

# **Networks & America's Future**

*Productivity, Jobs and Economic Growth*

# Trump's new FCC chief opposes net neutrality rules

**NEW YORK POST**

**InfoWorld**

What the end of net neutrality means for you

Net neutrality is dead –  
welcome to the age of digital  
discrimination **theguardian**

It looks like we're going to have a less open  
internet under Donald Trump

**BUSINESS INSIDER**

The death of net neutrality  
begins today **TNW**  
THE NEXT WEB

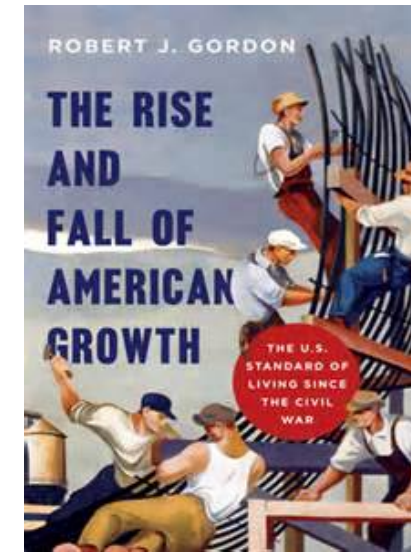
Internet providers won't rest until the  
government's net-neutrality rules are  
dead *The Washington Post*

**THE DAILY  
BEAST**

Ajit Pai, Donald Trump's FCC Pick, Hates Net Neutrality

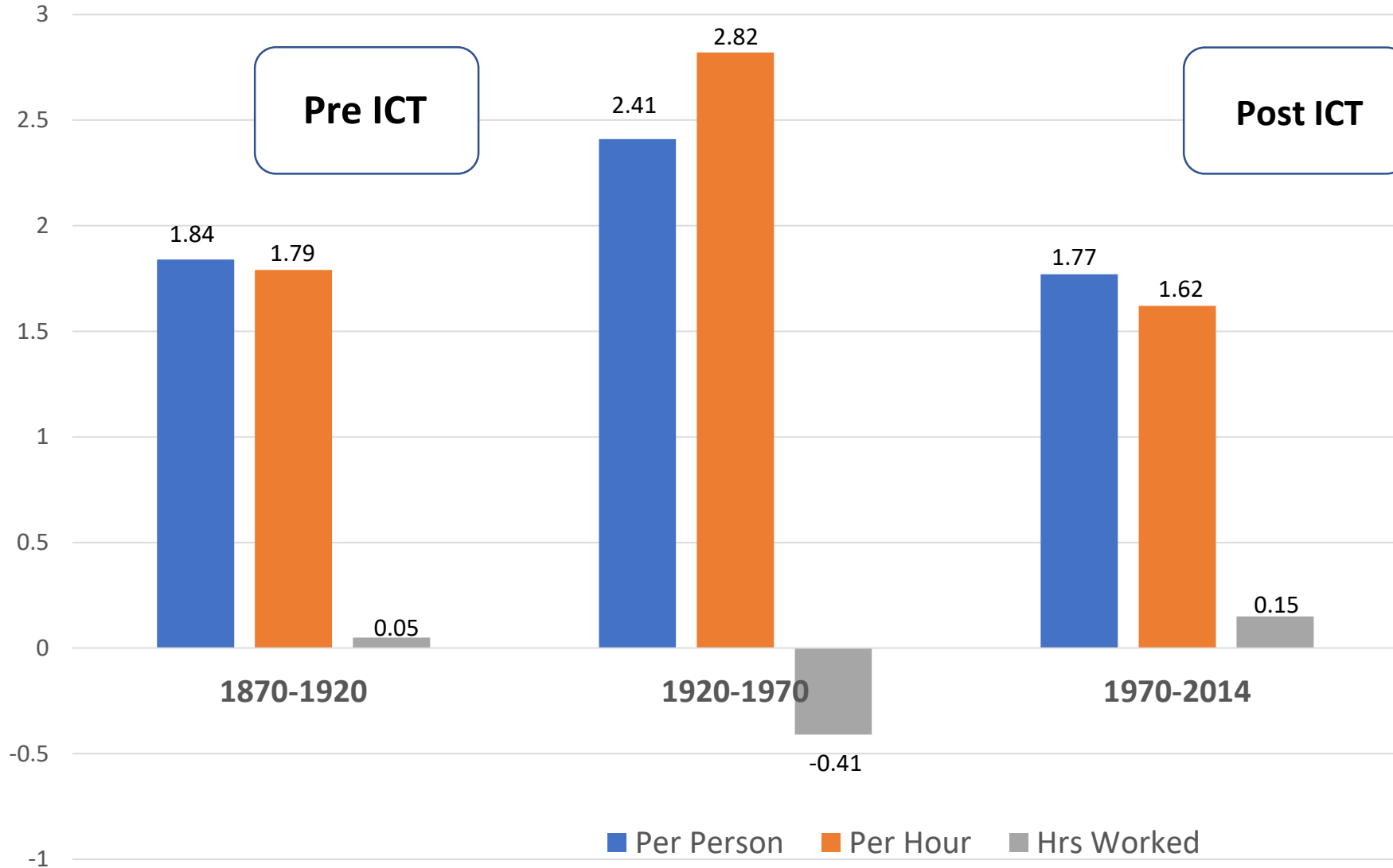


***You can see the Internet everywhere  
but in the productivity statistics***



# What Happened to American Productivity?

## Where is Impact of Internet & Technology?



Networks have changed our lives, but...

“Advances since 1970 have tended to be channeled into... entertainment, communications, and the collection and processing of information. *For the rest of what humans care about...progress has slowed down...*”

Internet has been about consumers

- Finding Things
- Delivering Video

# SHE'S IN OR-BRIT



She's a star... Helen, ringed, boards the Soviet craft last night

## Girl from Mars is our first astronaut

**BRAVE** Helen Sharman was Sheffield lass will spend eight days on the Mir space station. She won her place on the mission in a radio contest which 13,000 people entered — and spent 18 months training for it at Star City in the Soviet Union. The first non-American or Soviet spacewoman in history. The *Wish You Were Mir* — Pages 6&7

# World Wide What?

## COMPUTER 'WEB' TO CHANGE BILLIONS OF LIVES (YEAH, RIGHT)

**A BRITISH computer geek's brain-wave could be one of the greatest inventions ever, it was claimed last night.** Tim Berners-Lee, 35, has enabled computer users to see documents and pictures made available by others in "cyberspace". He uses the "Internet" system, which so far only links academics but could eventually include anyone. Berners-Lee, who works at a nuclear research base near Geneva, calls his idea the "World Wide Web". One scientist said: "This could be huge. The idea of strangers worldwide sharing ideas instantly is mind-boggling." But another sneered: "They said Sinclair's C5 would change the world. Now you'd struggle to give one away." *Riddle of 'E' mail* — Page 8



Web feat... Berners-Lee

# World Wide Web Set Internet Free - 1990

**And it did!**

Web 1.0 – Find and display things on the Internet making Net useful to everyone

Web 2.0 – Democratized Web making it easy to post content (2002)

Here we lived for the last decade-and-a-half



Edge services "would like to use my pipes for free, but it ain't going to happen"

# Web 1.0 Web 2.0 Web 3.0

## Delivery of *Intelligence*

Not just documents and video

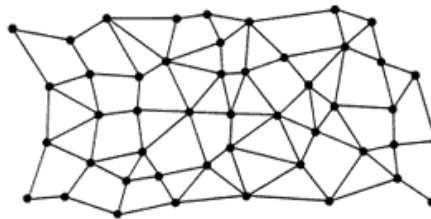
**21<sup>st</sup> Century  
Productivity**

## Semantic Web

Exchange of data describing relationships between information-generating objects

### Connecting Intelligence

- \* Data
- \* Apps
- \* Ideas
- \* People



Internet of Things

# Web 1.0 Web 2.0 Web 3.0

## New Business Model for Web

*USING* information vs. *PUSHING* information

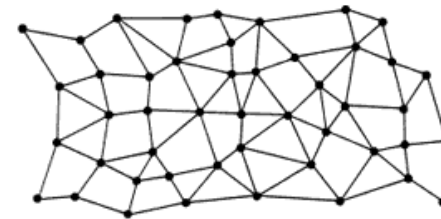
From *PUSH* to *PULL economics*

## Value Creation

Information from  $N + 1$  connections

From TRANSPORTATION to ORCHESTRATION

Productivity from connecting everything and collecting and relating the information results



# Web 1.0 Web 2.0 Web 3.0

Counter-party Trust

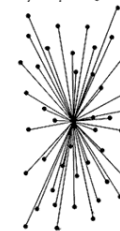
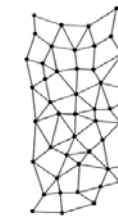
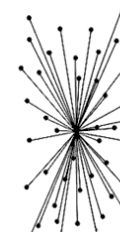
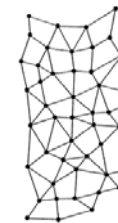
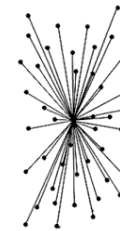
Identify and Validate Every Device

Analytic Capability

Making Use of all the Data

Security

Eliminate Network & Data Vulnerability



Blockchain

AI and Machine Learning

Cyber Security

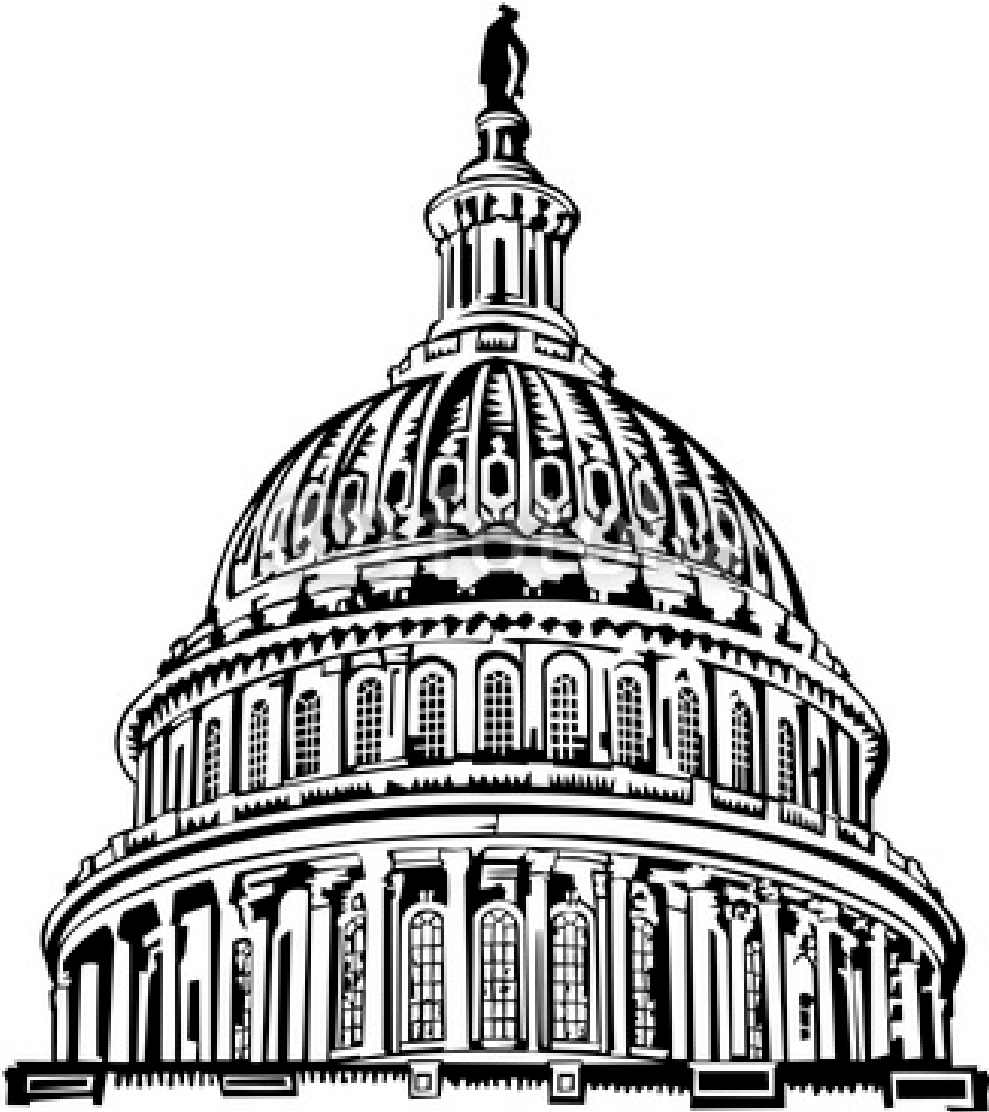


# Policy Issues

Controlling *largely uncompetitive* Internet pathways is far more than a consumer issue – means controlling future of economic growth

- ★ Controlling access to videos/shopping vs. controlling exchange of data, ideas & apps between devices (ultimately people)
- ★ Spying on consumer's info going across network vs. grabbing specifically-identifiable info on its way to be combined with other data to create new asset
- ★ Bad enough Russia hacks networks to influence democracy...need high level of security to protect flow of semantic information

Threats to openness, privacy and security are threats to our future



# THE GOOD NEWS

## **Economics of Technology**

“In 2015/16 we’re going to deploy about 250% of the capacity that we did in 2013/14, and we’re going to do it for 75% of the cost”

Bill Smith, AT&T President Network Operations

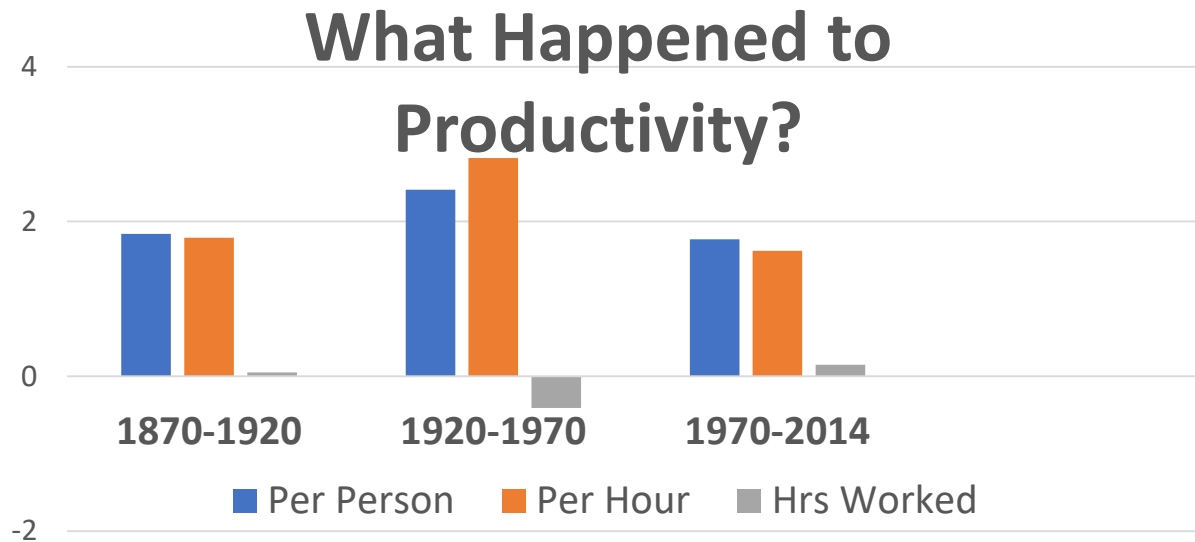
## **Consistent Investment**

“As we look out over the next 3 years, we anticipate that our capital spending will continue to run around 15% of our revenues”

AT&T Letter to Shareholders for 2016

**An ongoing commitment of investment dollars is being put to work with new technology so that fewer dollars deliver more connectivity**

# THE GOOD NEWS



## New Paradigm is Working

- Network investment stable as percent of revenue (as costs decline)
- Fiber to premises up
- ISP revenue – and stock prices – up
- Consumers, competition and the future is protected