Code & Pinot: UNIX!

Nathan Hubbard
@n8foo

"...the number of UNIX installations has grown to 10, with more expected..."

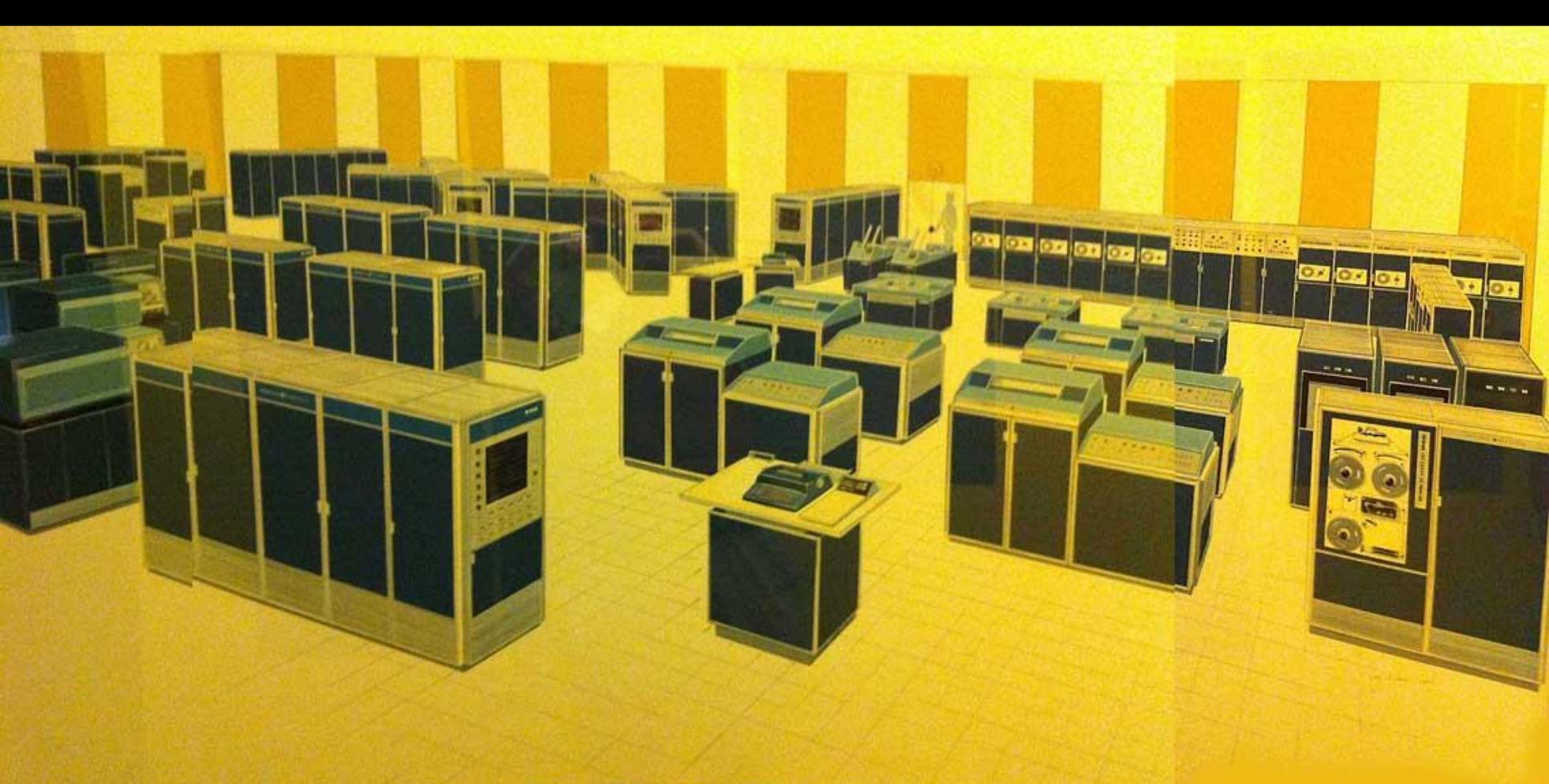- Dennis Ritchie and Ken Thompson, June 1972

A little history

Multics - MIT, AT&T Bell Labs & GE

Ran on the GE-645 - a *mainframe*

'time-sharing' OS

Very influential in UNIX's design philosophy

GE-645 SYSTEM

PDP-7
Unix's first real hardware

- Note the lack of a video display

THE

C

PROGRAMMING
LANGUAGE

```
SLMIN .SYS  12P 20-Dec-85      VM   .SYS   3P 13-Aug-06
XL    .SYS   4P 20-Dec-85      LD   .SYS   8P 23-Aug-06
SP    .SYS   6P 13-Aug-06      NL   .SYS   9P 13-Aug-06
RT11SJ.SYS  78P 13-Aug-06      DU   .SYS   2P 13-Aug-06
NL    .SYS   2P 13-Aug-06      TT   .SYS   2P 13-Aug-06
SQ    .SYS   9P 31-May-05      RL02DC.SYS  71P 21-Nov-04
BASIC .SAV  56  24-May-79      BINCOM.SAV  24  20-Dec-85
DATIME.SAV   4  20-Dec-85      DIR  .SAV   19  20-Dec-85
DUMP  .SAV   9  20-Dec-85      DUP  .SAV   47  20-Dec-85
TSXMOD.SAV  78  27-Nov-92      FORTRA.SAV 200P 25-May-05
HARRIS.SAV  41  12-Jun-80      LET  .SAV    5  20-Dec-85
START .F36   2  21-Dec-91      RETRO .OBJ 1515P 16-May-80
EM1A  .STM  19P 02-Feb-93      TSXUCL.TSX  22  07-Mar-92
STAND .LIN  12P 15-Aug-03      TSXVG .MSC   1P 04-Sep-96
EM1B  .STM  19  11-Feb-93      JKFLIP.SAV  30  08-Mar-96
JKFLIP.FOR   3  08-Mar-96      RT11FB.SYS  93P 20-Dec-04
ANNOT .SAV  38  10-Apr-93      TSXP23.NEW 1200P 27-Nov-02
DUO   .DIR  18  16-Jul-96      DEMOFG.OBJ   7  16-Jul-96
DIR   .DIF  26  16-Jul-96      EVAN  .ID    1
DEMOBG.OBJ   1     -BAD-                    -BAD-
114 Files, 5949 Blocks
14433 Free blocks

.D
```

Unix Philosophy

The Unix philosophy emphasizes building short, simple, clear, modular, and extensible code that can be easily maintained and repurposed by developers other than its creators. The Unix philosophy favors composability as opposed to monolithic design.

Unix Philosophy

"What we wanted to preserve was not just a good environment in which to do programming, but a system around which a fellowship could form. We knew from experience that the essence of communal computing, as supplied by remote-access, time-shared machines, is not just to type programs into a terminal instead of a keypunch, but to encourage close communication"

-Dennis Ritchie

Unix Philosophies

1. Small is beautiful.
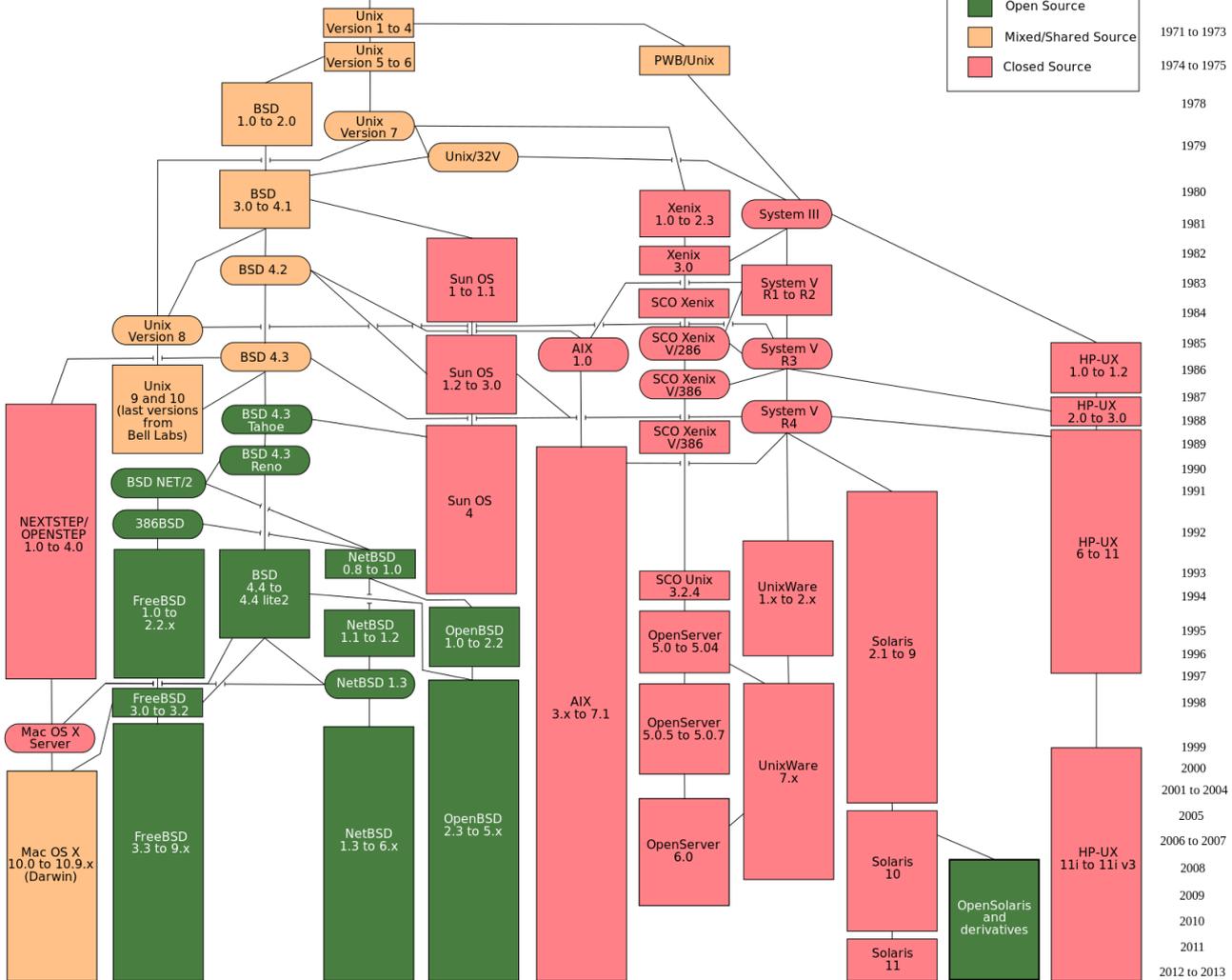2. Make each program do one thing well.
3. Build a prototype as soon as possible.
4. Choose portability over efficiency.
5. Store data in flat text files.
6. Use software leverage to your advantage.
7. Use shell scripts to increase leverage and portability.
8. Avoid captive user interfaces.
9. Make every program a filter.

Unix Components

- Kernel
- Development Environment
- Commands
- Documentation

XSET(1)   XSET(1)

NAME
       xset - user preference utility for X

SYNOPSIS
       xset [-display display] [-b] [b on/off] [b [volume [pitch [duration]]]
       [[-]bc] [-c] [c on/off] [c [volume]] [[+-]dpms] [dpms standby [suspend
       [off]]]   [dpms   force   standby/suspend/off/on]   [[-+]fp[-+=]
       path[,path[,...]]] [fp default] [fp rehash] [[-]led [integer]] [led
       on/off]   [m[ouse]   [accel_mult[/accel_div]   [threshold]]]   [m[ouse]
       default] [p pixel color] [[-]r [keycode]] [r on/off] [r rate delay
       [rate]]   [s [length [period]]] [s blank/noblank] [s expose/noexpose] [s
       on/off] [s default] [s activate] [s reset] [q]

DESCRIPTION
       This program is used to set various user preference options of the dis-
       play.

OPTIONS
       -display display
               This option specifies the server to use; see X(7).

       b   The b option controls bell volume, pitch and duration. This
               option accepts up to three numerical parameters, a preceding
               dash(-), or a 'on/off' flag. If no parameters are given, or
               the 'on' flag is used, the system defaults will be used.   If
               the dash or 'off' are given, the bell will be turned off.   If
               only one numerical parameter is given, the bell volume will be
               set to that value, as a percentage of its maximum. Likewise,
               the second numerical parameter specifies the bell pitch, in
               hertz, and the third numerical parameter specifies the duration
               in milliseconds. Note that not all hardware can vary the bell
               characteristics.   The X server will set the characteristics of
               the bell as closely as it can to the user's specifications.

       bc   The bc option controls bug compatibility mode in the server, if

Unnamed PDP-7 operating system

Unix Version 1 to 4

Unix Version 5 to 6

PWB/Unix

BSD 1.0 to 2.0

Unix Version 7

Unix/32V

Xenix 1.0 to 2.3

System III

BSD 3.0 to 4.1

Sun OS 1 to 1.1

Xenix 3.0

System V R1 to R2

BSD 4.2

SCO Xenix

Unix Version 8

Sun OS 1.2 to 3.0

AIX 1.0

SCO Xenix V/286

System V R3

HP-UX 1.0 to 1.2

BSD 4.3

SCO Xenix V/386

Unix 9 and 10 (last versions from Bell Labs)

BSD 4.3 Tahoe

System V R4

HP-UX 2.0 to 3.0

BSD 4.3 Reno

SCO Xenix V/386

Minix 1.x

Linux 0.0.1

NEXTSTEP/ OPENSTEP 1.0 to 4.0

BSD NET/2

386BSD

Sun OS 4

Linux 0.95 to 1.2.x

NetBSD 0.8 to 1.0

SCO Unix 3.2.4

UnixWare 1.x to 2.x

HP-UX 6 to 11

FreeBSD 1.0 to 2.2.x

BSD 4.4 to 4.4 lite2

NetBSD 1.1 to 1.2

OpenBSD 1.0 to 2.2

AIX 3.x to 7.1

OpenServer 5.0 to 5.04

Solaris 2.1 to 9

Minix 2.x

Linux 2.0 to 2.6.x

Mac OS X Server

FreeBSD 3.0 to 3.2

NetBSD 1.3

OpenServer 5.0.5 to 5.0.7

UnixWare 7.x

Minix 3.x

Mac OS X 10.0 to 10.9.x (Darwin)

FreeBSD 3.3 to 9.x

NetBSD 1.3 to 6.x

OpenBSD 2.3 to 5.x

OpenServer 6.0

Solaris 10

OpenSolaris and derivatives

HP-UX 11i to 11i v3

Linux 3.x

Solaris 11

Legend:
- Open Source
- Mixed/Shared Source
- Closed Source

Impact

- Direct interaction.
- Providing the software at a nominal fee for educational use.
- Running on inexpensive hardware.
- Being easy to adapt and move to different machines.

UNIX Today

- We won! \o/
- It's free!
- On your phone!
- On your website!
- On Supercomputers!
- Even on Macs!
- Runs the World...
  - Internet, Commerce, Government