trainwreck design
2024-08-14

the year is 2024, and i want to know my disk space
usage.

i recall a simple command i've used probably
tens of thousands of times.

df -h

the year is 2024. instead of sensible output,
i get... this:

```
Filesystem       Size  Used Avail Use% Mounted on
dev              7.7G     0  7.7G   0% /dev
run              7.8G  1.5M  7.8G   1% /run
efivarfs         184K  150K   30K  84% /sys/firmware/efi/efivars
/dev/nvme0n1p2   234G  193G   30G  87% /
tmpfs            7.8G  860K  7.8G   1% /dev/shm
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-udev-load-credenti
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-journald.service
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setup-dev
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-sysctl.service
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setup-dev
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-vconsole-setup.ser
tmpfs            7.8G   20M  7.7G   1% /tmp
/dev/nvme0n1p1   511M  296M  216M  58% /boot
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setup.ser
tmpfs            1.6G   32K  1.6G   1% /run/user/1000
tmpfs            1.0M     0  1.0M   0% /run/credentials/systemd-resolved.service
```

my eyes glaze over. somehow, i can never seem to find
the disk i actually care about.

somehow, "mount" is even worse:

```
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
sys on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
dev on /dev type devtmpfs (rw,nosuid,relatime,size=8063880k,nr_inodes=2015970,mod
run on /run type tmpfs (rw,nosuid,nodev,relatime,mode=755,inode64)
efivarfs on /sys/firmware/efi/efivars type efivarfs (rw,nosuid,nodev,noexec,relat
```

```
/dev/nvme0n1p2 on / type ext4 (rw,relatime)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relati
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,inode64)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode
cgroup2 on /sys/fs/cgroup type cgroup2 (rw,nosuid,nodev,noexec,relatime,nsdelegat
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
bpf on /sys/fs/bpf type bpf (rw,nosuid,nodev,noexec,relatime,mode=700)
systemd-1 on /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=39,pgrp=1,timeo
mqueue on /dev/mqueue type mqueue (rw,nosuid,nodev,noexec,relatime)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,nosuid,nodev,relatime,pagesize=2M)
debugfs on /sys/kernel/debug type debugfs (rw,nosuid,nodev,noexec,relatime)
tracefs on /sys/kernel/tracing type tracefs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /run/credentials/systemd-udev-load-credentials.service type tmpfs (ro,no
tmpfs on /run/credentials/systemd-journald.service type tmpfs (ro,nosuid,nodev,no
fusectl on /sys/fs/fuse/connections type fusectl (rw,nosuid,nodev,noexec,relatime
tmpfs on /run/credentials/systemd-tmpfiles-setup-dev-early.service type tmpfs (ro
configfs on /sys/kernel/config type configfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /run/credentials/systemd-sysctl.service type tmpfs (ro,nosuid,nodev,noex
tmpfs on /run/credentials/systemd-tmpfiles-setup-dev.service type tmpfs (ro,nosui
tmpfs on /run/credentials/systemd-vconsole-setup.service type tmpfs (ro,nosuid,no
tmpfs on /tmp type tmpfs (rw,noatime,inode64)
/dev/nvme0n1p1 on /boot type vfat (rw,relatime,fmask=0022,dmask=0022,codepage=437
tmpfs on /run/credentials/systemd-tmpfiles-setup.service type tmpfs (ro,nosuid,no
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc (rw,nosuid,nodev,noexec,
tmpfs on /run/user/1000 type tmpfs (rw,nosuid,nodev,relatime,size=1615816k,nr_ino
portal on /run/user/1000/doc type fuse.portal (rw,nosuid,nodev,relatime,user_id=1
tmpfs on /run/credentials/systemd-resolved.service type tmpfs (ro,nosuid,nodev,no
```

jesus christ.

and if you think that the above output is ugly, let
me assure you, it's even worse in a terminal.

each 150+ character line wraps around my buffer
like a boa constrictor, completely suffocating any
sense of meaning.

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my journey to know how much disk space i had left
has left me confused. annoyed.

i feel disrespected in my own ~home.

and i don't like being disrespected. especially
by command line applications.

after all, this is MY terminal. MY userspace.

a program just waltzes in and spews
shitty output all over MY tty?

HELL NO

oh, but tmpfs's are so very useful? fuck you.
oh, efivars are important becau- FUCK YOU.
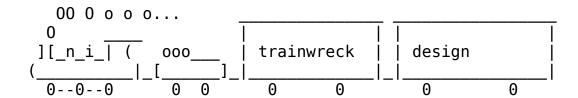

I AM A REGULAR LINUX USER

JUST SHOW ME MY DISKS PWEASE

THIS WAS SO MUCH BETTER 10 YEARS AGO

I AM SO SICK OF "TRAINWRECK DESIGN"

O DEAR LORD,

IS THERE ANY END TO THIS TORMENT?

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    O      ____         |             | |           |
  ][_n_i_| (   ooo___   | trainwreck  | | design    |
 (_____|_[_____]_|_____|_|_____|
    0--0--0      0  0      0        0      0        0
```

as open ecosystems grow, they tend to experience
what i like to call "trainwreck design"

basically: when many programs are independently designed
and developed & then smashed together, user
experience suffers.

things feel wrong because users can sense the lack of
coherent vision. tiny papercuts.

take the GNU/Linux ecosystem:
"trainwreck design" happens there all of the time.
programs are designed independently & smashed together,
everyone spritzes holy water on their keyboards,
adds 2,000 more lines of lua to their emacs config,
and things mostly sort of keep stumbling forward.

but this results in programs like df. or mount.

they grow weird appendages, have millions of
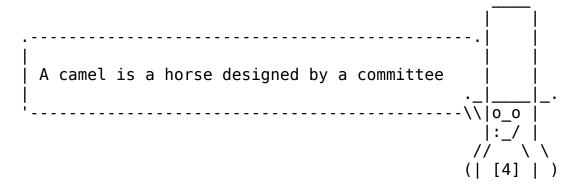esoteric flags, and worst of all,
they just FEEL obviously wrong.

"trainwreck design" is not intentional design.

people have tried using consensus-based design,
but consensus doesn't really work in the design realm.

                    BAZAAR DESIGN THEORY

when an open, bazaar-like[0] community grows too large,
it becomes impossible to insist on a coherent design
philosophy, because getting that many people to agree
on vision leads to slowdowns, disagreements, forks,
etc.

in other words, bazaar-like communities result
in bazaar-like design.

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 |  A camel is a horse designed by a committee      ||    |
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i actually think the above is completely false.

i have my own theory: bazaar-style development does
not necessitate committee-style design.

a bazaar can in fact have a unified vision.

but it must be intentional from the beginning.

this is already happening - many projects that are
very much bazaar-like in nature have a strong visionary
+ designer (or several), who typically hold leadership
positions.

but it's rare, and the territory is pretty new.

historically, this position has affectionately been
called the~

BDFL
"benevolent dictator for life"

for a good example, see the hare[1] project's BDFL page.

Drew Devault runs the hare project, and wrote that page.

my conclusions:
   - Drew is inclusive of the broader hare community
   - Drew has the final say over certain decisions
   - Drew will not "abuse" his position
   - Drew has "the vision"
   - ...
   - Drew is the designer.

try reading hare's style[2] guide and this[3] post
on hare's design philosophy. hare is clearly a designed
project.

"Hare Is Boring" is an assertion made by someone with
a strong innate sense of design.

a new contributor can immediately read, digest, and
align with Hare's vision. they can contribute code in
an expected style with very little oversight.

they can get excited about hare, because when design
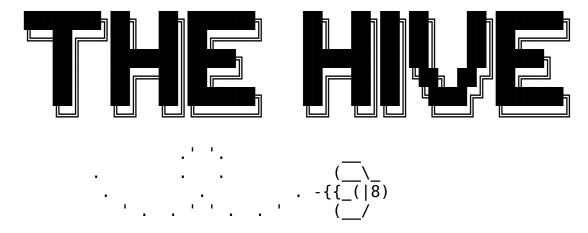is this up-front, it's compelling. exciting.

design requires vision. direction. involvement.

design does _not_ require the designer to do all of
the work, or be a gate through which all work flows.

the designer does _not_ have to be a dictator.

this sort of setup is neither a bazaar nor a
cathedral - i believe it's somewhere in between.

      the cathedral, the bazaar, and...

```
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there is third style of software design that is often
conflated with the other two.

i'm calling it "the hive", and it's a bazaar/cathedral
hybrid.

hives have one or more leaders who influence direction
and vision, but who do _not_ act as dictators.

in other words, hive leaders inspire design
through vision - not by telling people what to do.

being a hive leader is not fun.
they have stressful, emotional responsibilities:
   - produce vision and guidance for the project
   - help people understand the vision
   - organize people into roles
   - resolve interpersonal disputes
   - provide MORE guidance when people disagree
   - watch all of the trains
   - try not to burn the fuck out

people involved with hive projects make
decisions autonomously, but with shared
understanding and vision.

good hive leaders dramatically reduce the likelihood of
trainwreck design, and they keep the important communal
"vibe of the bazaar" alive.

also, you get to call yourself the "queen bee"

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```

        tldr:
           bazaar design: bad
           bazaar community: good

           cathedral design: good
           cathedral community: bad

           hive design: good
           hive community: also good

   if somebody is watching all of the trains
      and showing other people how to watch

   then maybe some of the trains
      won't collide

   love,

      jes

P.S. the year is 2035.

 you run "df -h" on your holo-deck.


```
Filesystem              Size  Used Avail Use% Mounted on
dev                     7.7T     0  7.7T   0% /dev
run                     7.8T  1.5G  7.8T   1% /run
efivarfs                184K  150K   30K  84% /sys/firmware/efi/efivars
/dev/qua0n1p2s4g8z7@    234T  193T   30T  87% /
tmpfs                   7.8G  860K  7.8G   1% /dev/shm
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-udev-load-cre
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-journald.serv
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-systema-syste
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setu
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-sysctl.servic
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-kitchen-sink.
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setu
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-vconsole-setu
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-dishwasher.se
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-mothership.se
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-taxes.service
tmpfs                   7.8G   20M  7.7G   1% /tmp
qtmpfs                  7.8G   20M  7.7G   1% /tmp-quantum-rebind
/dev/qua0n1p38fuqff@    234T  193T   30T  87% /
/dev/qua0n1p1984dja@   511M  296M  216M  58% /boot
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-tmpfiles-setu
tmpfs                   1.6G   32K  1.6G   1% /run/user/1000
tmpfs                   1.0M     0  1.0M   0% /run/credentials/systemd-resolved.serv
/dev/quantum0           dead     0  1.0T   0% /quantum/superposition/cat/0
```

```
/dev/quantum1        alive      0   1.0T    0% /quantum/superposition/cat/1
cybermem                  1P   750T   250T   75% /run/cybermemory/cybermem-setup
cybermem                  1P   750T   250T   75% /run/cybermemory/cybermem-init
cybermem                  1P   750T   250T   75% /run/cybermemory/cybermem-run
cybermem                  1P   750T   250T   75% /run/cybermemory/cybermem-RUN
virtualsocks             64G     2G    62G    3% /run/vsockies
```

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[0]: https://en.wikipedia.org/wiki/The_Cathedral_and_the_Bazaar
[1]: https://archive.is/H6qQA
[2]: https://archive.is/ypKFZ
[3]: https://archive.is/9762X
[4]: ty to dylan araps for this ascii thingy

thanks to Joan Stark for much of the bee ascii art