

# I Began Hacking in 1958 and Then Survived Rock'n'Roll

HOW STEVIE WONDER, BOB MARLEY, JIMI HENDRIX &  
LIZA MINNELLI PREPARED ME FOR INCIDENT RESPONSE  
AND SECURITY

WINN SCHWARTAU, FRSA

SECURITY GUY SINCE 1983

[WWW.WINNSCHWARTAU.COM](http://WWW.WINNSCHWARTAU.COM)

@WINNSCHWARTAU



# My Dad. NBC. 1946.

Oscilloscope and Radar Dev. WWII



# My Mom. 1943. NBC Mastering Engineer





# My First DefCon





# My Analogue Education



# Winn As Young TV Repairman

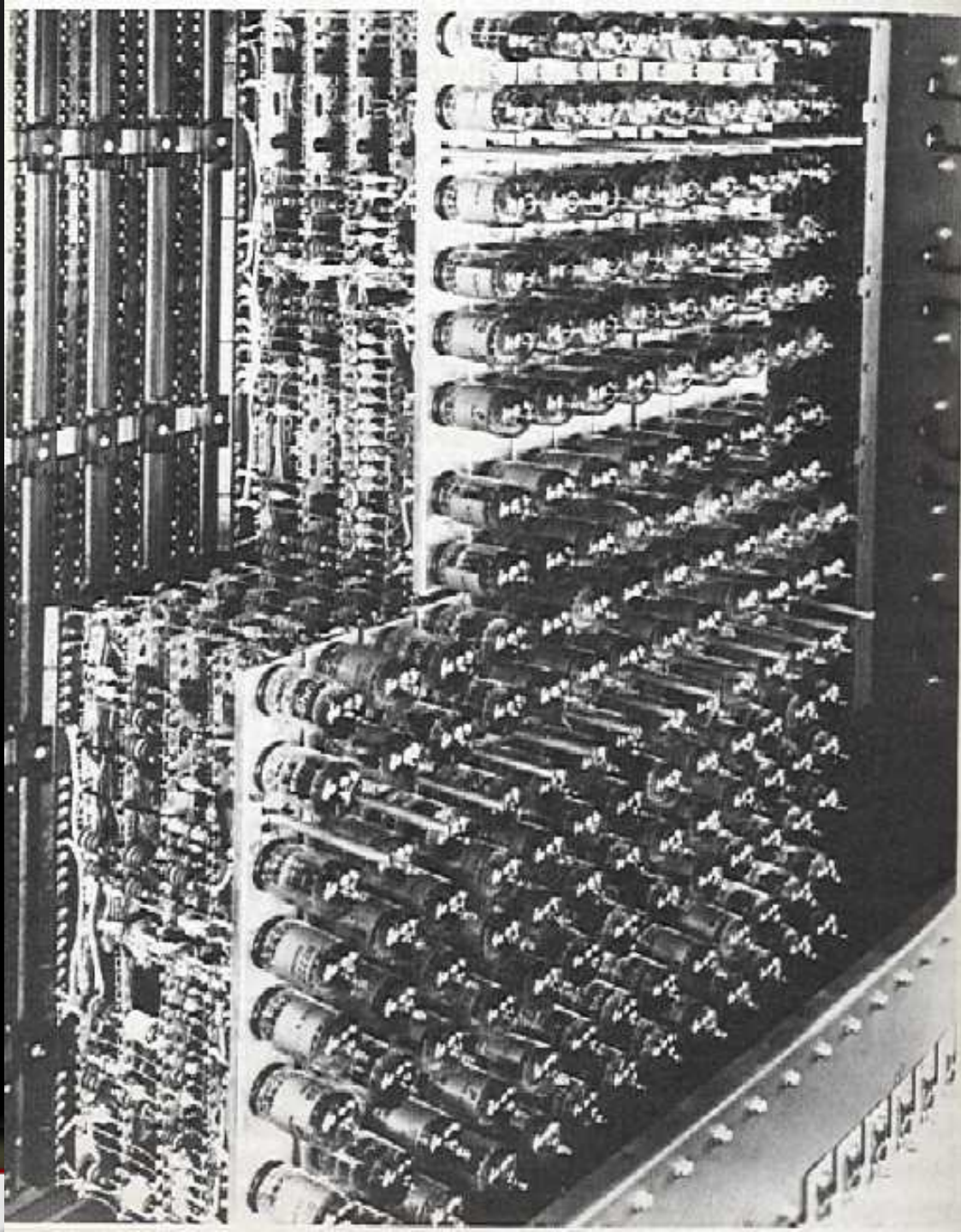




# My Electronics Store







# Vacuum Tube Computer 1950s



# My Home Phones 1950s: Some party line; Some 4-digit direct dial





# 1958: Phone Upgrade. My Mom Gets Pissed.

## Phone calls were *EXPENSIVE!*



New York Telephone

718 XXX-XXXX 240 R3A0

NOV 4, 1980

PAGE 2

### DETAIL OF MONTHLY SERVICE AND EQUIPMENT

OUR POLICY IS TO PROVIDE YOU WITH AN ACCURATE MONTHLY BILL. PLEASE REVIEW THE FOLLOWING DETAIL OF MONTHLY CHARGES FOR SERVICE AND EQUIPMENT BILLED FOR THE PERIOD NOV 4 THRU DEC 3. THE TOTAL OF THE CHARGES DETAILED BELOW IS REFLECTED AS THE FIRST LINE OF CHARGES ON PAGE 1 OF THIS BILL.

\*\*\*\*\* THE FOLLOWING DETAIL IS NOT A BILL \*\*\*\*\*  
IT IS PROVIDED ANNUALLY FOR YOUR REVIEW AND SHOULD BE RETAINED FOR YOUR RECORDS.

	PER MONTH
MAIN SERVICE LINE	6.04
1 WIRE OUTLET	1.24
1 TELEPHONE	1.18
CONTINUED	





# 1958: So She Locked My Phone.

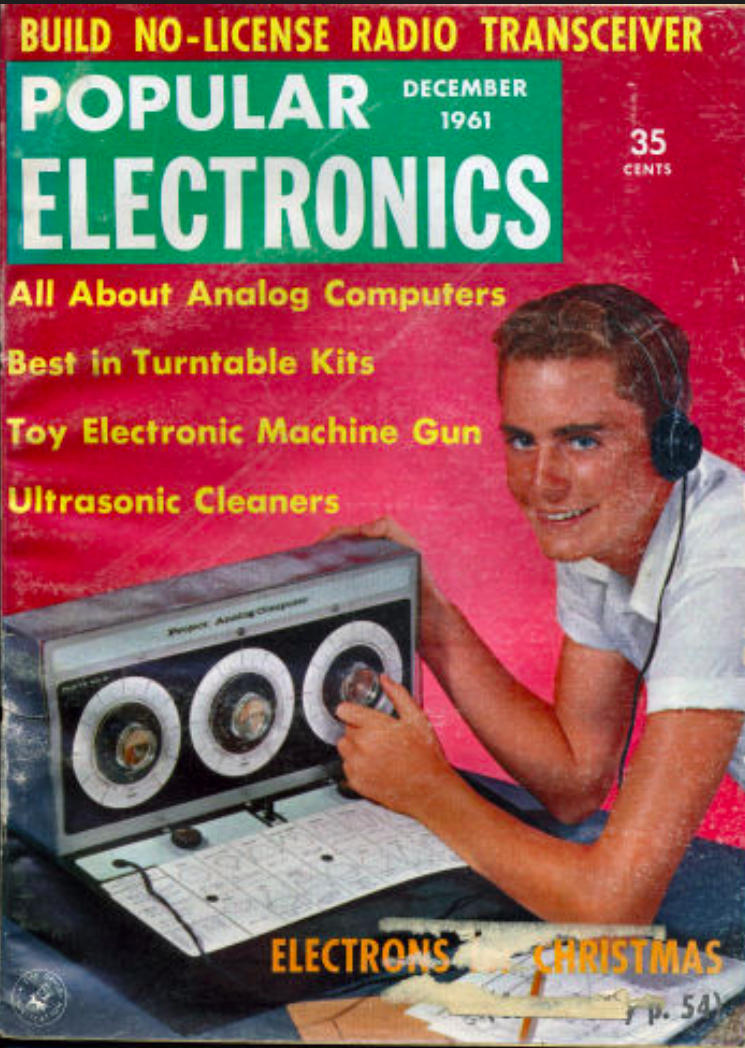


# 1958: How did I Make Phone Calls, Anyway?



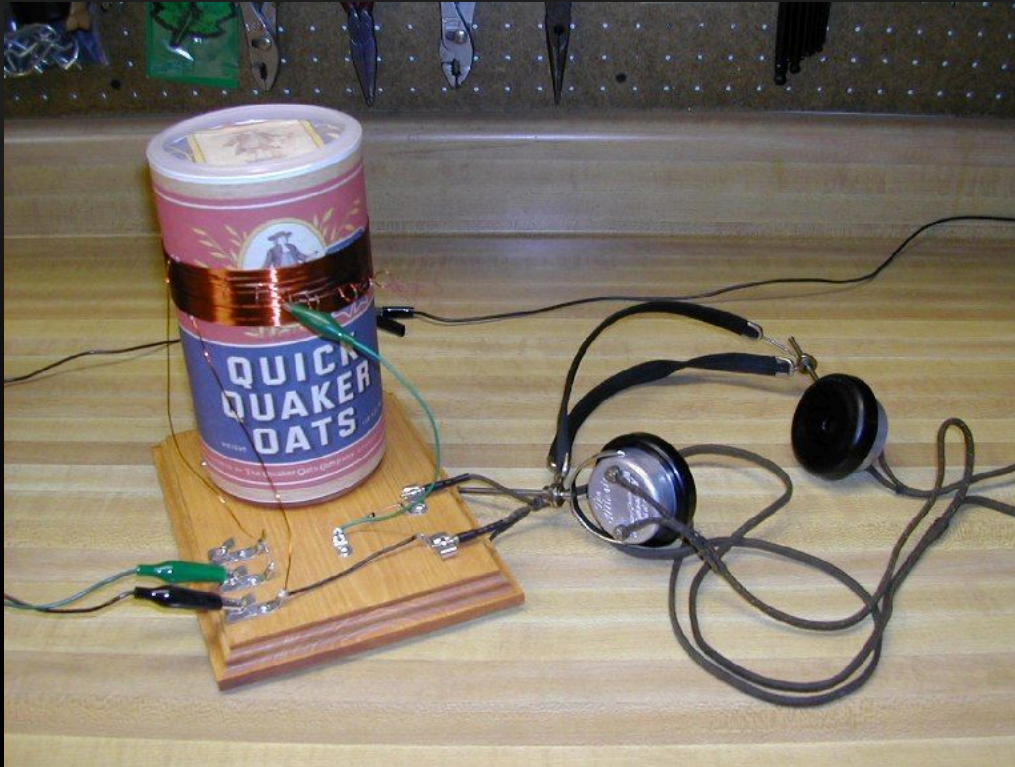


# 1961





# DIY – 1950-60s with Dickie Stallman





1962: Local Drug Store.  
Worked There Part-time.  
96<sup>th</sup> St. Columbus Ave., Manhattan





# 1962: Pay Phones



# 1962: Hack

## Make Long Distance Calls for Free

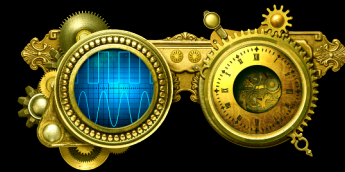


A good buy—that's how your citizens will rate outdoor phones on public property. • Any hour, any day, outdoor phones let your citizens *save* time looking for a phone—*gain* the 24-hour convenience and peace of mind only a telephone can deliver. • Outdoor phones can mean extra revenue for your city's treasury, too, without adding one cent to your municipal tax burden. • Learn how a planned *network* of outdoor phones on public property can be an important part of your municipal planning. Just call your local Bell Telephone Manager and invite him to prepare a complete, no-obligation plan for your city.



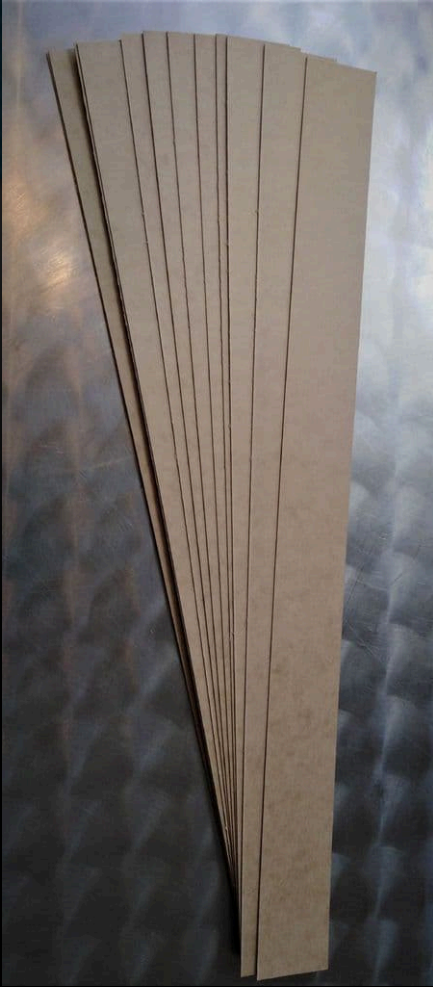
BELL TELEPHONE SYSTEM

- Goal
  - Free Local Calls
  - LD Phone Calls
  - Goof Calls





# 1962 Tools Used



# High School Computer





# Going Pro at 16: (1968) My First Studio Gig

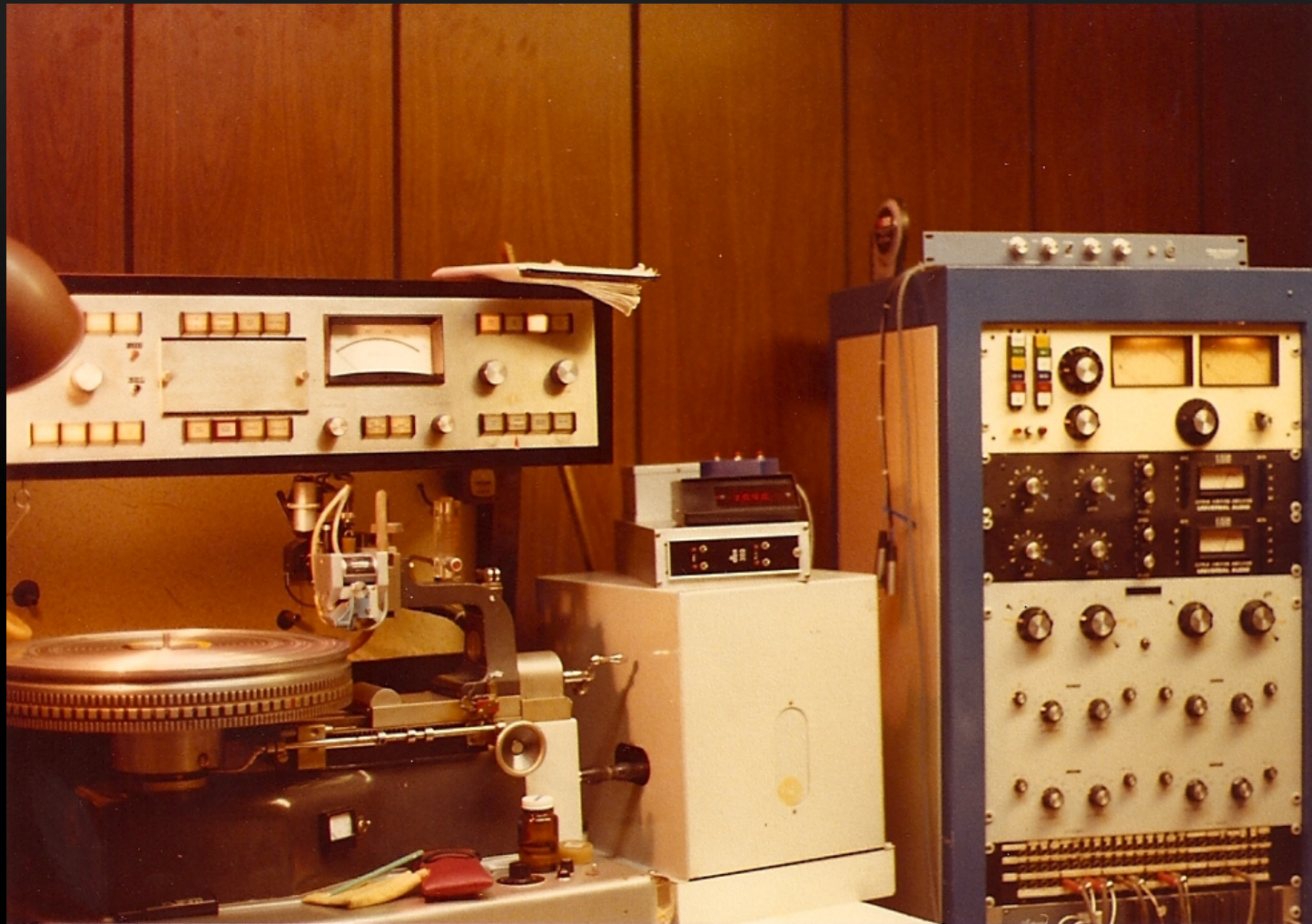


# My First Sessions





# My First Lathe



# 1969: Telephone Credit Card: Not a hack. Just theft.

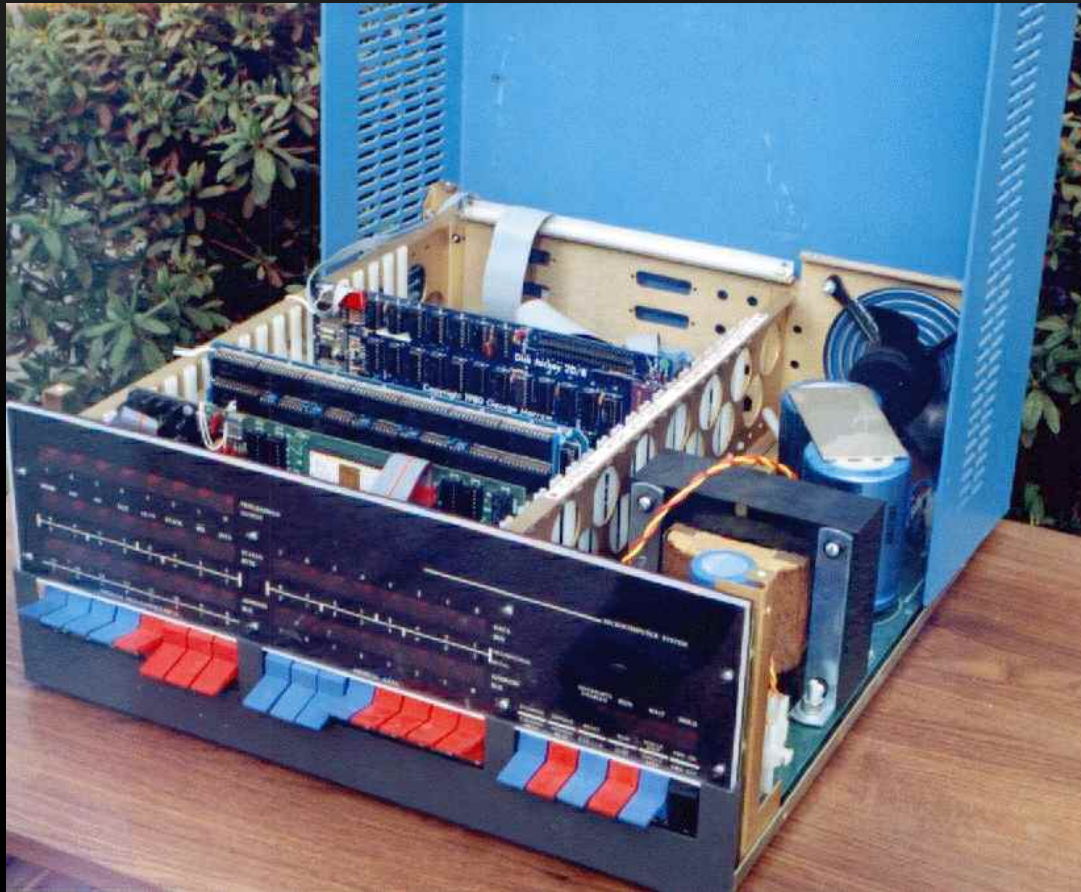




# 1969-1970: Complex Systems



# IMSAI 1972





# Applause!

## THE PALACE THEATRE

under the direction of Messrs. Nederlander

Joseph Kipness and Lawrence Kasha

in association with

Nederlander Productions and George M. Steinbrenner, III

present

**LAUREN BACALL**

in

## APPLAUSE

Best Musical—1970 Tony Award

Book by **BETTY COMDEN** and **ADOLPH GREEN**

Music by **CHARLES STROUSE**

Lyrics by **LEE ADAMS**

(Based on the film "All About Eve" and the Original story by Mary Orr)

with

**LEN CARIOU**

**GWYDA DONHOWE**

**LEE ROY REAMS**

**JOHN ANANIA**

**TOM URICH**

**ROBERT MANDAN**

**BRANDON MAGGART**

**BONNIE FRANKLIN**

**RAY BECKER**

and

**PENNY FULLER**

Scenery by

**ROBERT RANDOLPH**

Musical Direction and

Vocal Arrangements by

**DONALD PIPPIN**

Production Associate

**PHYLLIS DUKORE**

Choreographic Assistant

**TOM ROLLA**

Costumes by

**RAY AGHAYAN**

Orchestrations by

**PHILIP J. LANG**

Lighting by

**THARON MUSSER**

Dance and Incidental Music

Arranged by

**MEL MARVIN**

Directorial Assistant

**OTTO PIRCHNER**

Production Stage Manager

**TERENCE LITTLE**

Directed and Choreographed by

**RON FIELD**

Original Cast Album by ABC Records

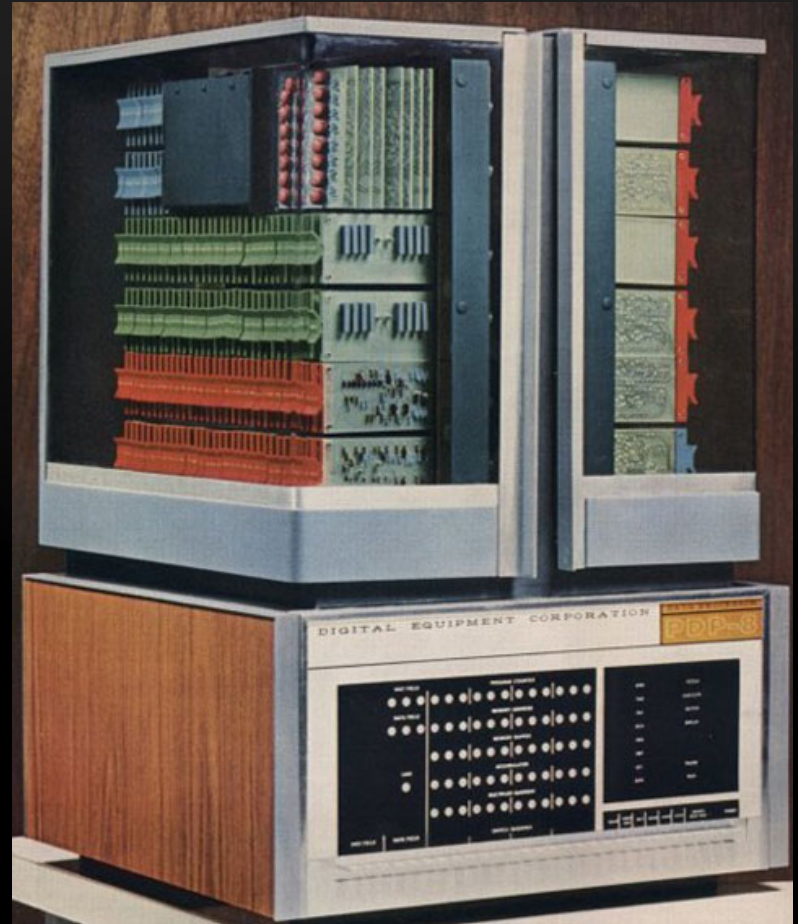
Music Publishers: Edwin H. Morris & Co.

The best seats cost more, too.

**Old Grand-Dad**  
Head of the Bourbon Family



Kentucky straight Bourbon whiskeys. 66 proof and 100 proof bottled in bond. Old Grand-Dad Distillery Co., Frankfort, Ky. 40601.



# 1972: At the Studio



## The Hack:

Using AT&T's leased equipment, we would run audio/music to the switchboard for internal distribution, tie lines to other locations, and even to California. Free.





U.S.A. DIXON TICONDEROGA 1388-2 3/16" F MEDIUM

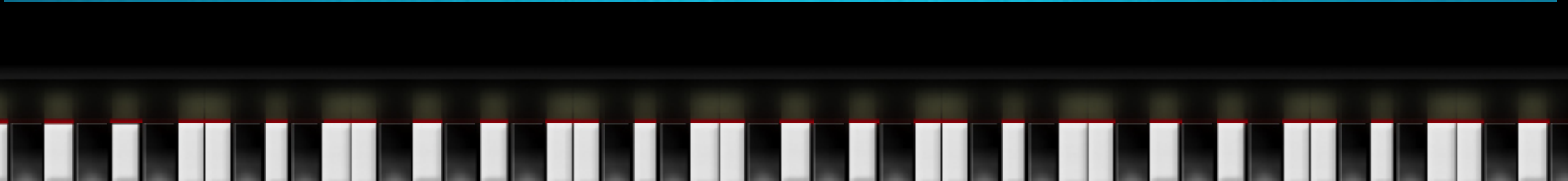
PRINT VOLTAGE AMPS RESISTANCE

FORTRAN STATEMENT

STATEMENT NUMBER

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

150-48812




# We Were Broke: How Did We Hack Them?

TELEPHONE NUMBER				CC	RB	BO	RAC	DATE OF BILL	AMOUNT DUE
617 491 4937				962	0729	03	1	05 04 83	15 38

PL-175 (9/79)

**PLEASE SEND THIS CARD WITH YOUR PAYMENT**

IF YOU PAY IN PERSON, BRING BOTH THIS CARD AND YOUR BILL

 **New England Telephone**

BOSTON, MASS. 02207

367390C3

PLEASE DO NOT FOLD OR STAPLE THIS CARD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

DDM-21492

LOCATION	%	OPERATION	VARIABLE FIELD
11			

UNION ELECTRIC				PLEASE RETURN THIS STUB WITH PAYMENT	
P. O. DRAWER 529, ST. LOUIS 3, MO.					
RATE CODE		DUE BY		ACCOUNT NUMBER	
APR 23	MAY 22	06	JUN 13	56	6248840500
METER READINGS		KILOWATT HOURS USED		AMOUNT OF BILL DUE BY	
4582	4834	252	7.00	JUN 13	7.00

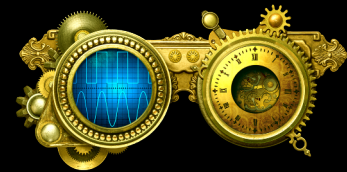
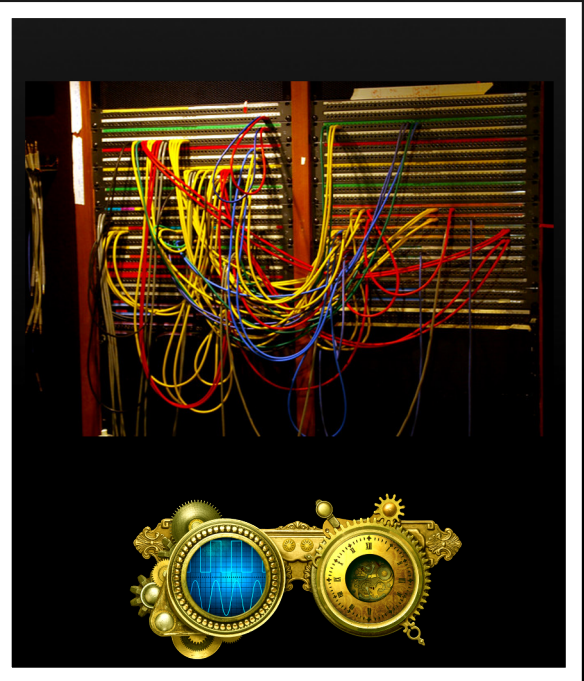
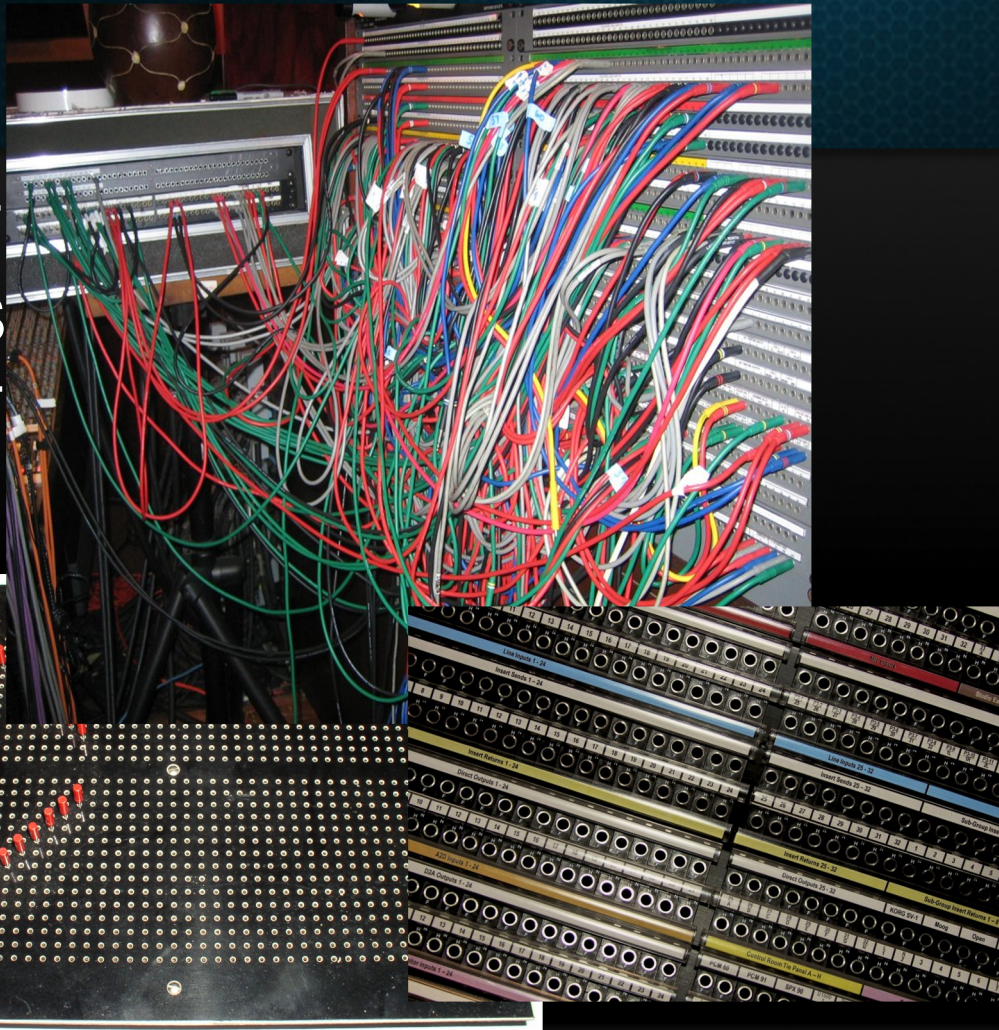
THE ABOVE AMOUNTS INCLUDE 2% MISSOURI SALES TAX WHERE APPLICABLE.  
CASH INFORMATION MAY BE OBTAINED AT ANY COMPANY OFFICE

[illegible]



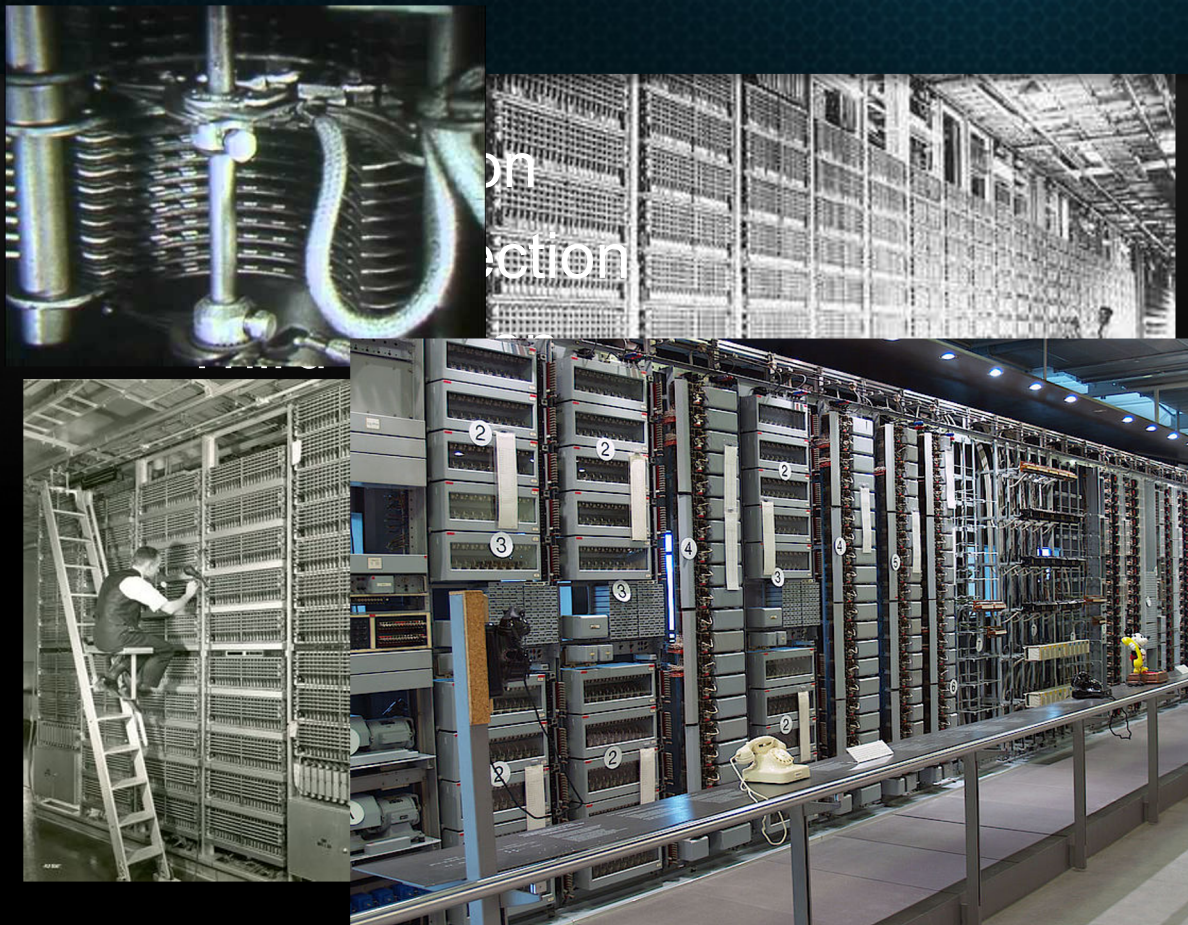
# 1975: They Wanted to build a Studio for Free.

- F
- S
- T





# 1975 Tools: AT&T Old Equipment Was Perfect!





# 1970s: Dumpster Diving AT&T



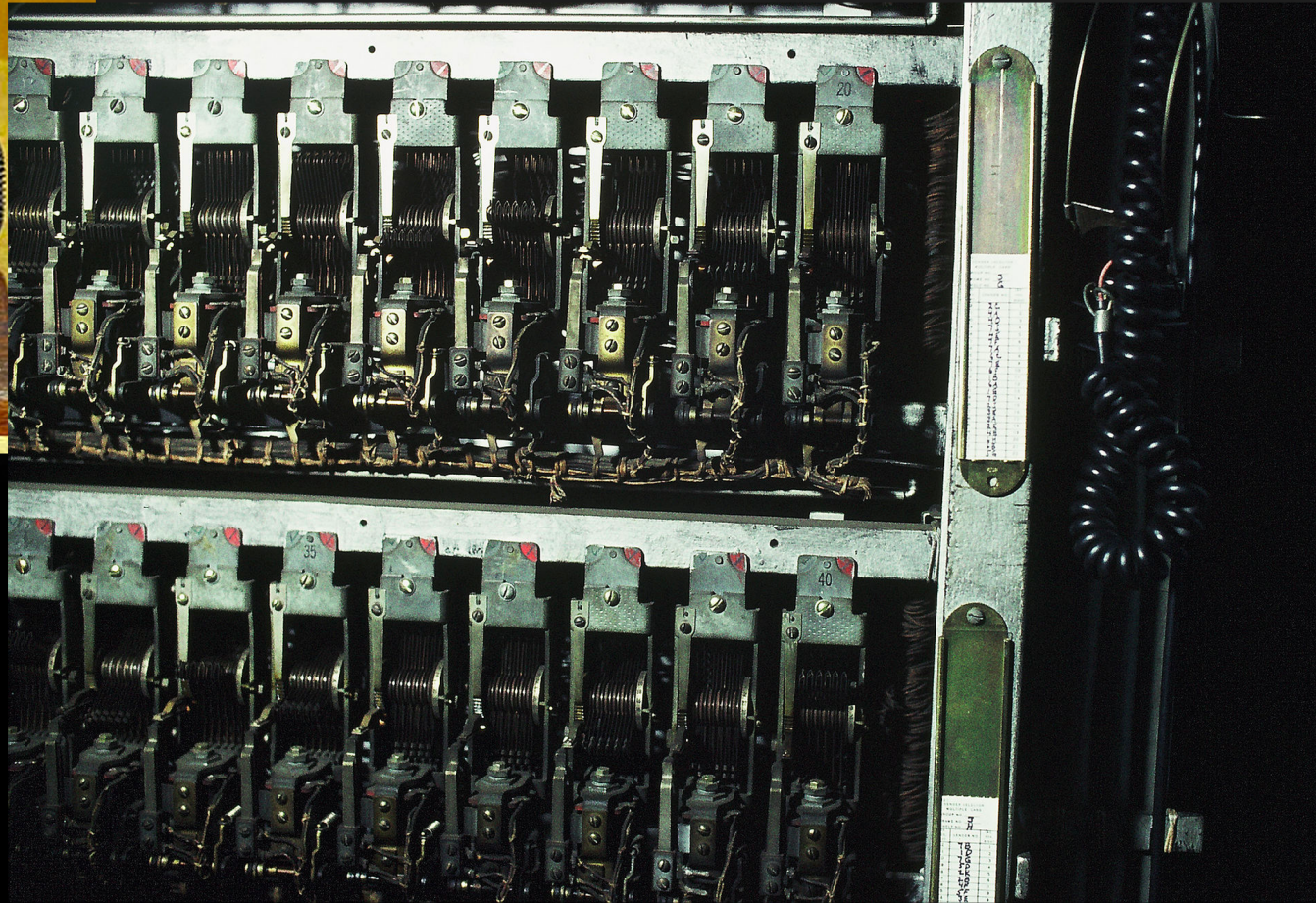


# Find Great Repurposable Stuff!



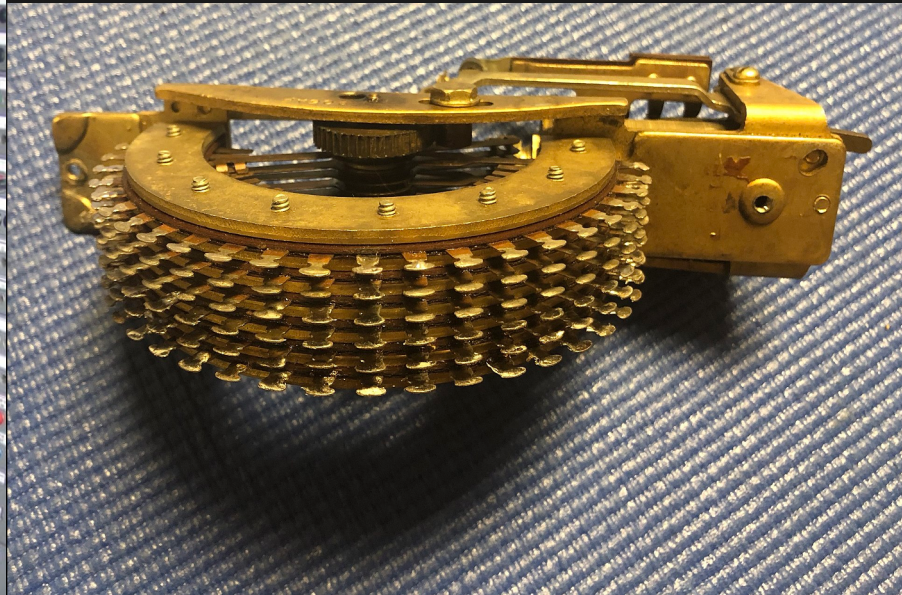
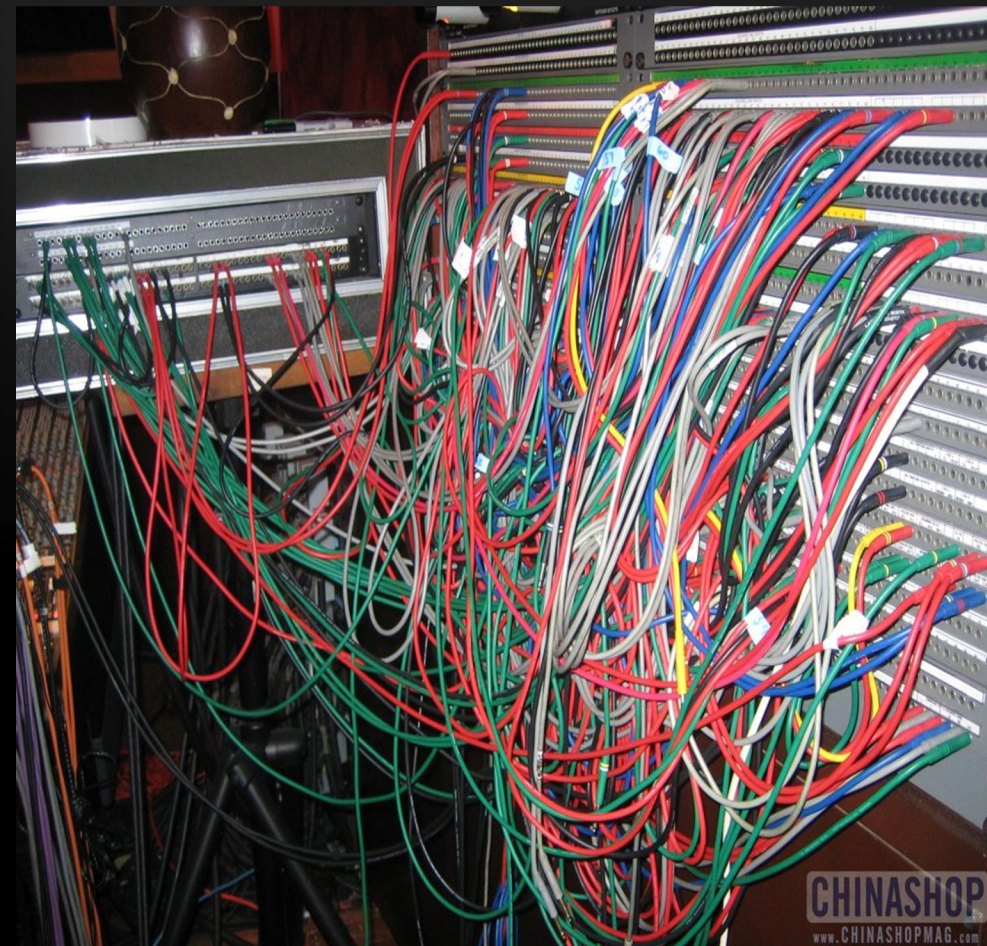


# Decade Counters for Studio Switching





# Replaced This with These: Free





# 1978: My First Home Computer (That Worked At All)



# My Wife. AES Convention 1980. First Computerized Audio





# Automation

**NEW** Proprietary Transformerless Microphone Preamplifier is available at no extra cost in all 32C series consoles. Opening up a new world of sonic experience, it's a difference you can hear. Contact your Harrison distributor for a demonstration. For those who would prefer, the traditional transformer mike pre-amp continues to be available.

**NEW** 4832C Master Recording Console. 48 I/O module positions with VCA grouping and AUTOSET are ideal for mixing from two locked 24 track recorders. 48 I/O modules also allow effective split operation. Record on one group of modules and monitor on another group. Master modules may be placed in the center for easy access.

**NEW** 4432C Master Recording Console. A compact, light weight Harrison made especially for remote recording and any other weight or space sensitive application. Utilizing the standard 32C series modules, the Harrison 4432C does not include wood trim or patch bays. It does come with all normal patch points terminated in quick connect splice blocks for easy connection of full external patching. All "normalised" patch points are looped with jumpers on splice blocks so that full patching need not be installed for operation. A new compact aluminum frame and efficient wire routing keep weight extremely low for a full 44 X 32 console. The 4432C is ideal for studio applications where it is desired to customize patching and cabinetry.

**NEW**  
FROM  
**Harrison**

**NEW** High Resolution LED meters are now standard at no extra cost in the Harrison 32C series console. The Harrison high resolution meters have both true ASA VU Ballistics and true DIN PPM Ballistics available at the push of a button. In addition, each meter includes instantaneous peak detector to indicate overload of the recording medium. The Harrison high resolution meters have no digital clocks or high voltages to interfere with sensitive audio circuits. The 36-segment bar display gives a highly accurate and visible flicker-free display.

**NEW** AUTOSET Automation Programmer. A true multiprocessor system under software control, AUTOSET can store up to four separate and independent dynamic mixes on each channel of an audio recorder. An integral data cartridge can store up to 630 snapshot or preset mixes. Most Important it's simple to operate. Even a guest mixer can use AUTOSET with only a couple of minutes instruction and an experienced operator can virtually perform miracles. Demonstrations can be arranged. Call today.

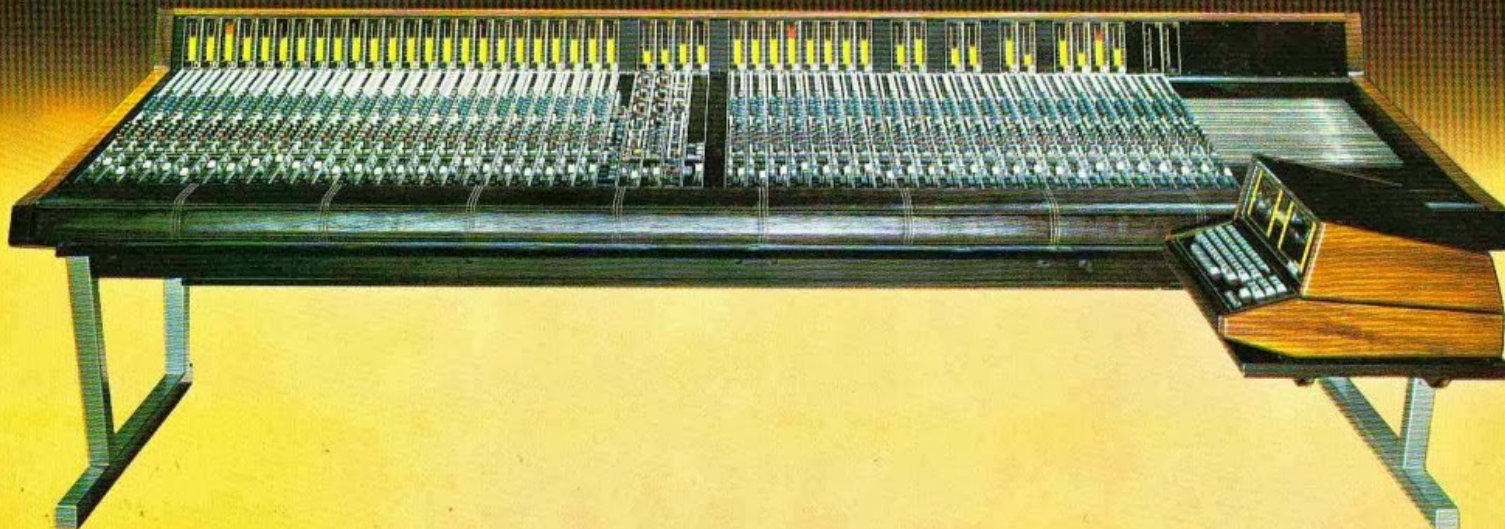
HARRISON PRODUCTS ARE AVAILABLE THROUGH THE FOLLOWING DISTRIBUTORS:

**Factory**  
Harrison Systems, Inc.  
Box 22964  
Nashville, Tennessee 37202  
(615) 834-1184 • Telex 555133  
Dave Harrison • Tom Piper  
Dave Purple

**Eastern U.S.**  
Studio Supply Co.  
P.O. Box 280  
Nashville, Tennessee 37202  
615-327-3075  
Tom Irtby

**International**  
Audio Systems International  
128 N. Highland Avenue  
Los Angeles, California 90036  
213-933-2210 • Telex 686101  
Paul Ford

**Western U.S.**  
Electro Media Systems, Inc.  
8230 Beverly Boulevard, Suite 28  
Los Angeles, California 90048  
213-653-4931  
Dan Gwynne





# My Remote Live Studio: NYC 1980





# Incident Response Was a Way of Life

My younger self taught me, *“There is always a way!”*

## # The Show Must ALWAYS Go On (Some EPIC Fails and Incident Response)

- # Stevie Wonder
- # Liza Minnelli
- # Charlie Daniels
- # Studio R-1
- # Lennon
- # Rod Stewart



# Stevie Wonder & Bob Marley 1975 “Holiday Jamaica, Mon” (Free!)



Stevie Wonder sits in with the Wailers, Kingston 1975.

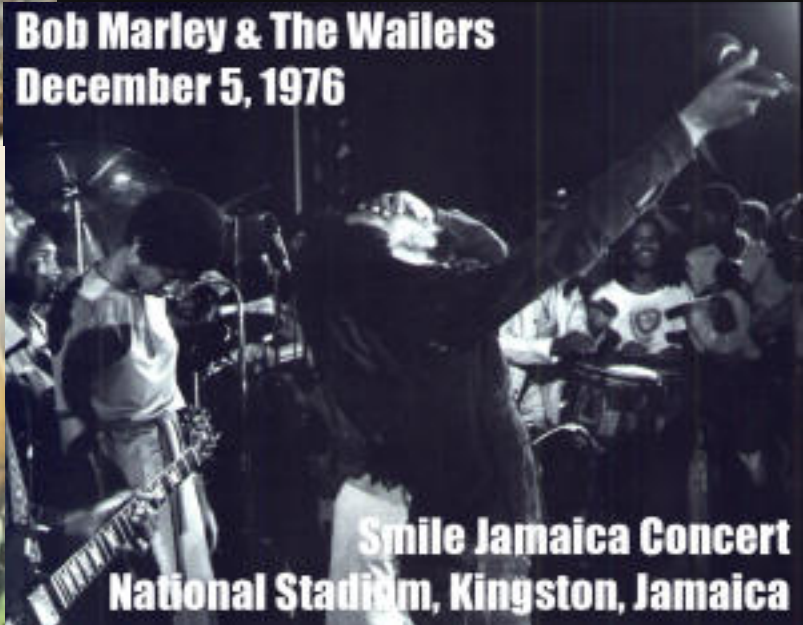


# Stevie Wonder Pt. I

## USA Chaos: Lost 727



**Bob Marley & The Wailers**  
**December 5, 1976**



**Smile Jamaica Concert**  
**National Stadium, Kingston, Jamaica**

# Stevie Wonder Pt. III

## Whaddya Do?





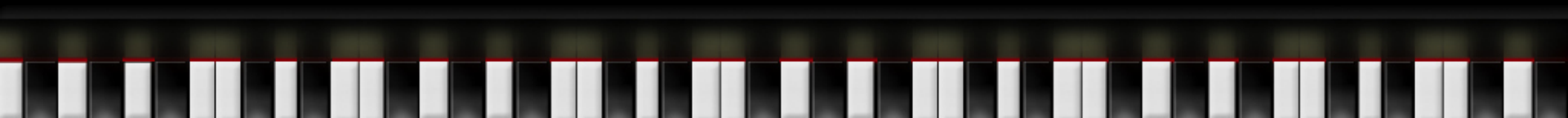
# Restoring Power: Only 2 of Us Arrested



# Stevie Wonder

## Security Take-Aways

- # Let the crazy guy try something crazy. What do you have to lose when 100,000 people start to riot?
- # Power is GOD!
- # Cyber is Physical.
- # Fast Incident Response is Critical!
- # Have a Backup. DR Plan. Exercise it. Again.
  - # Plan for double faults.
  - # Think Confocal Infrastructural Vulnerability
- # When the IT hits the fan...ask for forgiveness, not permission.





# When the \*\*IT Doesn't Sync

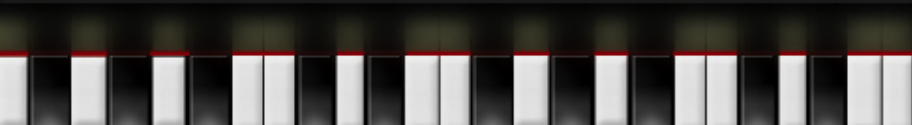


# Live!

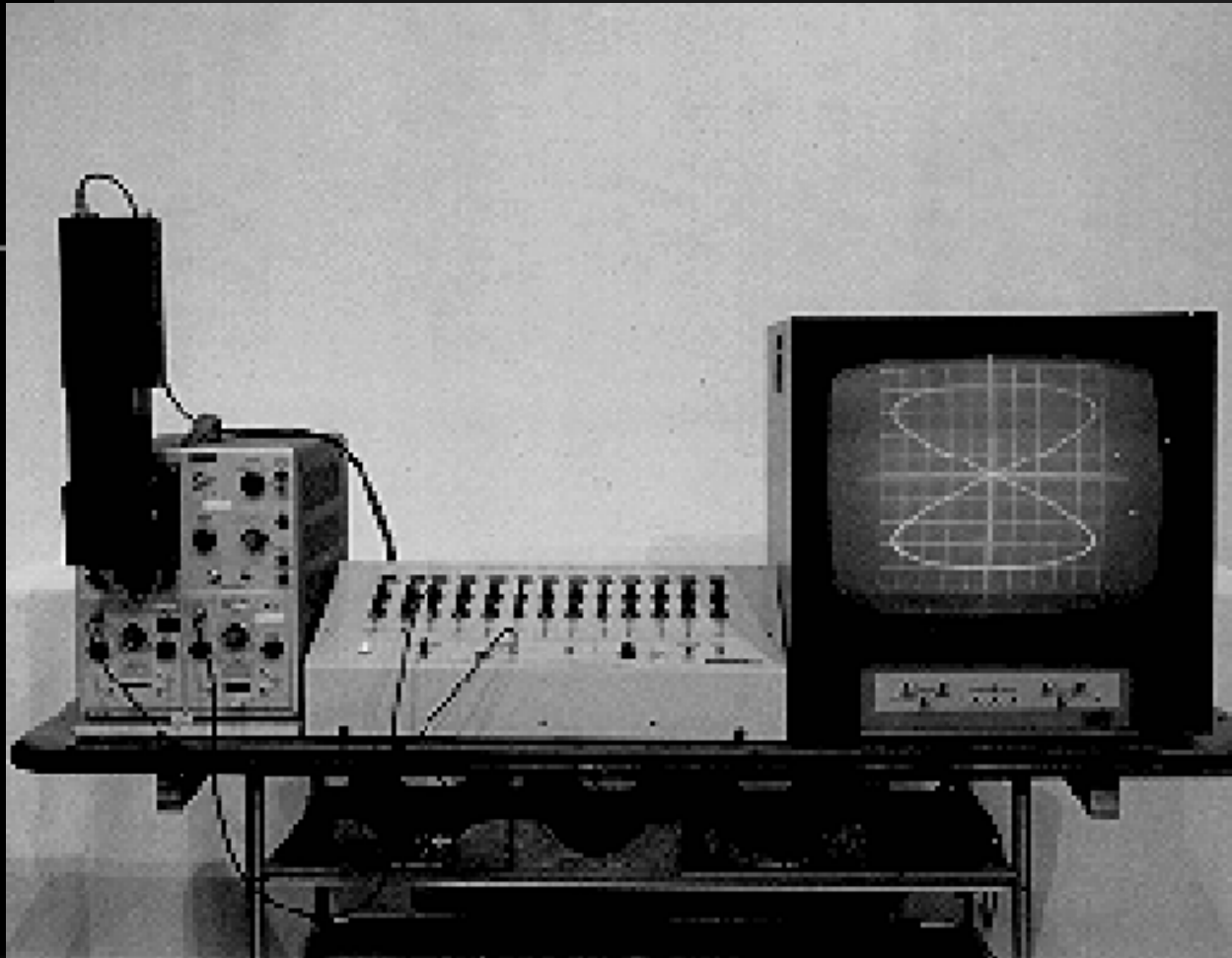
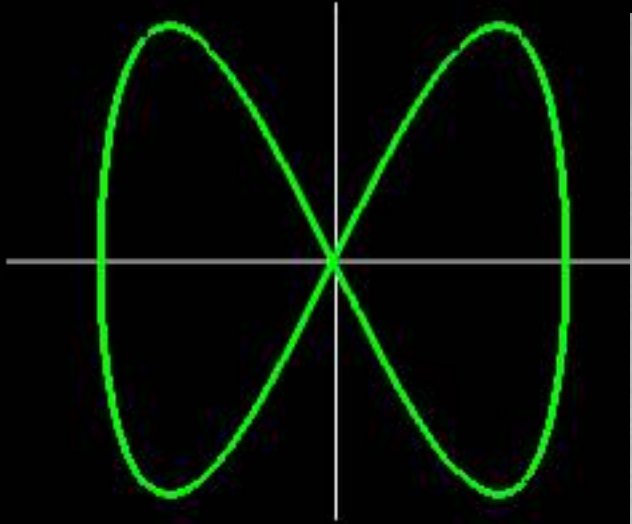




# Auto Sync (Right!)



# Manual Sync

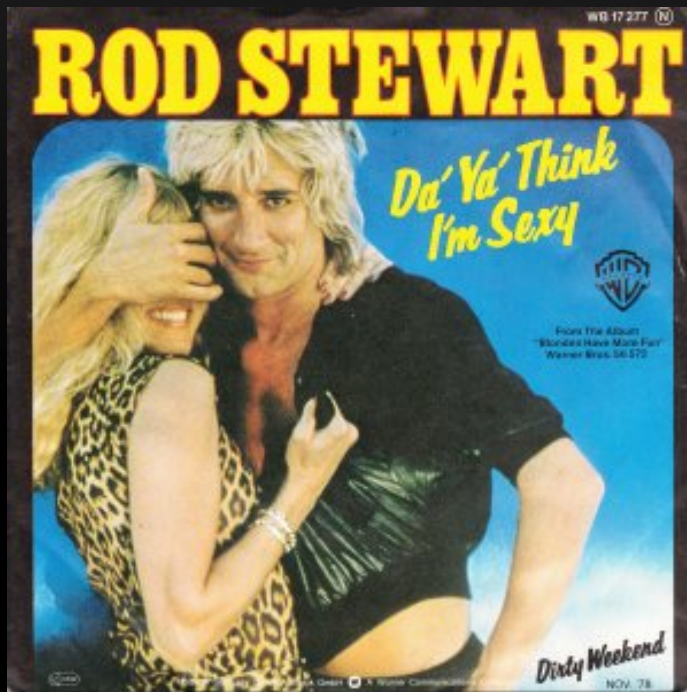




# More Sync Failures



# Only 8 Years Later...with Better Technology... Uh huh!





# Liza Minnelli et al, Sync Failures: Security Take-Aways

- # Sync
  - # Policy, AD, AS, Mobile, Backup, DR, etc.
  - # Compliance, Policy, Testing?
  - # Cross NWs
  - # Time/Date-Event Stamps  
(time changes globally!)
- # Can U Go Manual Synchronization Mode?
  - # Develop test & override
  - # Develop skills
  - # Have the manual tools in a kit
  - # Test the process
  - # Regularly



# Charlie Daniels: MSG, NYC: 32:1 Collapse





# Supposed to Be This



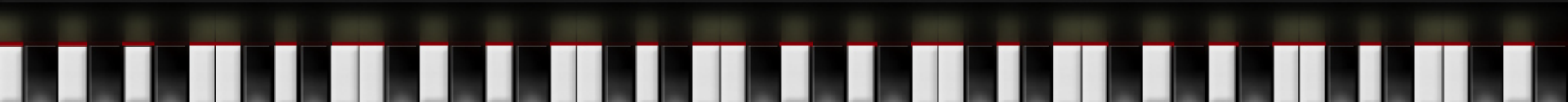
# But Was Actually...





# Charlie Daniels: Security Take-Aways

- # Plan for the Unimaginable
  - # Worst Case
  - # Trust No One
- # Architect for Graceful Degradation
  - # A Graceful Small Backup is Better Than None
- # Develop “What Can Go Wrongggggggg List”
  - # Risk/Cost Analysis
  - # Plan for Require Skills
- # Rehearse FAILURE Modes
  - # Mentally for those impossible situations
  - # Do it again



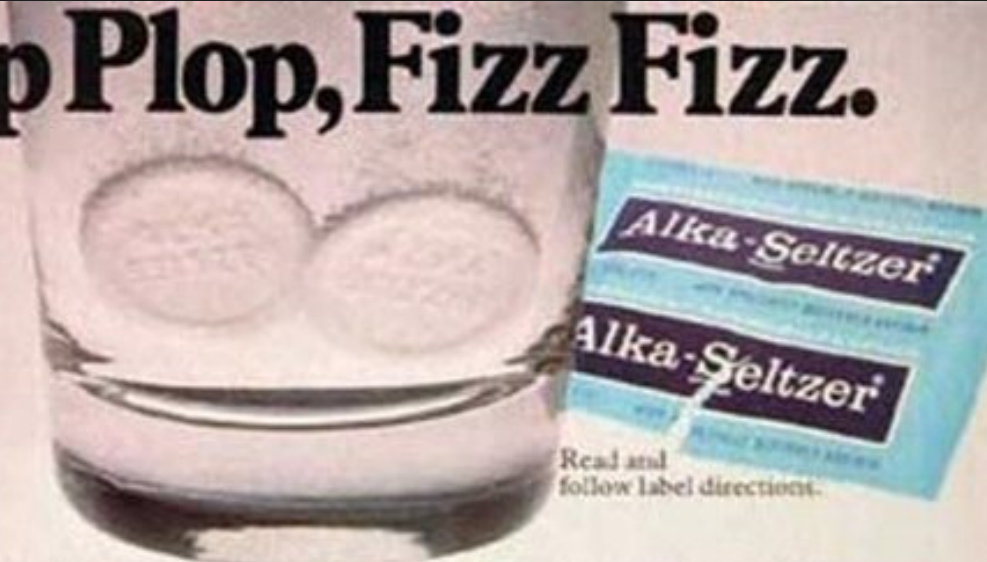
# The Reality of Remotes = The Reality of Networks & Security

- # “You know, it’s always something.”
- # Murphy has a tent city here.
- # One backup is not enough.
- # Always, always, have Plan-B and Plan-C ready to go!
- # Test it all.
- # Overstaff.





# Studio R-1: Flop Flop. Fizzle. Fizzle.



**Plop Plop, Fizz Fizz.**

Read and follow label directions.

If there's one thing you always look forward to, it's a weekend party. You munch on chips and dip. You chug-a-lug your beer. You bugaloo till two.

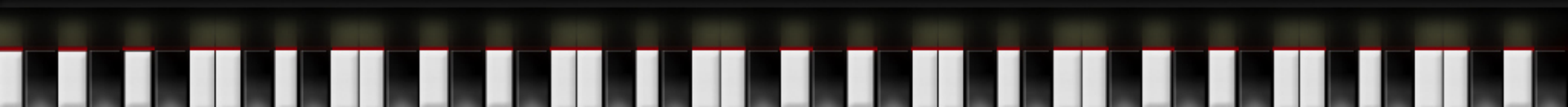
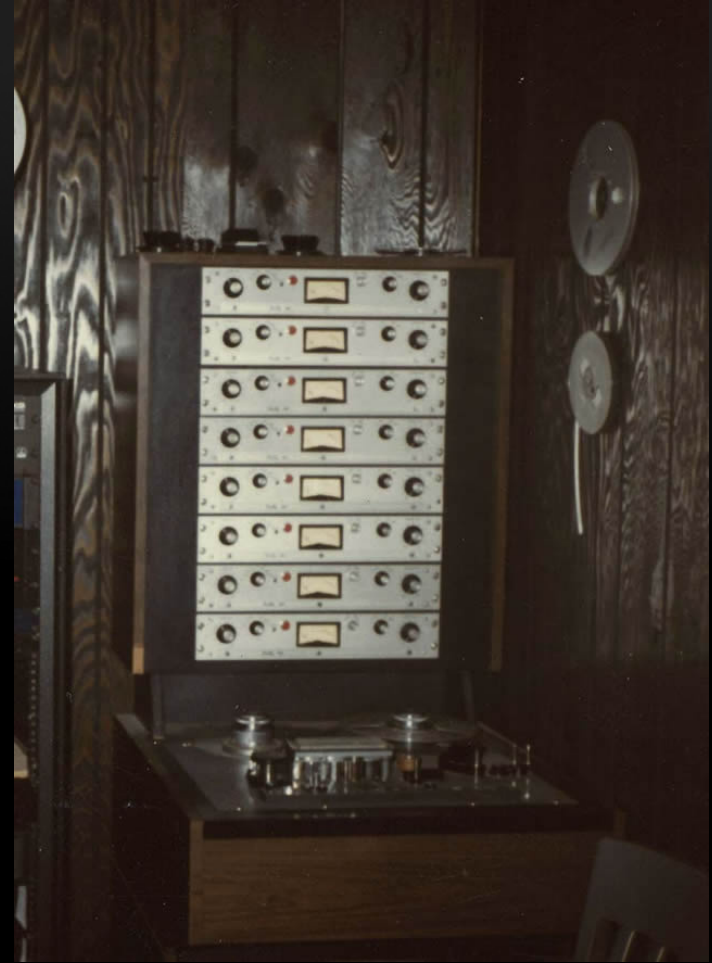
But sometimes you overdo it. You wake up feeling less than your best. When you do, reach for Alka-Seltzer. The moment you drink it, those tiny bubbles start to speed relief through your system. With specially buffered aspirin to soothe your throbbing head. And antacids to calm your upset stomach.

You'll be thankful you have Alka-Seltzer on hand. Because when morning comes, the only sound your aching head can bear to hear is a gentle plop plop, fizz fizz.

**Alka-Seltzer**  
**Oh, what a relief it is!**

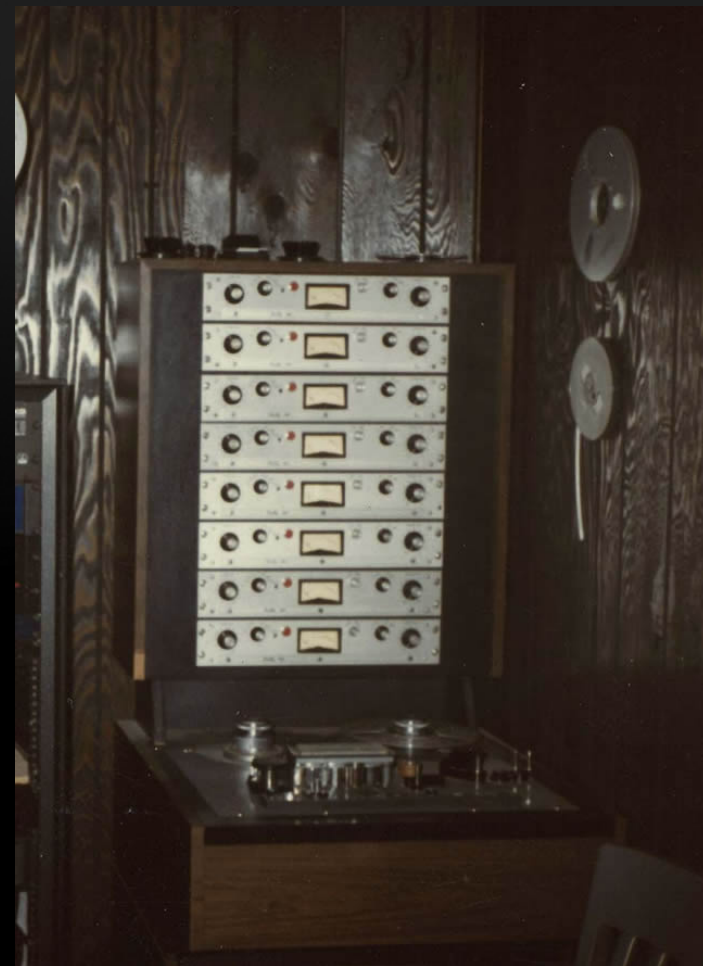
© 1994 Wm. S. Johnson & Co., Inc.

# Supposed to Be...





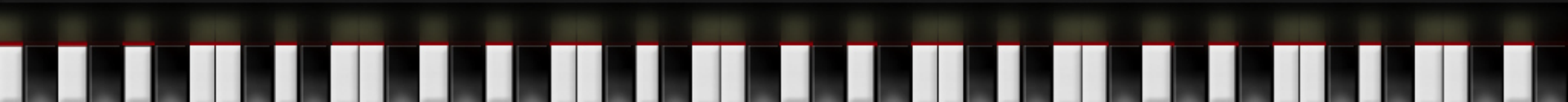
# What We Had To Do...



# Studio R-1

## Security Take-Aways

- # Time is Money: In the studio or the network!
- # Reliable, tested, fixed systems can fail, too!
- # Disaster Recovery
- # Graceful Degradation Part 2
- # Have a backup... Always!
- # Test the recovery process, not just the backup process.
- # Get very creative when the IT hits the fan.





# Other Lessons in Systemic Collapse

# 1979:  
Live From the  
Lone Star Café  
Hank Williams Jr.



# 1969:  
Bill Haley and the  
Comets  
MSG NYC



# 1977: BT Express  
NYC Blackout

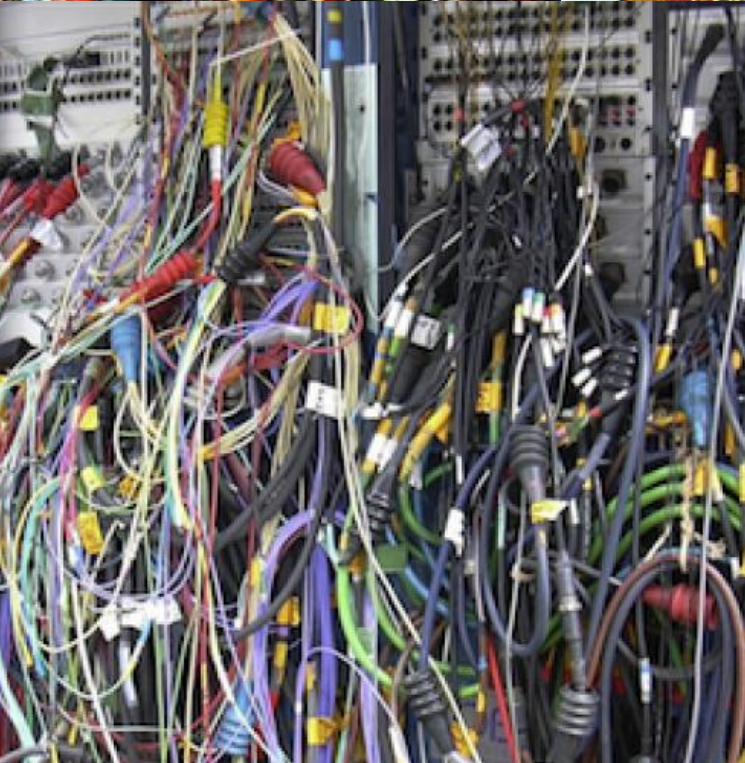
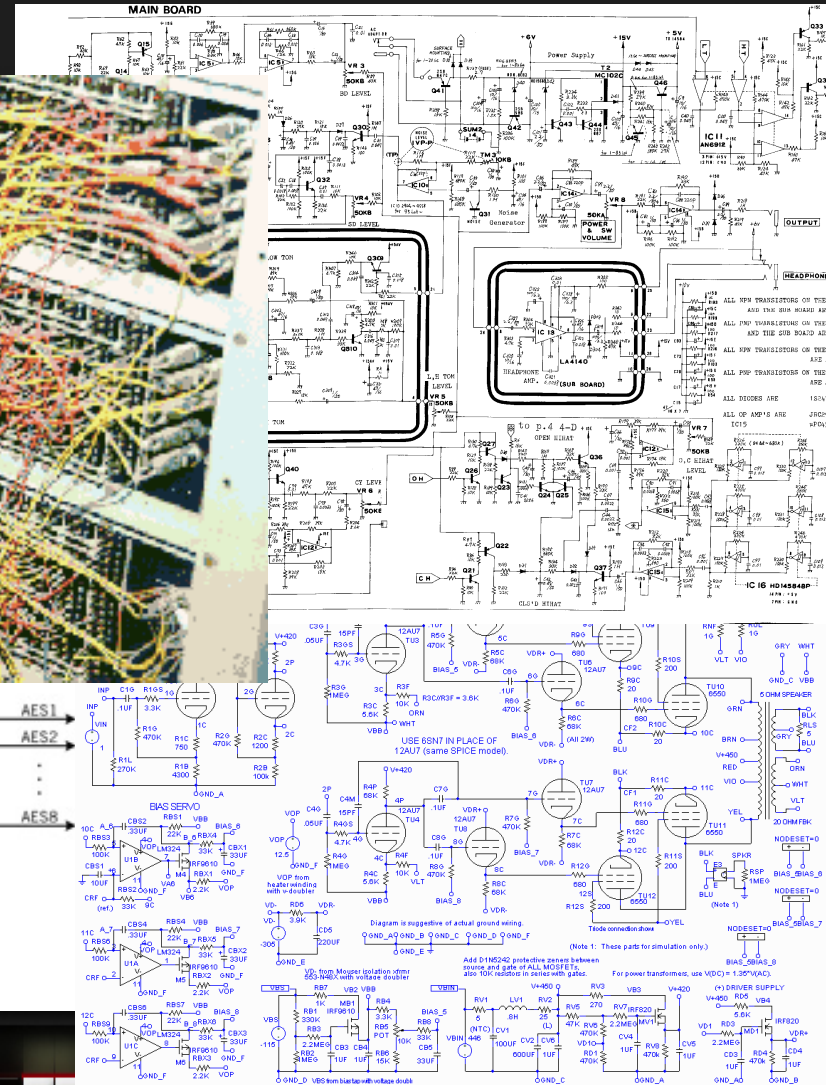


In the Studio, during a TV show, or on Live Sets...  
you never knew what was going to go wrong.  
**But it did.**

- # Massive Complex Networks
- # Hard to Visualize in One Go
- # It's a Way of Thinking
  - # Some call it Strategic
- # Easier to Spot Potentials for Failure
- # Complexity Breeds Insecurity

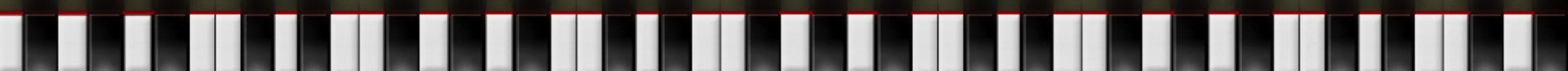






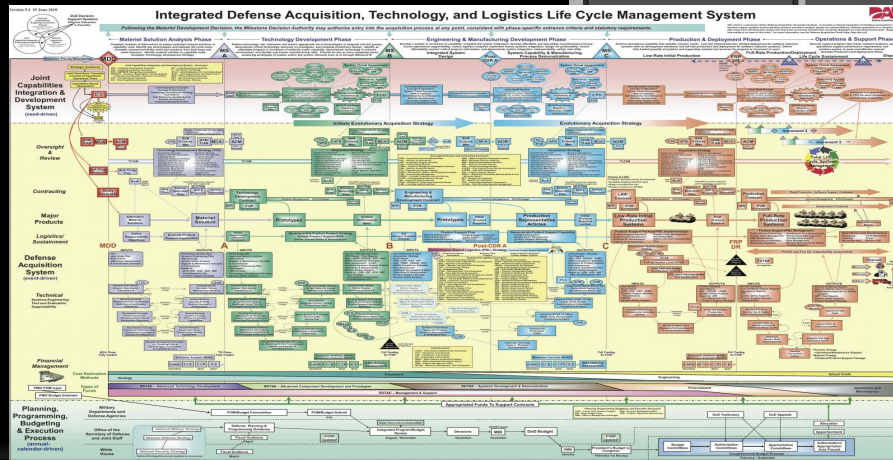
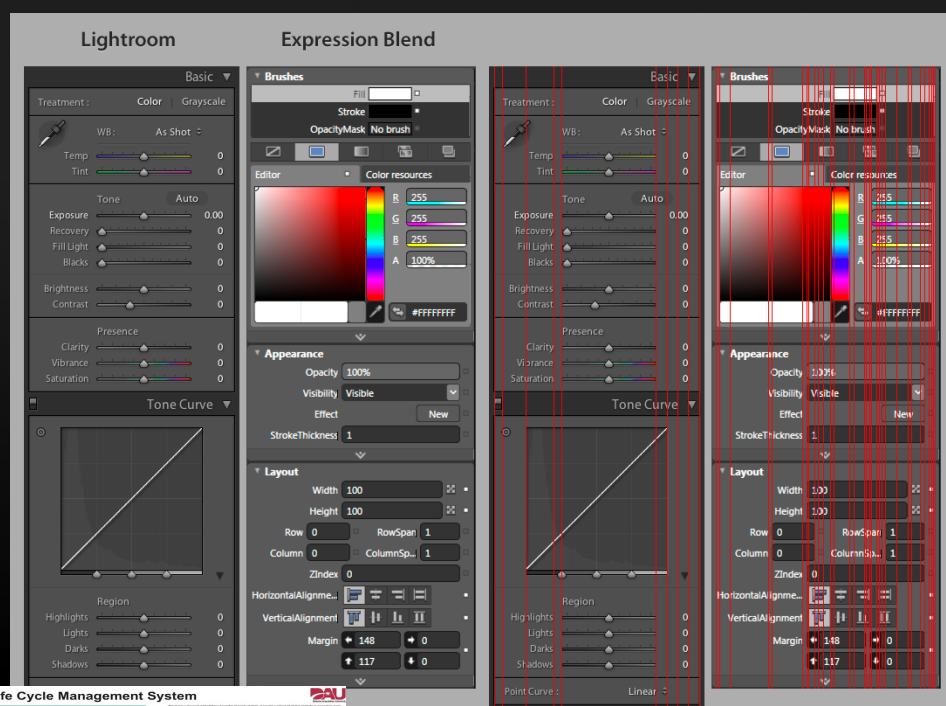
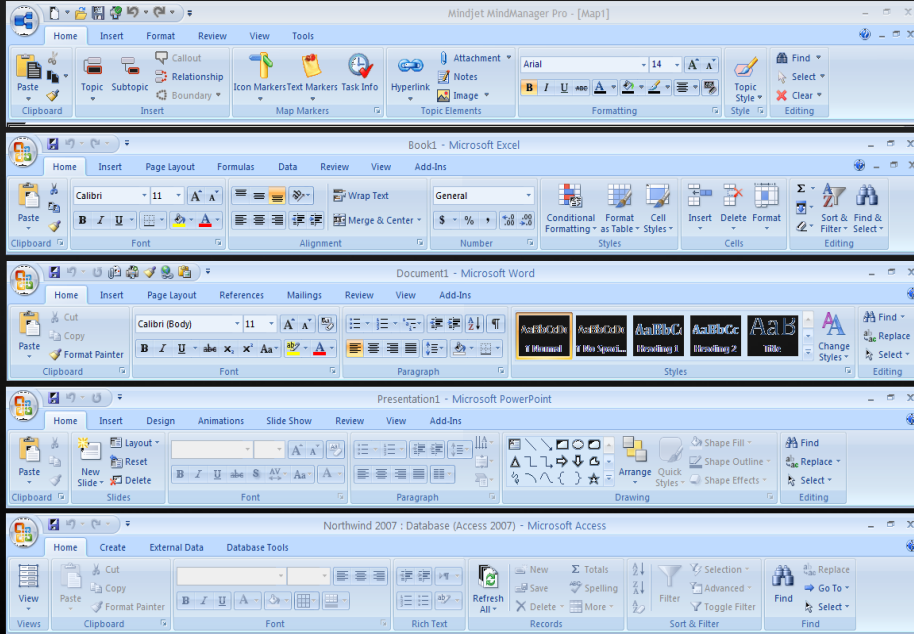


# Turn All The Knobs





# Turn All The V-Knobs



# Final Incident Response Rant

- # Add Some Crazy
- # Teach Failure
- # Architect for Failure
- # Think Strategically
- # Learn Systems
- # Inter-Disciplinary Skills
- # More Hands-On Engineering
- # Practice Incident Response & Recovery Processes





# Comments, Q & A?

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