

# **Being Digital**

**By Kestrel, Terence, Lorette, and  
Bill Cheswick**

# **Our response to requests for directions**

**<http://cheswick.com/summit/travel.html>**

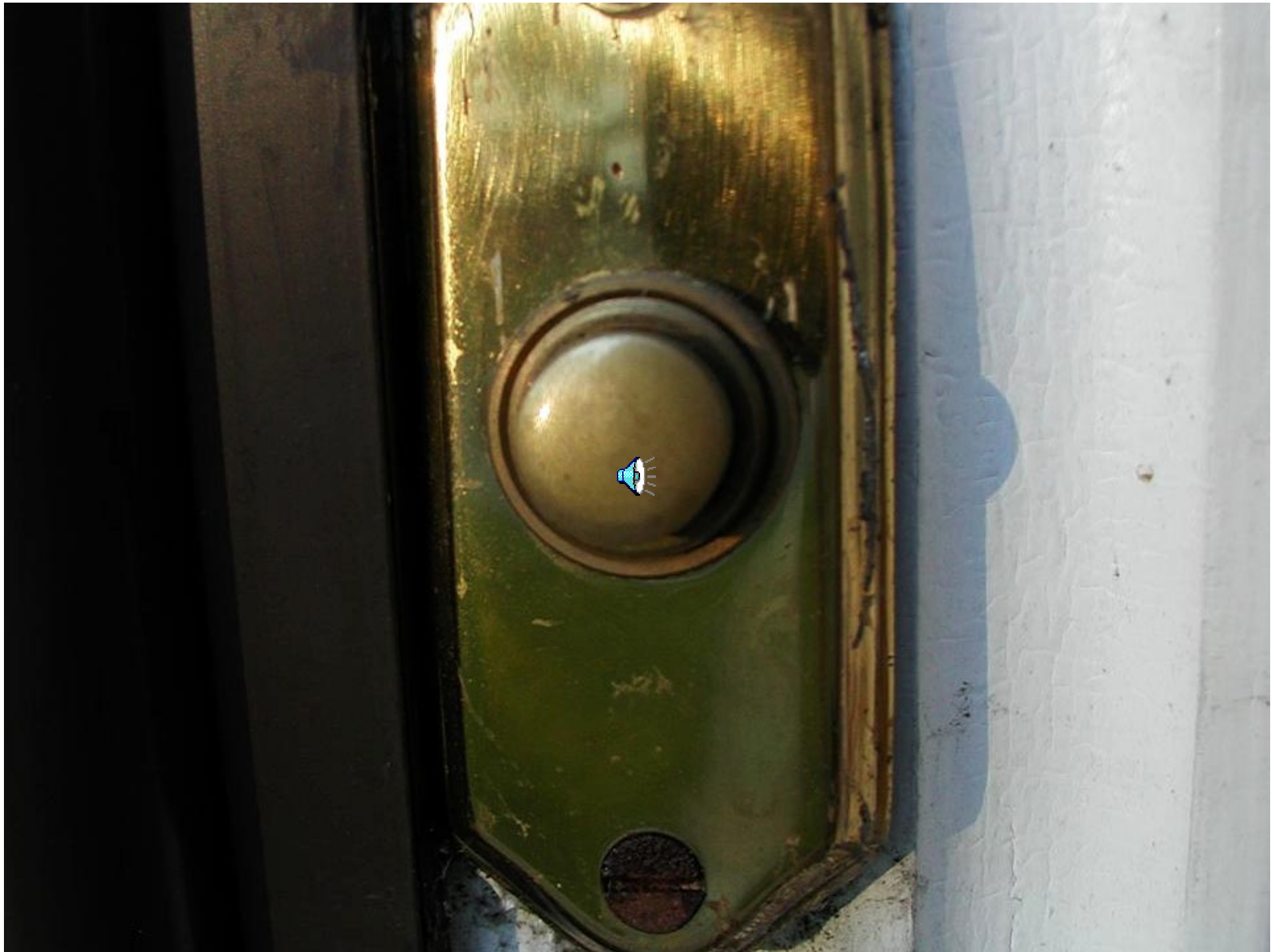
**We live in a three story stealth house. It houses 4 people, (plus one grad student til 15 Dec), 1 cat, various visitors who stay for various times.**







**People enjoy discovering what our house does differently each time they visit.**



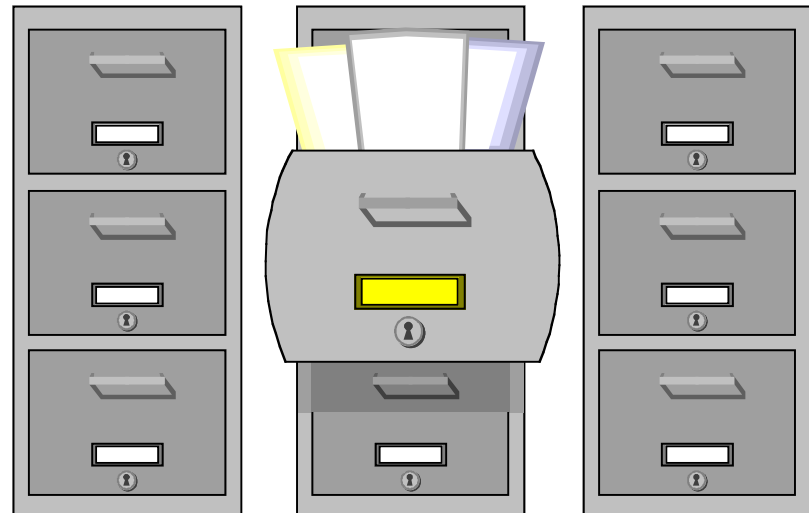






# We have 11 computers on our home LAN right now.

- We never finish setting up a computer system. We will always need more disk space or software.
- Our network changes all the time depending on our current interests.



# Evolution of Computers in the Cheswick house

- We started out with terminals connected to mainframes
- The first PC we bought was an AT. We got it about 1 week before my dad got his.
- B.C. brought home his first PC about 15 years ago.

# New computers for new jobs

- The Mac was a Christmas present 7 years ago.
- We thought we had to have familiarity with both sides of the PC world. Then we got Myst for the external CD-Rom and we've never looked back.
- Now we need fast computers for archiving, video, and scanning

# Some expansion of waistlines does occur with age

- Industrial lighting specifically designed to cut glare on CRT's
- Chairs and desks in many locations and as adjustable as we can make them
- A closet is our electronic stockroom ( I just built a wet lab for the messier projects)
- Toolkits

# How we use our computers:

Work, home, play and parenting

# Uses: What you would expect

- Family Accounting
- Graphics software
- Homework
- Testing software,
- Video research,
- Writing books anywhere,
- Family archives



# Premise for digital additions to our lives

- Practical
- Secure
- Helpful
- Expand our access to information by  
location

# Hardware for a Digital House

- Computers
- Home intercom connected to one computer's sound card
- X-10 serial interface connects computer to the X-10 in the wiring
- Caller ID serial interface
- Fax/modem

# Hardware, etc

- DSL connection to the Internet. /28 network
- Palm cradles in various places
- 2.4 GHz wireless video
- CAT 5 cabling
- Orinico (Wavelan was too simple a name)
- Networked printer for graphics and PS

# X- 10

- Slow signaling over power lines
- 16 House codes X 16 unit numbers= 256 devices
- Wireless motion sensors work over 100 feet distances
- Wall switch dimmers, switchable receptacles, water sensors, garage door sensor

# X10

- old, but cheap, and works
- wireless is not secure
- Needs bridging on electrical panels. When it works it's great; hard to debug.
- Our changing needs seem to be met in reasonable increments

# Software for a wired house

- X10 serial driver
- TTS
- linux
- net access for reports, web pages, general
- cron!
- Network Time Protocol (NTP)









**Radio Shack**

1 . 5

2 . 6

3 . 7

4 . 8

Bright

All lights on

ON

OFF

1-4 SELECTOR

Bright

All units off



HOUSE

A C E  
O I G  
M K

ON/OFF

**LEVITON**  
Transceiver Module







The driving computer is a Linux computer (RedHat 6.0), 233 MHz






Runs jailed Samba and Apache for shared file service and our web server.

NTP sets our clocks. Though we don't always know daylight savings time. *This is either a Linux bug or some mysterious configuration error*

# Linux computer

- Custom drivers for X-10 and caller ID serial interfaces
- Bell labs TTS- 100 MB binary!  
( Much better than rsynth)

# Text to speech- interesting announcements

- morning alarms   
- today's astronomical announcement
- trash and recycling day announcements
- today's stock report, at exchange close 
- iridium flares, space station passes, etc.
- occultations, eclipses, etc., when they happen 
- garage door status
- arrival of interesting email



# Special Announcement for LISA

6:20:05 Iridium Flare New Orleans







# Problems with TTS

Volume

Reading webpages

Scheduling

Day light saving time

“Forecast is minus storms.”

On vacation we were in a house with three other couples and never knew if the phone was for us or someone else.

At home we don't have to run to get the phone as long as people keep the intercom on and not on FM or AM

Cron runs the house

24/7



```
# set vacation for the following days (until
    sunday) with

# cp /bin/true /usr/local/bin/vacation

#
5 6 * * 1-5
    vacation || x10 on b4
15 6 * * 1-5
    vacation || (say "Good morning,
        everybody! Time to wake up!";
        /usr/local/lib/x10/wake_kids)
```

```
16 6 * * 1-5
    vacation || (say "Ding ding ding!
        Wake up!It's a school day! Please
        don't forget to brush your teeth.")
17 6 * * 1-5    vacation || (getweather | say)
5 7 * * 1,4      say "today is trash day"
25 7 * * 2       isrecycling && say "ding ding
                 ding!Today is recycling day"
45 7 * * 1-5    x10 off b1
46 7 * * 1-5    x10 off b13
```

Occasional weekday messages are a pain when they happen on an unexpected vacation day. There is no provision for snow days or other last minute schedule glitches

20 7 \* \* 1-5 vacation || say "15  
minutes to the school bus.  
15 minutes."

30 7 \* \* 1-5 vacation || say "5  
minutes to the school bus.  
finish up."

35 7 \* \* 1-5 vacation || say "You  
must go to the school bus  
now."

#

15 6 8 6 \*say "last day of school!  
Time to get up. Yippee!"

#

# kids to bed


#

50 21 \* \* 0-4 vacation || say "Hey, kids!  
It's a school night! Bedtime in 10 minutes!"

59 21 \* \* 0-4 vacation || say "Bed time kids.  
I really mean it."

02 22 \* \* 0-4 vacation || say "Lights out,  
please, kids. You too, Terry."

#

```
59 10 * * 6
    play -v 5 /usr/local/lib/sounds/cartalk.wav
44 11 * * 1-5 
    say "Hello America, this is Steven
        Hawkings. Stand by for news!"

#
# allowance reminder
#
1 9 * * 0
    say "ding ding ding.today is allowance day."
27 19 * * 0
    say "do not forget that today is
        allowance day."
```

```
# astro and satellite stuff

#

59 6 * * * /usr/ches/proj/astro/astro.sh
>/usr/apache/pages/astro.html

1 7 * * 1-5      vacation || doastro

05 8 * * 0,6     doastro

37 1 * * *       announceirid

38 1 * * *       announceiss

#
```

```
# stock report
```

```
#
```

```
15 16 * * 1-5  getstocks | say
```

```
20 18 * * 1-5  getstocks | say
```

```
58 17 * * *    doastro
```

```
#
```



```
# calendar reminders
```

```
#
```

```
15 7 27 10 * say 'Ding, ding, ding! Happy birthday Terry!'
```

```
15 7 18 6 * say 'Ding, ding, ding! Happy birthday Kestrel!'
```

```
15 7 4 11 * say 'Ding, ding, ding! Happy birthday Retlo!'
```

```
15 7 7 11 * say 'Ding, ding, ding! Happy anniversary!'
```

```
15 18 27 10 * say 'Ding, ding, ding! Happy birthday Terry!'
```

```
15 18 18 6 * say 'Ding, ding, ding! Happy birthday Kestrel!'
```

```
15 18 4 11 * say 'Ding, ding, ding! Happy birthday Retlo!'
```

```
15 18 7 11 * say 'Ding, ding, ding! Happy anniversary!'
```

```
0 7 5 2 * play -v 5 /usr/local/lib/sounds/hb-dear.wav
```

```
#
```



```
# christmas lights at night, if the dusk  
program misses it
```

```
#
```

```
45 17 * 1,12 * dochristmas 6
```

```
#
```

```
# christmas light cycler
```

```
# in the morning
```

```
#
```

```
45 4 * 12 * lights 1
```

```
45 4 1-12 1 * lights 1
```

```
30 5 13-31 1 * lights 1
```

```
#
```

```
#  
# grandfathered clock  
#  
0 12 * * *  
    play -v 3 /usr/local/lib/sounds/bigben.wav  
0 8-11,13-22 * * 1-5  
    play -v 0.05 /usr/local/lib/sounds/dadchime.wav  
0 8-11,13-22 * * 0,6  
    play -v 0.05 /usr/local/lib/sounds/chime.wav
```



Cron- one person has write permission.

We all know when it isn't working.

# X10 software services

- light control
  - dawn, dusk, kid's lights, morning alarm
  - lights off at late hours
- garage door announcements
  - when is someone arriving?
  - Door open too long
- “mail box is open”
- flood detection
- fire detection
  - backed up with normal smoke detectors

# States the house wants to know

- Christmas time
- school vacations
- day/night
- is someone in the house
- is the house supposed to be empty?
- Is it cloudy out?
- We would like to be able to talk to the house

# Home Ethernet and wireless

- Wavelan allows us to travel to the porches and pool
- Cellular connections can help w/ distance
- House was built before computers, so we have drop ceilings, holes, or no ceilings, depending on the situation. Wavelan cards have helped keep the number of holes in the walls to a minimum

# Back Porches are Office Extensions

So are Beaches and Ferries,  
hotel lobbies, and airline terminals

The world's vacuum cleaner outlets  
are part of our office



# How Sys Admin works here

It always needs  $N+1$  resources where  
N is the number of people in the  
house at any time

Our oldest machine is 16 years  
old and still running.

“I’ve had the same axe for 50 years and only  
replaced the head twice and the handle five  
times.”

Every operating system and program has issues.  
Every piece of hardware has conflicts.

Every operating system and program has issues.  
Every piece of hardware has conflicts.

**Windows Millenium bugs**  
Every operating system and program has issues.  
Every piece of hardware has conflicts.

Every operating system and program has issues.  
Every piece of hardware has conflicts.

# OS issues

- Linux
- FreeBSD
- BSDI
- Win Me, 98, 95
- Mac 8.0

# Sys Admin

- Software & hardware upgrades- some are now on auto-updates
- Scale- we have ordered PC's in pairs, disks and CD writers seem to be more like an Amazon order in the last year.
- Volume- archives, backup, and serving issues
- We keep logs for each machine and are now keeping system disks and backup CD's with the logs

# Sys Admin

- Lighting- 2 years ago we had an industrial designer review our lighting in the computer area. Glare reduction and flexibility wrt stop action animation were our parameters.
- Wiring- we used to do ourselves, now we have an electrician fish anything.

# Neat hardware

- Radio mice
- Radio keyboards
- PCMCIA cards and slots
- laser pointers
- radio ethernet
- PDA's and their evolution
- Modems
- Cisco bridge
- Radio video transmission
- Would like radio hifi speakers

# Network

- Linux server for file sharing, webpage service, printers, and network logging
- Problems: Windows side can go down with minimal changes on the Linux side esp. security ones. (Thank you Paul Vixie.)
- Using 16 addresses efficiently
- Wavelan is one radio use



# Peripherals

- networked printers
- Fixed IP address
- Port so that Windows machines can talk to printers. Still working on Postscript
- Sick black hole hack?
- Pcl v Adobe postscript- RIP software is still a mystery

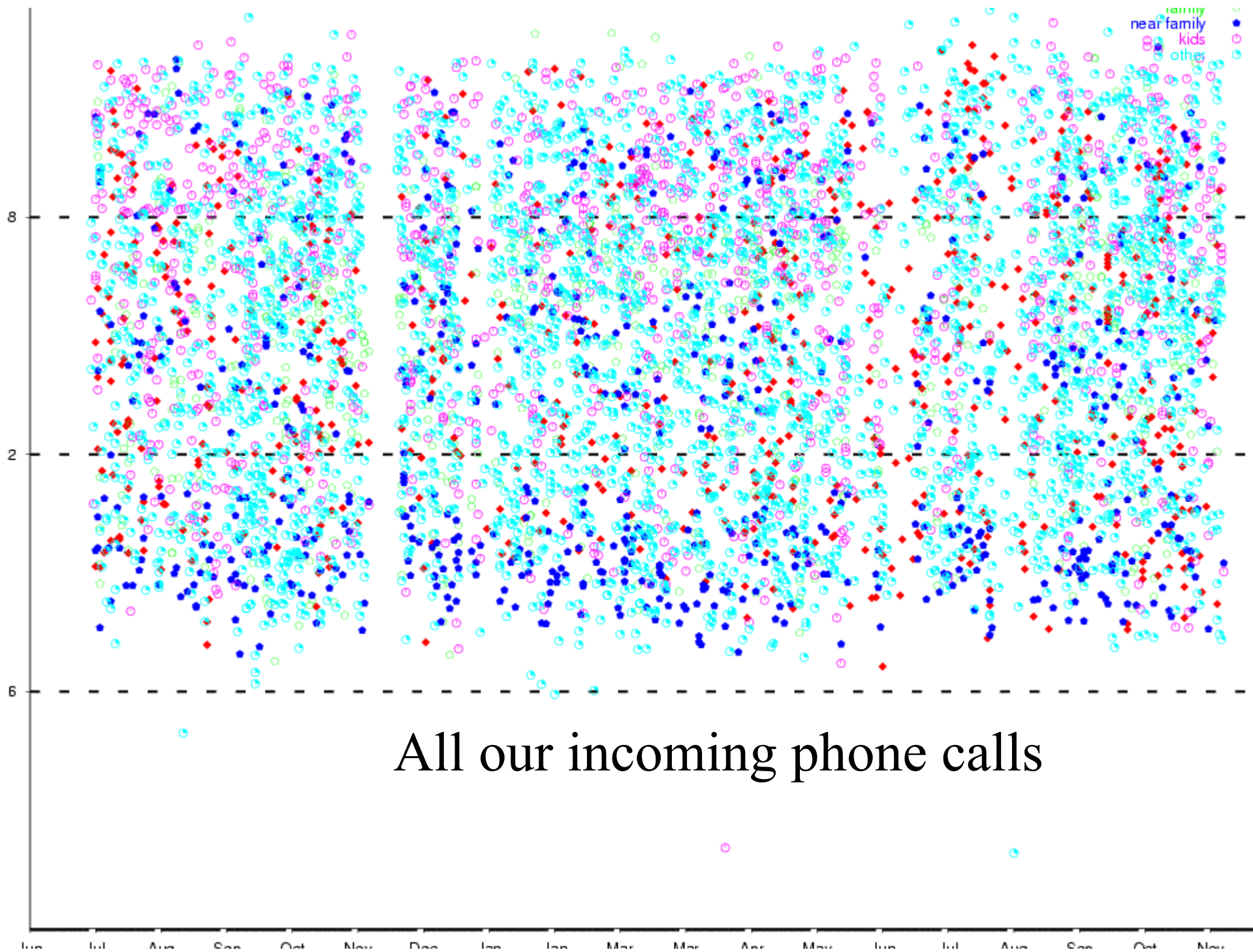
# BC's issues for programming his house.

- The digital house
- The family data archives
- Digital family travels
  - vacation photos
  - email
    - hotmail
    - need home access

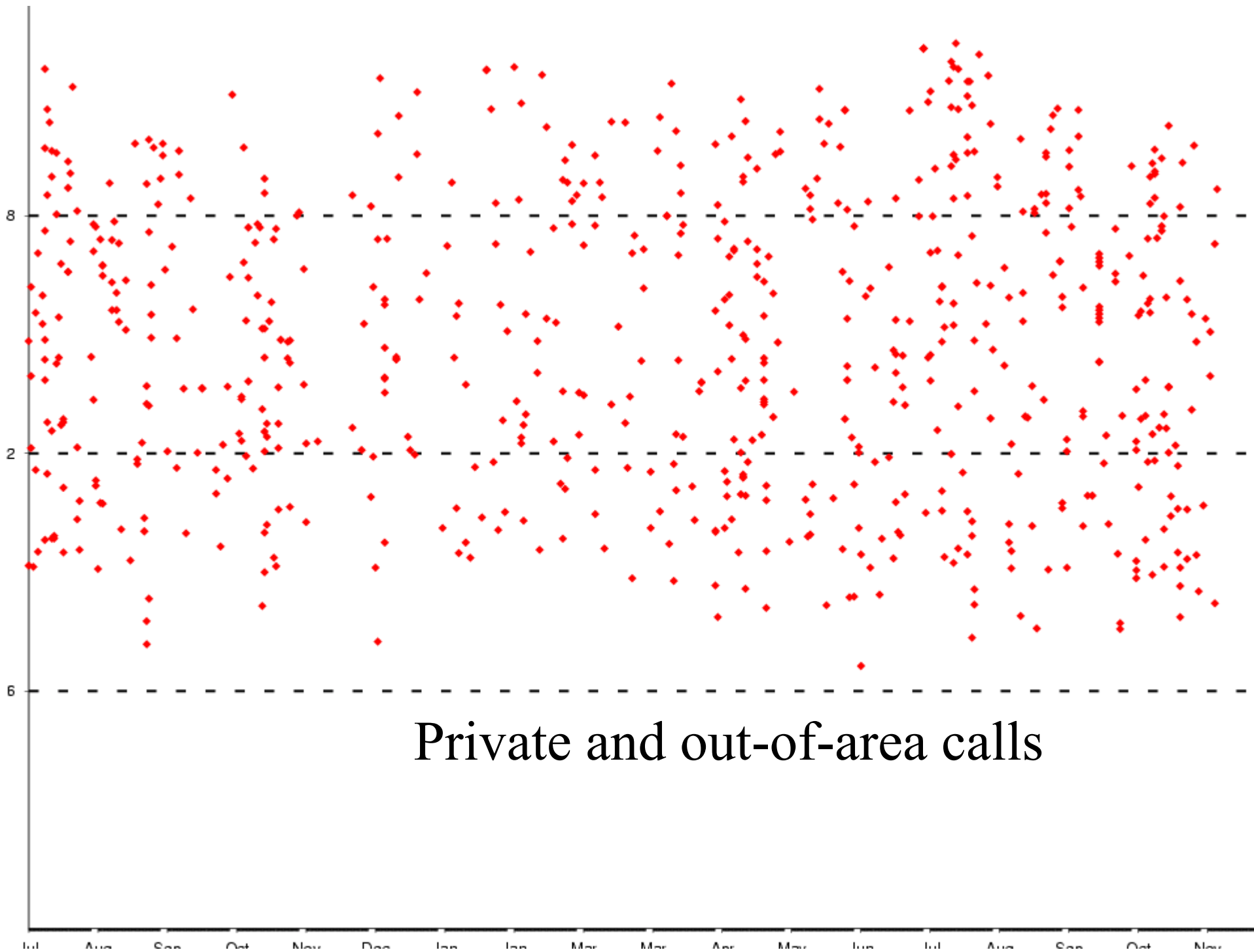


# Data Collection

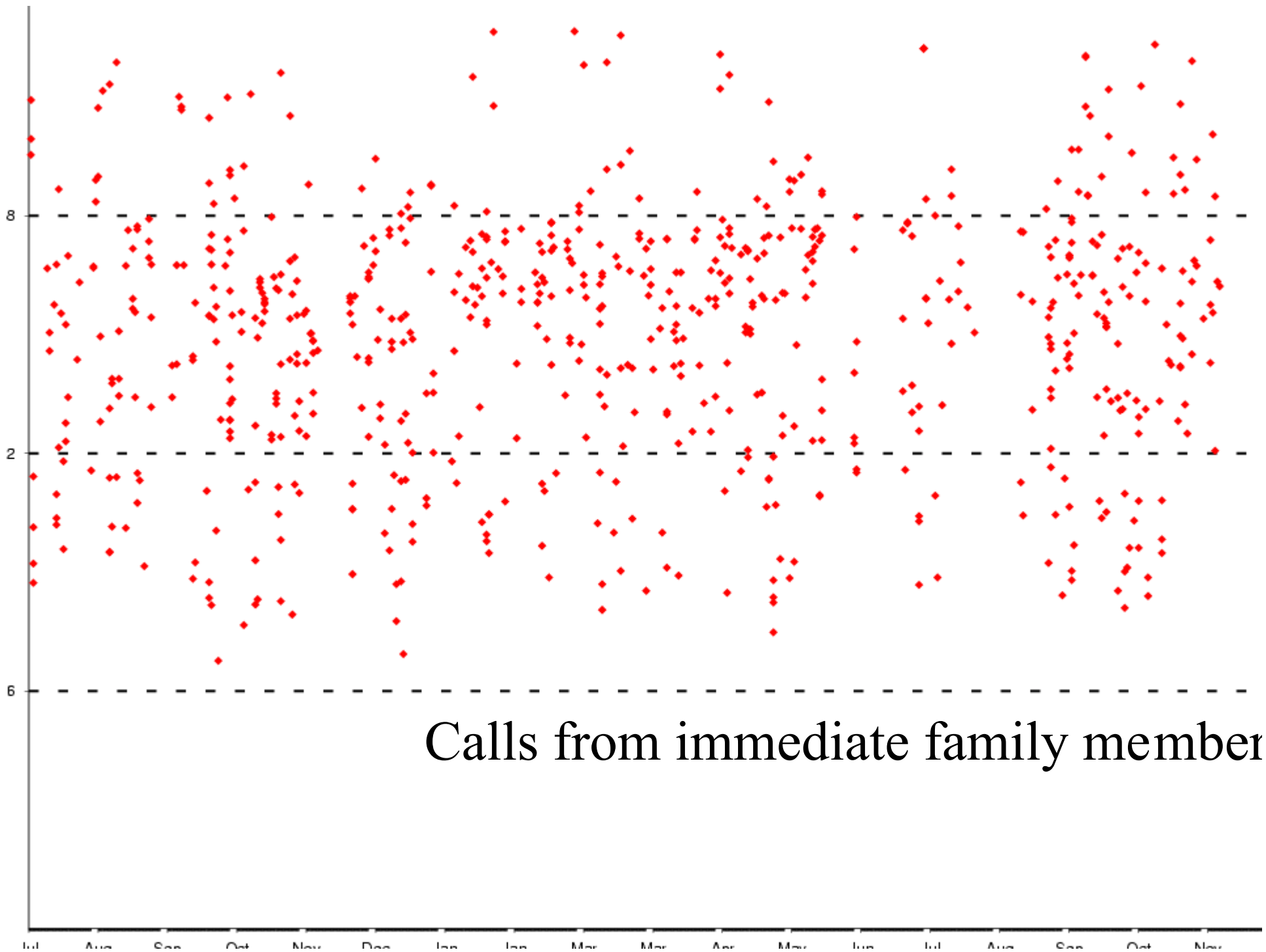
- Phone calls
- Plots
- Dawn and Dusk
- Garage door



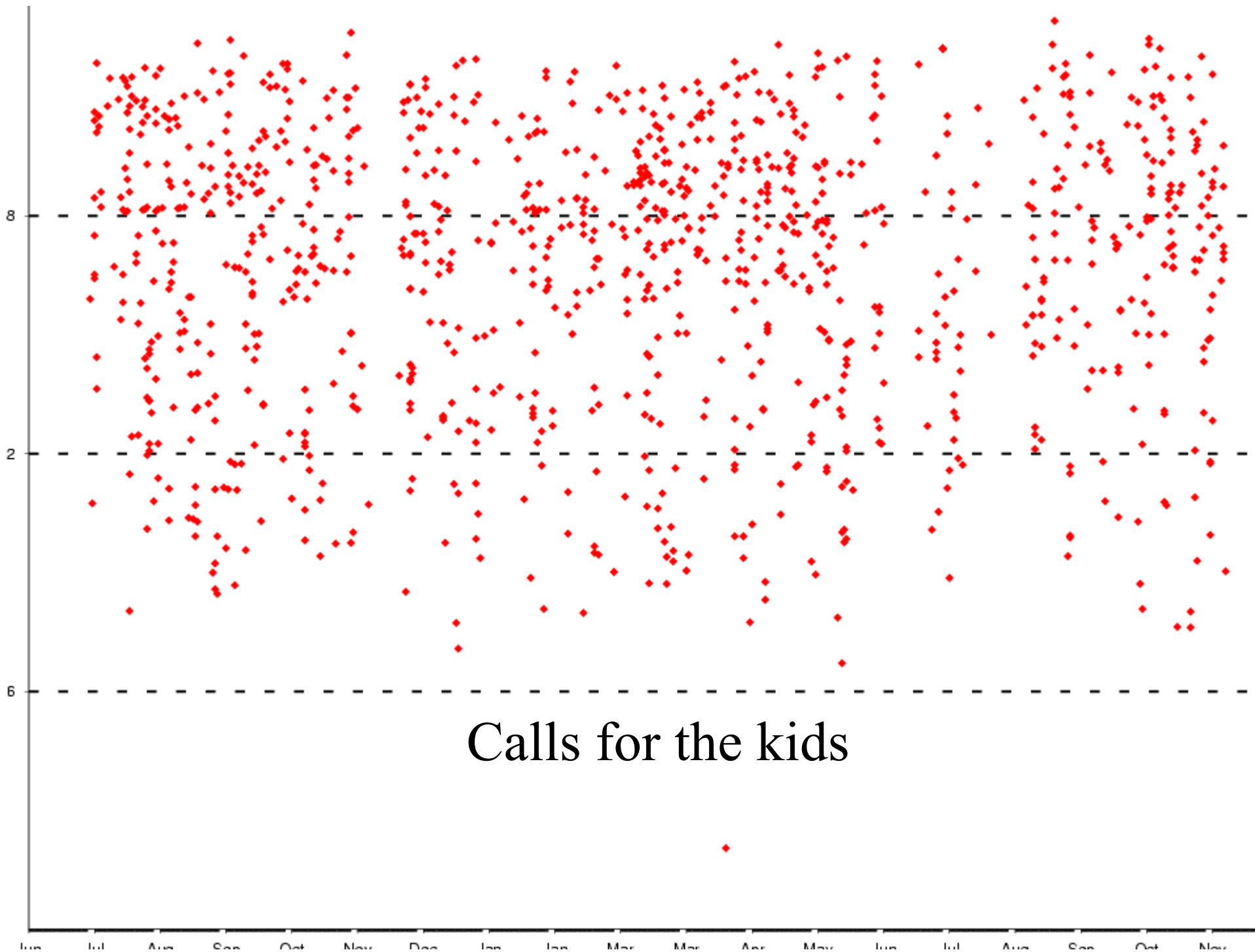
All our incoming phone calls

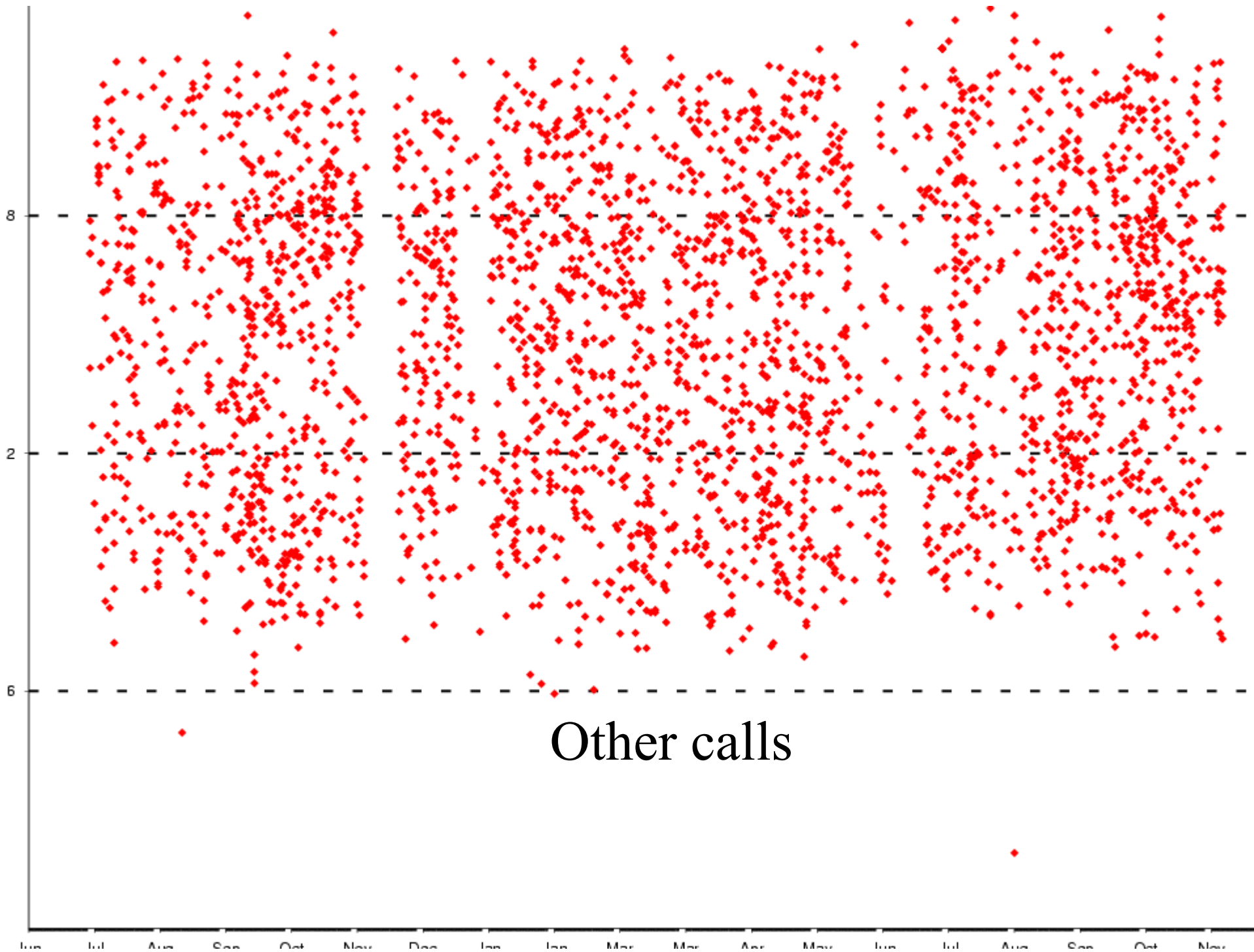


Private and out-of-area calls



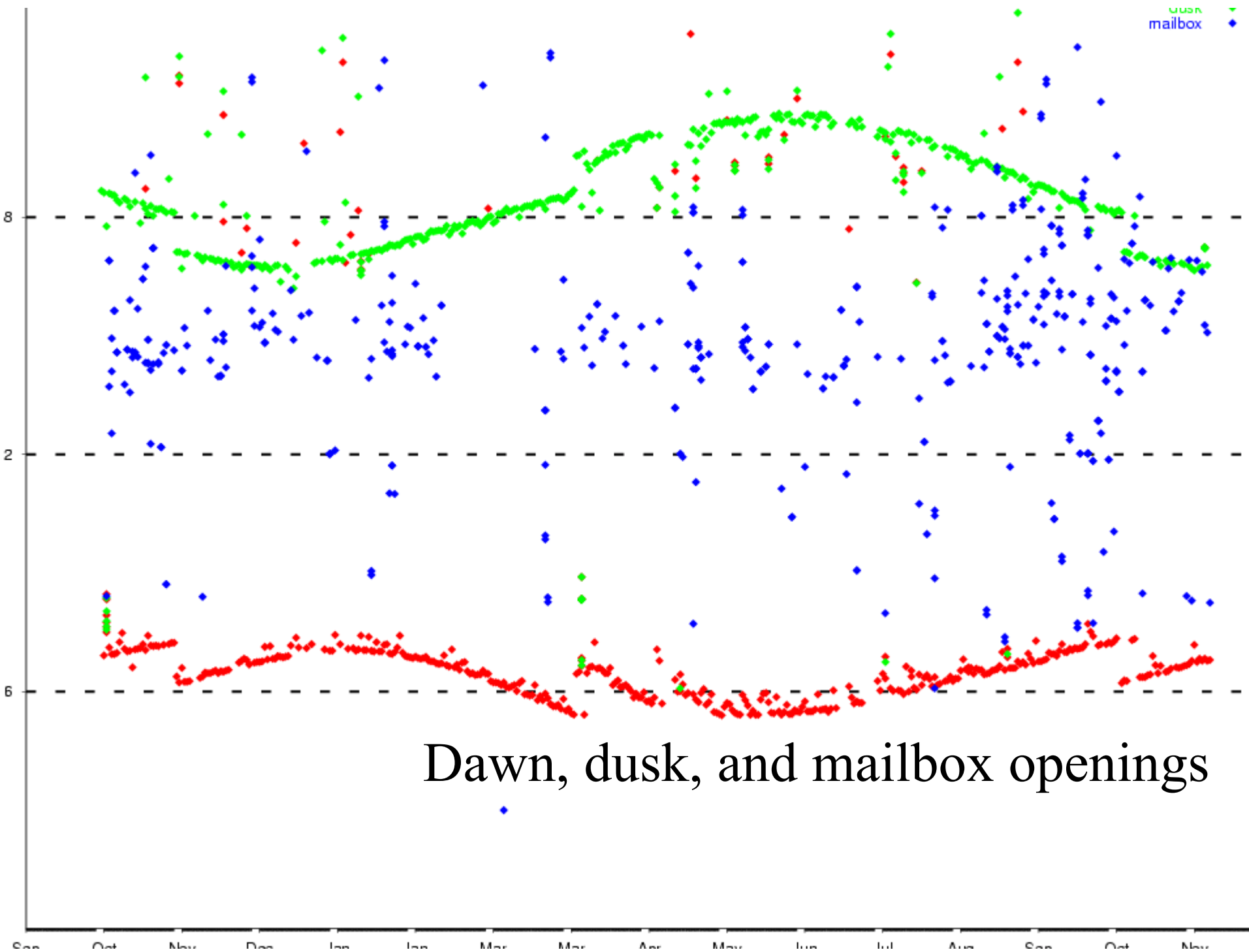
Calls from immediate family member



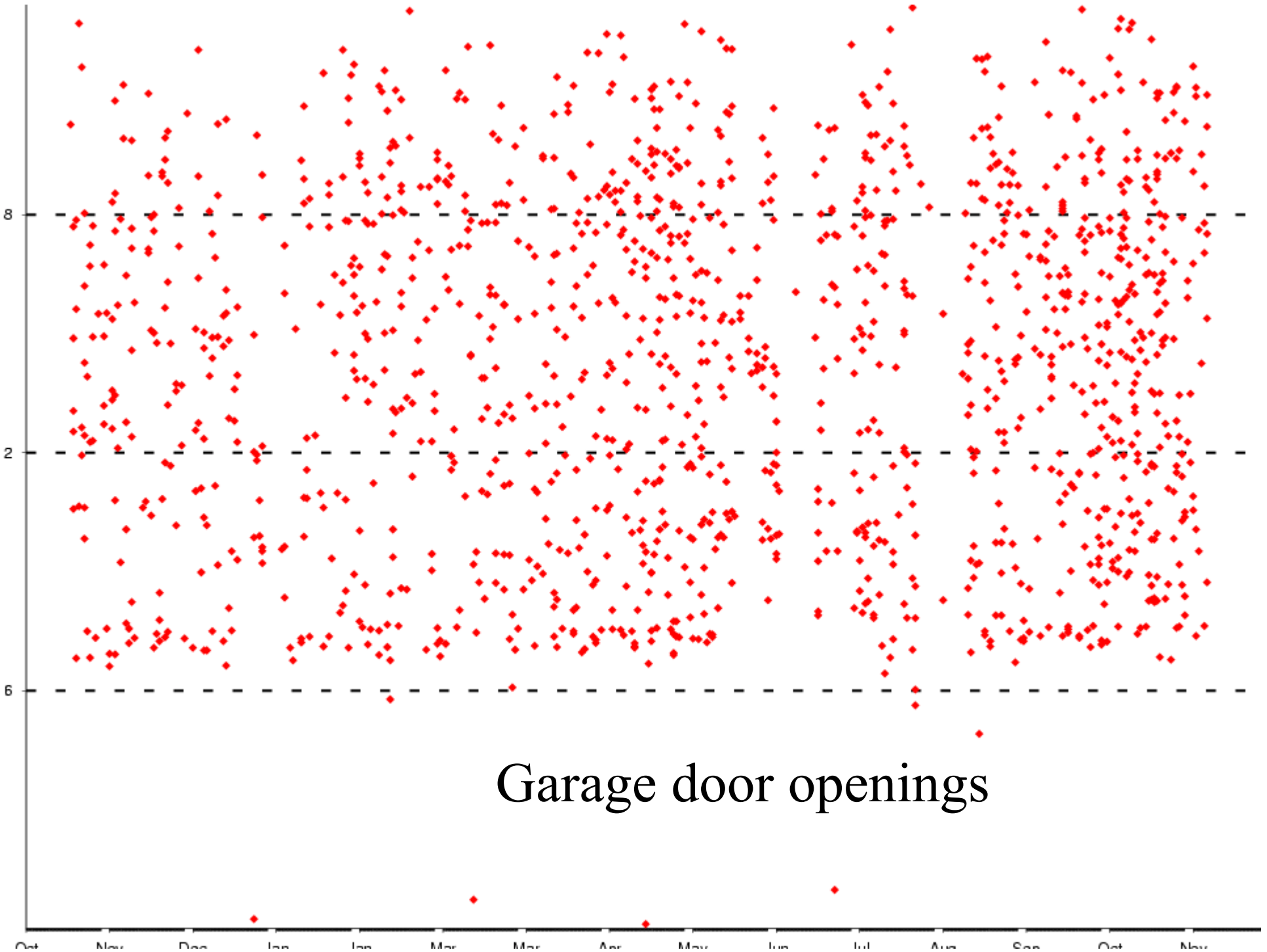


Other calls





Dawn, dusk, and mailbox openings



Garage door openings

# Data Collection

- Video
- Sound
- Digital capture of analog information
- mapping

# Applications

- Mouse cam- deer, groundhog,
- Stop Action animation
- Time Lapse
- Net meeting
- lost friends

# Uses

- new room use
- housework
- scarves
- Artwork
- keeping up w/  
family
- front doorbell
- love-lop, dusk,  
proflowers.Com
- Invitations
- scheduling- net

# Mobile Needs

- Omnisky- probably discontinue
- Currently using cellular w/ web
- Vpn- no longer in use
- rc recovery rockets
- cell phone as digital modem

# Digital Family Archives

- a new legacy
- pictures, videos, programs, email, etc
- preservation issues
- data volume issues

Secret Cheswick family photo albums - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Go to: <http://www.cheswick.com/private-directory/> What's Related

## Secret Cheswick family photo albums

- [July 1996: Lydia, Kitten, Ma, Duffs with Jr-all-star, Glicks.](#)
- [July 1996: Sabattis Boy Scout camp trip.](#)
- [July 1996: Trip to Speculator returning from Sabattis.](#)
- [July 1996: Winnebago Scout Reservation.](#)
- [July 18, 1996: 1127 center picnic](#)
- [July 1996: Lydia, the Duffs, and the Glicks](#)
- [July 29, 1996: Loantica](#)
- [July 1996: Intel](#)
- [July 1996: San Jose security conference](#)
- [Aug 1996: I visit to the Cheswicks, with Charlie and a very pregnant Carol.](#)
- [Aug 1996 \(many photos\): Nantucket, with Glicks, Amy and Mags, the Paraganos. .](#)
- [Aug 1996: Alvero's birthday party](#)
- [Sep 1996: BC's last ONSWG meeting; a couple shots of James Randi; K's sneakers.](#)
- [Sep 1996: Labor day bash, with Bellovins, Matt Blaze, the Stiers, the Glicks, Simona, and Amy.](#)
- [September 1996: Melbourne and Sydney](#)
- [Sep 1996: First Day of School](#)
- [Sep 1996: Early Jennifer](#)
- [Oct 1996: A trip to Cheswick Investment; Matt, Simona, and the kids go to New York and Brooklyn; BC's trip to Evi and gang at U Colorado; family trip to Frost Valley with Lydia and Kitten.](#)
- [Dec 1996: Kestrel, very young Jennifer and Christine; Christmas at Susie and Jim's; a few Renaissance Weekend shots.](#)

The iconified (fast download pages) start here.

- [Feb 1997](#)
- [Feb 1997: Photos by Terry and Danny](#)
- [March 1997](#)
- [March 3 1997](#)

Document Done



**Heron Island - Netscape**


File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Go to: <http://www.cheswick.com/private-directory/20000709/index.html> What's Related

# Heron Island, an island on the Great Barrier Reef

## Kestrel did a lot of painting on the beach




## Pictures from the semi-submersible

This was better than the glass-bottomed boat that we took in Bermuda. You are actually sitting underwater, in a windowed gallery at the bottom of the boat. It is the best way I have seen to see the reef without getting wet.

These pictures could use some color correction, because there isn't much red light at these depths.

Lorette did *\*not\** get seasick on this excursion.




Document: Done

Netscape

File Edit View Go Communicator Help

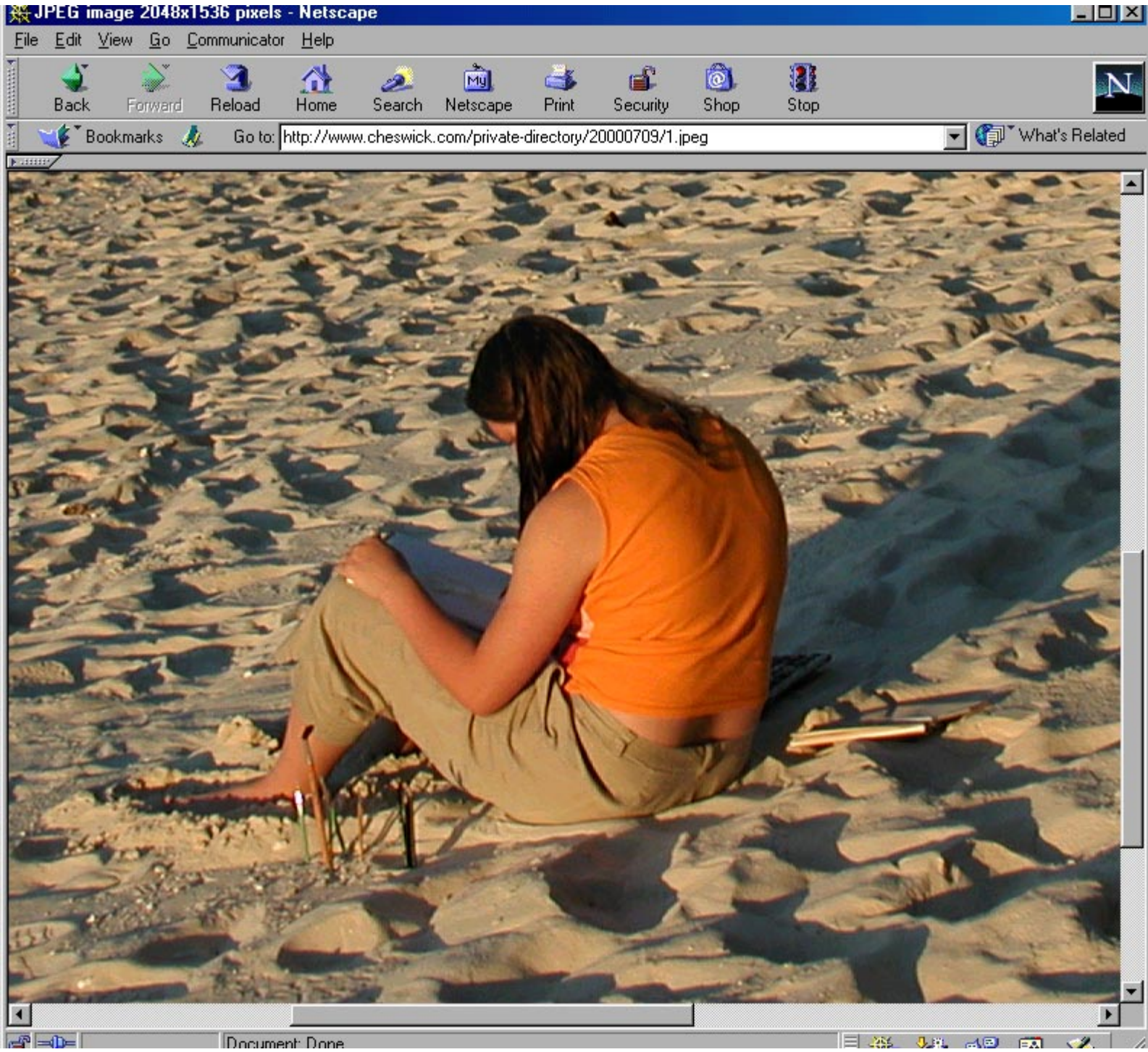
Back Forward Reload Home Search Netscape Print Security Shop Stop

Go to: <http://www.cheswick.com/private-directory/20000709/j-1.html> What's Related



Click on image for very high resolution image.

Document Done



# Secret web pages

- family photos
- lost friends page

# Travelling

- digital camera photos to the web page
- email to other family members
  - stuck in fjord
- GPS
  - convergences
  - maps
  - collecting waypoints
  - downloading roads and travel information
- travelling with a laptop
  - Britannica
  - road map USA
  - Windows CD, of course

# Home, while travelling

- “email from daddy”
- simulating a busy house
  - not just lighting scenes
  - the automated DJ (a new use for Dickens!)



# E-mail Realities

- Our e-mail has a fixed domain
- My family is so busy, I only talk to those who are on the Net with any frequency. My husband has become the family communicator because he typed faster.
- Hotmail and IM are very useful



# Games v Work

- I used to play Tetris and Shanghai all the time. My husband plays flight simulator and Civilization to relax or change pace. The kids used to play math, science, and simulation games whenever we let them. Now, it's RPG's or "First Person shooters."
- In a home environment, it is hard to control software versions, access, and space.
- Kids are a lot like employees from a sys admin point of view



# Scheduling

- HP 200 LS
- Win CE failed
- Palm III to Palm Vx for 2
- Should we get them for our kids?
- Web based scheduling for company and remote access
  - poor palm interface?

PDA's are a viable way of life as  
long as you plan ahead.....

I would not know what to do without "Box."

# PDA's and their evolution

- **EO** was a fun toy, but the screen was hard to read
- It was heavy but we did get involved reading a few “screen scrollers.”
- Software compatibility was so-so
- Flash cards are great and the PC slots allow a number of peripherals in a portable or PDA

# Mobility

- One cell to one per adult, Motorola talkabouts are fine if you can find them
- Newer batteries are much more useful for putting in a purse
- Weight continues to drop
- Cellular functionality increases

# Digital Cameras

- Have a similar evolution to the PDA's
- Software and resolution have improved immensely
- Print quality is still tricky.
- Batteries are a recycling issue
- Great to use

Would you glue a camera base to  
your dash board?

# Alternatives to TV and a clean house: Stop Action Animation

<http://cm.bell-labs.com/cm/cs/who/ches/mpg/gorgo.mpg>



# Digital Cameras and Video

San Diego

Gorgo Eats Miami

Field of Dreams

Cars in the Driveway

Nantucket Bathhouse

Stop Action Animation



Two years ago I was curious  
about-

- IBM Voice Type
- <http://www.sostech.com/quiz1.html>
- Storm on Sun creates solar flare
- <http://www.nasa.gov/>



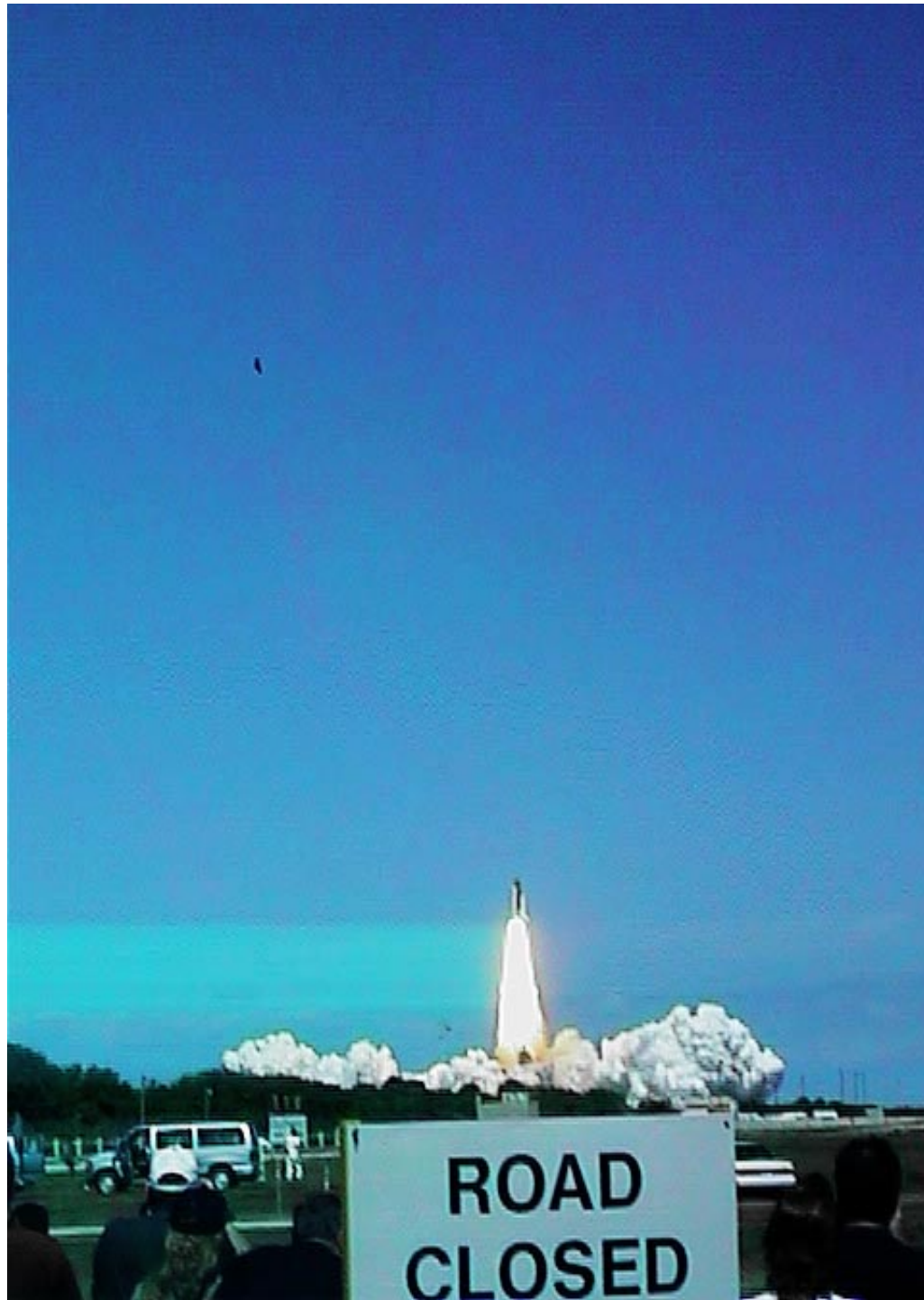




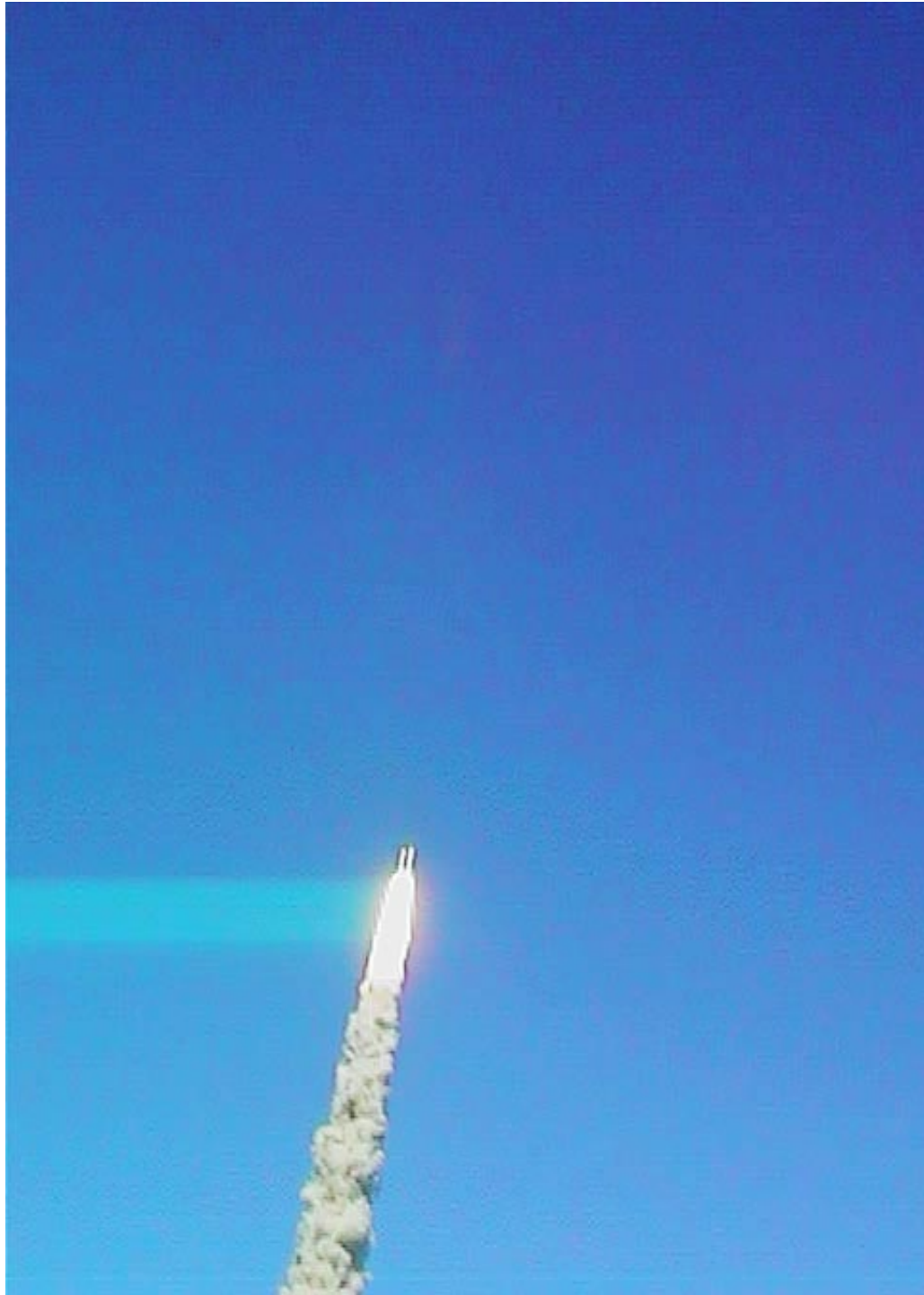


**ROAD  
CLOSED**

**BEYOND  
COMPLEX  
39A**











Last week I wanted to know-

- [http://www.noskidding.com/ns\\_121.htm](http://www.noskidding.com/ns_121.htm)
- <http://www.ericharshbarger.org/lego/index.html>
- <http://sohowww.nascom.nasa.gov/hotshots/>

On vacation we get blamed for  
all the nice toys

# Costs

- Cost- what some people pay for cable per month
- Blurring of home and work costs
- bills-internet banking can fail
- Replacement of handheld devices
- families can be hard on equipment
- salt doesn't agree with video cameras

# So when you visit us

- Please leave a sound file so that future phone calls will be announced by your voice
- You will be able to keep up with your stocks, the weather, and astronomical data
- Under the right circumstances you can launch rockets

# Other thoughts

We have thought about home resale issues.

Our legacies include domains, digital archives, data in a number of disciplines.

Our family needs still drive some of our creative impulses. Joint efforts make for events and executions that last longer.

I have lots of website content but have not allowed myself the time to set it up.



# **New Acquisitions and Goals-**

**(the I wants' )**

# Spreading the Wealth

- Ceiva for 3 grandmothers
- Recipe viewer that I can make comments on in the kitchen from files on the server
- Page turning facility for four hand piano music on CD ( I don't have time to memorize)
- Netmeeting



marks Thumbnails  
] Table of Contents



In order to view this piano duet,  
Please click on:  
VIEW/CONTINUOUS – FACING

The pages will then be displayed side-by-side,  
with the “secondo” part on the left  
and the “primo” part on the right.

CD Sheet Music

Debussy  
Petite Suite  
1. En Bateau

Secondo

Andantino

CD Sheet Music (en) – Debussy – Petite Suite

Debussy  
Petite Suite  
1. En Bateau

Primo

Andantino



**CD Sheet Music**

Debussy  
Petite Suite  
1. En Bateau

Secondo

Andantino

6

17

pp

p

mf

pp

CD Sheet Music (tm) - Debussy - Petite Suite

Debussy  
Petite Suite  
1. En Bateau

Primo

Andantino

6

17

pp

p

mf

dim.

2

# Public Services

- Digital cam plus cron to determine speeders on Mine Mount w/out getting into trouble.
- What about a best speed of the week shot?
- Web page hosting and creation for volunteer organizations

# Lojak for handhelds

We have found laserjet media that claim to be permanent on outside surfaces. They come in metallic and clear forms.

# Chroma-key Wall and software

We already have the lighting and the wall.

# Lorette's projects

- RC parafoil recovery of HP rockets
- Complete elevations for gardens cross referenced to plant database
- Christmas tree that has continuous color change that is easy to reset up year after year.
- Easier music environment
- Inkjet fabric printing



# Full Screen Video

- Exercise
- Digital collection not capture from analog\
- Cathedrals
- Christmas lights

Time lapse of Water at Disney  
World and Light Studies at  
Cathedrals.

Further Security studies in real  
life.

All of us



# Thanks

Any comments or questions can be directed to the following e-mail addresses.

[Lepac@cheswick.com](mailto:Lepac@cheswick.com)

[Ches@cheswick.com](mailto:Ches@cheswick.com)

# Hemo the Magnificent

A Bell Labs film directed  
by Frank Capra

# If you can't bend technology -

- Not all sequelli are obvious

