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~~PRESERVATION~~
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Out

Preservation
Photo copying

* Telecom & info technologies make info a new global resource

~~- Speed & flet of processing & moving info has increased dramatically~~
~~- At the same time, Cost has dropped, distance a shrinking factor.~~

This Global info → global mkts → a global economy
~~Global~~ → global media → global politics

- This is not just a new tech that must be wisely managed by corpns & govts,
  - not just a new industry taking its place on GNP pie charts ...

* Through telecom & media, info has become
  * the new currency, the new medium of exchange in world commerce & politics

- Both Corporate competitive strength & national political strength now depend on rapid access to info about what's happening & on prompt adaptation in the light of that info.

- Telecom & Info capabilities must now be the concern of corp CEO's & national political leaders.

~~* Technological~~

* The well-publicized whirlwind of new tech is driving this change
  But the tech isn't the most important thing to understand
  ~~It is the effect of these technologies~~
  Tech has become an embarrassment of riches
  - It is the economic & political effect of these technologies in their application to business & media that we must pay attention to:
  - World-wide mkts, world-wide distrib prodn, ~~shorter prod~~ shorter times to bring products to mkt, JIT prodn chains
    video training,

But
It isn't the technology that these leaders need to focus on, ..

~~- Although it is the activity of the devil that is driving this change~~
~~- Indeed it has been an important factor~~

- Rather, it is the utilization of of these technologies
  - to change business, media, & political institutions that these leaders must focus on.

- Decentralized ~~operations~~, shorter product cycles, global financial nets, J-I-T inventory chains, global advertising, ~~and~~ video training nets & E-mail are changing the dynamics of the corporation

- In the media also, regional satellites like Astra & Pan Am Sat are proliferating national TV channels & int'l TV networks. ~~For example~~ CNN & The Financial Times & Reuters are world wide institutions ~~For example~~

- Corporate & national political stability is becoming dynamic instead of static

- Economies of individuation are replacing ~~economies~~ economies of uniformity

- Also in media:
  Satellites have redefined TV distribution
  Intelsat giving way to regional systems (Astra, PanAm Sat)
  & domestic sats tied to cable & direct reception
  News & entertainment also are going global.

* All this brings ~~change~~ challenges to govts as well as corps

There are direct policy issues:

→ Should domestic telecom ~~mfrs~~ & monopoly ~~companies~~ telcos be protected from competition for their good?
  - Or should free trade & competition be allowed for the good of the users of info products & services?

→ Is the PTT model sound for the future
  - or is privatization & competition inevitable & beneficial?

~~→ Is there a benefit in restricting information flows across national borders in information ages?~~

~~→ Can commercial TV & state-run TV networks co-exist?~~

→ When will telecom & info executives earn more than regulatory lawyers?

* But there are broader issues for govts as well →
  ~~in this new information era~~

→ What govt restrictions on info flows are beneficial or practical?

→ When will telecom & info executives earn more than regulatory lawyers?

* And there are broader issues for govts as well →

* Just as corp strength rests on adaptation to info about mkts & sources of supply ~~& mfg technologies~~

- So national strength rests on adaptation to info about economic & political events ~~& trends~~

~~- Dynamic stability is replacing static stability~~
~~- Emergence of specialization is replacing economies of scale.~~

~~* Countries, like com~~

* Countries, like companies, can be info poor or info rich

large corps *

→ Telecom & ~~info~~ media networks are not a luxury for the economically ~~adv~~ developed countries.

→ They are a ~~one~~ resource for both competitive advantage & political resilience,
- for corporate strength & for national strength.

→ ~~the~~ mkts are becoming networks, both companies & countries must be plugged in or be left behind.

→ Volatility makes ways of hedging

* Few people have had the breadth of experience to address these issues as broadly & incisively as Bill Colby

a graduate of Princeton & Columbia Law School

• Mr. Colby is a decorated veteran of World War II
- A career diplomat with a key role in Vietnam,
He was later Director of the CIA

Now a consultant on int'l & domestic political matters,
Mr. Colby has written two fascinating books
& brings a unique perspective to the role
of info in the world of today & tomorrow

The title of his talk is: America's Stake in Information Technology
Redefining National Security.

New Business Opportunities in Telecom
... and with Telecom

- In Africa, some people count cows as 1, 2, "many"
- You expect more from consultants, so I'm going to give you three options, for how ~~doctrinaire~~ ~~energy/organize~~ you should view the role of telecom in your business

First a genius/division of telecom & IT have become one field
When I say telecom, I almost always mean IT/Telecom.

1) Outsource your telecom needs to more proficient and lower-cost telecom/IT service provider with "latest toys"

2) Leverage ~~your~~ the assets and capabilities you have in your core business to get into the telecom business

3) Utilize new telecom capabilities to prepare your core business units to be more competitive.

- If we had more time, I would compare and contrast all three options, each of which has an element of validity.
- But we don't, so I won't
- And before I go into my favorite of the three, let me give you a snapshot of the telecom industry:

What We Want You to Remember

- Plan for energy Darwinism
- Strong telecom capabilities are essential to ~~AEP's~~ your future market share and profitability
- Telecom will be a strategic competitive weapon, not a support service
- Telecom capabilities and roles will differ greatly in GenCo, WireCo, and RetailCo
  - A single telecom department isn't likely to serve any very well.
  - & especially in RetailCo which will use telecom to be entity driven
- Partners are necessary, and dance cards are being filled
- The keys to success are:
  - ~~Timely intelligence and action~~ Move quickly, but surely
  - ~~Profit-focused~~ Form alliances with strong partners before they are all gone
  - An entrepreneurial energy source
  - The money is in the customer pocket; customer not meter or regulator
- All economic organizations have had two kinds of people
  - Hunters & Skinners
- You've mainly needed & promoted ~~hunters~~ skinners
  - But the time for hunters is here
  - Telecom will be used by hunters to expand until over

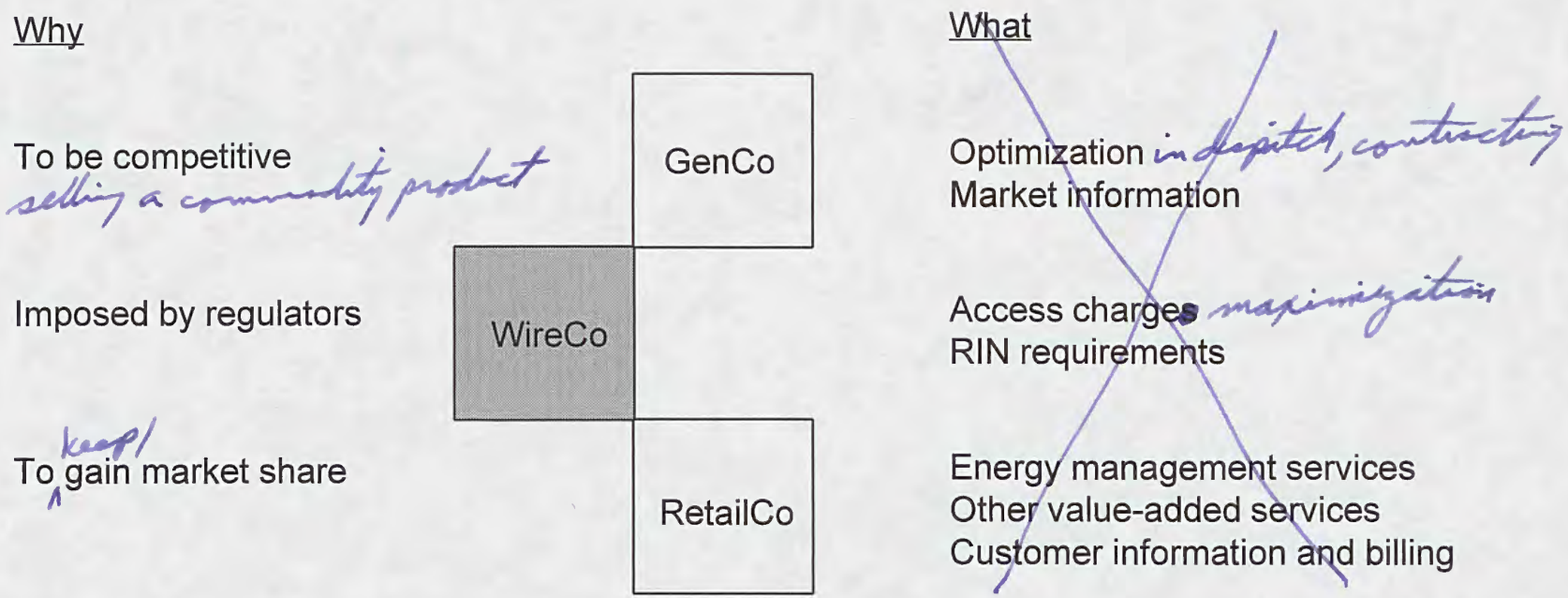
Telecom Industry Explosion

- Rapidly changing technologies
- Rapid deregulation
- Information and telecom becoming a single industry
- Evaporating barriers to entry
- Numerous sources for telecom services
- Intense competition, getting more so intense
- No friends, all foes

- *Coming soon to ~~power too!~~ a theater near you*
  – to your industry – we're just a few years ahead.
- ~~Most of~~ *It will focus on electric power, but much of the ~~end~~ thought process fits gas as well.*

Telecom Is a Weapon in the Power Industry

- Telecom becomes critical as competition spreads
- Telecom becomes part of the production function, not just a support service



Telecom for What?
Top-down view is needed – can't expect existing telecom/IT to tell you what to do.

Power Generation and Transport

G

- Will rely on telecom to collect market information
- Will need telecom for cost/price/dispatch optimizations
- Will be a modest user of telecom capacity, but will need fairly high-speed links to RIMs, BBS, cost, etc.
- Will have to interface with other GenCo's, WireCo's, and RetailCo's
- Your GenCo will have to use telecom to be competitive & to be plugged into markets.

W

- Needs to identify and charge for all power flows
- Wants maximum usage subject to stability
- Will have to provide its information to GenCo and RetailCo competition
- Will have "many" T&D points must be monitored or controlled
  - Will need both backbone and wireless capability
- Your WireCo will have to use telecom to because FERC will make them & because it's their only route to higher revenues

But the big need & opportunity is at the meter & beyond.

Retail Co.
Your

AEP's Retail Market Position

R

- 100% market share in electric power
- Assets in your service area:
  - Have a presence at every home and business
  - Send everyone a bill every month
  - Collect payment from everyone every month
  - Customer service everywhere
  - Brand awareness
- Retailing/marketing companies would die for such a position
- But this is all temporary and vulnerable

The Customer Interface: How to Avoid Becoming a Wholesaler

- Others will install digital gateways at the customer premises
  - Ameritech, cable TV, PCS, gas utilities, power brokers, ...
- These gateways will be used:
  - To sell energy management, home security, home automation, and other services
  - To collect information about the customer
  - To allow billing and electronic payment
- The gateways and EMS allow competitors to take over your customers even before retail wheeling

Communications with Customer Premises

- AMR, EMS, and other value-added services require two-way digital communications
- Interface technology and communications links are interdependent
- Connections can be provided by wireless, telephone, cable TV, ~~or (perhaps) satellite technologies~~
  - A means to an end
  - Choose the most cost-effective
  - But you need a default to be sure you can get there

- PCS: An immediate opportunity
  Your assets + capabilities as a whole are worth more than the sum of the parts ⇒ possibilities for partnering, options, cash
  check it out or miss it

- The advantages of RetailCo include:
  - A source of unregulated revenue & profit
  - A locked-in customer for GenCo
  - A growth rate in rev > 2% & in profits >> 2%
- RetailCo will be important for <u>all</u> customers
  - Industrial
  - Commercial
  - Residential
    - Each with different service packages & marketing approaches
    - But essential soon in all
- This is a natural business
  - No Utility, no RetailCo can ~~go~~ do it alone

Pay Attention to the Regulatory Boundary

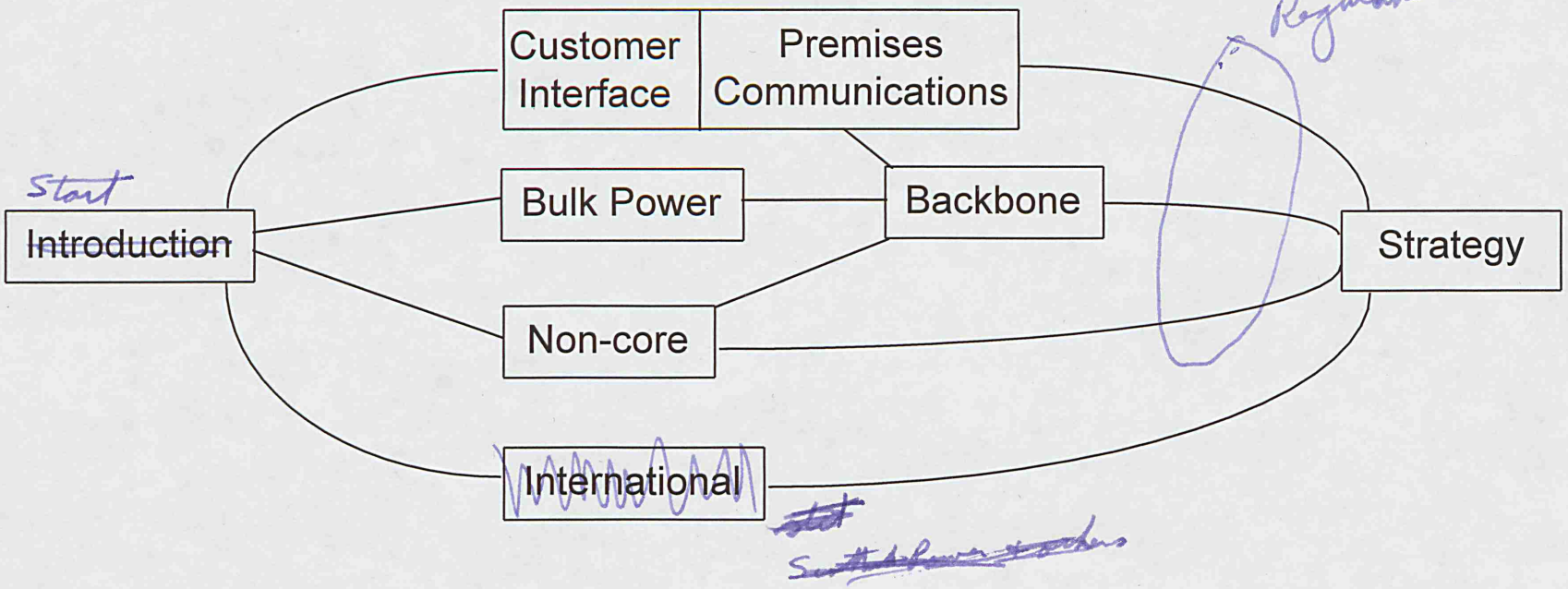
- ~~Plan ahead, make facts~~
- Redraw your ~~a~~ vertically-integrated utility function from a single column into <u>two</u> columns: <u>reg</u> & <u>unreg</u>
- 

- Pay special attention to the meter
  You don't want the cust premise gateway in Wires!
  The "meter" will have much valuable customer info.
  Get the meter into Retail Co.

What's the Point of All This?

First: You Need a

Telecom Strategy ~~Priorities~~



Summary of Testimony of Clay T. Whitehead
before the Senate Committee
on Commerce, Science, and Transportation

March 2, 1995

Much has changed since I was Director of the Office of Telecommunications Policy during the Nixon administration. Twenty-five years ago, we had:

- The Bell System.
- The three commercial television networks.
- A fragmented community antenna television (CATV) industry.
- A small industrial two-way radio business.
- A monopoly satellite industry.

The presumption in those days was that complex technology, spectrum limitations, and capital requirements combined to make telecommunications inherently a natural monopoly or, in the case of broadcasting, an oligopoly. But technology was beginning to erode the foundations of this assumption. We set our sights on replacing the old paradigm with a new one, and our agenda was primitive by current standards:

- Open entry and competition for U.S. domestic satellite services and other specialized carriers.

- Changes in broadcasting and cable television rules to allow cable television to grow into a new medium of channel abundance.

- Deregulation of radio broadcasting and repeal of the Fairness Doctrine to show how that FCC regulation of broadcast programming was unnecessary in a competitive environment.

- Building the case that a break-up of the Bell System was feasible and persuading Justice that the monopoly power lay in the local service monopoly rather than in manufacturing.

- Supporting the creation of PBS in anticipation that cable and satellite technology would bring about the channel abundance that would make federal funding of CPB unnecessary.

With the benefit of twenty-some years of experience, we can say clearly: Competition works. Open entry works. And the First Amendment works.

I would like to restrict my prepared remarks to a few key principles:

Go for the long run.
Don't try to <u>chart</u> the future, try to <u>enable</u> it.
Keep it simple.
Let telecommunications be a business.
Get the courts out of regulation and back into adjudication.
Do it now. The 104th Congress has a great opportunity.

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Mr. Chairman, it is a pleasure to be here with you today. Much has changed since my last appearance here many years ago when I was Director of the Office of Telecommunications Policy during the Nixon administration. For example, the whole cable television industry then had fewer than five million subscribers and revenues of less than $400 million; today that industry has 60 million subscribers and revenues of $25 billion.

In thinking about the task you face in making sense of the wonderful, wild, and wooly world of telecommunications, I thought it would be useful to recall the shape of things when I began to wrestle with telecommunications policy and the path we have travelled to your hearings in the 104th Congress. Twenty-five years ago, we had:

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Some of this structure had evolved from the technology and economics of the past, and some of it had been cast in the concrete of ancient legislation and regulation. The presumption in those days was that complex technology, spectrum limitations, and capital requirements combined to make telecommunications inherently a natural monopoly or, in the case of broadcasting, an oligopoly.

Even then, however, technology was beginning to erode the foundations of this assumption. The Carterphone decision recognized that telecommunications users could have their own ideas about the devices they attached to the telephone lines. Bill McGowan discovered that interstate microwave lines could undercut AT&T's long distance pricing. Cable television provided more channels into the viewers' homes than there were broadcast outlets to fill those channels. But "competition" and "telecommunications" seldom were found in the same sentence.

Many of us in the early days of the Nixon administration shared a vision of competition and deregulation as an alternative to the paradigm of highly detailed and centralized regulation inherited from the New Deal days in telecommunications,

transportation, power, and other industries. The Office of Telecommunications Policy was established by President Nixon based on a recommendation from President Johnson's telecommunications task force chaired by Eugene Rostow.

We quickly set our sights on replacing the old paradigm with a new one. Our goal was in part pragmatic; we believed that replacing regulation with competition and open entry would encourage more rapid development of new and lower cost services more responsive to consumer needs. But we also had a philosophical goal; we believed that regulation of telecommunications was particularly pernicious in that governmentally-fostered scarcity foreclosed in the electronic media the creativity and free speech principles of the print media and promoted governmental control of electronic content.

By current standards, the OTP agenda was primitive:

- Our "Open Skies" policy of open entry and competition for U.S. domestic satellite services was designed to serve two purposes. It was a precursor to implementing competition among long distance carriers; and it provided an economical means of distributing television nationwide, removing one of the barriers to competing with the big three television networks as HBO and PBS soon demonstrated.

- We supported financial syndication rules and promoted new prime time access and cable television copyright rules to encourage competition in television programming and to provide an economic basis for the growth of cable television to replace channel scarcity with channel abundance.

- The deregulation of radio broadcasting and repeal of the Fairness Doctrine were proposed to show that much FCC regulation of broadcast programming was unnecessary and counterproductive.

- We supported the re-opening of the anti-trust case against AT&T because the sheer power of the collective Bell System precluded any significant introduction of open entry and competition through regulatory or legislative measures. Our role was to build the case that a break-up of the Bell System was technically and economically feasible and to persuade the Justice Department that the monopoly power lay in the local service monopoly rather than in manufacturing.

- We opposed the rapid growth of the Corporation for Public Broadcasting and supported the creation of the Public Broadcasting Service controlled by the local stations because we believed that the growth of CPB as a large, highly-centralized, federally-funded, programming organization was inimical to the principles of the First Amendment and that cable and satellite technology in a free enterprise environment would bring about the channel abundance that would make such federal funding of CPB unnecessary.

Those are some of the things we got started to begin the move from what was a highly-regulated command economy in telecommunications toward a competitive free enterprise model. I wish we had been clairvoyant. We drastically underestimated the potential of fiber optics, the demand for wireless telephone service, and the dramatic impact of digital technology in breaking down distinctions between service categories.

Since those prehistoric days two decades ago we have seen remarkable progress in the telecommunications industry -- progress in technology, in regulation, and in new services, and in lower prices. With the benefit of twenty-some years of experience, we can say clearly: Competition works. In a free enterprise environment, technology promotes competitive energies, not monopoly power. Open entry works: No group of companies is uniquely qualified to provide any given service, and we have seen the most progress in those sectors where we have allowed open entry. And the First Amendment works: In a competitive, open-entry environment, the expansion of channel capacity, of computer networks, and of customer choices provide a market in which creativity and free speech flourish.

Mr. Chairman, as one who for several years faced the issues and pressures now before you, and having had time to digest my allotment of hat, crow, and humble pie, I would like to restrict my prepared remarks to a few key principles.

First, don't try to chart the future, try to enable it. The industries we lump under the telecommunications label are awash in uncertainty - technological, economic, cultural, and regulatory. We have learned the hard way that well-intended attempts to reduce uncertainty through regulation inevitably create more uncertainty than they remove, because the regulatory process itself becomes a major source of uncertainty. Moreover, it is a pernicious form of uncertainty because so much money and management talent is devoted to trying to manipulate it -- money and talent that otherwise would be applied to innovation, new services, and lower costs. The best thing the government can do in telecommunications is to get rid of the regulatory uncertainty by enabling industry and users alike to get on with their business.

Second, go for the long run. I know you are being presented many different positions on many issues, but look at the remarkable agreement on the big picture -- between Republicans and Democrats, cable and telephone, carriers and users. Everyone now accepts that telecommunications should be governed by open entry and competition. Telecommunications cuts across many lines of manufacturing, services, and applications. It should be a big tent with open entry and open use for everyone. (I should note that I have been looking at the impact of telecommunications and information technology on the electric utilities, and it seems clear to me that there is no more logic to limiting their entry into providing telecommunications services or their use of

telecommunications technologies than there is to keeping telephone and cable companies out of the other's business.)

Third, keep it simple. The more complex the legislation, the more often you will have to address new legislation. The more often you intervene in the industry, the more you will be asked to intervene, sinking to a level of detail at which neither you nor your petitioners can adequately foresee the implications. Set a framework based on those enduring principles of competition and open entry, allow a little time for the industry to get used to the idea, and get out of the way.

Fourth, get the courts out of regulation and back into adjudication. Judges are worse regulators than Senators, Representatives, or Commissioners. Judicial tests of competitiveness as a precondition of open entry only invite outrageous arguments and add to uncertainty. It would be far better to set a time certain for open entry and deregulation. Courts can play a more constructive role in post hoc adjudication of disputes about compliance with legislative and regulatory rules than they can in the a priori co-creation of regulatory rules.

Fifth, let telecommunications be a business. Some try to depict deregulation as an abandonment of the public interest. But in fact, we have a healthy body of contract, corporate, and common law that can more readily and more flexibly absorb the complexities of the industry in many cases than can the FCC or Public Utility Commissions. Why do we need detailed regulation in telecommunications, but not in computers, publishing, or libraries? By legislating for the long run with relatively simple rules for competition and open entry, you can provide a framework that will let telecommunications be a business responding to the rule of the customer in the marketplace, not as a half-free thrall of government.

Finally, do it now. The telecommunications industries - telephone, cable, broadcasting, interactive, multimedia, satellite, domestic, international - are on the verge of unprecedented innovation and creativity. They are prepared to invest huge sums of capital over the coming decade to create new services with lower prices. The 104th Congress has a great opportunity to set a simple, long-run, liberating framework that unleashes the creativity of American business and society in this exciting field. There is wide agreement on the big picture and a remarkable willingness across the industry to accept competition in return for reduced regulatory uncertainty. You and your colleagues are philosophically in accord with that agreement and off to a good start. We have had too many years of contrived and convoluted adaptations of an obsolete regulatory scheme. It has been 60 years since we had such a consensus and 60 years since we have had a comprehensive communications act. I urge you to give us a new one.

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SENATE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION

Witness List*

Hearing on Telecommunications Policy Reform

Thursday, March 2, 1995, 9:30 a.m.
Committee Hearing Room
253 Russell Senate Office Building

Panel 1

The Honorable Anne K. Bingaman, Assistant Attorney General for Antitrust, Department of Justice, Tenth Street and Constitution Avenue NW., Washington, DC 20530.

The Honorable Larry Irving, Assistant Secretary for Communications and Information, National Telecommunications and Information Administration, Department of Commerce, Washington, DC 20230

The Honorable Kenneth Gordon, Chairman, Massachusetts Department of Public Utilities, 100 Cambridge Street, Boston, MA 00202.

Panel 2

Mr. Peter W. Huber, Senior Fellow, Manhattan Institute, 5029 Edgewood Lane, Bethesda, MD 20814.

Mr. George Gilder, Senior Fellow, The Discovery Institute, The Red House, Main Road, P.O. Box 430, Tyringham, MA 01264.

Mr. Clay T. Whitehead, President, Clay Whitehead Associates, 1320 Old Chain Bridge Road, Suite 410, McLean, Virginia 22101.

Mr. Henry Geller, Communications Fellow, Markle Foundation. 1750 K Street NW., Suite 800, Washington, DC 20006.

Mr. John W. Mayo, Professor of Economics, Department of Economics, University of Tennessee, Knoxville, TN 37996.

Mr. L. Selwyn, President, Economics and Technology, Inc., 1 Washington Mall, Boston, MA 02108.

*Not necessarily in order of appearance

Venice, 6/29/94. (1)

Convergence usually means

cable / telco into each other's business
local / long-distance
universal digitalization of data, voice & video
integrity content / transmission

But proliferation & divergence too

Broadcast / cable / DBS / wireless cable / different ways to get TV
POTS / cellular / PCS / LEO / wireless data
LAN / WAN / MAN / VAN

The real convergence is

The flat & cost of transmitting & processing digital info (& innovation)
+ The irrepressible creativity of content providers,
network providers, & the flowering of consumer choice — worldwide

The U.S. Agenda

1) The content (or software) providers

The ferment is unbelievable: Hollywood to Silicon Valley
Interactive, multimedia, on-line, agents, ...

Concerns are • protection of intellectual property
• max flat & & compet in distrib
• no gatekeepers to erect unfair toll barriers
for creation or selling ent & info svcs

2) Cable operators

See proliferation of channels, VOD, & interactivity as keys to revenue growth

See two-way voice & data telecom ~~as low~~ as incrementally low cost sources of revenue

3) ~~#~~ Local telcos see a dead-end in POTS as cable & others begin to compete

See ~~higher~~ new revenue sources ~~in~~ & higher profit margins in unregulated entertainment & info svcs

~~4) Long-distance carriers see~~

~~BOC's in LD barriers~~

4) Other telecom-related companies have stakes to protect or markets to grow:

IXC's
CAP's
on-line services
electric power utilities

Seem a free-for-all.

* Main area I want to address regarding the US agenda is the most remarkable convergence of all - - a broad consensus that is quickly forming on telecom regulatory policy.

Wide agreement on ~~four~~ five principles:

1) The primary regulatory mechanisms ~~for~~ should be widespread competition, with open entry into all business areas, & consumer choice.

2) Private investment with largely unregulated pricing is the only way the creativity & competition need to build the new ~~infrastr~~ businesses can be unleashed

3) Old regulatory barriers based on obsolete linkages between technologies & services must be removed in favor of regulatory parity among all service providers

4) New regulatory principles must be adopted based on 3 flexibility
   2 open access to networks, ~~&~~ infrastructure & content
   1 competition: specifically at least 2 wires
   4 Assurance of universal access to basic service

5) Regulatory uncertainty must be reduced

- The devil, of course, is in the details.
- There is not wide agreement about how we should get from here to there.

— The two bills passed in the U.S. House of Rep yesterday were a good start, but there are different views in the Senate & a new law may not be passed this year.

— In the US, we also have the FCC, state reg agencies the courts, & the Justice Dept ~~and~~ & State Dept involved in reg policy, so it may take a while.

- But soon we will see

cable & telcos offering most of same service

local telcos & long-distance cos doing same

consumers will be king, picking & choosing; know your costs

However the details work out, however quickly or slowly, the key point is that we can't go back, ~~the way is~~ ~~not~~ the U.S., Europe, any of us.

Convergence of technologies & networks is inherently international & so are basic policies

~~Deregulation policies~~

Investment requirements are huge & can be justified only with a sound regulatory policy that reflects the technological realities of that convergence.

* Protection of monopoly infrastructures, even in the short run, only ~~puts the~~ puts the rest of a country's industry at a disadvantage in world trade & makes the ultimate breakup of the monopoly more painful

* Countries with liberalized telecom regulation & trustworthy governments will attract ~~the~~ new investment & new jobs as bases for telecom & info services sold across borders.

* Countries with rigid ~~protectionist~~ regulation — or ~~that~~ cannot be trusted to honor their commitments to new telecom ~~enterprises~~ businesses will become the backwaters, losing jobs & growth opportunities

* Countries with rigid regulation or governments that cannot be trusted to honor their commitments will become the backwaters, losing jobs & watching telecom & information-related businesses locate elsewhere.

* ~~Two lessons for telecom co~~
~~Know your customer; give him choice~~
~~Educate your regulator.~~

Intl Telecom Users Group
staff? where?

Key factors

(1) Technology

Satellites

- Power ↑, life ↑, reliability ↑
- Size: Economies of scale.
- 2-3 viable mfrs / competition
- Lightsats: commercial, military

geosynch econ
LEO's

nature not very innovative

Ground segment

Size ↓ cost ↓ capability ↑
Many suppliers
Very innovative, very competitive

(2) Terrestrial alternatives

Constant change of tech, cost, applic.
Sat is just one tech altern
People don't want sats, want commo

In tug & pull of competition,
sats best suited to:
- Point-Multipoint networks
  TV, corp VSAT nets
- "Thin route" networks
  "remote" sites
likely to remain so, w/ details shifting

(3) Digital video compression
- Video biggest near ~~term~~ & data
- Threat or oppty?
  static analysis v
  expanded view

(4) Deregulation & privatization
US open skies
European Community sat policy
World-wide trend of govts
~~Open~~ competition w/ PTT's
Even Intelsat ← PSTN
>40% owned private companies

Market Trends

(1) US domestic market.

mature business, little x-pdn growth

little innovation

Ground segment will continue

cost & capability

new applications

Proving ground for rest of world

tech, applic, mktg, finance

Need for innovation that looks at space & ground together

(2) International Domestic

big growth area

Domestic space segment

TV, VSAT's like US

Quick modern capability

Precede, bypass, leapfrog

expensive terr infrastructure

"Third world" oppty (USSR E Europe)

Econ of scale → condo's

(3) International — This is the big growth area

Need for global ~~this route~~ service
Video transport & distribution
Corp nets - everywhere but land

Intelsat & fiber cables are thick route
Alpha Lyracom this route
off the interstate, global commercial nets
~~VSAT~~ higher power for small, cheap ES
VSAT + video to the world
small but essential to corp nets
condo sales

Driven by: Growth world trade,
Need for comm in trade & econ devel

Sats will grow dramatically

Finance

Many factors, more & more complex
not less
Size of sat projects
US, international regulation

Project finance, presold xpdns difficult
But critical to future of business
More & more

the odymoron of "sat business"
will fade

It is a business, should be
eval as such, albeit complex

∴ Sat svc co mgt
— so make it a sound
long-term
less episodic business
— find a way to incorp innovation
entrepreneurship is hard

Three topics

1) History of satellites & entertainment in US
2) Will that history be repeated globally?
3) What are the tech & econ trends & implic for telcos?

① Because of location in space, frigy rocket launch, sats have ultimate high tech image

Originally ltd in power & bandwidth, & very expensive ---
- ES very large & expensive
- sat links thought of as long telecomm trunks
- economical only if replacing a very long MW or sub cable
- Intelsat for int'l comm.

Then power & bandwidth ↗ ES size & cost ↘
- Sat trunks become competitive at shorter distances
- ~~U.S. adopts~~
- Domestic use inside countries become reasonable

U.S. adopted the Open Skies policy
- first competitive open-entry policy in telecom
- power & BW ↑ again; ES size & cost ↓
- WU, RCA, ATT immed put up sat network
- ~~Power & bandwidth ↑ ES size & cost ↓~~
- But time delay a problem for telephone tfc
  - Bell System still quite monolithic
  - where was the traffic?

Meanwhile cable TV was growing

Orig put in where TV reception was poor

Cable operators began picking up distant TV signals & carrying them hundreds of miles to cable systems

- ~~ATT rates were too expensive~~
- ~~Private microwave networks~~

By ~~1970~~, 15% cable homes, 15% of U.S.

By the late 1970's:
10m cable homes; avg home 7 channels of TV
CABD ~~became established as selling movies for pay TV~~

Then to reach a wider audience, HBO leased a channel on an RCA ~~-~~ satellite

- S/A began selling ES small & cheap by Intelsat std:
  4.5m $40,000
- Other programmers copied the HBO idea
  - more cable operators installed ES ~~to get~~
    to get the signals to sell the movies
    to gain higher revenue
  - ES costs quickly declined to $15,000.
  - Because of size & cost, each cable system bought only one ES
    - programmers wanted to be on the sat w/ HBO
    - soon RCA Satcom 3 was sold out
      - 24 TV channels
      - the concept of the "cable sat" a "hot bird" born
  - Regulation made 2d hot bird difficult: ~~to~~
    - WU & RCA had long waiting lists
      of would-be cable programmers
    - ~~But first-come, first-served~~
    - But tariffs required them to treat all equally
    - How to get 24 good prog on one bird
      so cable operators had buy 2d bird?
  - Hughes designed first sat expressly for cable: Galaxy
    - Not a better sat technically
    - But innovative in regulation:
      All cust treated equally, but more = if initial HBO
    - Second cable sat

Now 4 cable sats in US + 3 for ~~network~~ broadcast TV

- Programming has expanded dramatically
  - ~~Super stations~~
  - Channels for: movies, old movies, ~~children~~ news, weather
  - Channels for: children, blacks, travel, religion, Spanish
    : arts, ~~natural history~~ nature,
    : returns, shopping, ~~talk~~ education, Congress

As a result, cable has grown dramatically:

- Now in 50 m homes (over half)
- ~~Beta~~
- Where cable not available (rural & urban core) individual dishes now can be bought for $500
- Between cable & dishes, 60% US homes receive sat prog
- Average home has access to over 30 channels

~~Why has all this happened?~~

As a result the economics & product cycle of programming has changed:

Used to be movies went: theaters → network TV → indep TV
Now: theaters → cable PPV → ~~cable~~ movie channel
→ video cassette → adv-supported cable net → indep TV

In 1979, $2 m/yr sat channel → $10–20 m rev
1989, $2 m/yr " " → $100–200 m rev

* Why has all this happened? 3 reasons

SLIDE.

1) Satellites create ubiquitous bandwidth ~~Network~~
~~No signif econ or tech restriction on TV dist. everywhere~~
Far more economic than terrestrial nets
2) Cable & sat brings wideband channels into homes ~~cheaply~~
3) There is an insatiable consumer demand for choice

With proper distribution technology, there is a spiral of supply & demand for TV products just like other goods & svcs.

② Will this U.S. phenomenon be duplicated globally?

- Yes, of course it will.
- And of course it will be different as well.
- Intelsat transponders are being used for TV distribution around the world
- Japan, France, & the UK have high-power direct broadcast sat prog
- Astra sat launched by Lux
  - first private ~~sat~~ enterprise sat in Europe & first dedicated to TV programming in style of "hot bird"
- Pan Am Sat in Sth Amer; Intelsat now competing Astra
- Cable continues to grow in Europe
  Govts are authorizing new private chains of ters TV stations
  Japan, France, Spain
- Why this growth, this pressure for more TV?
  1) Producers want to sell into the biggest poss mkt
     - today that means world wide
  2) Consumers want more choice
     Do they ~~know~~ they want it? Sort of
     Do they know ~~what~~ they want? No
     Will Rupert Murdoch ~~not~~ lose money Yes
     Will Rupert " make money Yes

Govts are responding by alternately controlling & encouraging. one but other hand.
- Treaty of Rome assures free flow of goods, services & capital ~~not TV~~ incl TV
- Helsinki Accords endorse free flow of news & info across natl borders. But in my eyes: other countries following; not in my country where we need to protect
- Will a free competitive global mkt for TV ent develop ~~world wide~~?

Yes I think but like a glacier, slowly but inexorably

~~W~~
Governments are responding to all this
by regulation & deregulation
alternately restricting & encouraging new ent possibilities

Cultural & linguistic barriers are a major factor

On one hand: said to preclude or limit a global mkt
in entertainment & advertising

On the other hand: regulation is needed to protect national culture
from being over-run

Treaty of Rome assumes free flow of goods, services & capital
→ incl TV

Helsinki Accords endorse free flow of news & info
across national borders

— But in my experience this freedom is meant
for the other fellow: free flow into other countries – Yes
Mine? well now...

~~W~~ All
Cultural & Regulatory barriers will prevent the world
— TV mkt from becoming like the U.S. mkt

But ~~slowly~~ inexorably there will be a free
competitive market in TV entertainment
just like other areas of telecom.

Now turn to:

③ Technical & economic trends & how this might affect telcos

(focus US but most is applicable elsewhere)

* Sat power ↑ ES size & cost ↓ (broken record)

  $500 in US £150 in UK

* Choice of cable vs DTH dish now just economics
  - Cable cheaper & easier than dish if avail
  - Dishes will proliferate where cable doesn't exist
    - but sat & dish as alt to plant expansion

* As ~~cable~~ channel choices expand ~~Networks~~ the 3 broadcast networks will lose mkt share
  ~~CBS~~ Now 67% + ↓ 3 pts per year.
  - Each a single channel programmer

* Instead of 3 TV networks, cable is becoming the new monopoly in US TV
  - squeezing profit margin of studios & program svcs
  - either there will be a new alternative to the home
    - ~~DBS~~ very high power DBS or telco fiber
    - or will have to be made a common carrier

* HDTV (an oxymoron?) will evolve
  - Not suited to over-the-air because of BW
  - 3 alternatives for delivery

    1) sat & cable : acceptable BW, cable retrofit, DBS
    2) ~~fiber~~ fiber : great BW, true digital TV; more choice
    3) ultimate in BW : shopping bag – VCR – Japanese soln.

* PPV & interactive video will evolve; line between ent & info will blur
  video ent on demand store & forward ent.
  - problem is acceptable back channel
  - Nating Nintendo /AT&T story?
  - telephone call OK for shopping, not for games, not for hypermedia

* Sat delivered video will increasingly penetrate business
  - employee communications,
  - training
  - industrial advertising
  - combination VSAT dish for ~~TV + data~~ corp + industry networks of TV & data

* Increasing ~~reliance~~ # of asymmetric networks
  ~~Dish~~ high BW outbound
  low BW this route inbound

Oppty's & threats? Well... for example...

* ISDN, digital plant, corp networks, lower-cost dial tone all important, but BHT...
  - into the home, the BW is entertainment
  - ~~likely to continue~~? home is where the bits are → Where is the telco?
* Asymmetry of networks for entertainment business TV, information ~~news~~ & need for ~~a~~ new broadcast channels creates new network oppty
  - leading contender: UHF radio → VSAT or cable head end
  - 9.6 Kb 2-way ~~nationwide~~ networks at $200/terminal (NOT INEXPENSIVE — TRANSACTION SVCS. HOME, STORE, LOADING DOCK)
  - last oppty for nationwide network bypassing the telcos. Where are telcos?

VSAT thoughts: data TV & would get global net oppty

* HDTV MAY BE ~~probably~~ the only justification for fiber into the home
  * If it is "cable fiber" then cable → telco threat real. Where are telcos?
* ~~Distinctions are blurring between entertainment & information~~
  - interactivity is increasing
  - store & forward video for choice of product on demand
* ~~Cable still could become an alternative for telephone svc.~~
* Entertainment ~~delivery~~ & are in product, not delivery: sat, cable, telco
  - consumer buys ent not tech
  - cost for ent distrib tech is selling of ent — Where are telcos? you are the tail not the dog
* The distinction between the telephone business & television business is blurring as technology & economics change consumer's choices
  - If there is a neat & simple new boundary between TV & telecom, I don't know where it is.
* But there is a fundamental principle at work in both ~~just over 100 years ago~~
  ~~Reporter → Thoreau: electric telegraph cable~~
  Captured in story just over 100 years ago by writer
  Reporter → Henry David Thoreau: electric telegraph cable
  - Moral of this story ("the Thoreau effect") is:
    - Communications opens new choice for people that
      - in advance they don't know they need & can't predict how they will use
      - after they have the ~~choice~~ options & make their choices ~~they can't conceive of how they~~ they integrate quickly into their life style & can't imagine life without it.

Expanding choice for the consumer & by the consumer is now the driving force in electronic entertainment & information ~~telecom~~

People ~~are~~ increasingly are choosing (in the marketplace to get entertainment & info electronically

With all the diversity, richness, & chaos of competitive markets

- (both technology & content)

- it is clear that entertainment presents the telco with both threats & opptys they ignore at their peril!