotozoomer path:

```

610 SC=1.7+SIN(Z)*0.9
620 CA=COS(A)/SC: SA=SIN(A)/SC
630 DC=INT(CA*FP): DS=INT(SA*FP)
640 U0=INT((CU-HW*CA+HH*SA)*FP)
650 V0=INT((CV-HW*SA-HH*CA)*FP)
660 BLIT MODE7 TX,BB,640,480,U0,V0,DC,DS,0-DS,DC,1023,511,TS,ST
710 BLIT MEMCOPY BB,FB,1228800
720 VSYNC

```

The masks are 1023 and 511 because the work texture is 1024 by 512.

## 51.5 Texture-Before-Transform

The order matters:

1. Clear the work texture.
2. Build or copy source material into it.
3. Run Mode 7 from the work texture into the back buffer.
4. Present the back buffer.
5. Advance phases.

This is a powerful demo pattern. You can replace the logo rows with text, sprites, bars, or generated noise. Mode 7 does not care. It only samples the texture it is given.

## 51.6 Limits

- Rebuilding a large texture every frame is heavier than using a static texture.
- Row-copy effects should clip before writing.
- A power-of-two texture lets the Mode 7 masks wrap naturally.
- If the texture build becomes too expensive, move that part to native code or reduce the number of changed rows.

Chapter 52 uses the same ideas, but the timing comes from music.