

# Digital Highways

by Stephen B. Waters — © 1993

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What it all means

The newsroom in 2010

Contacting the author

# Digital Highways of the Future

Ubiquitous high-band-width digital communication will spawn services, products and ways of doing business we have yet to imagine. The assignment:

- What's happening,
- Who are the players,
- Who is doing what to whom, and
- What does it all mean to your business.
- What it will afford and enable newspapers to do.

# What it all means for your business...

...if you are a small newspaper.

- Most newspapers are small.
- 80 percent of the 1,600 daily newspapers are between 10,000 and 40,000 circulation.

Until this year, the delivery of electronic newspapers to the home had seemed unrealistic

- Because of four major obstacles...

# 1) High bandwidth interactive cable seemed too expensive, until...

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- 1992 FCC video dial tone decision allowed telcos to transmit TV and video in their own serving area as long as the programming is supplied by others.
- Rochester Telephone, with 100,000 customers, left some PSC protection to compete with Time–Warner’s 30,000 customer base.

## 2) Residential compute power seemed unlikely, until...

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- Microsoft, Intel and General Instruments announced plans to build a 386/Windows cable converter for interactive programming, home shopping, video-on-demand, and information services.

### 3) A newspaper–like viewing model hadn't won popular acceptance, until...

- Roger Fidler, of Knight–Ridder's Boulder Research Lab reminded us a newspaper isn't a thing, it's a format.
- The format allows both scanning for topics quickly and delving for detail as desired. It retains all the typography and design of a newspaper.
- Columns, type variety, size and location make it easy to navigate through the news. Grazing is encouraged.
- The formatted news page is the entry point for the information junkie.

## 4) An acceptable, widescreen, light, wireless, high-res view screen is still missing.

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- As a display, today's newspaper is flexible (folding), extensible (opening), well-indexed, allows scanning, has large bandwidth, and a horrible refresh rate (24 hours).
- In 7–10 years cost for a 1/2" thick electronic display, according to Fidler, will be as little as \$200.
- Must be password protected to reduce potential for theft.



## Our conclusion:

Publishers face serious leakage of advertising that has traditionally subsidized newsgathering.

- ‘500’ Channels will include “Lands End”, Macy’s and other QVC-type catalog shopping channels running downloaded or interactively.
- Real Estate, Automobile, and Employment — the pillars of advertising — will migrate to an instantly updateable, extensible, regional networked database. We’ll retain small percentage of revenue serving as gateway.

Delivered digitally, can we restructure the newspaper to survive the loss of advertising revenue? Can we price delivery so we can survive?

# With an HBO–like \$5–\$9 monthly fee we could...

- Keep the reporters, editors, photo staff,
- Keep some layout people,
- Retain a couple of subscription clerks,
- Pay for building and maintenance,
- And still pay the publisher and stockholders.

David Easterly, Cox Newspapers, concurs, estimating local services can be priced as low as a flat \$6.95 per month.

# Augment the Basic Flat Fee for extra services...

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- Immediate delivery
- Prime time activity
- Unusual size (Use of available bandwidth)
- Complexity (Character, Audio, Video)
- Editing and other extra human or computing services required.

# What happens to the other departments?

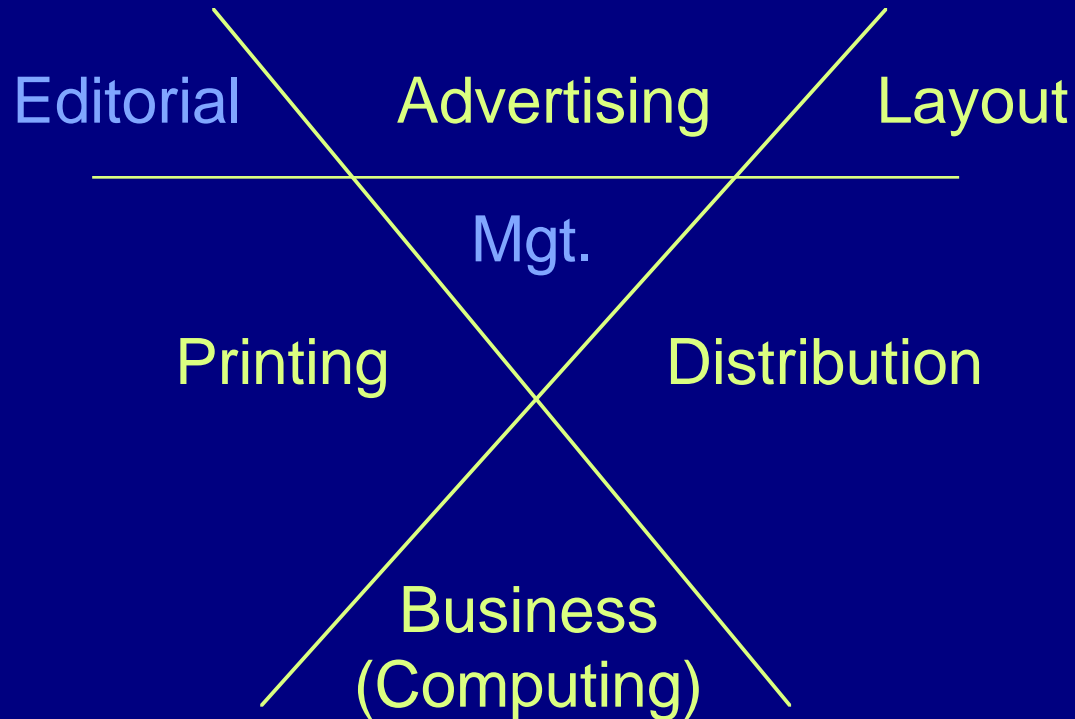
- Advertising
- Layout
- Printing
- Distribution
- Business (Computing)

# Company Structure

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- Each department must stand alone as a profit center.
- Staff will compress to the front line.
  - One–stop shopping at the front desk: subscription payment, fill out announcements, order back issues or reprints, place ads, sell memorabilia.
- New functions (i.e. Bulletin Boards) will need administration.

# The other departments:



# Advertising Department

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- Will expand on local advertising expertise.
- Will offer competitively the services previously provided by local agencies handling radio, TV, cable and other print outlets.



# Layout Department

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- Will unbundle production charges.
- Will develop multimedia skills to attach audio and video to hypertext–linked buttons on each newspaper–like electronic page.
- Will offer commercial imagesetting.

# Printing Department

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- When it may not be required to print a daily newspaper, it will publish periodic specialty or niche publications.

# Distribution Department

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- Will deliver home-printed publications and samples as targeted by the database.
- Will assume alternate delivery.

# Business and Computing Services

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- Since computing is so essential, commercial computing services and database management will be offered to customers.

# How do we get ready?

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- Invest in computing horsepower to do more work more quickly,
- Invest in programming tools to cheaply and speedily reconfigure the computers to do new jobs.
- You can't do it all by yourself. — David Easterly, Cox Newspapers

# To survive newspapers need...

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- Skill to write for dual news streams (print and electronic)
- Wisdom to organize departments as cost/profit centers,
- Insight to look for new ways of doing business, (Easterly — Use newspaper resources to create a new medium.)
- Guts to cashier departmentally isolated dinosaur computing systems in favor of business-wide, database-oriented flexible systems.

What it all means to your business...

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Do not sell the written word short...

It is at the core of all wisdom and  
everything a computer does.



# Information is not our core business...Collecting and editing is.

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- Don't mistake the noise for news.
- Newspapers keep the most complete record of local events. They keep local history. That local record has value. No one else has the resources to collect it.
- Newspapers contain a summary reference — a pointer — to even more that they leave out. Newspapers will become the hypertext gateway to all that they leave out.

# Do not sell the newspaper format short...

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- 114 million read a newspaper yesterday. In the 18 to 24 age group, 53% read a daily newspaper and that daily audience is more than double the cumulative reach of MTV measured over a full week. — David Easterly, Cox Newspapers
- Television is a peripheral. It is in the background when I read the newspaper, the book, or use the computer. The TV is there for replays.

# What are obstacles to progress...

Ubiquity rules — For good or ill.

Myopia — Businesses in this field can be simultaneously so right and so wrong.

- Like Republicans and Democrats no side can admit to the truths in the other's position: The Apple GUI is far smoother and easier to use, but the PC has the applications, connections and extensions I want access to.

# Apple

Positive

Negative

GUI

Pricing and openness

Need to become ubiquitous

- Windows has “won”, for the moment, because of DOS/PC ubiquity, not because it is better than Apple’s GUI — it is not.

# Windows

## Positive

Became ubiquitous

## Negative

Everything else:

file mgt—views, Trash Can

Print control and dialog boxes

Drive mapping

Net attachment—Novell logins

Ugly/inconsistent GUI's

Confusing—Ems, dashes, “ ”

Command mapping standards

\*.ini absurdity — print defaults

Windows is like rubbing the carpet against the nap; like a 1970's Chevy Vega — built with tolerances a little too loose.

# Lotus

Positive

Negative

## The Copyright Lawsuit

- Your intellectual property, expressed in Lotus' macro language, is worthless if you don't use Lotus programs. It chills my desire to use their tools. The decision won't encourage ubiquity.

# Oracle

## Positive

Generalized data handling

## Negative

It's an expensive tool  
without applications  
Applications are expensive

- Oracle should consider the lesson of Apple: Without ubiquity profits can evaporate. Encouraging ubiquity is worth reducing immediate profits. 1000 daily newspapers could be paying yearly maintenance fees.

# Associated Press

## Positive

Digital Pictures  
News Coverage

## Negative

Proprietary hardware  
Cavalier contracts

- The Associated Press is squandering resources trying to lock in its small customer base with unique interfaces, and specialized hardware and software.
- It's monopoly on channel is evaporating. When the channel becomes commonplace, AP's temporary, but deteriorating command of state reporting will disappear.



# Online Services

Positive

Negative

Rampant Analogy

Misuse of bandwidth

Commandeered computers

- Overblown graphical interfaces can be impossible to get out of the way, monopolizing bandwidth, storage and time. In place of information you get icons that bore after the second view.
- Some logins uninterruptably download gobs of updated support files — monopolizing both your time and your disk space.
- People want to choose the interface they prefer.

# What it all means to society —

and evident in small cities before it is in the power centers.

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- Hometown retail has supported families for 90 years.
- Orders from online/TV and overnight Fed Ex® from retail hubs á la MacWarehouse and PC Connection will undermine local retailers.
- This is a cataclysmic change in the way retail business is carried out.
- How do we propose to employ these workers? How do we propose to productively dispense wealth?

# We risk a two-tiered society.

- Those who have money and those who don't.
- Those who can afford news and information and those who can't.

# Expansion of Copyright definition types

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- Referential — Hyperlink
- Reportorial — Excerpted for news; "Fair Use Doctrine"
- Advertorial — Commercial Use; To Sell
- Anthological — Full or extensive use
- Artistic — an excerpted note, line, image incidental to another piece.

I'm a small town newspaper man and I expect to remain a small town newspaperman throughout the coming change of technology. I really want to think more about my community. To do that, I long to dwell less on technology and its interconnection.

We can only afford to do it once. This transition is expensive for our sized newspaper. We have to do it right. Fortunately, I need not predict what will succeed. I just need to be darned sure we don't dead end.

The services we offer today are not so important as the infrastructure we prepare.

Flexible, extensible, interconnected, and easy to program.

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The key is not the technology — which any competitor can duplicate — it is to reorganize to exploit the systems.

— Philip Evans, The Boston Consulting Group

# Newspaper 2010 from an Editorial Point of View

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by Stephen B. Waters  
© March 1990



For years, prior to 2010, people had mistaken information for news.

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The resulting proliferation of video and audio channels split the audience and escalated delivery charges.

# Our newspaper realized

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- To be useful, information needs...
- Organization
- Access

# We manage these databases...

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- the local news database,
- the local advertising database,
- the customer database, and, as a value-added service, the indexes to them.

# We operate a franchise for...

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- national and international information collectors.

Franchising inexpensively serves readers.

# Telephone companies

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- who we thought were going to put us out of existence, were unable or unwilling to see the value of this editing and data-structuring.

Cable television, the telephone company, and the Postal Service sucked up a larger percentage of advertising to pay their own overhead.

- It was difficult to convince people to pay more than the price of a cup of coffee for local news.
- Subscribers had been spoiled by advertisers shouldering the cost of collecting and editing news.

# Citizens became information-rich and news-impooverished.

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- Television didn't cover half the news on the front page of a newspaper and most people considered news to be simply what they thought they were interested in.
- Local newspapers dwindled.



We knew that news blends what you want with what you need to know.

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Local newspapers would have died had it not been for the emergence of the copyrighted filter.

# Computerized Filters...

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- Extract selected text and graphics from the information stream based upon subject, author, keyword, source, destination, date, or other blend of characteristics.

# The automated filter...

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- is necessary because more information than can be easily assimilated by the reader is shoveled down the fiber-optic cables and the satellite sideband feeds attached to the home communications computer system.
- Prior to the filter, people would dip into the rushing torrents of information with limited means to winnow it down or extract it efficiently.

# People subscribe to a filter they trust.

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- I may prefer the British magazine, the Economist's filter over the Time or Newsweek filter because of their point of view or because I trust their judgment.
- I subscribe to the Associated Press filter and the local newspaper filter.

Changing keywords modifies the basic filter to reflect personal preferences.

# The newspaper still uses editors.

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- As a human filter they provide a good defense against the possibility a brittle, automated filter could insulate a subscriber from too much.

# A personally-tailored newspaper is...

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- Filtered out of the information streams
- Composed
- Indexed
- And then displayed on the flexible, portable computerpage screens beside the morning coffee, the evening martini, or the toilet.
- The remainder of the torrent of information is still available for detailed examination, and need only be requested over the cable backchannel.



# Filters have an advertising portion attached to them

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- Like conventional newspapers and magazines
- For years advertisers had targeted specific segments of the market. This kept down their expenses and provided a decent return on investment.
- With saturation of the targeted market, however, new growth depended on reaching unexpected markets.
- Advertising to everyone through mass media returned to favor: The general purpose newspaper had returned.

# The newspaper staff includes an Archivist

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- Archivists maintain the most efficient paths to index and reference our collected data.

# Archivists also help reporters investigate public databases.

- Business and governmental bureaucracies occasionally try to remove indexes that reference potentially embarrassing information
- Or they try to obfuscate the issues with so much information that news becomes lost in the noise.
- Archivists try to deduce what might be there but, because of the lack of index connections, cannot be reached.
- We learned long ago that whoever controls the index controls the future.

# Archivists maintain Navigator programs

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- to transfer subscriber requests for supplementary, in-depth information automatically to original source databases.
- Subscribers are charged a flat subscription charge up to a particular level of usage.
- Surcharges are applied for expeditious delivery or extraordinary competition for the available bandwidth.

# Most staff come in to work

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- Although gateways exist such that staff can work at home.
- They prefer the camaraderie and the change of scenery.

# The tools of the trade...

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- There is no difference between desktop and laptop computing except the portability of the peripherals and the bandwidth of the communications connections.
- Desks have only one computer with one screen to control the operator interface to all programs.

# Input devices

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- Reporters and editors argued interminably whether track balls, mouses(mice?), touch screens, keyboards, sensor gloves, or neural sensors provided the best operator interface.
- It was finally recognized that individual preference is best.

# A standard input interface

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- This led to a standard interface to programs through which different operator interfaces could be attached.
- Once an operator has decided what to do, the task is to quickly and efficiently convince the computer to do it. Therefore, operators change interfaces depending upon the job at hand.



# Audio and video

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- Original information may be played on the screen in real time.
- Since it takes less time to read than to listen, most editors choose to peruse computer-generated full-text transcripts of audio or video that scroll rapidly across the screen. (Audio Word Recognition—the aural equivalent to Optical Character Recognition)

# Sieves

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- To quickly reduce long transcripts to manageability, text can be run through a programmed context-sensitive sieve to tag potentially relevant parts.
- A compressed document appears on the screen with the selected, highlighted, areas visible and the full body of text hidden in the background in hypertext mode.

# The newspaper sponsors computer-managed forums for subscribers.

- News events themselves, the premise is that words on the screen (or page) stay put for closer and repeated examination.
- Verbal debate has been replaced by the written dialog.
- People -- particularly politicians -- are held accountable for what they say and for what, according to our archives, they have said in the past. Changes of mind in the face of sound argument are not sins the way they used to be.

Actually, dialogs have been replaced by the polylog -- multi-threaded computer-managed discussions in which anyone can participate.

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- New threads can break off and diverse old threads can reconnect.
- The reassuring event about these is how quickly an irresponsible participant's threads are ignored. The discussions are self-policing.

One of the most popular reader functions, also maintained by the Archivist, is the local port to Collected Algorithms.

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- The cost of storage capacity has reduced to the point that a "How to" database can be maintained on everything from mixing a martini, manufacturing concrete, or running a meeting.
- The object-oriented database builds into its structure some knowledge about the world it records.

# To maintain an updated database of local organizations, officers and members we created a public service bulletin board.

- Without it, the expense for mailing lists, bookkeeping, and other recordkeeping for the clubs would have been substantially higher.
- More importantly, since we are a small city, the management time required to maintain individual systems would have tied up the city's volunteer management pool.
- The only thing we ask of user organizations is occasional use of the E-mail address list and use of their minutes and other public communications for news articles.

# Several times over the past years we have donated older personal computers to the public library.

- Even though they may have been limited for our use, they serve perfectly well for teaching reading, writing, and other basic skills.
- They also minimize non-readers embarrassment since they can tell family and friends that they are learning to use the computer when, almost incidentally, they are developing their reading skills.
- The facility is heavily used since the local courts and social services have undertaken the responsibility to identify those that pass by them who are in need of help.

## -- 30 --

- In hot metal, Linotype days, reporters ended their typewritten stories with the “--30--”. It indicated the end of the story. The compositor typesetting the galley of type would insert in its place a line of dashes. The dashes could be easily recognized as a story separator, even when the type was upside down and backwards. Different numbers identified standard standing line types that were kept on the bank for insertion in stories as specified by the editors. This particular one is called a “Thirty Dash”.



# How to connect:

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- 
- The Rome Sentinel publishes an 18,300 circulation daily newspaper, a 27,000 circulation Sunday TMC shopper, a 10,000 circulation military weekly, and a monthly 25,000 circulation publication of area attractions.