X and Modesetting: Atrophy illustrated.
Modesetting is ...

Getting pixels on a “screen”.
Modesetting is ...

• Boring.
• Hard.
• Slow.
• Requires a lot of hardware to do properly.
Tseng ET4000W32p:

- **CRTC**
  - DAC bus (8bit)
  - R/W
  - Clock Select
  - Blank
  - Pixel Bus (8/16bit)

- **DAC**
  - HSync/VSync
  - RGB

- **CRT**
Unichrome:

- CRTC1
- CRTC2
- DAC
- Panel Scaler
- CRT
- TTL Panel
- External Encoder
- External Encoder
External encoder

PC

Pixel Bus

Blank / Data Enable

H/VSync

“Screen”
Enemy: VBE

Extension of IBMs VGA BIOS:
• Selfmodifying binary.
• Always loaded at 0xC0000
• Hooked into interrupt vector table (int10)

VBE:
• 1991: v1.2
• meant to get past VGA limitations, forgood.
• meant to alleviate the burden of modesetting on complex hardware.
Modesetting for 7.1:

- cvt (committed)
- bug #5386: Getting a mode without a Modes directive.
  - cvts xf86CVTMode() -> common/xf86cvt.c (attached).
  - xf86SetDDCproperties becomes useful (attached).
- adjust drivers to new xf86SetDDCproperties (todo / trivial).
- filter resulting modeslist based on type. (todo / discuss / pending).
- multiple ClockRanges:
  - tseng fixup (committed).
  - xf86mode.c cleanup (pending).
- non-programmable dotclocks:
  - trident fixup (test).
  - c&t fixup (redo).
  - vga fixup (todo / discuss).
  - atimisc fixup (scared).
  - xf86mode.c cleanup (pending).