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# THE ROCKY ROAD TO DIGITAL BROADCASTING

v. 7.3

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PBS Development Conference

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## **The view out my window at home**

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- **May 1, 2003 - WGBX-DT43/Boston signed on the air, as required by the FCC, joining WGBH-DT19/Boston and ten other broadcast DTV stations on the air in the Boston market**
- **We're broadcasting HD and one SD on one channel, multicasting four separate channels of SD programming on the other**
- **six years into the transition to Broadcast DTV...there's nobody out there**

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## **CAVEAT #1**

**Those who say they know how the transition to digital media will come out don't know what they're talking about.**

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## **CAVEAT #2**

**Three months from now, these will be the old days,  
technologically speaking**

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## **CAVEAT #3**

**If some aspects of the transition to digital media  
don't make sense to you ...**

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## **CAVEAT #3**

**If some aspects of the transition to digital media don't make sense to you . . .**

**. . . it could be because they don't make sense**

## WHAT WE'RE GOING TO TALK ABOUT

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- What are “digital television” and “the digital transition”?
- What’s going on in the marketplace?
- Status of -
  - HDTV
  - TiVo/PVRs
  - VoD
- Why does any of this matter to development professionals?

## What is “Digital Television”?

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- Direct broadcast satellite (e.g. DirecTV, DishTV)
- Digital cable
- DVDs
- PVRs (e.g. TiVo, Replay, Sonic Blue)
- Digital video on the web and wireless
- Digital TV monitors
- Broadcast digital television



## Types of Broadcast DTV

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- HDTV (high definition, widescreen (16x9), often with 5.1 Dolby Digital audio)
- SDTV (standard definition, may be widescreen or 4x3)
- multicasting (multiple SDTV program streams on single broadcast channel)
- datacasting

# **What does “The Digital Transition” mean?**

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## **FOR BROADCASTERS**

- **The transition from analog to digital television broadcasting, to clear the analog spectrum for new uses**

## **FOR CABLE**

- **The transition from analog to digital cable (especially HDTV)**

## **FOR THE CONSUMER ELECTRONICS INDUSTRY**

- **The transition from analog to digital television displays (especially HDTV)**

## **The Broadcast DTV Transition**

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- **original timetable**
  - **April, 1997 - FCC assigned additional channels to each TV station for digital broadcasting**
  - **May, 2002 - deadline for commercial TV stations**
  - **May, 2003 - deadline for public TV stations**

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## Where are we today?

- slightly more than two-thirds of commercial stations' DTV transmitters are on air (826/1290 as of mid-September)
- slightly more than half of PTV stations' DTV transmitters on air (185/357 as of mid-September)
- FCC will impose penalties on stations which don't put DTV transmitters on air
  - ultimate penalty - loss of DTV broadcast license

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- **Watch “the spin”**
    - **NAB (9/2/03) - “DTV signals are being transmitted in 201 markets that include 99.17% of U.S. TV households”**
    - **What they’re NOT saying: “DTV signals now REACH 99.17% of U.S. TV households”**
      - **many stations transmitting at low power**
      - **very few sets capable of receiving broadcast DTV signals**
      - **very limited cable carriage**
      - **problems with transmission/reception**
      - **interference problems**

## The Broadcast DTV Transition

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- **original timetable**
  - **2006 - analog stations to be shut down, spectrum returned for auctioning, re-use**
  - **it won't happen**
    - **85% rule**
    - **analog broadcasting will remain TV broadcasters' principal distribution platform for many years to come**

## **How are we doing with cable carriage?**

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- **No current “must carry” requirement, as with analog stations**
- **DTV must-carry during transition highly unlikely**
- **Requirement that cable carry multi-cast feeds highly unlikely during transition, but possible after the transition (as opposed to being required only to carry one “primary video” feed**
- **Several PTV DTV stations are being carried by Time-Warner or Insight cable systems**

## How are we doing with cable carriage?

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- Comcast has PTV DTV carriage deals (with one station in each market) in 14 markets, for multicast and HD
- Cox has PTV DTV carriage deals in 7 markets, principally for HD
- Cable operators don't need permission to carry PTV DTV signals, so "marketplace" is determining which PTV DTV stations get carried, which ones don't



## **How are we doing with cable carriage?**

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### **From cable operator's perspective**

- **I have finite bandwidth, can't carry everything**
- **need to maximize revenues from subscribers to pay for cost of building system**
- **need to choose among mix of**
  - **cable program services**
  - **broadcast stations (I must carry local analog stations)**
  - **local "access" channels**
  - **pay per view**
  - **high speed internet/broadband**
  - **telephone service**
  - **video on demand (VoD)**

## **The Players in the Transition to Broadcast DTV**

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- **FCC, US Congress, the Federal Courts, the Administration**
- **NAB, MSTV, APTS and broadcasters; National Cable and Telecommunications Association, cable operators**
- **Consumer Electronics Association and retailers**
- **copyright holders**
- **broadcast and production equipment manufacturers and distributors**
- **those who covet the analog spectrum: service providers (e.g. mobile/wireless industries)**
- **They haven't been "playing well with others"**

## **The Players in the Transition to Broadcast DTV**

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- **consumers (!!!)**

## What's Going on in the Marketplace?

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- After six years (since 1997), fewer than 1/2 of 1% of USTVHHs have equipment which can receive broadcast DTV signals
- 25,000,000 - 30,000,000 TV sets sold each year
  - about 12% of sets sold to dealers this year will be digital monitors
- very few (<1%) DTV sets/monitors are being sold with off-air DTV tuners
- average TV set life: 8 years
- (check the Best Buy and Circuit City ads and the fine print)

## **What's Going on in the Marketplace?**

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- **“HDTV: At What Price”? (CTAM March/April 2003)**

**Likely/somewhat likely to buy HDTV in next three years at various price points:**

**\$1,800 - 28%**

**\$1,500 - 30%**

**\$1,200 - 35%**

**\$ 900 - 51%**

**\$ 600 - 57%**

**\$ 300 - 65%**

## **Glimmers of Hope for Broadcast DTV**

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**On 9/10/03, FCC adopted rules for “cable-ready” DTV sets**

- no set-top box needed for one-way digital cable**
- set-top box still needed for interactive services, such as EPGs, PayPerView, or VoD**
- all “cable-ready” DTV sets must have built-in broadcast DTV tuners**
- expected to be available for Christmas, 2004**

## **The FCC's DTV tuner requirement**

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- **to be phased in 2004-2007, beginning w/ largest sets, down to sets 13"+**
- **Consumer Electronics Association has challenged requirement in D.C. Court of Appeals; case was heard 9/16/03**
  - **Even if FCC requirement is upheld, FCC very unlikely to set minimum technical standards for DTV tuners**
- **Advanced Television Systems Committee and Consumer Electronics Association working on voluntary guidelines for DTV tuner specs, hope for 5/04 completion**

## **The Challenge to PTV**

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- **Limit investment in DTV facilities and operating costs without missing window of opportunity**
  - **In many markets, offering HDTV service may be key to securing cable carriage**
- **Be realistic in expectations**
  - **don't expect measurable audiences**
  - **don't expect significant fundraising/underwriting lift**



## **What might change these assumptions?**

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- **FCC or Congress mandate dual analog/DTV cable carriage**
  - **one channel per station (“primary video”) or full signal including multicast channels, data?**
- **FCC or Congress mandate “date certain” for analog station shutdown without waiting for 85% DTV penetration**
- **very low-cost digital-to-analog converter box significantly increases number of homes able to watch broadcast DTV and/or digital cable**

## **What might change these assumptions?**

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- **DirecTV and DishTV required to carry local DTV broadcast signals**
- **individual stations work with local cable franchising authorities to secure DTV cable carriage**
- **PTV strikes national deal for DTV carriage with additional cable MSOs (in addition to Time Warner, Insight)**

## **What might change these assumptions?**

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- **cost of DTV receivers/displays declines more quickly than currently projected, boosting sales**
- **number of HD-capable cable set-top boxes grows more quickly than currently projected**
- **number of PTV DTV stations carried by cable increases significantly (HD? multicast?)**

## **For the remainder of our time this morning....**

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- **HDTV**
- **PVRs (e.g. Tivo, Replay)**
- **Video on Demand (VoD)**
- **Why Does Any of This Matter to Development Professionals?**

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**HDTV**

## **Watch the spin !!**

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**“The NCTA announced . . . that HDTV now was available to 60 million TV households from local cable operators. Cable customers in 83 of the top100 Designated Market Areas (DMAs) - including 19 of the top 20 - were passed by at least one cable operator that provided HDTV service as of Sept. 1” (Public Broadcasting Report, 9/19/2003)**

## HD penetration figures

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- **At this time, there are no more than 500,000 (est) HD cable households in the U.S. (Out of 108,000,000 TVHHs)**
- **Comcast projects 150,000 HD set-tops by year-end '03 (out of 22,000,000 subs); TWC claims 120,000 HD subs (out of approx 13,000,000 TWC subs)**
- **approx 5,000,000 homes have HDTV displays**

## **Why the “irrational exuberance” for HDTV?**

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- **competition between cable and satellite for subscribers**
  - **February '03 SG Cowen survey (cited in CableWorld 6/2/03)**
    - **16% of cable subs plan to switch to satellite in next two years = possible loss of 10M cable subs to satellite**
    - **8.2% of satellite subs plan to switch to cable = possible loss of 1.6 million satellite subs to cable**
  - **The most-prized subscribers are those who spend the most on home media services. Early HD adopters are in that group**
- **this is about Wall Street and stock prices**



## **Why the “irrational exuberance” for HDTV?**

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- **political/regulatory -**
  - **FCC Chairman Powell’s 4/02 letter urging accelerated rollout of digital services**
  - **NCTA President Robert Sach’s 5/02 pledge (on behalf of top 10 MSOs) to comply with Chairman Powell’s admonitions**
  - **The cable industry would like to avoid displeasing legislators and regulators**

## **Why the “irrational exuberance” for HDTV?**

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### **Among the broadcasters -**

- Increase in hours of HD programming is prompted at least in part in response to published threats from Sen. McCain, others, that if stations don't use their digital bandwidth for HD programming, Congress will reduce their digital spectrum allocation from 6MHz to bandwidth sufficient to provide SD programming (2MHz?)**

## **Why the “irrational exuberance” for HDTV?**

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### **Competition among program suppliers seeking cable and satellite shelf-space**

- **Discovery HD Theater, HD-NET, ESPN-HD, HBO, Showtime, Starz!, Bravo HD, others**
- **Broadcast networks**
- **PTV is following suit**
  - **The PBS HD plan**
    - **“HD Loop” being replaced in winter 2003/2004 with 24/7 HD and digital widescreen service**
    - **will draw on growing library of 400 hours of digital NPS programs**

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## TiVo and VoD

## What are “TiVo” and “VoD”?

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- Both TiVo and Video-on-Demand are services which enable viewers to control
  - what programs they want to watch
  - when they want to watch them
  - and what portions of programs they want to watch

# What is a “TiVo” box?

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- **“TiVo” is a brand name for a device generically known as a “PVR” or “DVR”**
- **PVR = personal video recorder**
- **DVR = digital video recorder**
- **TiVo = one brand of PVR, DVR**
- **Replay = another brand of PVR, DVR**
- **“TiVo” is becoming a generic name, like “Kleenex”, “Xerox”, or “Frigidaire”**

# What does a PVR do?

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- **Enables a viewer to pause live television(!), or rewind, fast-forward, or watch in slow motion**
- **facilitates skipping over commercials (and pledge breaks)**
- **records up to 80 hours of television on a computer disk (no tape needed) for time-shifted viewing**
- **with a few button clicks, records single programs, or every episode of a favorite series for later viewing**

## What does a PVR do?

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- has built-in, continually updated program guide for all the channels you receive
- finds and records programs by title, genre, actor, director, writer
- searches for and records programs it thinks you might like, based on your other viewing choices
- records and promotes “TiVo Showcase” promos (paid for and provided by program suppliers) to call viewers’ attention to specific programs
- makes it easy for viewers to designate “Showcase” programs for subsequent recording (e.g. “Nova”, “Manor House” on PBS)



## **PVRs are more than replacements for VCRs**

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- PVRs are “smart devices” with large disk drives; essentially, they are special-purpose computers**
- In addition to freeing viewers from the constraints of television schedules, they can be used to store and play digital music and digital photos, and they can be networked with other PVRs and with computers**
  - PVRs may evolve into - or become a part of - home media servers which connect computers, TV sets and other devices throughout the home (and to the Internet?)**

## Current PVR penetration estimates

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- At present, approximately 700,000 US TV households have purchased TiVo-branded PVRs
- In addition, an estimated 2 million (or more) TV households have cable or satellite set-top boxes with built-in PVRs
- Total current penetration: approx 3%
- Whether or not TiVo-branded devices succeed in the marketplace (e.g. TiVo share prices fell 17% on 9/25/03), PVR functionality is proving to be very attractive to consumers

## **Enthusiastic consumer response**

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- **Although initial PVR sales have been slow, word-of-mouth reactions are reminiscent of response to DVD players, the fastest-selling consumer electronics device in the history of the category**
- **PVR owners often say about their PVR: “It has changed my life” (especially if they have young children)**
- **see “Why TiVo Owners Can’t Shut Up” - (NYTimes, 4/20/03)**
- **penetration might approach 20% of all US TV households over next 3-5 years**

## What do PVRs cost?

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- **TiVo**
  - **\$249 for 40 hours of recording time**
  - **\$349 for 80 hours of recording time**
  - **Plus \$12.95 monthly subscription fee, or \$299 for the life of the unit**
- **PVRs built into cable, satellite set-top boxes**
  - **Cost varies by provider**
  - **Generally less expensive than stand-alone PVRs**
  - **basic PVR functions (e.g. pause live TV) are being built into other devices such as DVD players**
- **prices likely to decrease over time, as with most consumer electronics devices**

## What is “Video-on-Demand”?

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- **VoD is a service offered by cable systems to their “digital tier” subscribers**
- **(The “digital tier” is the next level above “basic cable”, offers dozens of additional channels at an additional cost of \$10-\$15/month over the cost of “basic cable”)**
- **Using their cable remotes, subscribers have full “VCR-like” control over programs selected - play, pause, rewind, repeat - for a window of time (typically 24 hours for a single program).**

## What is “Video-on-Demand”?

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- **VoD allows subscribers to select programs from a “library” containing hundreds of choices, refreshed regularly**
- **Programs are made available at no additional charge to “digital tier” subscribers; other programs (such as movies) typically cost between \$3 and \$5 per viewing**
- **Programs and films from HBO, Showtime, Cinemax and Starz are made available on demand at no additional charge to current subscribers to those premium TV services**
- **Cable companies are experimenting with other VoD subscription models, including charging for all VoD services, as well as advertiser-supported VoD**

# Comcast VoD spots

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## Why VoD?

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Part of cable industry's "pull out all the stops" effort to personalize and customize viewer choices, and exploit advantage over arch-rival satellite services

- Early evidence suggests that cable subscribers who make use of VoD are less likely to disconnect from cable or downgrade from the "digital tier"
- VoD attracts new subscribers to cable and the "digital tier"
- estimated national penetration: approx. 9 million TV households at present, likely to increase to 30% - 45% of all cable subscribers in next three-five years



# Why VoD?

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## VoD localization opportunities

- **Comcast/Philadelphia -**
  - **agreement with local NBC affiliate to offer local newscasts on demand, NBC Nightly News, Dateline NBC, Meet the Press**
  - **“Philly on Demand” - locally-themed programs from HGTV and Food Network, others to follow**
- **Cablevision/NYC -**
  - **“Thirteen on Demand” offers library of PTV choices from WNET/13**
- **discussions underway in Boston about comparable services**
- **PBS has developed national PBS kids VoD**

## What is Disney's "Moviebeam"?

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- launched last Monday, 9/29 in Salt Lake City, Spokane, and Jacksonville
- set-top box holds 100 movies which can be viewed on a pay-per-view basis for 24 hours with full VCR-like control
- targeting video renters tired of paying late fees
- free full-length previews for each title; search function by category, title, actor, director, rating
- \$6.99 monthly fee; \$3.99 for new releases; \$2.49 for older titles; \$29.99 activation fee in some areas
- movies regularly refreshed (approx 10 titles/week) using over-the-air datacasting from PTV and ABC-owned analog stations

## **Why Does Any of This Matter to Development Professionals?**

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- **We are so focused on the rollout of digital broadcasting that we may be distracted from changes in the marketplace which will have far greater impact on our viewers and members**

## Why Does Any of This Matter to Development Professionals?

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- When looked at from the traditional broadcaster's perspective, PVRs, VoD, digital cable, digital satellite, DVDs, broadband streaming and downloading are all subversive, disruptive technologies
  - They may not all succeed, but in the aggregate:
    - they exponentially increase viewer choice
    - they put the viewer in control of what is watched, when, and at what level of quality
- They further fragment the audience, frustrating attempts to measure audiences

## **Why Does Any of This Matter to Development Professionals?**

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- **PVRs and VoD threaten the future viability of commercials on commercial TV and cable; of PTV underwriting credits; and of on-air fundraising**
  - **For commercial television, one result is increased use of “product placement” (aka “product integration”) within programs**
- **PVRs and VoD challenge traditional program scheduling strategies (e.g. audience flow, counter-programming)**

## **Why Does Any of This Matter to Development Professionals?**

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- **Don't miss the increasing importance of EPGs/IPGs (electronic program guides/interactive program guides) as navigational tools**
  - **increasing importance of search functions**
  - **PTV must provide appropriate metadata to listings services so our programs can be found**

## Why Does Any of This Matter to Development Professionals?

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- PVRs and VoD may present opportunities as well as threats
  - preliminary research by PBS indicates that viewers and members may watch more PTV as viewing becomes more convenient and ability to be selective is enhanced
  - Chris Dann's "Retained and New Member" survey indicates above average (5%-6%) TiVo penetration among retained donors
  - Viewers and members may welcome our assistance to help them sort through the blizzard of choices and technologies

# Why Does Any of This Matter to Development Professionals?

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- **Opportunities**
  - **We're in the relationships business, and these emerging technologies can help us**
  - **increase the personalization and customization of our relationships with members**
    - **e-mail (retained members are heavy users)**
    - **CRM initiatives**
    - **provide “concierge” services**
    - **build member program preference profiles**
    - **letters from producers, programmers, program hosts**



# Why Does Any of This Matter to Development Professionals?

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(email from Dick Gordon, host of "The Connection" on WBUR/Boston)

Dear

This coming week we will be watching the news develop in the Middle East and elsewhere, and as ever, we'll take apart what's planned to stay with the news if that's what's required.

From this past week, you'll have some fun listening on our website to our Early Music show with the musicians and co-directors of the Boston Early Music Festival. That was Tuesday in our second hour.

For a slightly more sobering look at the world, you can listen to Israel's Tourism Minister Benny Elon (from Monday's first hour) or the French Ambassador Jean David Levitte from Tuesday.

Quick playtime report. I had a terrific time on the Vineyard last weekend. I discovered while biking from one end to the other, that for each hill that goes down, there's another that goes up, and always seems twice as high. We looked at the beer bottle caps on John Belushi's grave, stared at the red clay cliffs of Gay Head, watched the lighthouse light go round and round, and generally enjoyed ourselves. Traveler's tip. If you want a good bowl of chili, see Buffalo. He used to be a road manager for the Allman Brothers. Now he runs the Back Alley in West Tisbury. Tryin' to make a livin' and doin' the best he can.

My daughters are on a break from their summer job zooming around the Great Lakes on a coast guard patrol boat. They're promising to kidnap me after work today, so the family can spend a weekend together. Gee. That sounds tough.

Cheers,

## WHAT WE'VE TALKED ABOUT

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- What are “digital television” and “the digital transition”?
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