

Less reading now

More guest speakers

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Thur; Guest projects

Learn how to write

How to construct a consistent argument

Learned good prof in humanities

1st Paper is 1st try

- can you weave arguments together

- not a mess

Wants to show

Science writing

A few ways to show how to deal w/ mass of data

- how to prioritize

- lots of tools

- can map or otherwise make sense of stuff

2-3 people in 7 groups work on tools

②  
You try things  
and it might not work  
Need to adjust parameters

Network  
Semantic  
Statistical ) analysis

## Issue Crawler

issuecrawler.net

kinda slow - since cloud

Seed websites

then will crawl web

Can do ~~from~~ linked or cited ?

- only show ones cited 2x

Meet as specialists

## Digital Methods

- various tools

movies. issuecrawler.net

③

Colink - ~~Web~~ link ~~tree~~ to and from

tools.issuecrawler.net

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How does a local question become amplified by press

Becomes global issue

STS, 011  
Recitation

10/13

Website should not just be paper

- interactive

Zeega is a platform to build media heavy sites

- Harvard GS Design

- Mitex, zeega.org

- link to it from wordpress

- build fancy presentations

- map overview of presentation

- like a slideshow

- sensate project.com shows examples

- Mapping Main Street.com

- text editor sucks

- upload stuff to flickr + import

- has chrome extension

- can ~~build~~ link to any node in cluster

STSON

10/11

Net Neutrality

1st Meeting

- Who / what
- not all that much
- wants us to read a lot
  - so most project is being able to talk, not share
- 1 para on each player
- 1 para on each issue

Want How to split:

- functional jobs
- web builder
  - issue crawler/mapping tools
  - manager
  - editor/

Starting pts

- as technical
- eff: one party

2

Could interview people

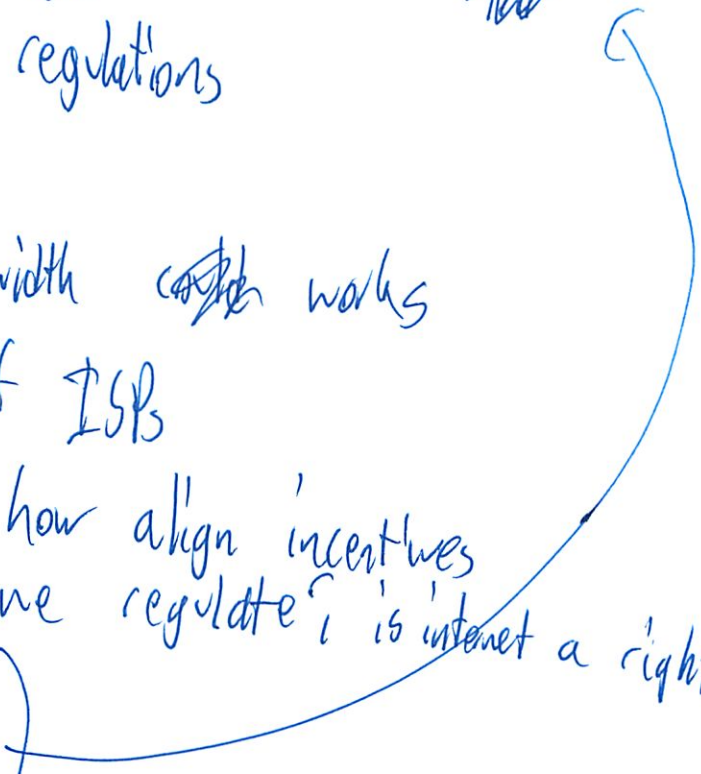
- fcc docket

- Wikipedia has lots of interlinking ~~links~~ links

- Comcast blaming of BT
- Verizon Proposal Google Proposal
- FCC issue of regulations

- Net Neutrality/CDU dispute  
Ara

- tech: how bandwidth ~~works~~ works
- biz models of ISPs
- legal / policy: how align incentives
- politics: should we regulate? is internet a right?
- transit / peering
- managed services
- mobile
- timeline



(3)

## Scope

- can we decide now?
- ask prof
- building a map of sub issues
  - ? go in depth on 1 or broad
- BFS this

## Who

Tech + Issue Crawler<sup>web</sup> - Alex  
Politics + Editor - Thoan  
Policy + Manager - Plaz  
Biz + Web Master<sup>i</sup> - Roshon

Do we issue groups ourselves

- But can issue crawler

## Timeline

- ask prof
- 30 min presentation

## Group Meeting

- Roshan - ~~Policy~~ <sup>Politics</sup> + ~~Editing~~ Editing  
↳ like ocean
- Tharun - Policy + Web
- Plaz - Biz model + Manager
- Alex Tech + Issue Crawler

### - International:

- China censorship:
- Internet control
- too far at

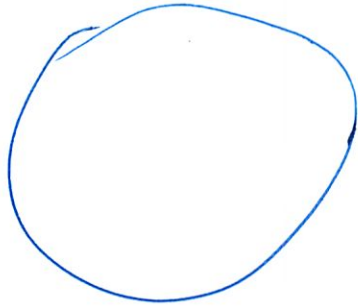
By Mon some research



Draft of Map

10/13

Chinese  
Sensor



Peering

STS, 011

10/17

Net Neutrality

Post meeting

Don't <sup>start</sup> ~~be~~ on wrong track

Have too much data

How long <sup>since was</sup> object of concern?

Interested in neutrality in general  
W-grams

- word freq from books

- see from when it started

History of contentious opinions

List of actors

Rate ~~can~~ actors by powerful

- what are their interests

Fracking one is best to look at

- lots of work behind the scenes

Lazy: just put items on web

- internal link

2

Will give examples of papers too

- will be start of your website

- how do you engage docs that you find

- people of evidence

Find a few documents

- really dissect it (thru)

Or a few that are related

- analyze that

- where guy writes from

- resources into argument

- friends + enemies

Figure out perimeter of controversy

What are the main questions

People disagree → frame controversy differently

their interests

Find birth date

Time line

3

Yucca mt did work freq

Viz is not great

(wants to hire us)

Engage other povs + write about

Need to do a lot of reading

- now

Meet every week Mon at 1 - koch

Then meet w/ him every other week

paper

Interested in 'improvement curve

2nd will be diff: smaller scope

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After

- ~~can~~ how divide website:

- Meeting time

# Net Neutrality Research

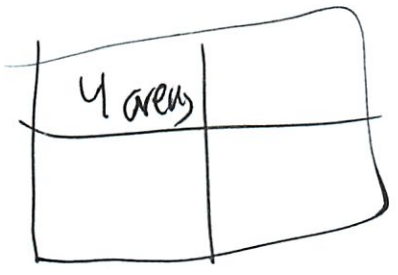
How to research?

Around our 4 core areas

Or various things  
↳ mind map

Net ~~ne~~ Neutrality ↳ color

def from wikipedia  
first line



text w/  
colors

Map of state

? create site - no do later

~~It~~ ~~is~~ We could do something grand  
- nice videos, etc - but no time

2

John Hodgeman video

lots of stuff from 2006

- series of types

Blocking competitors

Charging more ← a common issue

Deep Packet inspection

Quality of Services

Managed services - free vs pay  
- health care vs Im

Tim Wu

Content vs network advantage

Ding

Charging both sides

FCC Internet policy statement

- NCTA wants to adopt

③

2008 700 Mhz sale

10/09 Notice of proposed rulemaking

Reclassifying broadband

12/21/20 more rules

FCC sue

Long history: before internet

8/2010 Google Verizon @ wireless opt at  
- phones - call anyone

Phone: had common carriage

No gatekeepers to the internet

Small biz + individual

Freedom of speech

Decline of international standard authority

End to end principal

↳ dumb net work

4

## Opponents

Right wing orgs + telcos

It "flees off the internet"

No rules or just?

Or actually bad?

Property rights

↓ coming to invest in networks

↳ study their profits

"freeloading" or are cost paying  
- peering?

Bandwidth limits?

Can customers switch if don't like ISPs?

↳ multi modal

- access over their wires

---

↓ difficult to understand exactly where edge





6

Apps have diff requirements

↳ can they be neutral

Relationship to monopoly laws

Common Carrier

Blocking ports for security

Traffic shaping / bandwidth throttling

Just over provision

Tiered pricing

So what is next for us to research

How do we want to do this?

- put together nice proposal online

long paper Buzzwords Playes Timeline

Read up more on FCC status

6

## NN in VS WP:

2006 big issue

5 bills in congress

- prevent variable pricing on QoS

1994 Al Gore talked about

~~PSTN~~ are common carriers  
PSTN

Cable modems are info service - not tel co service

Tired internet:

Must carry precedent

SBC chief says need to pay

Telco + Operates act

FTC don't do nothing

Nice video on Open internet gov

- No pay for priority

Re-read your first paper

2nd paper introduced Thur

Can read online on what a sci paper is

↳ Sci in Action Chap 1

Care about learning curve on paper

- read the comments

2nd paper more directed

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## Ryan Shapiro Human Relationships w/ Other Animals

- was supposed to read something 1st
- grad student in STS
- animal research
- antiquity: Romans + Greeks
  - no <sup>animals</sup> rational soul
  - so didn't object
  - prisoners too
  - Galen trained people to experiment on animals
  - animals expressed pain

②

# Christianity

- new doctrine human exceptionalism
- immortal soul
- any thoughts about animal cruelty was centered around human's hardening their soul by being cruel
- general decline of experimental science

# Middle Ages

- interested in human body
- dug up old bodies

# 16th century

- large experiments in front of large audience
- dogs show suffering - maternal instinct

# 17th Century

- systematic practice back in Italy
- God does not usually perform miracles
- so can see what usually does
- ~~learn~~ discovered circulation
- mind-body dualism  
↳ bodies just machines

③

But

Only humans had right soul

- only humans have reason, since can speak
- can't speak, so don't know god
- animal ~~cries~~ cries were just chimes of a clock

18th century

- origins of modern concerns
- still kinda about God
- 4 stages of ~~crit~~ critical
- still about people

Bentham

- Animals ~~are~~ were property
- Challenged Descartes <sup>- kinda</sup> - animals did suffer

John Oswald

- people should be nice to animal
- first animal rights

1st few laws on animal rights

- failed
- connected w/ other social goals
  - slavery
  - child labor

9

Industrialization has a lot to do

- people saw more animals being brought to slaughterhouse
- people less afraid of nature
- it had been tamed
- protect or value nature

First anti cruelty bill

SPCA

- now RSPCA

- moderate

Radical members split off

Start in US after civil war

But Expansion of uses for animals

1860s-70s Animal experimentation becomes systematic

- self regulation argument - scientists wouldn't abuse

Start of anti vivisection societies

5

RSPCA more interested in preventing lower class abuse

Vegeterians more radical

Dogs + Cats loyal members of ~~human~~ families

Henry Salt

- Gandhi read it - why he was vegeterian
- it sounds very current

Start of professional animal experimentation groups

WW1 ~~there~~ destroyed anti-vivisection groups

~~There~~ Very strong after WW2

Andrew Ivy ran pro-vivisection group

So more broader groups

60s thought these 50s groups too liberal

Peter Singer

- now a lot of people read
- rejected human exceptionalism

Speciesism

- difference in thought is degree not thought
- under estimating similarities



6  
Consent is key

- didn't like experiments on prisoners
- also most people who agree to experiment are poor → economic coercion

This was big shift

- before was a wealthy pursuit
- and ~~pro~~ on right
- scientists were messing up social order

Henry Spira

- applied his decades of organizing experience

Moral - before # of victories : 0

- shut down first experiment
- came from other liberal causes

Movement now about people actually

Direct action new

- wanted to ↓ suffering
- not just stopping humans from being cruel

⑦

Undercover investigations - get a job or take tapes

Some complaints on scientific validity

- but most people concerned about cruelty

Undercover videos worked

- showed animals were suffering

- eroded public confidence

Directly intervening

- hunt saboteurs

Often ~~the~~ successful tactics are made illegal

ALF - Ronnie Lee

- liberated animals - not really seen as terrorists

- plus start burning stuff down

- got FBI attention

- first view of terrorism

After 9/11 - new strategy

- open rescue

- no more hiding w/ ski masks

8 Held press releases announcing cease  
Much more positive media attention

No one prosecuted

Factory farmers said not my farm

Except him - he was prosecuted

Beat the charges

No one really does it anymore

90s - Big shift from vivisection to factory farms  
- larger #s in factory farm

(Video of factory farms)

Male chicks simply killed 1st day  
etc

Ocean trawlers - ~~at~~

Farm raised ~~rooms~~ fish

This stuff is not illegal

Federal Animal Welfare Act

- ~~removes~~ exempts animals raised for food

State anticruelty code

- standard Industry Practice

9

It can be a standard industry practice  
even if only 1 does it

Other stuff marketing

Free range labeling not regulated  
- small little patch outside

Organic - is what they are fed  
- not practices

Famer in class - you could do it different ways

I've worked w/ animals

Misleading - since kill animals wrong

could <sup>kill</sup> animals properly

People ate less meat before

Q What do you do w/ liberated animals?

- can't release - would not make it

- have predator proof cages

- more about making pt

10

USDA dual mission

- promote + regulate

Now environmental concerns too

- animals is leading cause of greenhouse gas

Whats a right way?

What's ~~an~~ a standard animal activists

At MIT too

- less overtly horrific
- but still imprisoning w/o consent

I like the idea that there is a point here -

Now a few remarks: since when is GDP a good "standard of living" indicator? what is "the people"? This is only one of many examples where you play with very general notions and where you adopt a very

Michael Plasmeier

# Mart for Science: Can't Avoid It; Can't Beat It

"pragmatic" (what can we do about it?)  
- yes very hardwired

B+  
he said it was close to A-

By reading *Science-Mart*<sup>1</sup> by Phillip Mirowski one would think that the university of 2011 is a

WP: Pragmatism

"bad" place to do science. I do not think this is the case; there are plenty of positive things about the university of 2011. In addition, there are more fundamental questions such as, what are the goals of universities? What are the alternatives for the research currently being done and how to fund it? The world's resources are scarce - money needs to be allocated somehow. We need to look at the modern university not backwards from what has changed, but at what it is and what's good about this new model.

philosophical tradition linking practice + theory

Theory is extracted from practice

What is the goal of science? A disinterested exploration down whatever path looks interesting?

avoid abstractions

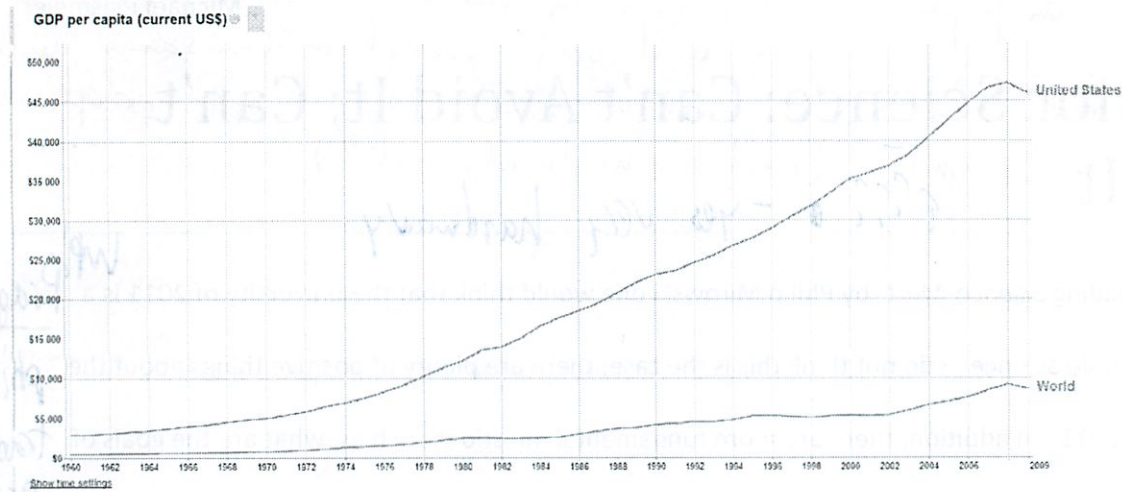
Or a tool that increases standards of living worldwide? Prof. Mirowski thumbs his nose at the new "neoliberal" order, but how has the new model changed people's standards of living? If we look at standards of living, they have certainly increased worldwide, and especially in the United States.<sup>2</sup>

high value on science

?  
seems like I am often opposite  
Is tied to Latour

<sup>1</sup> Mirowski, Phillip. *Science-Mart: Privatizing American Science*. Harvard University Press. 2011.

<sup>2</sup> From Google Public Data. Powered by World Bank, World Development Indicators  
[http://www.google.com/publicdata/explore?ds=d5bncppjof8f9\\_&ctype=l&strail=false&nseim=h&met\\_y=ny\\_gdp\\_pcap\\_cd&scale\\_y=lin&ind\\_y=false&rdim=country&idim=country:USA&ifdim=country&tdim=true&tstart=-291672000000&tend=1286164800000&hl=en&dl=en&uniSize=0.035&iconSize=0.5&icfg](http://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&ctype=l&strail=false&nseim=h&met_y=ny_gdp_pcap_cd&scale_y=lin&ind_y=false&rdim=country&idim=country:USA&ifdim=country&tdim=true&tstart=-291672000000&tend=1286164800000&hl=en&dl=en&uniSize=0.035&iconSize=0.5&icfg) Reterived 2011-10-3



From what perspective?  
return on investment?  
not sure....

Now it is very hard to say what benefits came from universities. Our universities are becoming better at taking research and translating it out into the world. While research might be slightly more encumbered by IP claims, the overall effect seems to lead to a positive benefit to the world. Prof.

Mirowski does not attempt to answer this; he merely looks at published papers, which I believe is a very limited way to look at the output of science, especially if one believes that the goal of science is to lead to improvements in life.

MIT occasionally does studies about how it has innovation. One study by Edward Roberts, a professor of Management at MIT, found 25,000 MIT alumni-founded companies worldwide, which were still in business.<sup>3</sup> This does not count the companies that merely work with current MIT faculty and students.

In addition, I think getting students to think about their work's application real world is a positive thing. MIT hosts many events during the year to encourage students to be interested in

<sup>3</sup> Roberts, Edward B. and Charles Eesley. Entrepreneurial Impact: The Role of MIT. MIT. 2009-02.

<http://entrepreneurship.mit.edu/article/entrepreneurial-impact-role-mit>

[http://entrepreneurship.mit.edu/sites/default/files/files/Entrepreneurial\\_Impact\\_The\\_Role\\_of\\_MIT.pdf](http://entrepreneurship.mit.edu/sites/default/files/files/Entrepreneurial_Impact_The_Role_of_MIT.pdf) Retrieved 2011-10-4

entrepreneurship.<sup>4</sup> Many of these students go into business with technology from the lab they were working in. As Prof. Mirowski pointed out much of this research was funded by the government. But the government does not always have a use for the technology, so it allows universities to license it to people who can commercialize it. I believe that this pipeline has never been as primed to produce tangible benefits for people as today. *the same as above.*

Now it is also important to realize that a product is not ready to go when it leaves the university lab. A research paper is a long way from a product. Almost all biomedical companies have labs on their own where they do more of the development work. Corporations know that universities excel at basic research, not product development, because of their openness and dedication to basic research. That is why they rely on universities to do the basic research.

What would science look like today if corporations did not step in to fill the funding gap created by the drawdown of the cold war? Instead of expanding, universities would have shrunk, causing them to have to shrink all programs, including humanities programs. In addition, where would this science occur if it was not occurring in a university? In a private lab? As Prof. Mirowski points out himself, IP rules for corporations are even stricter than at today's universities. At universities, even with restrictive research contracts, students still get exposure to the cutting edge of their field. Faculty members and researchers can still commingle, even if they are unwilling to share exact ideas. At the MIT Media Lab, a largely corporate funded lab, they bill communication with other sponsors as one of the advantages of the lab.<sup>5</sup> Instead of shrinking, universities have been expanding. In the past ten years MIT has added a new.<sup>6</sup>

<sup>4</sup> MIT News Office. "Classes and academic research help launch companies" MIT. 2011-10-3. <http://web.mit.edu/newsoffice/2011/entrepreneurship-academic-1003.html> Retrieved 2011-10-4

<sup>5</sup> Personal conversation.

<sup>6</sup> MIT Department of Facilities "Completed Projects". MIT. <http://web.mit.edu/facilities/construction/completed/completed.html> Retrieved 2011-10-3.



- Biology lab
- Brain and Cognitive Science laboratories
- Business school expansion
- Media Lab expansion
- Two Undergraduate dormitories
- Three graduate dormitories
- Athletic Center expansion

Science is more expensive today than at every point in history.<sup>7</sup> As science grows more advanced, it needs new labs and equipment. In particular, as science chases more and more discoveries, those discovers require more and more specialized equipment. Costs also rise from the new layers of accountability and transparency required this day and age. The world is more complex. As machines do more of the actual work, people are left to manage the context of their work. As professors become responsible for more and more, they delegate more to hired assistants. Today's science lab leaders act more like middle managers, leading and overseeing their labs. In addition, science is a well-paying job, and it comes with an array of benefits, including health care. The cost of health care goes up around 10% a year. This needs to be paid for somehow.

Finally, with the international growth of science, sponsors have a greater of choice of where they want to conduct research. As with anything, the more money that gets poured into science, the more startups are starting to want to grab a piece of the pie. Many countries also realize the benefits that higher education has on their economies and are rushing to set up systems of their own. The United Arab Emirates, Singapore, and Chile, all have visited MIT, and two of the three have agreements in place

<sup>7</sup> Ehrenberg, Ronald G., Michael J. Rizzo, and George H. Jakubson. Who Bears the Growing Cost of Science at Universities? National Bureau of Economic Research. 2003-04. <http://www.nber.org/papers/w9627.pdf>  
<http://ideas.repec.org/p/nbr/nberwo/9627.html> Retrieved 2011-10-3

*I would question that? AS with is conducted in more artificial environments, it gets less complex.*

*↳ cost or price? he never crosses his x and does double i*

where MIT helps to set up their universities.<sup>8,9,10</sup> The world has scarce resources, and a growing number of claims on those resources.

Prof. Mirowski has never proposed a better way of allocating money to science than our current model. Any model will have flaws. How do you try and predict which research will pay off? How do you bring research to the commercial arena while protecting the openness of universities? These are questions we will continue to answer in the future, but I do not believe the situation is as dire as Prof. Mirowski makes it seem. If we believe that the goal of science is to produce tangible benefits for humanity, then it appears the new form of university is more successful than ever. There seems little alternative or going back to the old model, so the new way of science seems to be the best we have. Modern universities are not all that “bad.”

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<sup>8</sup> SMART program <http://smart.mit.edu> Retrieved 2011-10-4

<sup>9</sup> Masdar Institute <http://www.masdar.ac.ae> Retrieved 2011-10-4

<sup>10</sup> Gillooly, Patrick. MIT News Office. “Chilean president visits MIT”. MIT. 2011-9-26.  
<http://web.mit.edu/newsoffice/2011/chilean-president-visit.html> Retrieved 2011-10-4

5/15.011  
Recitation

10/20

This is not a puzzle finding class

Controversy are polymorphous

- must come up w/ something new
- bend it to a new message
- way to describe is open ended

Your writing  
~~It~~ might look nice

- but it is empty

- ~~is~~ unstructured

- also needs content + articulation

- no vague claims

~~We~~ shall see the

We shall see a big picture

- Later → how to build a strong argument

- hard to attack

Who is the we?

- 1 community

- diff communities?

2

As citizens - what are our rights?

But each of us has diff exposure to risks

- people are not the same

Using Science as signifier is misleading

"Good science" is a joke

- reasonable people disagree on it

## Tuesday Lecture

Use of video

What you show is a big thing

War of images

Like not showing 9/11 coffins

Tom will talk about later:

- can we convey it all w/ figures + #s

- how can we rely on an image?

- just equations, no pictures

3

Is it fair to show an animal suffering?

His presentation was 1 sided?

- ~~what~~ what were the benefits from done

What are regs for animals in sci?

- his position was extreme
- so I was even more extreme

Sampling is biased

2 extremes

factory farm meat

eat vegan

No discussion how video practices extreme

Can't be too radical

- look crazy to people

Very little actual current info

- no logic or ~~other~~ reason
- didn't explain much

How do factory farmers live w/ themselves?

Studies in Europe

Hard to torture people too

- when army comes back to US after war
- People have lots of issues

Who deals w/ that?

Whats the consequence of that?

Appeal to 'irrational' side

- easier
- strong emotion

Does Torture work?

- w/ that pain are not logical

What are the logical arguments for being vegan?

- sustainability
- employment in slaughter houses

But need to appeal to our sense of what type of world we want

5

Suffering + Pain

L do animals experience

~~the~~ This project: High Frequency Trading

We read 2 position/argument papers

L bringing science into it

~~the~~ Net neutrality: Should submit a white paper  
- strong position

Read other group papers

Rhetoric

How counter-factuals are used  
- if ... then ...

Open up controversy

Flaw other party's assumptions are wrong

They haven't looked at everything

# Net Neutrality Exp

10/24

Little data on tech

- how internet works
- how peering/transit
- can it be overloaded
- how would ~~then~~ prioritization work?
  - how to tell content apart?
- QoS features
- Deep Packet Inspection
- Debunk BS - analyze their proposal/  
scability
- Structure
  - sands goal



STS, 011  
Lecture

'10/25

Paper due Tue

↳ 1, 2, or 3 documents from your case to analyze

- 4 pgs
  - dissect articles + documents
  - resources mobilized
  - how they create friends + enemies
  - what claims are
  - Thrur: show what he expects
- 

Today: <sup>ISP</sup> Shaya worked on BU lab  
Shahriar Khan <sup>Biohazard</sup>  
- maze of expertise  
- did this class a few years ago

Question

1. What is science?
2. What makes a problem
3. How and why do ideas slip into each other
4. ~~What~~ <sup>what</sup> makes why are you interested in certain problems

②

## Courts

Are judges scientists?

" lawyers " ?

Marbury v Madison - started judicial review

Mandamus - Command

↳ Can compel gov to take action

Courts can only act if

- arbitrary and capricious

- abuse of discretion

Environmental laws

NEPA

MEPA

Environmental Impact Statement

How do you decide if it is good

Anthrax case

US became interested in biohazards

- wanted to keep Soviet scientists employed

- al Qaeda started becoming interested

3

Need for bio-security interested

- want to keep people interested in selling it

So \$ 25 billion

- lots of gov labs

- to existing institutions

- Some \$ for any purpose, some \$ for labs

Howard

PBL

- ~~5~~ 5 labs → 15 labs in 6 years

Accidents happen all the time

↳ including at MIT

Biohazard labs levels 1-4

- are levels kinda arbitrary

Would we want one next door?

But labs are pretty over engineered

Spills you can't see

Lab protocols

Percentages (Risk)

4

US News ranking

- Criticized by the FEE

BU Medical Center

- Revitalize area
- BU trying to ↑ ranking

BU wanted to get the \$

- got the land for free

Lab was not in <sup>an</sup> ~~the~~ EIS  
original

Statements of why labs different

- President for prestige
- Lab director for research
- Politicians liked job ability

People protested as soon as Univ applied

- not just in Boston
- UC Davis
- etc. etc. ?
- many withdrew apps
- lower tier univs wanted

5

GAO also wanted to know why gov didn't build themselves

- wanted to get them at
- privatization
- but gov built 2

In minority area

- environmental injustice
- cheap land

People calling it differently

- bio safety vs bio terror

Pros

Construction Lobby

Health Care Lobby

Cons

Some Harvard MIT scientists against

Local residents

Various liberal groups

6  
Had Public hearings

- contentious

Then lawsuits

- both federal + state courts

State said EIS was done wrong

Read amicus briefs

Conflicts

Public health vs environmental protection

Remote vs likely contingencies

Deference vs active judicial review

Federal vs state regulation

Risk calculations

People w/ high status arguing w/ other people  
w/ high status

Can we always be secure

National Research Council

- From national academies

- like consultants for gov

7

# Experts disagreeing

BU making engineering arguments

Other people dumb - not scientists

Residents more about ~~ethic~~ redonkic

Gets caught up in 'imaginations'

Reading: Becki modern society has new risks

nature under control

risk distributed to everyone

People calculate risks

Scientists become more and more specialized

How can you know?

- technology needs to tell you

"Reflexive ~~the~~ modernity"

Science doesn't exist by itself, its political

Becki direct risk based on <sup>class</sup> economic

- but scary to affluent as well

8

His ~~own~~ view: tech spiral

- people get into more and more nitpicky science
- we aren't viewing it as politics
- do we want to do this research

Expertise: different types of science being used

- still need a degree to comment

All court cases are 'imagination'

↳ no data

Brexit always filed through experts

- lawyers
- scientists

Court analysis not being sufficiently good

↳ from Harvard scientists

One judge: we can't have concerns about every facility

Expertise is wielded as weapon

No people have the right to talk about an issue



9

What makes an expert an expert?

- PhD
- what is sufficient credentials

Its a political questions

- tricks - like in P-Sets

Still ongoing

Lesson: work w/ community

Risks + MBV Bio lab

- people thought he did good job
- did good background
- non experts' imagination
  - dissecting who did what
- how do people actually create problems?
  - people need to dramatize ~~public~~ problem
  - to get public attention
- Claims often based on more than just facts
- no one would pay attention unless there was a stake
- Latour: science pushes rhetoric to its limits
- km
  - 50s @ Harvard
    - Science is not accumulation
    - is local accumulation
- MIT - refine theories
- problem solving
- normal science

②

Normal science comes to an end w/ anomalies

When anomalies accumulate, whole thing collapses

Disciplines become disrupted

Short term: looks like normal science

Most interesting: scientific revolution

Others: in reality much more complicated

What's rhetoric?

How does Latour describe rhetoric

- Do you care about credibility when you read?

Modalities

- relative positionings of conclusions

Latour's Scientific article is a machine of war

Must convince reader

Reader has a lot of ~~skill~~ resources

- can ask to see data, visit lab

Alone when reading article

- must accept solely from written

3

Modalities tie the 2 pieces

People don't visit lab

Are - when moments of fraud

Readers can attack each word

- Paper must be like a fortress

Pro Lab: Scientists projecting into future

like writing a paper

Writing reasons

Including political answers

Counterfactual

- raise the past

- if 50s no nukes - then tech will be different

- push an alternative

- raise new futures

Stem Cell

- dream about personalized medicine

- bank account of stem cells

(4)

Do away w/ medicine the way we know it

---

## Foal + Water Watch Doc

---

- I thought nice w/ PDF
- other thought it less scientific b/c too polished
- pictures were overly rethoric

- Document is building series of equivlency

- From center of tech i big nets

- Who defines system? → handles matter

- ~~paper~~ paper: what you thought was system - is not the system

NOAA is not enough Foal Crisis  
we will solve it

System <sup>is</sup> actor of salvation

- fish produced by this

5

Attacks every claim

- either directly or makes claim bad

(He has sample paper)

- Need fish to breed fish

- bottom line bad
- fish in/out ratio

- So biz model is bad

- <sup>Nuclear</sup> Catastrophy is not everyday biz
- hard for activists

- But fish in / fish out is easy to say

- No business here

- Move to price of fish
- \$3,000 a fish!

- Downsides of it

- Normally don't see waste in ocean
- Compare to whole city 34 mil people
- directing attention to

⑥

- Use LA; everything a city shouldn't be
- Has you look at production in different ways

### - externalities

- you know it exists
- but don't calculate it
- jesuit way of thinking
  - purposely avoid thinking about something

\* activists trying to reenter externalities to calculation

~~the~~

- then to fish

- Fish can escape
- pokite gene pool

- what stands as a greater good in a document

- ~~the~~ Krugman vs Menken

- have diff goals

- jobs

- reducing deficit

7

- import less
- Things become less + less tangible
- jobs easy to count
- env can't quantify
- food security - when do you quantify?

Using these to grade aquaculture

- Scores poorly
- so don't do

Normative definitions change from article to article

- Sometimes stated up front
- Other times need to read b/w lines

---

This is one model

- can also do other things

Must turn in documents w/ paper

- max 3 documents

Due Tue

- papers must talk w/ each other

Draft emailed Sun @ noon



STSON

10/24

Paper 2 Assignment

Nov 1 - Tue

4 pages double spaced

individual

On controversy

Look at ~ 3-4 articles.

Analyze them

Or do one major articles

---

We could circulate to edit

focus on our core topic

So can put it on the web later

---

Finish by Sun Morning ~~12 noon~~ 12 noon

- circulate then

- post on ~~Google~~ Google docs

## Michael E Plasmeier

---

**From:** Vincent Antonin Lepinay <lepinay@MIT.EDU>  
**Sent:** Thursday, October 27, 2011 11:09 AM  
**To:** Vincent Antonin Lepinay  
**Subject:** [STS.011] an example of a document dissection

**Follow Up Flag:** FollowUp  
**Flag Status:** Flagged

This email is mostly directed to the recitation #1 group as they have read the underlying document found at:

<http://documents.foodandwaterwatch.org/FishyFarms.pdf>

Here is one short possible treatment that focuses on a strategy adopted by the author:

Building a series of equivalences

The FWW document builds a series of equivalences. These are meant to show both the consequences of the factory farms on aspects that are either deliberately neglected by the advocates of the farms or too remote from the system itself (the farm and the fishes trapped there) to feature prominently in what would be a first and preliminary costs/benefits analysis.

From fish to fish

Input/output analysis of the farmed fish is used in this document to show how the human action of fish farmers and their privileging a few fish kinds for their commercial prospect requires to over exploit a much larger amount of fish used to feed the fish in farms. The equivalence built there is X tons of fish needed for Y tons of fish, regardless of what fish. One could easily argue that this equation is misleading to begin with because some fishes are desirable and desired by consumers whereas the other kind - the feeder fish - is of no use to the consumer so that the fish - pellets - fish equation misses that the food chain will always be grotesquely imbalanced if one neglects to mention what is likely to be human consumption (fish) and what is only food for these animals.

Monetary equivalence and the question of profitability This absurd and ironic use of equivalencies extends to the cost of a farmed fish once ready to be consumed, once in the plate so to speak.

"each pound of fish sold in a year by the Atlantic Marine Aquaculture Center, an experimental facility in New Hampshire, cost about \$3,000 in U .S . taxpayer dollars to produce"

From fish to waste

The strategy employed here is one of reversal by which what you thought you understood as a good turns out to be a liability. To action this strategy the authors of the FWW document operate by creating another equivalence, but not one that looks upstream for the amount of fishmeal necessary to raise factory fish but rather downstream towards the amount of waste produced by the farm.

"this volume of production would lead to as much nitrogenous waste as the raw sewage from a city of over 34 million people — nearly nine times the city of Los Angeles" (p.3) Here, the equivalence is stretched towards a comparison, that takes the reader even further away from the system itself - even understood as a larger extended system taking into account the long term and distant consequences that it could have on the environment. The comparison is used to strike the reader by forcing him to figure out what the cost of the system could be. It is also a way of overcoming the intrinsic opacity of the system built underwater and uneasy to access or observe because of his remote location.

From fish to risk

In a move that is fairly common among anti-GMO activists, fish are presented as a threat to the environment. Just like GM soy and corn are attacked for being difficult to control and likely to interbreed with non GMO soy or corn once they are in the field and outside the solid bounds of the laboratory, the FWW document turns the fish into a danger for the biodiversity of oceans. The message becomes the medium - ocean farms - are not suitable for these kinds of experiments precisely because they challenge controls that an enclosed lab like site would allow.

"34.8 million fish could be released into our oceans, where they could compete and interbreed with wild fish. This is over 17 times as many fish as are estimated to escape from salmon farms in the Atlantic Ocean each year"

What is the greater good embedded in the document?

- 1-Jobs
  - 2-Reducing commercial deficit by producing locally.
  - 3-The environment:
  - 4-"Food Security". This is clearly the greater good in that article, more so than the other candidate for the common good - farmed fish as holding the prospect of US commercial deficit reduction. The paper even raises the question of a we/they mode of exploitation - we farm expensive boutique, high-end fish by depleting the ocean of other fish that we disregard as consumers but that other nations use as food for their population. There is a more indirect mode of exploitation that deprives population relying primarily on ocean resources - so a more indirect but not less disturbing exploitation than Darwin's Nightmare's.
- "we may be trading many people's access to a nutrient-rich food source for fewer people's access to more high-value, sushi-grade fish" (p.14)

# Rhetoric

From Wikipedia, the free encyclopedia

**Rhetoric** is the art of discourse, an art that aims to improve the facility of speakers or writers who attempt to inform, persuade, or motivate particular audiences in specific situations.<sup>[1]</sup> As a subject of formal study and a productive civic practice, rhetoric has played a central role in the Western tradition.<sup>[2]</sup> Its best known definition comes from Aristotle, who considers it a counterpart of both logic and politics, and calls it "the faculty of observing in any given case the available means of persuasion."<sup>[3]</sup> Rhetorics typically provide heuristics for understanding, discovering, and developing arguments for particular situations, such as Aristotle's three persuasive audience appeals, logos, pathos, and ethos. The five canons of rhetoric, which trace the traditional tasks in designing a persuasive speech, were first codified in classical Rome, invention, arrangement, style, memory, and delivery. Along with grammar and logic, rhetoric is one of the three ancient arts of discourse. From ancient Greece to the late 19th Century, it was a central part of Western education, filling the need to train public speakers and writers to move audiences to action with arguments.<sup>[4]</sup> The word is derived from the Greek ῥητορικός (*rhētorikós*), "oratorical",<sup>[5]</sup> from ῥήτωρ (*rhētōr*), "public speaker",<sup>[6]</sup> related to ῥήμα (*rhēma*), "that which is said or spoken, word, saying",<sup>[7]</sup> and ultimately derived from the verb ἐρῶ (*erō*), "to speak, say".<sup>[8]</sup>



Painting depicting a lecture in a knight academy, painted by Pieter Isaacsz or Reinhold Tilm for Rosenborg Castle as part of a series of seven paintings depicting the seven independent arts. This painting illustrates rhetorics

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## Uses of rhetoric

### The scope of rhetoric

Scholars have debated the scope of rhetoric since ancient times. Although some have limited rhetoric to the specific realm of political discourse, many modern scholars liberate it to encompass every aspect of culture. Contemporary studies of rhetoric address a more diverse range of domains than was the case in ancient times. While classical rhetoric trained speakers to be effective persuaders in public forums and institutions like courtrooms and assemblies, contemporary rhetoric investigates human discourse writ large. Rhetoricians have studied the discourses of a wide variety of domains, including the natural and social sciences, fine art, religion, journalism, digital media, fiction, history, cartography, and architecture, along with the more traditional domains of politics and the law.<sup>[9]</sup> Public relations, lobbying, law, marketing, professional and technical writing, and advertising are modern professions that employ rhetorical practitioners.

Because the ancient Greeks highly valued public political participation, rhetoric emerged as a crucial tool to influence politics. Consequently, rhetoric remains associated with its political origins. However, even the original instructors of Western speech—the Sophists—disputed this limited view of rhetoric. According to the Sophists, such as Gorgias, a successful rhetorician could speak convincingly on any topic, regardless of his experience in that field. This method suggested rhetoric could be a means of communicating any expertise, not just politics. In his *Encomium to Helen*, Gorgias even applied rhetoric to fiction by seeking for his own pleasure to prove the blamelessness of the mythical Helen of Troy in starting the Trojan War.<sup>[10]</sup>

Looking to another key rhetorical theorist, Plato defined the scope of rhetoric according to his negative opinions of the art. He criticized the Sophists for using rhetoric as a means of deceit instead of discovering truth. In “Gorgias,” one of his Socratic Dialogues, Plato defines rhetoric as the persuasion of ignorant masses within the courts and assemblies.<sup>[11]</sup> Rhetoric, in Plato’s opinion, is merely a form of flattery and functions similarly to cookery, which masks the undesirability of unhealthy food by making it taste good. Thus, Plato considered any speech of lengthy prose aimed at flattery as within the scope of rhetoric.

Aristotle both redeemed rhetoric from his teacher and narrowed its focus by defining three genres of rhetoric—deliberative, forensic or judicial, and epideictic.<sup>[12]</sup> Yet, even as he provided order to existing rhetorical theories, Aristotle extended the definition of rhetoric, calling it the ability to identify the appropriate means of persuasion in a given situation, thereby making rhetoric applicable to all fields, not just politics. When one considers that rhetoric included torture (it IS persuasive, and was accepted in forensics in the West until very recently), it is clear that rhetoric cannot be viewed only in academic terms. However, the enthymeme based upon logic (especially, based upon the syllogism) was viewed as the basis of rhetoric. However, since the time of Aristotle, logic has also changed, for example, Modal logic has undergone a major development which also modifies rhetoric.<sup>[13]</sup> Yet, Aristotle also outlined generic constraints that focused the rhetorical art squarely within the domain of public political practice. He restricted rhetoric to the domain of the contingent or probable: those matters that admit

multiple legitimate opinions or arguments.

The contemporary neo-Aristotelian and neo-Sophistic positions on rhetoric mirror the division between the Sophists and Aristotle. Neo-Aristotelians generally study rhetoric as political discourse, while the neo-Sophistic view contends that rhetoric cannot be so limited. Rhetorical scholar Michael Leff characterizes the conflict between these positions as viewing rhetoric as a "thing contained" versus a "container." The neo-Aristotelian view threatens the study of rhetoric by restraining it to such a limited field, ignoring many critical applications of rhetorical theory, criticism, and practice. Simultaneously, the neo-Sophists threaten to expand rhetoric beyond a point of coherent theoretical value.

Over the past century, people studying rhetoric have tended to enlarge its object domain beyond speech texts. Kenneth Burke asserted humans use rhetoric to resolve conflicts by identifying shared characteristics and interests in symbols. By nature, humans engage in identification, either to identify themselves or another individual with a group. This definition of rhetoric as identification broadened the scope from strategic and overt political persuasion to the more implicit tactics of identification found in an immense range of sources.<sup>[14]</sup>

Among the many scholars who have since pursued Burke's line of thought, James Boyd White sees rhetoric as a broader domain of social experience in his notion of constitutive rhetoric. Influenced by theories of social construction, White argues that culture is "reconstituted" through language. Just as language influences people, people influence language. Language is socially constructed, and depends on the meanings people attach to it. Because language is not rigid and changes depending on the situation, the very usage of language is rhetorical. An author, White would say, is always trying to construct a new world and persuading his or her readers to share that world within the text.<sup>[15]</sup>

Individuals engage in the rhetorical process anytime they speak or produce meaning. Even in the field of science, the practices of which were once viewed as being merely the objective testing and reporting of knowledge, scientists must persuade their audience to accept their findings by sufficiently demonstrating that their study or experiment was conducted reliably and resulted in sufficient evidence to support their conclusions.

The vast scope of rhetoric is difficult to define; however, political discourse remains, in many ways, the paradigmatic example for studying and theorizing specific techniques and conceptions of persuasion, considered by many a synonym for "rhetoric."<sup>[16]</sup>

## Rhetoric as a civic art

Throughout European History, rhetoric has concerned itself with persuasion in public and political settings such as assemblies and courts. Because of its associations with democratic institutions, rhetoric is commonly said to flourish in open and democratic societies with rights of free speech, free assembly, and political enfranchisement for some portion of the population. Those who classify rhetoric as a civic art believe that rhetoric has the power to shape communities, form the character of citizens and greatly impact civic life.

Rhetoric was viewed as a civic art by several of the ancient philosophers. Aristotle and Isocrates were two of the first to see rhetoric in this light. In his work, *Antidosis*, Isocrates states, "we have come together and founded cities and made laws and invented arts; and, generally speaking, there is not institution devised by man which the power of speech has not helped us to establish". With this statement he argues that rhetoric is a fundamental part of civic life in every society and that it has been necessary in the foundation of all aspects of society. He further argues in his piece *Against the Sophists* that rhetoric, although it cannot be taught to just anyone, is capable of shaping the character of man. He writes, "I do think that the study of political discourse can help more than any other thing to stimulate and form such qualities of character". Aristotle, writing several years after Isocrates, supported many of his arguments and continued to make arguments for rhetoric as a civic art.

In the words of Aristotle, in his essay *Rhetoric*, rhetoric is "the faculty of observing in any given case the available

means of persuasion". According to Aristotle, this art of persuasion could be used in public settings in three different ways. He writes in Book I, Chapter III, "A member of the assembly decides about future events, a juryman about past events: while those who merely decide on the orator's skill are observers. From this it follows that there are three divisions of oratory- (1) political, (2) forensic, and (3) the ceremonial oratory of display". Eugene Garver, in his critique of "Aristotle's Rhetoric", confirms that Aristotle viewed rhetoric as a civic art. Garver writes, "Rhetoric articulates a civic art of rhetoric, combining the almost incompatible properties of *techné* and appropriateness to citizens".<sup>[17]</sup> Each of Aristotle's divisions plays a role in civic life and can be used in a different way to impact cities.

Because rhetoric is a public art capable of shaping opinion, some of the ancients including Plato found fault in it. They claimed that while it could be used to improve civic life, it could be used equally easily to deceive or manipulate with negative effects on the city. The masses were incapable of analyzing or deciding anything on their own and would therefore be swayed by the most persuasive speeches. Thus, civic life could be controlled by the one who could deliver the best speech. Plato's explores the problematic moral status of rhetoric twice: in *Gorgias*, a dialogue named for the famed Sophist, and in *The Phaedrus*, a dialogue best known for its commentary on love.

More trusting in the power of rhetoric to support a republic, the Roman orator Cicero argued that art required something more than eloquence. A good orator needed also to be a good man, a person enlightened on a variety of civic topics. He describes the proper training of the orator in his major text on rhetoric, *De Oratore*, modeled on Plato's dialogues.

Modern day works continue to support the claims of the ancients that rhetoric is an art capable of influencing civic life. In his work *Political Style*, Robert Hariman claims, "Furthermore, questions of freedom, equality, and justice often are raised and addressed through performances ranging from debates to demonstrations without loss of moral content".<sup>[18]</sup> James Boyd White argues further that rhetoric is capable not only of addressing issues of political interest but that it can influence culture as a whole. In his book, *When Words Lose Their Meaning*, he argues that words of persuasion and identification define community and civic life. He states that words produce "the methods by which culture is maintained, criticized, and transformed".<sup>[19]</sup> Both White and Hariman agree that words and rhetoric have the power to shape culture and civic life.

In modern times, rhetoric has consistently remained relevant as a civic art. In speeches, as well as in non-verbal forms, rhetoric continues to be used as a tool to influence communities from local to national levels.

## Rhetoric as a course of study

Rhetoric as a course of study has evolved significantly since its ancient beginnings. Through the ages, the study and teaching of rhetoric has adapted to the particular exigencies. (The particular exigencies of...?)<sup>[20]</sup> The study of rhetoric has conformed to a multitude of different applications, ranging from architecture to literature.<sup>[21]</sup> Although the curriculum has transformed in a number of ways, it has generally emphasized the study of principles and rules of composition as a means for moving audiences. Generally speaking, the study of rhetoric trains students to speak and/or write effectively, as well as critically understand and analyze discourse.

Rhetoric began as a civic art in Ancient Greece where students were trained to develop tactics of oratorical persuasion, especially in legal disputes. Rhetoric originated in a school of pre-Socratic philosophers known as the Sophists circa 600 BC. Demosthenes and Lysias emerged as major orators during this period, and Isocrates and Gorgias as prominent teachers. Rhetorical education focused on five particular canons: *inventio* (invention), *dispositio* (arrangement), *elocutio* (style), *memoria* (memory), and *actio* (delivery). Modern teachings continue to reference these rhetorical leaders and their work in discussions of classical rhetoric and persuasion.

Rhetoric was later taught in universities during the Middle Ages as one of the three original liberal arts or trivium (along with logic and grammar).<sup>[22]</sup> During the medieval period, political rhetoric declined as republican oratory

condemning ottes instead of fiat

died out and the emperors of Rome garnered increasing authority. With the rise of European monarchs in following centuries, rhetoric shifted into the courtly and religious applications. Augustine exerted strong influence on Christian rhetoric in the Middle Ages, advocating the use of rhetoric to lead audiences to truth and understanding, especially in the church. The study of liberal arts, he believed, contributed to rhetorical study: "In the case of a keen and ardent nature, fine words will come more readily through reading and hearing the eloquent than by pursuing the rules of rhetoric."<sup>[23]</sup> Poetry and letter writing, for instance, became a central component of rhetorical study during the Middle Ages.<sup>[24]</sup> After the fall of the Republic in Rome, poetry became a tool for rhetorical training since there were fewer opportunities for political speech.<sup>[25]</sup> Letter writing was the primary form through which business was conducted both in state and church, so it became an important aspect of rhetorical education.<sup>[26]</sup>

Rhetorical education became more restrained as style and substance separated in 16th century France with Peter Ramus, and attention turned to the scientific method. That is, influential scholars like Ramus argued that the processes of invention and arrangement should be elevated to the domain of philosophy, while rhetorical instruction should be chiefly concerned with the use of figures and other forms of the ornamentation of language. Scholars such as Francis Bacon developed the study of "scientific rhetoric."<sup>[27]</sup> This concentration rejected the elaborate style characteristic of the classical oration. This plain language carried over to John Locke's teaching, which emphasized concrete knowledge and steered away from ornamentation in speech, further alienating rhetorical instruction, which was identified wholly with this ornamentation, from the pursuit of knowledge.

In the 18th century, rhetoric assumed a more social role, initiating the creation of new education systems. "Elocution schools" arose (predominantly in England) in which females analyzed classic literature, most notably the works of William Shakespeare, and discussed pronunciation tactics.<sup>[28]</sup>

The study of rhetoric underwent a revival with the rise of democratic institutions during the late 18th and early 19th centuries. Scotland's author and theorist Hugh Blair served as a key leader of this movement during the late 18th century. In his most famous work "Lectures on Rhetoric and Belles Lettres", he advocates rhetorical study for common citizens as a resource for social success. Many American colleges and secondary schools used Blair's text throughout the 19th century to train students of rhetoric.<sup>[29]</sup>

Political rhetoric also underwent renewal in the wake of the US and French revolutions. The rhetorical studies of ancient Greece and Rome were resurrected in the studies of the era as speakers and teachers looked to Cicero and others to inspire defense of the new republic. Leading rhetorical theorists included John Quincy Adams of Harvard who advocated the democratic advancement of rhetorical art. Harvard's founding of the Boylston Professorship of Rhetoric and Oratory sparked the growth of rhetorical study in colleges across the United States.<sup>[26]</sup> Harvard's rhetoric program drew inspiration from literary sources to guide organization and style.

Debate clubs and lyceums also developed as forums in which common citizens could hear speakers and sharpen debate skills. The American lyceum in particular was seen as both an educational and social institution, featuring group discussions and guest lecturers.<sup>[30]</sup> These programs cultivated democratic values and promoted active participation in political analysis.

Throughout the 20th century, rhetoric developed as a concentrated field of study with the establishment of rhetorical courses in high schools and universities. Courses such as public speaking and speech analysis apply fundamental Greek theories (such as the modes of persuasion: ethos, pathos, and logos) as well as trace rhetorical development throughout the course of history. Rhetoric has earned a more esteemed reputation as a field of study with the emergence of Communication Studies departments in university programs and in conjunction with the linguistic turn. Rhetorical study has broadened in scope, and is especially utilized by the fields of marketing, politics, and literature.

Rhetoric, as an area of study, is concerned with how humans use symbols, especially language, to reach agreement that permits coordinated effort of some sort.<sup>[31]</sup> Harvard University, the first university in the United States, based

typical  
liberal  
arts  
schools  
focus on

the 17th  
grade  
English



on the European model, taught a basic curriculum, including rhetoric. Rhetoric, in this sense, how to properly give speeches, played an important role in their training. Rhetoric was soon taught in departments of English as well.<sup>[32]</sup>

## Epistemology

*Main article: Epistemology*

The relationship between rhetoric and knowledge is one of the oldest and most interesting problems. The contemporary stereotype of rhetoric as "empty speech" or "empty words" reflects a radical division of rhetoric from knowledge, a division that has had influential adherents within the rhetorical tradition, most notably Plato and Peter Ramus. It is a division that has been strongly associated with Enlightenment thinking about language, which attempted to make language a neutral, transparent medium. A philosophical argument has ensued for centuries about whether or not rhetoric and truth have any correlation to one another. In ancient Greece, the sophists generally believed that humans were incapable of determining truth but used logos to determine what was best (or worst) for the community. Sophists like Protagoras put great emphasis on speech as a means that could help in making these decisions for the community.

However, Plato was critical of the sophists' views because he believed that rhetoric was simply too dangerous, being based in skill and common opinion (doxa). Plato set out to instead discover episteme, or "truth," through the dialectical method. Since Plato's argument has shaped western philosophy, rhetoric has mainly been regarded as an evil that has no epistemic status.

Over the 20th century, with the influence of social constructionism and Pragmatism, this tradition began to change. Robert L. Scott states that rhetoric is, in fact, epistemic.<sup>[33]</sup> His argument is based on the belief that truth is not a central, objective set of facts but that truth is based on the situation at hand. Scott goes as far as stating that if a man believes in an ultimate truth and argues it, he is only fooling himself by convincing himself of one argument among many possible options. Ultimately, truth is relative to situated experiences, and rhetoric is necessary to give meaning to individual circumstances. Researchers in the rhetoric of science, have shown how the two are difficult to separate, and how discourse helps to create knowledge. This perspective is often called "epistemic rhetoric", where communication among interlocutors is fundamental to the creation of knowledge in communities.

Truth has also been theorized as a mutual agreement amongst the community. Academics like Thomas Farrell discuss the importance of social consensus as knowledge.<sup>[34]</sup> Furthermore, Brummett points out, "A worldview in which truth is agreement must have rhetoric at its heart, for agreement is gained in no other way."<sup>[35]</sup> So, if one agrees with the statement that truth is mutual agreement, truth must be relative and necessarily arise in persuasion. Emphasizing this close relationship between discourse and knowledge, contemporary rhetoricians have been associated with a number of philosophical and social scientific theories that see language and discourse as central to, rather than in conflict with, knowledge-making.(See Critical Theory, Post-structuralism, Hermeneutics, Dramatism, Reflexivity).

## History

Rhetoric has its origins in the earliest civilization, Mesopotamia.<sup>[36]</sup> Some of the earliest examples of rhetoric can be found in the Akkadian writings of the princess and priestess Enheduanna (ca. 2285-2250 BC),<sup>[37]</sup> while later examples can be found in the Neo-Assyrian Empire during the time of Sennacherib (704–681 BC).<sup>[38]</sup> In ancient Egypt, rhetoric has existed since at least the Middle Kingdom period (ca. 2080-1640 BC). The Egyptians held eloquent speaking in high esteem, and it was a skill that had a very high value in their society. The "Egyptian rules of rhetoric" also clearly specified that "knowing when not to speak is essential, and very respected, rhetorical knowledge." Their "approach to rhetoric" was thus a "balance between eloquence and wise silence." Their rules of speech also strongly emphasized "adherence to social behaviors that support a conservative status quo" and they

held that "skilled speech should support, not question, society."<sup>[39]</sup> In ancient China, rhetoric dates back to the Chinese philosopher, Confucius (551-479 BC), and continued with later followers. The tradition of Confucianism emphasized the use of eloquence in speaking.<sup>[40]</sup> The use of rhetoric can also be found in the ancient Biblical tradition.<sup>[41]</sup>

In ancient Greece, the earliest mention of oratorical skill occurs in Homer's *Iliad*, where heroes like Achilles, Hektor, and Odysseus were honored for their ability to advise and exhort their peers and followers (the *Laos* or army) in wise and appropriate action. With the rise of the democratic *polis*, speaking skill was adapted to the needs of the public and political life of cities in ancient Greece, much of which revolved around the use of oratory as the medium through which political and judicial decisions were made, and through which philosophical ideas were developed and disseminated. For modern students today, it can be difficult to remember that the wide use and availability of written texts is a phenomenon that was just coming into vogue in Classical Greece. In Classical times, many of the great thinkers and political leaders performed their works before an audience, usually in the context of a competition or contest for fame, political influence, and cultural capital; in fact, many of them are known only through the texts that their students, followers, or detractors wrote down. As has already been noted, *rhetor* was the Greek term for *orator*: A *rhetor* was a citizen who regularly addressed juries and political assemblies and who was thus understood to have gained some knowledge about public speaking in the process, though in general facility with language was often referred to as *logôn techne*, "skill with arguments" or "verbal artistry."<sup>[42]</sup>

Rhetoric thus evolved as an important art, one that provided the orator with the forms, means, and strategies for persuading an audience of the correctness of the orator's arguments. Today the term *rhetoric* can be used at times to refer only to the form of argumentation, often with the pejorative connotation that rhetoric is a means of obscuring the truth. Classical philosophers believed quite the contrary: the skilled use of rhetoric was essential to the discovery of truths, because it provided the means of ordering and clarifying arguments.

## The Sophists

*Main article: Sophists*

In Europe, organized thought about public speaking began in ancient Greece.<sup>[43]</sup> Possibly, the first study about the power of language may be attributed to the philosopher Empedocles (d. ca. 444 BC), whose theories on human knowledge would provide a basis for many future rhetoricians. The first written manual is attributed to Corax and his pupil Tisias. Their work, as well as that of many of the early rhetoricians, grew out of the courts of law; Tisias, for example, is believed to have written judicial speeches that others delivered in the courts. Teaching in oratory was popularized in the 5th century BC by itinerant teachers known as sophists, the best known of whom were Protagoras (c.481-420 BC), Gorgias (c.483-376 BC), and Isocrates (436-338 BC). The Sophists were a disparate group who travelled from city to city, teaching in public places to attract students and offer them an education. Their central focus was on *logos* or what we might broadly refer to as discourse, its functions and powers. They defined parts of speech, analyzed poetry, parsed close synonyms, invented argumentation strategies, and debated the nature of reality. They claimed to make their students "better," or, in other words, to teach virtue. They thus claimed that human "excellence" was not an accident of fate or a prerogative of noble birth, but an art or "*techne*" that could be taught and learned. They were thus among the first humanists. Several sophists also questioned received wisdom about the gods and the Greek culture, which they believed was taken for granted by Greeks of their time, making them among the first agnostics. For example, they argued that cultural practices were a function of convention or *nomos* rather than blood or birth or *phusis*. They argued even further that morality or immorality of any action could not be judged outside of the cultural context within which it occurred. The well-known phrase, "Man is the measure of all things" arises from this belief. One of their most famous, and infamous, doctrines has to do with probability and counter arguments. They taught that every argument could be countered with an opposing argument, that an argument's effectiveness derived from how "likely" it appeared to the audience (its probability of seeming true), and that any probability argument could be countered with an inverted probability argument. Thus, if it seemed likely that a strong, poor man were guilty of robbing a rich, weak man, the strong poor man could argue, on the contrary,

that this very likelihood (that he would be a suspect) makes it unlikely that he committed the crime, since he would most likely be apprehended for the crime. They also taught and were known for their ability to make the weaker (or worse) argument the stronger (or better). Aristophanes famously parodies the clever inversions that sophists were known for in his play *The Clouds*.

The word "sophistry" developed strong negative connotations in ancient Greece that continue today, but in ancient Greece sophists were nevertheless popular and well-paid professionals, widely respected for their abilities but also widely criticized for their excesses.

## Isocrates

*Main article: Isocrates*

Isocrates (436-338 BC), like the sophists, taught public speaking as a means of human improvement, but he worked to distinguish himself from the Sophists, whom he saw as claiming far more than they could deliver. He suggested that while an art of virtue or excellence did exist, it was only one piece, and the least, in a process of self-improvement that relied much more heavily on native talent and desire, constant practice, and the imitation of good models. Isocrates believed that practice in speaking publicly about noble themes and important questions would function to improve the character of both speaker and audience while also offering the best service to a city. In fact, Isocrates was an outspoken champion of rhetoric as a mode of civic engagement.<sup>[44]</sup> He thus wrote his speeches as "models" for his students to imitate in the same way that poets might imitate Homer or Hesiod, seeking to inspire in them a desire to attain fame through civic leadership. His was the first permanent school in Athens and it is likely that Plato's Academy and Aristotle's Lyceum were founded in part as a response to Isocrates. Though he left no handbooks, his speeches (*"Antidosis"* and *"Against the Sophists"* are most relevant to students of rhetoric) became models of oratory (he was one of the canonical "Ten Attic Orators") and keys to his entire educational program. He had a marked influence on Cicero and Quintilian, and through them, on the entire educational system of the west.

## Plato

*Main article: Plato*

Plato (427-347 BC) famously outlined the differences between true and false rhetoric in a number of dialogues; particularly the *Gorgias* and *Phaedrus* wherein Plato disputes the Sophistic notion that the art of persuasion (the Sophists' art which he calls "rhetoric"), can exist independent of the art of dialectic. Plato claims that since Sophists appeal only to what seems probable, they are not advancing their students and audiences, but simply flattering them with what they want to hear. While Plato's condemnation of rhetoric is clear in the *Gorgias*, in the *Phaedrus* he suggests the possibility of a true art wherein rhetoric is based upon the knowledge produced by dialectic, and relies on a dialectically informed rhetoric to appeal to the main character: *Phaedrus*, to take up philosophy. Thus Plato's rhetoric is actually dialectic (or philosophy) "turned" toward those who are not yet philosophers and are thus unready to pursue dialectic directly. Plato's animosity against rhetoric, and against the Sophists, derives not only from their inflated claims to teach virtue and their reliance on appearances, but from the fact that his teacher, Socrates, was sentenced to death for being a Sophist.

## Aristotle

*Main article: Rhetoric (Aristotle)*

Plato's student Aristotle (384-322 BC) famously set forth an extended treatise on rhetoric that still repays careful study today. In the first sentence of *The Art of Rhetoric*, Aristotle says that "rhetoric is the counterpart [literally, the antistrophe] of dialectic." As the "antistrophe" of a Greek ode responds to and is patterned after the structure of the "strophe" (they form two sections of the whole and are sung by two parts of the chorus), so the art of rhetoric

follows and is structurally patterned after the art of dialectic because both are arts of discourse production. Thus, while dialectical methods are necessary to find truth in theoretical matters, rhetorical methods are required in practical matters such as adjudicating somebody's guilt or innocence when charged in a court of law, or adjudicating a prudent course of action to be taken in a deliberative assembly. For Plato and Aristotle, dialectic involves persuasion, so when Aristotle says that rhetoric is the antistrophe of dialectic, he means that rhetoric as he uses the term has a domain or scope of application that is parallel to but different from the domain or scope of application of dialectic. In *Nietzsche Humanist* (1998: 129), Claude Paur explains that "[t]he Greek prefix 'anti' does not merely designate opposition, but it can also mean 'in place of.'" When Aristotle characterizes rhetoric as the antistrophe of dialectic, he no doubt means that rhetoric is used in place of dialectic when we are discussing civic issues in a court of law or in a legislative assembly. The domain of rhetoric is civic affairs and practical decision making in civic affairs, not theoretical considerations of operational definitions of terms and clarification of thought – these, for him, are in the domain of dialectic.

Aristotle's treatise on rhetoric is an attempt to systematically describe civic rhetoric as a human art or skill (*techne*). His definition of rhetoric as "the faculty of observing in any given case the available means of persuasion," essentially a mode of discovery, seems to limit the art to the inventional process, and Aristotle heavily emphasizes the logical aspect of this process. But the treatise in fact also discusses not only elements of style and (briefly) delivery, but also emotional appeals (*pathos*) and characterological appeals (*ethos*). He thus identifies three steps or "offices" of rhetoric—*invention*, *arrangement*, and *style*—and three different types of rhetorical proof:

- Can say paper uses
- **ethos**: how the character and credibility of a speaker can influence an audience to consider him/her to be believable.
    - This could be any position in which the speaker—whether an acknowledged expert on the subject, or an acquaintance of a person who experienced the matter in question—knows about the topic.
    - For instance, when a magazine claims that *An MIT professor predicts that the robotic era is coming in 2050*, the use of big-name "MIT" (a world-renowned American university for the advanced research in math, science, and technology) establishes the "strong" credibility.
  - **pathos**: the use of emotional appeals to alter the audience's judgment.
    - This can be done through metaphor, amplification, storytelling, or presenting the topic in a way that evokes strong emotions in the audience.
  - **logos**: the use of reasoning, either inductive or deductive, to construct an argument.
    - Logos appeals include appeals to statistics, math, logic, and *objectivity*. For instance, when advertisements claim that their product is *37% more effective than the competition*, they are making a logical appeal.
    - Inductive reasoning uses examples (historical, mythical, or hypothetical) to draw conclusions.
    - Deductive reasoning, or "enthymematic" reasoning, uses generally accepted propositions to derive specific conclusions. The term *logic* evolved from *logos*. Aristotle emphasized enthymematic reasoning as central to the process of rhetorical invention, though later rhetorical theorists placed much less emphasis on it.

Aristotle also identifies three different types or genres of civic rhetoric: *forensic* (also known as judicial, was concerned with determining *truth* or *falsity* of events that took place in the *past*, issues of guilt), *deliberative* (also known as political, was concerned with determining whether or not particular actions *should* or should not be taken in the *future*), and *epideictic* (also known as ceremonial, was concerned with praise and blame, values, right and wrong, demonstrating beauty and skill in the *present*).

In the rhetoric field, there is an intellectual debate about Aristotle's definition of rhetoric. Some believe that Aristotle defines rhetoric in *On Rhetoric* as the art of persuasion, while others think he defines it as the art of judgment. Rhetoric as the art of judgment would mean the rhetor discerns the available means of persuasion with a choice. Aristotle also says rhetoric is concerned with judgment because the audience judges the rhetor's *ethos*.

One of the most famous of Aristotelian doctrines was the idea of topics (also referred to as common topics or commonplaces). Though the term had a wide range of application (as a memory technique or compositional exercise, for example) it most often referred to the "seats of argument"—the list of categories of thought or modes of reasoning—that a speaker could use in order to generate arguments or proofs. The topics were thus a heuristic or inventional tool designed to help speakers categorize and thus better retain and apply frequently used types of argument. For example, since we often see effects as "like" their causes, one way to invent an argument (about a future effect) is by discussing the cause (which it will be "like"). This and other rhetorical topics derive from Aristotle's belief that there are certain predictable ways in which humans (particularly non-specialists) draw conclusions from premises. Based upon and adapted from his dialectical Topics, the rhetorical topics became a central feature of later rhetorical theorizing, most famously in Cicero's work of that name.

## Cicero

*Main articles: Cicero, De Inventione, De Oratore, Brutus (Cicero), De Optimo Genere Oratorum, and De Partitionibus Oratoriae*

For the Romans, oration became an important part of public life. Cicero (106-43 BC) was chief among Roman rhetoricians and remains the best known ancient orator and the only orator who both spoke in public and produced treatises on the subject. *Rhetorica ad Herennium*, formerly attributed to Cicero but now considered to be of unknown authorship, is one of the most significant works on rhetoric and is still widely used as a reference today. It is an extensive reference on the use of rhetoric, and in the Middle Ages and Renaissance, it achieved wide publication as an advanced school text on rhetoric.

Cicero is considered one of the most significant rhetoricians of all time. His works include the early and very influential *De Inventione* (On Invention, often read alongside the *Ad Herennium* as the two basic texts of rhetorical theory throughout the Middle Ages and into the Renaissance), *De Oratore* (a fuller statement of rhetorical principles in dialogue form), *Topics* (a rhetorical treatment of common topics, highly influential through the Renaissance), *Brutus (Cicero)* (a discussion of famous orators) and *Orator* (a defense of Cicero's style). Cicero also left a large body of speeches and letters which would establish the outlines of Latin eloquence and style for generations to come. It was the rediscovery of Cicero's speeches (such as the defense of Archias) and letters (to Atticus) by Italians like Petrarch that, in part, ignited the cultural innovations that we know as the Renaissance. He championed the learning of Greek (and Greek rhetoric), contributed to Roman ethics, linguistics, philosophy, and politics, and emphasized the importance of all forms of appeal (emotion, humor, stylistic range, irony and digression in addition to pure reasoning) in oratory. But perhaps his most significant contribution to subsequent rhetoric, and education in general, was his argument that orators learn not only about the specifics of their case (the *hypothesis*) but also about the general questions from which they were derived (the *theses*). Thus, in giving a speech in defense of a poet whose Roman citizenship had been questioned, the orator should examine not only the specifics of that poet's civic status, he should also examine the role and value of poetry and of literature more generally in Roman culture and political life. The orator, said Cicero, needed to be knowledgeable about all areas of human life and culture, including law, politics, history, literature, ethics, warfare, medicine, even arithmetic and geometry. Cicero gave rise to the idea that the "ideal orator" be well-versed in all branches of learning: an idea that was rendered as "liberal humanism," and that lives on today in liberal arts or general education requirements in colleges and universities around the world.

## Quintilian

*Main articles: Quintilian and Byzantine rhetoric*

Quintilian (35-100 AD) began his career as a pleader in the courts of law; his reputation grew so great that Vespasian created a chair of rhetoric for him in Rome. The culmination of his life's work was the *Institutio oratoria* (*Institutes of Oratory*, or alternatively, *The Orator's Education*), a lengthy treatise on the training of the orator in which he discusses the training of the "perfect" orator from birth to old age and, in the process, reviews the

doctrines and opinions of many influential rhetoricians who preceded him.

In the *Institutes*, Quintilian organizes rhetorical study through the stages of education that an aspiring orator would undergo, beginning with the selection of a nurse. Aspects of elementary education (training in reading and writing, grammar, and literary criticism) are followed by preliminary rhetorical exercises in composition (the *progymnasmata*) that include maxims and fables, narratives and comparisons, and finally full legal or political speeches. The delivery of speeches within the context of education or for entertainment purposes became widespread and popular under the term "declamation." Rhetorical training proper was categorized under five canons that would persist for centuries in academic circles:

- *Inventio* (invention) is the process that leads to the development and refinement of an argument.
- Once arguments are developed, *dispositio* (disposition, or arrangement) is used to determine how it should be organized for greatest effect, usually beginning with the *exordium*.
- Once the speech content is known and the structure is determined, the next steps involve *elocutio* (style) and *pronuntiatio* (presentation).
- *Memoria* (memory) comes to play as the speaker recalls each of these elements during the speech.
- *Actio* (delivery) is the final step as the speech is presented in a gracious and pleasing way to the audience - the Grand Style.

This work was available only in fragments in medieval times, but the discovery of a complete copy at the Abbey of St. Gall in 1416 led to its emergence as one of the most influential works on rhetoric during the Renaissance.

Quintilian's work describes not just the art of rhetoric, but the formation of the perfect orator as a politically active, virtuous, publicly minded citizen. His emphasis was on the ethical application of rhetorical training, in part a reaction against the growing tendency in Roman schools toward standardization of themes and techniques. At the same time that rhetoric was becoming divorced from political decision making, rhetoric rose as a culturally vibrant and important mode of entertainment and cultural criticism in a movement known as the "second sophistic," a development which gave rise to the charge (made by Quintilian and others) that teachers were emphasizing style over substance in rhetoric.

## Medieval to Enlightenment

After the breakup of the western Roman Empire, the study of rhetoric continued to be central to the study of the verbal arts; but the study of the verbal arts went into decline for several centuries, followed eventually by a gradual rise in formal education, culminating in the rise of medieval universities. But rhetoric transmuted during this period into the arts of letter writing (*ars dictaminis*) and sermon writing (*ars praedicandi*). As part of the *trivium*, rhetoric was secondary to the study of logic, and its study was highly scholastic: students were given repetitive exercises in the creation of discourses on historical subjects (*suasoriae*) or on classic legal questions (*controversiae*).

Although he is not commonly regarded as a rhetorician, St. Augustine (354-430) was trained in rhetoric and was at one time a professor of Latin rhetoric in Milan. After his conversion to Christianity, he became interested in using these "pagan" arts for spreading his religion. This new use of rhetoric is explored in the Fourth Book of his *De Doctrina Christiana*, which laid the foundation of what would become homiletics, the rhetoric of the sermon. Augustine begins the book by asking why "the power of eloquence, which is so efficacious in pleading either for the erroneous cause or the right", should not be used for righteous purposes (IV.3).

One early concern of the medieval Christian church was its attitude to classical rhetoric itself. Jerome (d. 420) complained, "What has Horace to do with the Psalms, Virgil with the Gospels, Cicero with the Apostles?" Augustine is also remembered for arguing for the preservation of pagan works and fostering a church tradition which led to conservation of numerous pre-Christian rhetorical writings.

Rhetoric would not regain its classical heights until the renaissance, but new writings did advance rhetorical thought. Boethius (480?-524), in his brief *Overview of the Structure of Rhetoric*, continues Aristotle's taxonomy by placing

rhetoric in subordination to philosophical argument or dialectic.<sup>[45]</sup> The introduction of Arab scholarship from European relations with the Muslim empire (in particular Al-Andalus) renewed interest in Aristotle and Classical thought in general, leading to what some historians call the 12th century renaissance. A number of medieval grammars and studies of poetry and rhetoric appeared.

Late medieval rhetorical writings include those of St. Thomas Aquinas (1225?-1274), Matthew of Vendome (*Ars Versificatoria*, 1175?), and Geoffrey of Vinsauf (*Poetria Nova*, 1200–1216). Pre-modern female rhetoricians, outside of Socrates' friend Aspasia, are rare; but medieval rhetoric produced by women either in religious orders, such as Julian of Norwich (d. 1415), or the very well-connected Christine de Pizan (1364?-1430?), did occur if not always recorded in writing.

In his 1943 Cambridge University doctoral dissertation in English, Canadian Marshall McLuhan (1911–1980) surveys the verbal arts from approximately the time of Cicero down to the time of Thomas Nashe (1567-1600?).<sup>[46]</sup> His dissertation is still noteworthy for undertaking to study the history of the verbal arts together as the trivium, even though the developments that he surveys have been studied in greater detail since he undertook his study. As noted below, McLuhan became one of the most widely publicized thinkers in the 20th century, so it is important to note his scholarly roots in the study of the history of rhetoric and dialectic.

Another interesting record of medieval rhetorical thought can be seen in the many animal debate poems popular in England and the continent during the Middle Ages, such as *The Owl and the Nightingale* (13th century) and Geoffrey Chaucer's *Parliament of Fowls* (1382?).

## Sixteenth century

Walter J. Ong's encyclopedia article "Humanism" in the 1967 *New Catholic Encyclopedia* provides a well-informed survey of Renaissance humanism, which defined itself broadly as disfavoring medieval scholastic logic and dialectic and as favoring instead the study of classical Latin style and grammar and philology and rhetoric. (Reprinted in Ong's *Faith and Contexts* (Scholars Press, 1999; 4: 69-91.))

One influential figure in the rebirth of interest in classical rhetoric was Erasmus (c.1466-1536). His 1512 work, *De Duplici Copia Verborum et Rerum* (also known as *Copia: Foundations of the Abundant Style*), was widely published (it went through more than 150 editions throughout Europe) and became one of the basic school texts on the subject. Its treatment of rhetoric is less comprehensive than the classic works of antiquity, but provides a traditional treatment of *res-verba* (matter and form): its first book treats the subject of elocutio, showing the student how to use schemes and tropes; the second book covers inventio. Much of the emphasis is on abundance of variation (*copia* means "plenty" or "abundance", as in copious or cornucopia), so both books focus on ways to introduce the maximum amount of variety into discourse. For instance, in one section of the *De Copia*, Erasmus presents two hundred variations of the sentence "*Semper, dum vivam, tui meminero.*" Another of his works, the extremely popular *The Praise of Folly*, also had considerable influence on the teaching of rhetoric in the later 16th century. Its orations in favour of qualities such as madness spawned a type of exercise popular in Elizabethan grammar schools, later called adoxography, which required pupils to compose passages in praise of useless things.

Juan Luis Vives (1492–1540) also helped shape the study of rhetoric in England. A Spaniard, he was appointed in 1523 to the Lectureship of Rhetoric at Oxford by Cardinal Wolsey, and was entrusted by Henry VIII to be one of the tutors of Mary. Vives fell into disfavor when Henry VIII divorced Catherine of Aragon and left England in 1528. His best-known work was a book on education, *De Disciplinis*, published in 1531, and his writings on rhetoric included *Rhetoricae, sive De Ratione Dicendi, Libri Tres* (1533), *De Consultatione* (1533), and a rhetoric on letter writing, *De Conscribendis Epistolas* (1536).

It is likely that many well-known English writers would have been exposed to the works of Erasmus and Vives (as well as those of the Classical rhetoricians) in their schooling, which was conducted in Latin (not English) and often included some study of Greek and placed considerable emphasis on rhetoric. See, for example, T.W. Baldwin's

*William Shakspeare's Small Latine and Lesse Greeke*, 2 vols. (University of Illinois Press, 1944).

The mid-16th century saw the rise of vernacular rhetorics — those written in English rather than in the Classical languages; adoption of works in English was slow, however, due to the strong orientation toward Latin and Greek. Leonard Cox's *The Art or Crafte of Rhetoryke* (c. 1524-1530; second edition published in 1532) is considered to be the earliest text on rhetorics in English; it was, for the most part, a translation of the work of Philipp Melanchthon.<sup>[47]</sup> A successful early text was Thomas Wilson's *The Arte of Rhetorique* (1553), which presents a traditional treatment of rhetoric. For instance, Wilson presents the five canons of rhetoric (Invention, Disposition, Elocutio, Memoria, and Utterance or Actio). Other notable works included Angel Day's *The English Secretorie* (1586, 1592), George Puttenham's *The Arte of English Poesie* (1589), and Richard Rainholde's *Foundacion of Rhetorike* (1563).

During this same period, a movement began that would change the organization of the school curriculum in Protestant and especially Puritan circles and lead to rhetoric losing its central place. A French scholar, Pierre de la Ramée, in Latin Petrus Ramus (1515–1572), dissatisfied with what he saw as the overly broad and redundant organization of the trivium, proposed a new curriculum. In his scheme of things, the five components of rhetoric no longer lived under the common heading of rhetoric. Instead, invention and disposition were determined to fall exclusively under the heading of dialectic, while style, delivery, and memory were all that remained for rhetoric. See Walter J. Ong, *Ramus, Method, and the Decay of Dialogue: From the Art of Discourse to the Art of Reason* (Harvard University Press, 1958; reissued by the University of Chicago Press, 2004, with a new foreword by Adrian Johns). Ramus, rightly accused of sodomy and erroneously of atheism, was martyred during the French Wars of Religion. His teachings, seen as inimical to Catholicism, were short-lived in France but found a fertile ground in the Netherlands, Germany and England.<sup>[48]</sup>

One of Ramus' French followers, Audomarus Talaeus (Omer Talon) published his rhetoric, *Institutiones Oratoriae*, in 1544. This work provided a simple presentation of rhetoric that emphasized the treatment of style, and became so popular that it was mentioned in John Brinsley's (1612) *Ludus literarius; or The Grammar Schoole* as being the "most used in the best schooles." Many other Ramist rhetorics followed in the next half-century, and by the 17th century, their approach became the primary method of teaching rhetoric in Protestant and especially Puritan circles. See Walter J. Ong, *Ramus and Talon Inventory* (Harvard University Press, 1958); Joseph S. Freedman, *Philosophy and the Art Europe, 1500-1700: Teaching and Texts at Schools and Universities* (Ashgate, 1999). John Milton (1608–1674) wrote a textbook in logic or dialectic in Latin based on Ramus' work, which has now been translated into English by Walter J. Ong and Charles J. Ermatinger in *The Complete Prose Works of John Milton* (Yale University Press, 1982; 8: 206-407), with a lengthy introduction by Ong (144-205). The introduction is reprinted in Ong's *Faith and Contexts* (Scholars Press, 1999; 4: 111-41).

Ramism could not exert any influence on the established Catholic schools and universities, which remained generally stuck in Scholasticism, or on the new Catholic schools and universities founded by members of the religious orders known as the Society of Jesus or the Oratorians, as can be seen in the Jesuit curriculum (in use right up to the 19th century, across the Christian world) known as the Ratio Studiorum (that Claude Pavur, S.J., has recently translated into English, with the Latin text in the parallel column on each page (St. Louis: Institute of Jesuit Sources, 2005)). If the influence of Cicero and Quintilian permeates the Ratio Studiorum, it is through the lenses of devotion and the militancy of the Counter-Reformation. The *Ratio* was indeed imbued with a sense of the divine, of the incarnate logos, that is of rhetoric as an eloquent and humane means to reach further devotion and further action in the Christian city, which was absent from Ramist formalism. The Ratio is, in rhetoric, the answer to St Ignatius Loyola's practice, in devotion, of "spiritual exercises." This complex oratorical-prayer system is absent from Ramism.

## Seventeenth century New England

In New England and at Harvard College (founded 1636), Ramus and his followers dominated, as Perry Miller shows in *The New England Mind: The Seventeenth Century* (Harvard University Press, 1939). However, in England,



several writers influenced the course of rhetoric during the 17th century, many of them carrying forward the dichotomy that had been set forth by Ramus and his followers during the preceding decades. Of greater importance is that this century saw the development of a modern, vernacular style that looked to English, rather than to Greek, Latin, or French models.

Francis Bacon (1561–1626), although not a rhetorician, contributed to the field in his writings. One of the concerns of the age was to find a suitable style for the discussion of scientific topics, which needed above all a clear exposition of facts and arguments, rather than the ornate style favored at the time. Bacon in his *The Advancement of Learning* criticized those who are preoccupied with style rather than "the weight of matter, worth of subject, soundness of argument, life of invention, or depth of judgment." On matters of style, he proposed that the style conform to the subject matter and to the audience, that simple words be employed whenever possible, and that the style should be agreeable.<sup>[49]</sup>

Thomas Hobbes (1588–1679) also wrote on rhetoric. Along with a shortened translation of Aristotle's *Rhetoric*, Hobbes also produced a number of other works on the subject. Sharply contrarian on many subjects, Hobbes, like Bacon, also promoted a simpler and more natural style that used figures of speech sparingly.

Perhaps the most influential development in English style came out of the work of the Royal Society (founded in 1660), which in 1664 set up a committee to improve the English language. Among the committee's members were John Evelyn (1620–1706), Thomas Sprat (1635–1713), and John Dryden (1631–1700). Sprat regarded "fine speaking" as a disease, and thought that a proper style should "reject all amplifications, digressions, and swellings of style" and instead "return back to a primitive purity and shortness" (*History of the Royal Society*, 1667).

While the work of this committee never went beyond planning, John Dryden is often credited with creating and exemplifying a new and modern English style. His central tenet was that the style should be proper "to the occasion, the subject, and the persons." As such, he advocated the use of English words whenever possible instead of foreign ones, as well as vernacular, rather than Latinate, syntax. His own prose (and his poetry) became exemplars of this new style.

## Rhetoric in the 18th and 19th centuries

Arguably one of the most influential schools of rhetoric during this time was Scottish Belletristic rhetoric, exemplified by such professors of rhetoric as Hugh Blair whose *Lectures on Rhetoric and Belles Lettres* saw international success in various editions and translations.

## Modern rhetoric

At the turn of the 20th century, there was a revival of rhetorical study manifested in the establishment of departments of rhetoric and speech at academic institutions, as well as the formation of national and international professional organizations.<sup>[50]</sup> Theorists generally agree that a significant reason for the revival of the study of rhetoric was the renewed importance of language and persuasion in the increasingly mediated environment of the 20th century (see Linguistic turn) and through the 21st century, with the media focus on the wide variations and analyses of political rhetoric and its consequences. The rise of advertising and of mass media such as photography, telegraphy, radio, and film brought rhetoric more prominently into people's lives. Rhetoric has become decreasingly important in the normal school day, because of myriad reasons.

Reflecting this, more recently the term rhetoric has been applied to media forms other than verbal language, e.g. Visual rhetoric. The goal is to analyze how non-verbal communication persuades. For example, a soft drink advertisement showing an image of young people drinking and laughing is making the case that the consumer, by using the product, will be healthy and happy.

## Notable modern theorists

- **Chaim Perelman** was a philosopher of law, who studied, taught, and lived most of his life in Brussels. He was among the most important argumentation theorists of the 20th century. His chief work is the *Traité de l'argumentation - la nouvelle rhétorique* (1958), with Lucie Olbrechts-Tyteca, which was translated into English as *The New Rhetoric: A Treatise on Argumentation*, by John Wilkinson and Purcell Weaver (1969). Perelman and Olbrechts-Tyteca move rhetoric from the periphery to the center of argumentation theory. Among their most influential concepts are "dissociation," "the universal audience," "quasi-logical argument," and "presence."
- **Henry Johnstone Jr.** was an American philosopher and rhetorician known especially for his notion of the "rhetorical wedge" and his re-evaluation of the ad hominem fallacy. He was the founder and longtime editor of the journal *Philosophy and Rhetoric*.<sup>[51]</sup>
- **Kenneth Burke** was a rhetorical theorist, philosopher, and poet. Many of his works are central to modern rhetorical theory: *A Rhetoric of Motives* (1950), *A Grammar of Motives* (1945), *Language as Symbolic Action* (1966), and *Counterstatement* (1931). Among his influential concepts are "identification," "consubstantiality," and the "dramatistic pentad." He described rhetoric as "the use of language as a symbolic means of inducing cooperation in beings that by nature respond to symbols."<sup>[52]</sup>
- **Lloyd Bitzer** is a rhetorician who is best known for his notion of "the rhetorical situation."<sup>[53]</sup>
- **Edwin Black** was a rhetorical critic best known for his book *Rhetorical Criticism: A Study in Method*<sup>[54]</sup> (1965) in which he criticized the dominant "neo-Aristotelian" tradition in American rhetorical criticism as having little in common with Aristotle "besides some recurrent topics of discussion and a vaguely derivative view of rhetorical discourse." Furthermore, he contended, because rhetorical scholars had been focusing primarily on Aristotelian logical forms they often overlooked important, alternative types of discourse. He also published several highly influential essays including: "Secrecy and Disclosure as Rhetorical Forms,"<sup>[55]</sup> "The Second Persona,"<sup>[56]</sup> and "A Note on Theory and Practice in Rhetorical Criticism."<sup>[57]</sup>
- **Marshall McLuhan** was a media theorist whose discoveries are important to the study of rhetoric. McLuhan's famous dictum "the medium is the message" highlights the significance of the medium itself. No other scholar of the history and theory of rhetoric was as widely publicized in the 20th century as McLuhan.<sup>[58]</sup>
- **I.A. Richards** was a literary critic and rhetorician. His *The Philosophy of Rhetoric* is an important text in modern rhetorical theory. In this work, he defined rhetoric as "a study of misunderstandings and its remedies,"<sup>[59]</sup> and introduced the influential concepts *tenor* and *vehicle* to describe the components of a metaphor - the main idea and the concept to which it is compared.<sup>[60]</sup>
- **Stephen Toulmin** was a philosopher whose models of argumentation have had great influence on modern rhetorical theory. His *Uses of Argument* is an important text in modern rhetorical theory and argumentation theory.<sup>[61]</sup>
- **Edward Bernays** is the father of modern public relations. As such, he devised works about intricate sales and marketing practices to market goods to people. A nephew to Sigmund Freud, he used late 19th century psychology in application of his techniques. *Converting classic ideas to actual*
- **Richard E. Vatz** is a professor of rhetoric and communication whose framing of rhetoric and persuasion as the struggle for salience/agenda and then struggle for infusion of meaning/spin was first articulated in "The Myth of the Rhetorical Situation"<sup>[62]</sup> and later in "The Mythical Status of Situational Rhetoric".<sup>[63]</sup>

His *The Only Authentic Book of Persuasion* (Kendall-Hunt, 2012) explicates his theory of persuasion through the salience-agenda/meaning-spin model.

- **Carl Hovland** was a social psychologist who devised the Yale Attitude Change Approach to make persuasive communications more effective. The Yale group developed a general theoretical structure linking individual attributes and persuasion. This theory adapts Aristotle's three means of persuasion: the character of the speaker, the emotional state of the listener, and *logos*, the argument itself, into a broader sense of social psychology that emphasize the source and nature of the communication and the nature of the audience.<sup>[64]</sup>

## Methods of analysis

There does not exist an analytic method that is widely recognized as "the" rhetorical method, partly because many in rhetorical study see rhetoric as merely produced by reality (see dissent from that view below). It is important to note that the object of rhetorical analysis is typically discourse, and therefore the principles of "rhetorical analysis" would be difficult to distinguish from those of "discourse analysis." However, rhetorical analytic methods can also be applied to almost anything, including objects—a car, a castle, a computer, a comportment.

Generally speaking, rhetorical analysis makes use of rhetorical concepts (*ethos*, *logos*, *kairos*, mediation, etc.) to describe the social or epistemological functions of the object of study. When the object of study happens to be some type of discourse (a speech, a poem, a joke, a newspaper article), the aim of rhetorical analysis is not simply to describe the claims and arguments advanced within the discourse, but (more important) to identify the specific semiotic strategies employed by the speaker to accomplish specific persuasive goals. Therefore, after a rhetorical analyst discovers a use of language that is particularly important in achieving persuasion, she typically moves onto the question of "How does it work?" That is, what effects does this particular use of rhetoric have on an audience, and how does that effect provide more clues as to the speaker's (or writer's) objectives?

There are some scholars who do partial rhetorical analysis and defer judgments about rhetorical success. In other words, some analysts attempt to avoid the question of "Was this use of rhetoric successful [in accomplishing the aims of the speaker]?" To others, however, that is the preeminent point: is the rhetoric strategically effective and what did the rhetoric accomplish? This question allows a shift in focus from the speaker's objectives to the effects and functions of the rhetoric itself.

## Rhetorical criticism

Modern rhetorical criticism explores the relationship between text and context; that is, how an instance of rhetoric relates to circumstances. In his *Rhetorical Criticism: A Study in Method*, scholar Edwin Black states, "It is the task of criticism not to measure... discourses dogmatically against some parochial standard of rationality but, allowing for the immeasurable wide range of human experience, to see them as they really are."<sup>[65]</sup> While the language "as they really are" is debatable, rhetorical critics explain texts and speeches by investigating their rhetorical situation, typically placing them in a framework of speaker/audience exchange.<sup>[66]</sup>

Following the neo-Aristotelian approaches to criticism, scholars began to derive methods from other disciplines, such as history, philosophy, and the social sciences.<sup>[67]</sup> The importance of critic's personal judgment decreased in explicit coverage while the analytical dimension of criticism began to gain momentum. Throughout the 1960s and 1970s, methodological pluralism replaced the singular neo-Aristotelian method. Methodological rhetorical criticism is typically done by deduction, where a broad method is used to examine a specific case of rhetoric.<sup>[68]</sup> These types include:

- **Ideological criticism** – critics engage rhetoric as it suggests the beliefs, values, assumptions, and interpretations held by the rhetor or the larger culture. Ideological criticism also treats ideology as an artifact of discourse, one that is embedded in key terms (called "ideographs") as well as material

- resources and discursive embodiment.
- **Feminist criticism** – rooted in the feminist movement, which seeks to improve conditions for women and change existing power relations between men and women. It critiques rhetorical forms and processes that allow oppression to be maintained and seeks to transform them.
  - **Cluster criticism** – a method developed by Kenneth Burke that seeks to help the critic understand the rhetor's worldview. This means identifying terms that are 'clustered' around key symbols in the rhetorical artifact and the patterns in which they appear.
  - **Generic criticism** – a method that assumes certain situations call for similar needs and expectations within the audience, therefore calling for certain types of rhetoric. It studies rhetoric in different times and locations, looking at similarities in the rhetorical situation and the rhetoric that responds to them. Examples include eulogies, inaugural addresses, and declarations of war.
  - **Narrative criticism** – narratives help to organize experiences in order to endow meaning to historical events and transformations. Narrative criticism focuses on the story itself and how the construction of the narrative directs the interpretation of the situation.

By the mid-1980s, however, the study of rhetorical criticism began to move away from precise methodology towards conceptual issues. Conceptually driven criticism operates more through abduction, according to scholar James Jasinski, who argues that this emerging type of criticism can be thought of as a back-and-forth between the text and the concepts, which are being explored at the same time. The concepts remain "works in progress," and understanding those terms develops through the analysis of a text.<sup>[69]</sup>

Criticism is considered rhetorical when it focuses on the way some types of discourse react to situational exigencies – problems or demands – and constraints. This means that modern rhetorical criticism is based in how the rhetorical case or object persuades, defines, or constructs the audience. In modern terms, what can be considered rhetoric includes, but is not limited to, speeches, scientific discourse, pamphlets, literary work, works of art, and pictures. Contemporary rhetorical criticism has maintained aspects of early neo-Aristotelian thinking through close reading, which attempts to explore the organization and stylistic structure of a rhetorical object.<sup>[70]</sup> Using close textual analysis means rhetorical critics use the tools of classical rhetoric and literary analysis to evaluate the style and strategy used to communicate the argument.

Rhetorical criticism serves several purposes or functions. First, rhetorical criticism hopes to help form or improve public taste. It helps educate audiences and develops them into better judges of rhetorical situations by reinforcing ideas of value, morality, and suitability. Rhetorical criticism can thus contribute to the audience's understanding of themselves and society.

## French rhetoric

Rhetoric was part of the curriculum in Jesuit and, to a lesser extent, Oratorian colleges until the French Revolution. For Jesuits, right from the foundation of the Society in France, rhetoric was an integral part of the training of young men toward taking up leadership positions in the Church and in State institutions, as Marc Fumaroli has shown it in his foundational *Âge de l'éloquence* (1980). The Oratorians, by contrast, reserved it a lesser place, in part due to the stress they placed on modern language acquisition and a more sensualist philosophy (like Bernard Lamy's *La Rhétorique ou l'Art de parler* (1675) which is an excellent example of their approach). Nonetheless, in the 18th Century, rhetoric was the structure and crown of secondary education, with works such as Rollin's *Treatise of Studies* achieving a wide and enduring fame across the Continent.<sup>[71]</sup> Later, with Nicolas Boileau and François de Malherbe, rhetoric is the instrument of the clarity of the comment and speech ; the literature that ensues from it is named "Sublime". The main representative remains Rivarol.

The French Revolution, however, turned this around. Philosophers such as Condorcet, who drafted the French revolutionary chart for a people's education under the rule of reason, dismissed rhetoric as an instrument of oppression in the hands of clerics in particular. The Revolution went as far as to suppress the Bar, arguing that forensic rhetoric did disservice to a rational system of justice, by allowing fallacies and emotions to come into play.

Nonetheless, as later historians of the 19th century were keen to explain, the Revolution was a high moment of eloquence and rhetorical prowess, although set against a background of rejecting rhetoric.

Under the First Empire and its wide-ranging educational reforms, imposed on or imitated across the Continent, rhetoric regained little ground. In fact, instructions to the newly founded Polytechnic School, tasked with training the scientific and technical elites, made it clear that written reporting was to supersede oral reporting. Rhetoric reentered secondary curriculum in fits and starts, but never regained the prominence it had enjoyed under the *ancien régime*, although the penultimate year of secondary education was known as the Class of Rhetoric. When manuals were redrafted in the mid-century, in particular after the 1848 Revolution to formulate a national curriculum, care was taken to distance their approach to rhetoric from that of the Church, which was seen as an agent of conservatism and reactionary politics.

By the end of the 1870s, a major change had taken place: philosophy of the rationalist or eclectic kind, generally Kantian, had taken over rhetoric as the true end stage of secondary education (the so-called Class of Philosophy bridged secondary and university education). Rhetoric was then relegated to the study of literary figures of speech, a discipline later on taught as Stylistics within the French literature curriculum. More decisively, in 1890, a new standard written exercise superseded the rhetorical exercises of speech writing, letter writing and narration. The new genre, called dissertation, had been invented in 1866, for the purpose of rational argument in the philosophy class. Typically, in a dissertation, a question is asked, such as: "Is history a sign of humanity's freedom?" The structure of a dissertation consists in an introduction that elucidates the basic definitions involved in the question as set, followed by an argument or thesis, a counter-argument or antithesis, and a resolving argument or synthesis that is not a compromise between the former but the production of a new argument, ending with a conclusion that does not sum up the points but opens onto a new problem. Hegelianism influenced the dissertation design. It remains today the standard of writing in French humanities.

By the beginning of the 20th century, rhetoric was fast losing the remains of its former importance, and eventually was taken out of the school curriculum altogether at the time of the Separation of State and Churches (1905). Part of the argument was that rhetoric remained the last element of irrationality, driven by religious arguments, in what was perceived as inimical to Republican education. The move, initiated in 1789, found its resolution in 1902 when rhetoric was expunged from all curricula. At the same time, Aristotelian rhetoric, owing to a revival of Thomistic philosophy initiated by Rome, regained ground in what was left of Catholic education in France, in particular at the prestigious Faculty of Theology of Paris, now a private entity. Yet, rhetoric vanished substantially from the French scene, educational or intellectual, for some 60 years..

In the early 1960s a change began to take place, as the word rhetoric and the body of knowledge it covers began to be used again, in a modest and almost secret manner. The new linguistic turn, through the rise of semiotics as well as of structural linguistics, brought to the fore a new interest in figures of speech as signs, the metaphor in particular (in the works of Roman Jakobson, Michel Charles, Gérard Genette) while famed Structuralist Roland Barthes, a classicist by training, perceived how some basic elements of rhetoric could be of use in the study of narratives, fashion and ideology. Knowledge of rhetoric was so dim in the early 1970s that his short memoir on rhetoric was seen as highly innovative. Basic as it was, it did help rhetoric regain some currency in avant-garde circles. Psychoanalyst Jacques Lacan, his contemporary, makes references to rhetoric, in particular to the Pre-Socratics. Philosopher Jacques Derrida wrote on Voice.

At the same time, more profound work was taking place that eventually gave rise to the French school of rhetoric as it exists today.<sup>[72]</sup>

This rhetorical revival took place on two fronts.<sup>[73]</sup> First, in 17th century French studies, the mainstay of French literary education, awareness grew that rhetoric was necessary to push the limits of knowledge further, and also to provide an antidote to Structuralism and its denial of historicism in culture. This was the pioneering work of Marc Fumaroli who, building on the work of classicist and Neo-Latinist Alain Michel and French scholars such as Roger Zuber, published his famed *Age de l'Eloquence* (1980), was one of the founders of the International Society for the

History of Rhetoric and was eventually elevated to a chair in rhetoric at the prestigious Collège de France. He is the editor in chief of a monumental *History of Rhetoric in Modern Europe*.<sup>[74]</sup> His disciples form the second generation,<sup>[75]</sup> with rhetoricians such as Françoise Waquet and Delphine Denis, both of the Sorbonne, or Philippe-Joseph Salazar (fr:Philippe-Joseph Salazar on the French Wikipedia), until recently at Derrida's Collège international de philosophie, laureate of the Harry Oppenheimer prize and whose recent book on *Hyperpolitique* has attracted the French media's attention on a "re-appropriation of the means of production of persuasion".<sup>[76]</sup>

Second, in the area of Classical studies, in the wake of Alain Michel, Latin scholars fostered a renewal in Cicero studies. They broke away from a pure literary reading of his orations, in an attempt to embed Cicero in European ethics. Meanwhile, among Greek scholars, the literary historian and philologist Jacques Bompaire, the philologist and philosopher E. Dupréel, and later the literature historian Jacqueline de Romilly pioneered new studies in the Sophists and the Second Sophistic. The second generation of Classicists, often trained in philosophy as well (following Heidegger and Derrida, mainly), built on their work, with authors such as Marcel Detienne (now at Johns Hopkins), Nicole Loraux, Medievalist and logician Alain De Libera (Geneva)<sup>[77]</sup>, Ciceronian scholar Carlos Lévy (Sorbonne, Paris) and Barbara Cassin (Collège international de philosophie, Paris).<sup>[78]</sup> Sociologist of science Bruno Latour and economist Romain Laufer may also be considered part of, or close to this group. Also French philosophers specialized in Arabic commentaries on Aristotle's *Rhetoric*<sup>[79]</sup>.

Links between the two strands – literary and philosophical – of the French school of rhetoric are strong and collaborative, and bear witness to the revival of rhetoric in France.<sup>[80]</sup> A recent issue of *Philosophy & Rhetoric* presents current writing in the field.<sup>[81]</sup>

## See also

- Argumentation Theory
- Artes Liberales
- Casuistry
- Civic humanism
- Chironomia
- Composition studies
- Critical Theory
- Critical thinking
- Demagogy
- Dialogue
- Elocution
- eRhetoric – has computer affect writing
- Fallacies
- Figure of Speech
- Figure of thought
- Grammar
- Hermeneutics
- Homiletics
- Language and thought
- Linguistics
- Logic
- New rhetoric
- Oratory
- Pedagogy
- Persuasion
- Persuasion technology
- Phenomenology
- Platonism
- Political rhetoric
- Post-realism
- Post-structuralism
- Propaganda
- Public speaking
- Rhetorical criticism
- Rhetorical operations
- Rhetorical reason
- Rogerian argument
- Semiology
- Sophism
- Technical communication
- Trivium (education)
- Visual rhetoric

## Miscellaneous terms

- Ad captandum
  - Allusion
  - Ambiguity
  - Anaptyxis
  - Antimetabole
  - Aphesis
  - Aphorism
  - Apologue
  - Figure of speech
  - Formal equivalence
  - Hendiadys
  - Hysteron-proteron
  - Idiom
  - Innuendo
  - Ipsedixitism
  - Kairos
  - Pathos
  - Pericope
  - Period
  - Perissologia
  - Praeteritio
  - Proverb
  - Representation
  - Rhetoric of science
- has a few journals  
– are ~~the~~ journals good for society?  
? a lot of rhetoric about this

Dissecting an argument - Latour

3 types of rhetoric

Citation

authority

layering

modalities??

---

Ok did changing goals  
and citations/authority

next: layering ← variety of reasons  
3 types of rhetoric ↳ builds on

→ pointing at specific things

- do that - then see what to add

---

For logos - do my own argument

②

I could focus on just con arguments

- people arguments against Tree Pres

- I don't think it matters here

---

Like I don't really like logos - not much need for

- or present data better

- say did analysis

---

review ~~laying~~ description

Stacking

- no gaps
- each one add something
- basic claims support later claims
- each stone goes further than the last

- more abstract section

! example:

- just from



③

## Reviewing paper

Arguments in lot para don't match paper

(Building a good paper myself)  
- analyzing stuff

Alex Willisson  
Second Paper  
STS.011  
DRAFT

## Network Neutrality and Technical Requirements

The internet is a massive, ever growing network. Now, internet video alone is over 30% of all internet traffic and is predicted to reach 57% in 2014. If you include TV, video on demand and peer to peer (P2P) transfers, it is expected to surpass 90% of all internet traffic by 2014 [1].

To support the predicted increase in use, something needs to be done about the current system. The easiest answer is to simply add more bandwidth. However, the question arises; who should pay for the added infrastructure? Through the competition between Internet Service Providers (ISPs), it is very difficult to invest money in a new network. To afford it, a company would need to raise it's prices. As soon as it does, it's customers would want to abandon it for a less expensive provider. Because of how the internet is set up, all the providers benefit from the newly expanded network, without having to pay a cent.

Alternatively, ISPs can design their plans to use the existing bandwidth more efficiently. "Technical aspects of network neutrality" (Jukic Z. et al) [2] proposes classes

of users, based on types of internet service and required bandwidth for each. The idea seems to be to impose the classes on ISPs as required plans to sell. On top of each plan, the ISPs could offer their own value added services. A good example of what could be a value added service is Verizon's FIOS TV. It runs over the same protocols as the internet but is independent. Other extra services could be increased bandwidth or increased speeds for specific sites. Separating value added services from a required minimum bandwidth guarantees that extra services, such as TV streamed over the internet, will not overload the internet and drag everything else down.

This idea has several benefits. In theory, by establishing minimum allowable downlinks, the internet can no longer be completely overloaded. There should always be enough bandwidth to use the services specified in each class. Users never have to worry about getting their bandwidth cut below their plan's minimal downlink. If the internet started becoming overloaded, users could have their bandwidth throttled to keep the internet working at reasonable speeds. Users could pick which services they are likely to use and choose a plan appropriate to their needs. The user would benefit from having more flexibility in the cost of internet and the ISPs would benefit in having a database of which users are allowed to be throttled by how much. While this isn't quite as good a deal for the ISPs as charging a very large flat rate, it protects the internet from getting flooded by heavy bandwidth services such as streamed video which, in turn, protects the ISPs from being considered an unreliable service.

The plan proposed in [2] relies heavily on defining the minimum bandwidths

very carefully, and possibly scaling them with time. For example, if this plan was implemented back before YouTube or other video streaming sites existed the bandwidth values would be very different. Most likely no class' minimum would be above 260 kbits/second ([2], Table I). The classes are also assumes there is only one user per connection. If you have to users using the same connection normally, or one user streaming low resolution video, there would not be enough bandwidth to do everything reliably.

Coming up with ideas, such as classes of internet services is certainly a step in the right direction. We need to figure out how to keep the internet from becoming overloaded by bandwidth intensive services, such as streaming video. Right now, ISPs simply try to push as much bandwidth to as many people as possible. Part of this includes advertising more bandwidth then there actually is available. Odds are everyone won't be using everything flat out at the same time. While this is very attractive from a business point of view, it is not stable from a technical point of view.

The main dangerous part of the classes plan is what ISPs are allowed to do with bandwidth beyond the minimum amount required. As long as the minimum downlinks are enough to use the internet well, it shouldn't be a problem what ISPs do with extra bandwidth. It would be used as an extra lure to a specific ISP. Some people might be interested in a faster internet connection, while others might want a dedicated part of their bandwidth devoted to TV. However, if the minimum downlinks are not chosen well the internet could suffer. Services not chosen by the ISPs to gain a special chunk

of bandwidth would be limited in their abilities. It would give existing sites an unfair advantage over new sites, which could prevent competition and impede new ideas.

## References

- [1] "Hyperconnectivity and the approaching zettabyte era" , Cisco, 2010
- [2] "Technical aspects of network neutrality", Croatian Post & Electronics Communications Agency, 2011

- Paper looks boring
  - did I choose topic?
- Make thesis more explicit?
- Rearrange closing

STS.001

10/31

Net Neutrality

Prot Meeting

- not 1 way to do assignment
- dissect or write reply
  - talk about argument itself
  - more like whole website

Goal of class: find someone who responds to brief  
and see what they say

Tie your response to what you have read

Not you saying argument is solid

Web, can have or take on controversy evolved

- has it been locked down
  - no progress

- or has debate progressed

  - argued about terms

Point of paper: way sci or policy papers are built

②

Pay attention to construction, ideas, argument

- when use citations mobilized

- for which argument

Tell how author conducts arguments

How convince is different

- often is not direct

- can't say direct

(Lessig conflates net neutrality w/ competition in general)  
PowerPoint pulls it together

- Ways to convince people

Final: mix of deep analysis of important papers

- then longitudinal

- big theories + how they change → next paper

Builds enemy, friends, creates problems

- dramatize problem



3

For Alex: who are you to say that?

Goal: how you manage to present what others have to say

## Overview of FCC Filings

---

Tavan: took arguments and replied to them

- how come w/ w/ center attack
- could slow down others to charge it

Same thing - we are witnessing gap of actors

- have diff actors + principles
- why do people care so much about it

- Not so much judge positions

- how did we come to the situation

List unsubstantiated claims in article

Article + Policy paper different

Don't try to correct positions

- illustrate claims + positions

- (we have ideas too)

9

Thur ~~map~~

exciting paper

stats and math

network of citations

- small clusters

- or broad

Can say about level of consensus

---

Microsites - are they worth crawling

- too general public focused

↑ Disrupt coreography

- how do you tell

Tells you ~~public~~ general public

- canned, simplified

---

Bachman's death panels on the debate

Interesting brokers b/w tech people and politics  
↑ Grades

5

Don't give up too quickly on Issue Tracker

For Thur's article - would it be worth it here

- works on clear cases
- doesn't work on messy

Web of science / web of knowledge

- select right db
- ~~key~~ key words - right ones

Clusters

Over time

Does it change?

Scopus is direct competitor

- larger base of journals

Political of which journals are in

---

Not much on net neutrality

- 100 including wrong ones

⑥

Rosan - health problems  
- drop out

---

~~for~~

His research: SEC insider trading  
- material public info  
non

- Since 1940s
- 13,000 Federal court decisions on when can do it
- 2,000 scholarly articles
  - Economists think should
  - speed up market

Same w/ court decisions <sup>as</sup> than w/ scholarly articles  
- when talk about w/ each other

IAP

- call be 2 of us
- ways of quantifying qv

Good piece - A-

I do not think you use "credibility" properly - most instances could have been credibility. But I may be wrong.

Michael Plasmeier

# Dissecting AT&T's Arguments against Net Neutrality Regulations<sup>1</sup>

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On April 26, 2010, AT&T took the opportunity to file a 176-page document refuting the claims of many Net Neutrality regulation proponents. In the document, AT&T lays out its reasoning against the arguments of Google, Free Press, Public Knowledge, and others. AT&T believes that regulations laid out in the FCC's *Preserving the Open Internet* NPRM would be overly strict, would harm private investment, and would address problems which are only theoretical.<sup>2</sup> In laying out its arguments, AT&T uses many of the techniques that Bruno Latour identified in *Science in Action*, including all three types of rhetoric, citations, and stacking.<sup>3</sup>

Although Bruno Latour's *Science in Action* focuses on the work of scientists and engineers, lawyers and others who work in the field of public policy use similar techniques to build arguments and convince others to believe their arguments. In fact, scientists likely adopted these techniques from politicians and lawyers. Well written public comments do not simply advocate a position, but they must attempt to argue what is in the best interest of the public. For example, AT&T cannot simply say that they oppose net neutrality because it would cause them to lose money. Instead, AT&T must say that because they will lose money, networks will not be as built up as they would be otherwise, which would

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<sup>1</sup> AT&T. *Reply Comments of AT&T Inc.* In the Matter of Preserving the Open Internet (GN Docket 09-191) and Broadband Industry Practices (WC Docket 07-52). 2010 April 26. Filed with the FCC.

<http://fjallfoss.fcc.gov/ecfs/comment/view?id=6015583073>

<http://fjallfoss.fcc.gov/ecfs/document/view?id=7020437381>

<sup>2</sup> FCC. *Notice of Proposed Rulemaking*. FCC #09-03. In the Matter of Preserving the Open Internet (GN Docket 09-191) and Broadband Industry Practices (WC Docket 07-52). Adopted 22 Oct 2009.

[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-09-93A1.doc](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-93A1.doc)

<sup>3</sup> Latour, Bruno. *Science in Action: How to Follow Scientists and Engineers through Society*. Harvard University Press, Cambridge, Massachusetts. 15 Oct 1988.

be a worse outcome than what proponents argue should occur. For example, more built-up, but prioritized, networks are better for consumers than older, but neutral, networks.

*framing*  
 AT&T uses a variety of techniques to build their argument. First, AT&T provides an overview of the goals of the controversy. AT&T is already building an argument by choosing which goals to include. Rather than focus on the specific goals of a neutral internet, AT&T talks about the goals of a healthy broadband market.<sup>4</sup> AT&T uses other FCC documents, such as the *National Broadband Plan* to build the argument that net neutrality regulation is a “distraction” from other important FCC policies, such as broadband penetration and meeting social objectives of the Obama administration.<sup>5</sup>

AT&T also uses citations of other parties to support their argument. AT&T realizes that they do not have much ~~credibility~~ to members of the general public because they have a large financial stake in the outcome of net neutrality regulations. Because of their large financial stake, AT&T cannot objectively talk about the public good. Instead, AT&T uses pages 2, 3, and 4 of their filing to cite various individuals, industry groups, and foreign government’s papers, positions, and policies. AT&T even attaches papers written by university professors and economists to its filing with the FCC.<sup>6</sup> Throughout the filing, AT&T usually dedicates between a quarter and a half of each page to footnotes which cite other papers and filings. For some footnotes, AT&T adds its comments or calls out the relevant section of each document. Later documents can then build on this document by citing AT&T’s filing.

In their actual arguments, AT&T uses a variety of rhetorical devices to make its arguments.

We’ve previously discussed ethos, or using the credibility of various independent scientists, economists, and companies to support their arguments. AT&T also attacks the credibility of net neutrality regulation supporters. For example, on page 23, AT&T quotes Harvard professor, and “the  
*any difference between credibility and ethos.*

<sup>4</sup> Page 1. Page numbering used throughout this paper refers to printed page numbers; add 4 to get the PDF page number.

<sup>5</sup> Page 9

<sup>6</sup> List of attachments <http://fjallfoss.fcc.gov/ecfs/comment/view?id=6015583073>

father of net neutrality,” Larry Lessig who predicated in 2001 that the move from open-access dial up lines to closed-to-competitors broadband lines would cause the internet to “collapse [...] quickly and profoundly.” AT&T claims that the move to broadband has not “destroy[ed]” the “egalitarian vision of the Internet”, but has strengthen it, without needing additional regulation.

AT&T uses *pathos*, or emotional appeal, to support their argument. AT&T uses applications of the internet that have social good, such as health care, to support its position that some applications might need prioritization.

*And the market is also exploding with new Smart Grid, healthcare, emergency-response, and a variety of other services that should qualify as “managed” services under any definition of the term. These services are not, as Free Press believes, lurking future menaces. They are widespread today, inarguably proconsumer, and indispensable to this Administration’s key social objectives. Banning or prescriptively regulating these services, as Free Press and others propose, would be a colossal mistake.<sup>7</sup>*

Although net neutrality advocates raise serious questions about how this prioritization would occur, or how it would be allocated, such as by paying a fee, AT&T ignores these issues and pulls on the heartstrings of the reader by arguing health care data or emergency calls should be prioritized over movie reviews.

AT&T uses mostly *logos*, or reasoning, to build its arguments. As discussed earlier, AT&T must show that net neutrality regulations are not in the public interest. One of AT&T’s arguments is that net neutrality would provide a disincentive towards investing in new networks. AT&T quotes a FCC estimate that the deployment of ultra-fast broadband to all corners of the United States would cost \$350 billion. AT&T argues that with the *National Broadband Plan* advocating the use of private capital, a return on that capital must be expected. It uses a paper by Bernstein Research, to discuss the costs of Verizon’s new fiber-to-the-premises system, FiOS.<sup>8</sup> The paper built a model of the costs and revenues from the

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<sup>7</sup> Page 9

<sup>8</sup> Craig Moffett, “Verizon FiOS... Great for Consumers, but What About Investors,” Bernstein & Co.

Verizon's FiOS deployment. It found costs of about \$4,000 per subscriber, but a present value of incremental contribution, including cost savings, incremental revenues, and avoided capital spending, of approximately \$3,200 per subscriber. As the AT&T filing quotes from a UBS report, "if there is a lack of competition in the market for residential broadband, it is because the economics of the business are not attracting new capital to the space. It's simply too difficult to make money here given current technology. If telco prices were too high and their profits too enticing, this wouldn't be the case."<sup>9</sup> AT&T supports these claims by citing studies showing that investing in new networks is not only expensive, but might not pay off, even under a current regulatory environment. AT&T argues that if the FCC would add even more new regulations, it would further reduce the NPV of investment, causing ISPs to withhold building new networks, which would be overall worse for consumers.

AT&T's 176-page rebuttal builds a strong case against the regulations specified in the FCC's *Preserving the Open Internet* NPRM. AT&T carefully structures their arguments so that one stacks on top of one another, like how bricks are placed on top of each other to build a wall. If one argument is declared invalid, there are plenty more that keep the wall standing. First, AT&T claims that the rules are needless since there is no evidence of any real-world market failures. Then AT&T attacked the *ethos* of proponents, undermining their claims. AT&T then used *logos*, or data, to refute arguments. Even within *logos*, arguments are stacked on top of each other. Finally AT&T discusses how, even with flaws, the rules would be illegal under the current Communications Act. AT&T stacks these arguments on top of each other, so that even if the law was changed, AT&T's arguments would still stand.

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2009 Jan 14. The paper is not easily available online, but the author found several articles quoting it.

[http://articles.businessinsider.com/2008-01-14/tech/30051156\\_1\\_fios-bundle-vz-shares-new-fiber](http://articles.businessinsider.com/2008-01-14/tech/30051156_1_fios-bundle-vz-shares-new-fiber)

<http://iep.gmu.edu/iepfiler/papers/Hazlett.Weisman.Broadband.SSRN-id1525568.pdf> (page 29)

[http://www.businessweek.com/magazine/content/11\\_13/b4221046109606.htm](http://www.businessweek.com/magazine/content/11_13/b4221046109606.htm)

<sup>9</sup> Quoted on page 13



*Page 2*  
*Discretion*  
*Document*

Before the  
 FEDERAL COMMUNICATIONS COMMISSION  
 Washington, DC 20554

In the Matter of )  
 Preserving the Open Internet )  
 Broadband Industry Practices )  
 GN Docket No. 09-191  
 WC Docket No. 07-52

REPLY COMMENTS OF AT&T INC.

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*Read 10/30*

D. Wayne Watts  
 Paul K. Mancini  
 Gary L. Phillips  
 Jack S. Zinman  
 AT&T INC.  
 1120 20th Street NW, 10th Floor  
 Washington, D.C. 20036  
 202-457-3053 (phone)  
 202-457-3073 (facsimile)

Jonathan E. Nuechterlein  
 Lynn R. Charytan  
 Heather M. Zachary  
 Anne H. Sherwood  
 WILMER CUTLER PICKERING  
 HALE & DORR LLP  
 1875 Pennsylvania Ave., NW  
 Washington, D.C. 20006  
 202-663-6850 (phone)  
 202-663-6363 (facsimile)

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## INTRODUCTION AND EXECUTIVE SUMMARY

After launching two separate “net neutrality” proceedings, asking scores of questions, and receiving thousands of comments, the Commission has now accumulated a record conclusively demonstrating that the broadband Internet is healthier and more diverse today than it has ever been. It features more providers, more subscribers, more deployment, more speed, more usage, more devices, more applications, and more investment than when the Commission issued its NOI on *Broadband Industry Practices* three years ago or even when the Commission issued its NPRM on *Preserving the Open Internet* just six months ago. And by any measure, consumer welfare has improved dramatically since 2001, when advocates of net neutrality regulation first began predicting that a lack of such regulation would kill the Internet (see Section I, *infra*). These advocates still have not identified—and the record here contains no evidence indicating—any real-world market failure that could justify prescriptive net neutrality regulation, let alone the stringent rules proposed in the NPRM.

Under these circumstances, calls for net neutrality regulation are an unfortunate distraction from the important work that remains to be done in bringing ultra-fast next-generation Internet service to all Americans. The *National Broadband Plan* recognizes that private investment, not prescriptive regulation, is the key to achieving that goal—which, according to the Commission’s own estimates, will cost \$350 billion.<sup>1</sup> The *Broadband Plan* thus wisely

<sup>1</sup> Staff Presentation, *September 2009 Commission Meeting*, at 45 (Sept. 29, 2009) (“September 2009 Staff Presentation”), [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-295742A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-295742A1.pdf). As the *Broadband Plan* explains, “the American broadband ecosystem has evolved rapidly” over the past decade, and this evolution has been “[f]ueled primarily by private sector investment and innovation.” FCC, *Connecting America: The National Broadband Plan* at XI, 40 (2010) (“*Broadband Plan*”), <http://download.broadband.gov/plan/national-broadband-plan.pdf>. For example, in 2009 alone, AT&T devoted approximately two-thirds of its roughly \$17.3 billion capital expenditure budget to broadband investment, and it recently announced a 5 percent to 10 percent capex increase for 2010, despite the still-

endorses “actions government should take to encourage more private innovation and investment,” while emphasizing that “the role of government is and should remain limited.” *Broadband Plan* at 5.

The opening comments likewise reveal a consensus among a diverse cross-section of parties in support of the same types of pragmatic, middle-ground solutions as those proposed in the *Broadband Plan*. These parties tend to support the consumer-focused principles of the Commission’s *Internet Policy Statement* and encourage the Commission to help consumers make well-informed choices by promoting additional transparency in the broadband marketplace. But many in this emerging consensus express serious concern about the more intrusive rules proposed in the NPRM, including any inflexible limitation on business-to-business QoS arrangements and the application of unpredictably disruptive “neutrality” rules to the nascent wireless broadband industry. And they rightly caution the Commission about the unintended consequences of such rules, such as hindering broadband investment and innovation, widening the digital divide, ceding U.S. leadership in Internet technology, depressing job creation and economic growth, and increasing security risks for networks and consumers.

The voices in this emerging consensus include not only AT&T and hundreds of other broadband network operators—ranging from cable companies to CLECs like Covad, to rural ILECs like the members of NECA, to international providers like Telefonica—but also:

- the hundreds of content providers represented by the Motion Picture Association of America and the Recording Industry Association of America, along with online retailers such as Amazon.com;
- the Association for Competitive Technology, representing over 3,000 small and medium-sized software developers;

fragile economy. Mark Winther, *AT&T Year End FY2009 Earnings: \$2 Billion More in 2010 Wireless Capex*, IDC Link (Feb. 1, 2010), [http://www.att.com/Common/about\\_us/files/pdf/IDC\\_report.pdf](http://www.att.com/Common/about_us/files/pdf/IDC_report.pdf).

- former FCC Chairmen William Kennard and Michael Powell;<sup>5</sup>
- Google's Vint Cerf<sup>6</sup> and the drafters of the Google and Verizon Joint Submission, which departs sharply and wisely from Google's separate comments advocating maximal regulation (while remaining consistent with Verizon's own comments),<sup>7</sup> and
- the Commission's regulatory counterparts in the United Kingdom, Canada, the European Union, and Japan, as well as the Organisation for Economic Co-operation and Development, which offers policy guidance to its 30 member nations (see AT&T Comments at 87-93).

If the Commission follows this consensus middle-ground approach, it will preserve the historic openness of the Internet and keep the United States at the forefront of technological

431620 (earlier version); Declaration of Marius Schwartz (attached to AT&T Comments as Ex. 3).

<sup>5</sup> William E. Kennard, *Spreading the Broadband Revolution*, N.Y. Times, Oct. 21, 2006, <http://www.nytimes.com/2006/10/21/opinion/21kennard.html> ("Policymakers should rise above the net neutrality debate and focus on what America truly requires from the Internet: getting affordable broadband access to those who need it.") ("Spreading the Broadband Revolution"); John Eggerton, *Q&A: Michael Powell: Title II Move Could Spark 'War'*, Multichannel News, March 29, 2010, [http://www.multichannel.com/article/450846-Q\\_A\\_Michael\\_Powell\\_Title\\_II\\_Move\\_Could\\_Spark\\_War\\_php](http://www.multichannel.com/article/450846-Q_A_Michael_Powell_Title_II_Move_Could_Spark_War_php) (Powell: "[Y]ou can have net neutrality rules that could be appropriately light and appropriately thoughtful. I do worry that a lot of the advocates for the concept at the commission are looking at something that is way more dramatic than that. I am a really big fan of the open Internet. I think that the four principles that I articulated originally was a better way" because that approach "focus[es] on consumer rights and principles and [is] more manageable."); see also AT&T Comments at 1 (quoting William Kennard, *The Road Not Taken: Building a Broadband Future for America*, FCC (June 15, 1999), <http://www.fcc.gov/Speeches/Kennard/spwck921.html>).

<sup>6</sup> Cerf recently remarked: "With regard to net neutrality, the term has been vastly distorted. Our concern has been with *anti-competitive behavior*. Our biggest concern[] is not that all packets be treated identically, and it's not that you have to pay more for certain packets. It's to ensure that there is a level playing field." Jason Kincaid, *Google's Top Innovators on the Cloud, Net Neutrality, and More*, TechCrunch, Apr. 12, 2010, <http://techcrunch.com/2010/04/12/google-top-innovators-on-the-cloud-net-neutrality-and-more/> (emphasis added); see also Stacey Higginbotham, *Google on Net Neutrality: Its Fiber Buildout and Cloud*, Gigamon, Apr. 12, 2010, <http://gigamon.com/2010/04/12/google-on-net-neutrality-its-fiber-buildout-and-cloud/> ("Cerf reiterated[] that Google isn't calling for every packet to be treated the same, but rather making sure the owners of the pipe don't behave anticompetitively toward content flowing over their pipes. Prioritizing the flow of information for legitimate network management means is fine, but blocking them to stifle competition isn't.") (emphasis added).

<sup>7</sup> Accord Eric Schmidt & Ivan Seidenberg, *Unleashing American Broadband: Google and Verizon support a policy of minimal government involvement*, Wall St. J., Mar. 30, 2010, <http://online.wsj.com/article/SB10001424052748704100604575145663137195890.html> ("The Internet has thrived in an environment of minimal regulation. . . . [T]he framework of minimal government involvement should continue. The [Broadband Plan] underscores the importance of creating the right climate for private investment and market-driven innovation to advance broadband.")

- equipment and software manufacturers ranging from Cisco and Alcatel-Lucent to Motorola and Qualcomm to Sandvine;
- independent backbone providers such as Global Crossing and BT Americas;
- wireless broadband providers ranging from MetroPCS and Leap to Sprint Nextel and Clearwire;
- the thousands of business customers represented by the Chamber of Commerce of the United States and the National Association of Manufacturers;
- trade associations and labor unions spanning the spectrum from the Telecommunications Industry Association to the Communications Workers of America;
- civil rights groups such as the NAACP and LULAC;<sup>2</sup>
- Internet founders David Farber, Robert Kahn, and David Clark;<sup>3</sup>
- leading economists Robert Baumol, Gary Becker, Dennis Carlton, Gerry Faulhaber, Alfred Kahn, Michael Katz, Bruce Owen, Robert Pindyck, Greg Rosston, Richard Schmalensee, Vernon Smith, and Marius Schwartz;<sup>4</sup>

<sup>2</sup> See, e.g., Letter from Rev. William J. Jamison, NAACP, to Chairman Julius Genachowski, FCC, WC Docket No. 07-52 (filed Oct. 14, 2009); Brent Wilkes, LULAC, *It's time for a broadband bill of rights for Latinos*, Houston Chronicle, Jan. 13, 2010, <http://www.chron.com/dispatch/story.npl/editorial/outlook/6814399.html>; Navarroz Wright, *Who Pays the Price for Net Neutrality?*, Huffington Post, Jan. 18, 2010, <http://www.huffingtonpost.com/navarroz-wright/who-pays-the-price-for-net-neutrality> ("When I read the blogs and filings of groups like Free Press and Public Knowledge, I wonder who they really represent. . . . The FCC is playing a dangerous game here, and the people who have the most to lose are already the socially and economically disenfranchised members of our national community—low-income, rural, urban, non-English speaking, tribal, minority . . . and underserved populations.")

<sup>3</sup> See Gerald R. Faulhaber & David J. Farber, *The Open Internet: A Customer-Centric Framework* (attached to AT&T Comments as Ex. 1) ("Faulhaber & Farber"); Andrew Orlovski, *Father of internet (Robert Kahn) warns against Net Neutrality*, The Register, Jan. 18, 2007, [http://www.theregister.com/2007/01/18/kahn\\_net\\_neutrality\\_warning/](http://www.theregister.com/2007/01/18/kahn_net_neutrality_warning/); Comments of David Clark, William Lehr & Steve Bauer (filed under Professor Lehr's name in GN Docket No. 09-191). Unless otherwise indicated, all references below to the "Comments" of a party refer to comments filed in GN Docket No. 09-191 in January 2010.

<sup>4</sup> See, e.g., William J. Baumol, et al., *Economists' Statement on Network Neutrality Policy*, AEI-Brookings Joint Center (2007), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=976889#](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=976889#) PaperDownload (on behalf of seventeen leading economists, including Professors Kahn, Pindyck, Schmalensee, and Smith); Declaration of Gary S. Becker & Dennis W. Carlton (attached to Verizon Comments as Attach. A); Faulhaber & Farber, *supra*; Declaration of Michael L. Katz, *Maximizing Consumer Benefits from Broadband* (attached to Verizon Comments as Attach. B); David Farber & Michael Katz, *Hold Off On Net Neutrality*, Wash. Post, Jan. 19, 2007, at A19; Bruce M. Owen & Gregory L. Rosston, *Local Broadband Access: Primum Non Nocere or Primum Processus? A Property Rights Approach*, in NET NEUTRALITY OR NET NEUTERING: SHOULD BROADBAND INTERNET SERVICES BE REGULATED? 163 (Lenard & May eds., 2006), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=)

innovation, all the while retaining its ability to monitor market developments and pursue further steps in the unlikely event that some market "problem" actually does arise. If, on the other hand, the Commission were to inflict experimental regulatory prohibitions on the Internet ecosystem now, it would all but guarantee a decade of needless regulatory anomalies, market distortions, and industry-destabilizing litigation. And as the Internet *abroad* evolves to meet the consumer demand for next-generation applications over converged IP platforms, the Internet in the *United States* would become straitjacketed by increasingly anachronistic preconceptions about how the Internet "should" operate. That should not be the legacy of this Commission.

#### The misconceptions of the dissenters.

The leading dissenters from the consensus middle-ground approach are Washington-based interest groups like Free Press and Public Knowledge. While these groups opine extensively on the complex technological and economic issues at the heart of this proceeding, none of them has operated a large-scale IP network—nor, for that matter, have they invested a dime of risk capital to build and operate *any* customer-serving commercial enterprise, let alone the tens of billions of dollars in risk capital that the Administration is asking the private sector to invest in order to meet this nation's broadband objectives. This lack of expertise and real-world experience shows. The advocacy of these groups is riddled from beginning to end with basic and often startling misconceptions about IP technology in general as well as the specific IP-enabled services provided to millions of residential and business customers today. For example:

Misunderstanding voluntary QoS arrangements. Some net regulation advocates still argue that new rules are needed to prevent any given ISP from charging unilateral "tolls" to

content providers for access to the ISPs' customers.<sup>8</sup> But there is no evidence in the record that ISPs actually impose such unilateral charges, and no ISP could force any content provider to pay such charges under the existing principles of the *Internet Policy Statement*, which AT&T supports.<sup>9</sup> Instead, the real issue here concerns voluntary commercial arrangements between content and broadband providers for the provision of service-quality enhancements for performance-sensitive content over some or all of the links between the source and destination of that content. These voluntary arrangements exist today, through services like IP multicast, DiffServ functionality, and CDN-collocation arrangements, and the Internet community is hard at work developing innovative "QoS peering" mechanisms. These arrangements are unquestionably pro-consumer; they are desired by and beneficial to content and application providers; and they are increasingly indispensable to the cost-effective distribution of high-quality, lawful content over the Internet. Banning such QoS arrangements, as the NPRM could be construed to propose, would serve no valid purpose, would senselessly undermine whole categories of performance-sensitive Internet services, would discourage investment, and would subvert the interests of content providers and consumers alike.

Mischaracterizing differential packet handling as a "zero-sum game." Free Press (at 3, 18-20) and similar groups contend that "the routing of IP data is a zero-sum game" because the prioritization of packets associated with some content or applications necessarily "degrades" the performance of all other non-prioritized content and applications. But these commenters display

<sup>8</sup> See, e.g., Free Press Presents: Save the Internet, Frequently Asked Questions, Who wants to get rid of Net Neutrality?, <http://www.saveinternet.com/faq> ("The nation's largest telephone and cable companies—including AT&T, Verizon, Comcast and Time Warner Cable—want to be Internet gatekeepers, deciding which Web sites go fast or slow and which won't load at all. They want to tax content providers to guarantee speedy delivery of their data."). In these reply comments, we sometimes use the term "content provider" as shorthand for "provider of Internet content and applications," and we also use the term "ISP" interchangeably with "broadband Internet access provider."

<sup>9</sup> See AT&T Comments at 123-27 (explaining absence of "terminating access monopoly").

no awareness that network engineers have been prioritizing real-time and other performance-sensitive applications for years and have developed sophisticated algorithms to ensure proper handling of all traffic. And these engineers have followed that practice because, as Professor Farber and countless others have explained, it is far more cost-efficient to prioritize applications that need prioritization than to waste millions or billions of dollars in massively overbuilt networks and pass the unnecessary costs through to consumers. See AT&T Comments at 45-46, 65-69; see Section II.F.2, *infra*. This longstanding practice of handling IP packets differently, depending on the performance-sensitivity of their associated applications, is not a "zero-sum game" in any meaningful sense of that term. Some applications need differential handling to function properly, while many do not, and prioritizing the former will not "degrade" the latter or consign users to "the digital equivalent of a winding dirt road."

The proof of this point is staring policymakers in the face. Large, medium, and small providers alike have built IP-based, double- and triple-play platforms that are shared between prioritized IP traffic (IPTV and/or VoIP) and unprioritized, best-effort Internet traffic.<sup>10</sup> As AT&T's own experience has shown, differentiation among these service categories gives consumers a high-quality, high-value experience for all of these services.<sup>11</sup> The best-effort

<sup>10</sup> These providers range from AT&T, which provides IPTV services to millions of consumers over its shared U-verse platform, to mid-sized provider Surewest to more than two hundred rural telephone companies. See National Exchange Carrier Association, *Trends 2009: A report on rural telecom technology*, at 11 (2009) ("NECA Trends 2009 Report"), <https://www.neca.org/cms400min/WorkArea/linkit.aspx?linkIdentifier=id&ItemID=2392> ("IPTV is the next wave of video services delivery. Two hundred ten companies report IPTV deployment; 57 more companies plan to deploy IPTV in 2010."). And, of course, all of the major cable companies offer managed VoIP services over the same shared facilities as their broadband Internet access services.

<sup>11</sup> See AT&T Comments at 53-54 & nn.88-89 (citing reviews of U-verse from Consumer Reports, Frost & Sullivan, and J.D. Power); AT&T, Press Release, *AT&T Wins Frost & Sullivan 2009 Market Leadership Award in Dedicated Internet Access Service*, Mar. 11, 2010, <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=30631>; AT&T, Press Release, *AT&T Wins Frost & Sullivan*

Internet access service that AT&T offers today, over the shared U-verse platform, is far faster and more robust than it was just a few years ago when it was provided over a legacy DSL network that was *not* shared with managed IPTV and VoIP services. There is no reason to expect a different result when, *within* the Internet access portion of a shared platform, providers offer QoS enhancements to the providers of the performance-sensitive applications that need them. The Commission should thus reject proposals, such as the one contained in paragraphs 106 and 107 of the NPRM, to limit or ban such QoS-enhancing services—a rule that would deprive consumers of valuable services that are already widely used today.

*Overlooking the current ubiquity of QoS-enhanced IP services.* In a misguided effort to deny that its proposals would be disruptive, Free Press asserts that "[m]anaged or specialized services represent a future, not a present, use of the broadband network. It is unclear if *any* 'managed or specialized services' are currently offered to consumers." Free Press Comments at 110. Although the term "managed service" is admittedly ambiguous (see Section V.A, *infra*), this statement is market-oblivious even by Free Press's standards. *lol, burn*

Again, AT&T and hundreds of other providers have used packet-prioritization technologies (along with related quality-of-service mechanisms) to provide "managed" IP video and voice services to millions of residential consumers over the same physical transmission links used to provide Internet access service. Likewise, AT&T, Verizon, Qwest, many CLECs, and cable companies like Cox have long provided "managed" IP-based services to enterprise business customers, including Internet content providers, often with packet-prioritization

2009 Video Company of the Year Award, Mar. 11, 2010, <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=30629>.

Remember goal!  
dissect  
argument

capabilities.<sup>12</sup> These services include enterprise-grade Internet access with the capability to prioritize packets associated with performance-sensitive applications, which is provided to a wide range of customers, including healthcare providers, community service organizations, restaurant chains, car dealers, electric utilities, banks, municipalities, security/alarm companies, hotels, labor unions, charities, and video-relay service providers. And the market is also exploding with new Smart Grid, healthcare, emergency-response, and a variety of other services that should qualify as "managed" services under any definition of the term. These services are not, as Free Press believes, lurking future menaces. They are widespread today, inarguably present, and indispensable to this Administration's key social objectives. Banning or prescriptively regulating these services, as Free Press and others propose, would be a colossal mistake.<sup>13</sup>

*Misunderstanding how shared IP platforms work.* Public Knowledge (Comments at 32-35) urges the Commission to crack down on broadband providers that offer "managed services" alongside Internet access by means of shared bandwidth. Like Free Press, however, Public Knowledge appears unaware that, as discussed, millions of Americans *currently receive* the

<sup>12</sup> See AT&T Comments at 51-52; see, e.g., AT&T Wholesale, Managed Internet Service, <http://www.business.att.com/wholesale/Family/ip-solutions-wholesale/managed-internet-service-wholesale/>; Verizon Business, *Internet Dedicated Access Fact Sheet* (2008), [http://mediumbusiness.verizon.com/documents/resource\\_library/Internet\\_Dedicated\\_Access\\_Customer\\_Fact.pdf](http://mediumbusiness.verizon.com/documents/resource_library/Internet_Dedicated_Access_Customer_Fact.pdf); Qwest Wholesale Dedicated Internet Access, <http://www.northwesternbell.us/wholesale/pnwl/hatdia.html>.

<sup>13</sup> For example, as Senator Wyden has suggested, such restrictions could imperil key healthcare objectives: "There are big, big traffic jams and unpaved roads on the information superhighway that's called the Internet, and that is holding back improvements in health care for those in rural and tribal areas," said Wyden. . . . Wyden waded into net neutrality late in the hearing, asking [experts] if health IT should get a priority lane on wireless broadband networks. Wyden hasn't decided whether it's 'appropriate for the Congress or the [FCC] to start thinking about . . . an HOV lane for e-care data for wireless broadband,' he said, 'but at some point Americans are going to ask' if someone reading movie reviews should be allowed to slow down transmission of emergency healthcare service. [Expert Eric] Dishman agreed 'we need to be exploring use cases for the technology that say heart rate data for a critical patient needs to be' prioritized over 'a recipe being exchanged.'" Adam Bender, *Wyden Says Broadband Spending Would Spur Health IT*, Communications Daily, Apr. 23, 2010.

triple play of IPTV, VoIP, and Internet access over shared IP platforms by means of dynamic bandwidth allocation. And neither group seems to know or care that the Internet access speeds available over these shared platforms are dramatically higher than the speeds available over unshared legacy broadband infrastructure such as ADSL. Judging from their comments, these groups would be happier if consumers were stuck with much slower Internet connections so long as the bandwidth of those connections is dedicated solely to Internet access service. For example, the Center for Democracy and Technology expresses an inexplicable nostalgia for "the crowded pre-broadband marketplace featuring thousands of providers offering dial-up Internet access over the common carriers' telephone lines." CDT Comments at 4-6.

Consumers, in contrast, are happy to be rid of 56k modems. And they are also happy to buy triple-play services over a shared IP infrastructure, because sharing allows for high-quality and affordable voice, video, and Internet access services.<sup>14</sup> The Commission would betray their interests as well as this Administration's most basic policy objectives if it subjected such bandwidth-sharing arrangements to new regulatory restrictions—and thereby thwarted the economic logic underlying private multi-billion-dollar investments in next-generation, high-capacity wired and wireless networks.

*Ignoring the unique network-management challenges faced by wireless broadband providers.* Free Press, New America Foundation, and similar groups give lip service to the acute engineering challenges of managing a wireless broadband network over shared and limited spectrum, but in the next breath they reveal that they either do not mean what they say or do not understand these challenges at all. For example, these groups seek to prohibit all broadband

<sup>14</sup> See, e.g., AT&T Investor Briefing No. 268, First Quarter 2010, at 8 (Apr. 21, 2010), [http://www.att.com/investor/financial/earning\\_Info/docs/IQ\\_10\\_IB\\_FINAL.pdf](http://www.att.com/investor/financial/earning_Info/docs/IQ_10_IB_FINAL.pdf) (more than 90 percent of AT&T U-verse TV subscribers also subscribe to U-verse Internet access service and approximately 75 percent of U-verse TV subscribers take U-verse voice service).

No special  
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providers from employing any form of network management, including prioritization, as a means of contending with capacity limitations. In their view, the only legitimate response to capacity constraints is greater investment in more capacity. But no amount of investment, no matter how wasteful and extravagant, can overcome hard limits on available wireless spectrum.

The blanket no-prioritization rule Free Press proposes would therefore degrade all wireless broadband platforms, to the great detriment of consumers. As we show below and as explained in detail in the reply declaration of Professor Reed and Dr. Tripathi,<sup>15</sup> the quality and reliability of wireless voice traffic (including emergency calls) would deteriorate, and congestion would block the deployment of many pro-consumer devices and services ranging from Smart Grid meters to heart monitors. This would thwart a variety of the Administration's broadband goals, including, in particular, its hope of making wireless platforms fully competitive with fixed broadband services. These advocates' proposals to compel wireless networks to support all devices with complete equivalence would likewise destroy the diversity of the wireless broadband ecosystem, stripping networks of differentiated capabilities and forcing complete homogenization. That approach would dramatically reduce consumer choice and deprive consumers of any sophisticated capability that requires close network-to-device coordination. Here, as in many other contexts, advocates of net neutrality regulation would subject consumers to inferior service and less choice, all in the name of misconceived abstractions.

In sum, many of these self-styled "consumer groups" simply do not know what they are talking about, and their proposals, if adopted, would defeat the interests of the very consumers they purport to represent.

<sup>15</sup> Jeffrey Reed & Nishith Tripathi, *Wireless Net Neutrality Regulation: A Response to Afflerbach and DeHaven* (attached to these reply comments as Ex. 1) ("Second Reed & Tripathi Paper").

The disconnect between net regulation proposals and the Broadband Plan's goals.

While Free Press and its ideological kin may fundamentally misunderstand the technology and economics at issue in this proceeding, no one should misunderstand their radical regulatory agenda. As the co-founder of Free Press (and a current member of its Board) has explained: "What we want to have in the U.S. and in every society is an Internet that is *not private property, but a public utility*.... In the realm of Internet service provision, the telephone and cable companies play a parasitic and negative role. They do nothing positive.... Our struggle [is] to make the Internet into a public utility[.]"<sup>16</sup> The supposedly "parasitic" network providers that Free Press wishes to nationalize however, are the same providers on whom this Administration is depending to invest many billions of dollars in private risk capital to extend broadband facilities to underserved communities, all without any guaranteed returns.

Without a shred of support, Free Press nonetheless argues that intrusive broadband regulation would have no effect on investment incentives on the theory that "ISPs are making so much money, and their costs are declining so rapidly, that they could invest in next-generation networks and lower their prices and still remain one of the most profitable sectors of our economy." Free Press Comments at 72-73. Free Press presumably feels free to make such baseless claims because, unlike the market actors on whom this Administration is depending to achieve its broadband goals, Free Press faces few consequences for being wrong, time and again, on issues of critical national importance. But real investment analysts, who understand this market and have done their homework, know that Free Press's advocacy is dangerous nonsense.

<sup>16</sup> *Media Capitalism, the State and 21st Century Media Democracy Struggles: An Interview with Robert McChesney*, The Bulletin, Socialist Project E-Bulletin No. 246 (Aug. 9, 2009), <http://www.socialistproject.ca/bullet/246.php> (emphasis added).

is this a bad thing to Tea Parties certainly



For example, Craig Moffett of Bernstein Research concludes that broadband providers face "a dizzying challenge in earning a desirable return for shareholders," given that "the returns of building a new network of this magnitude are unappealing."<sup>17</sup> Likewise, UBS analyst John Hodulik recently remarked:

[Broadband providers] have been working hard to streamline their cost structures for over a decade. Most investors that follow the space are wondering how much room to cut costs is still left. Verizon alone has been taking out over 10K employees per year for the past several years to improve efficiency and still can't make a decent profit in wireline. In contrast, monopolies are typically characterized by excess returns. People concerned with the lack of competition should also be concerned with the absence of economic profits in this industry because it is excess profits that drive market entry.<sup>18</sup>

The UBS report concludes: "If there is a lack of competition in the market for residential broadband, it is because the economics of the business are not attracting new capital to the space. It's simply too difficult to make money here given current technology. If telco prices were too high and their profits too enticing, this wouldn't be the case."<sup>19</sup>

<sup>17</sup> Craig Moffett, et al., *Project FiOS . . . Great for Consumers, but What About Investors?*, Bernstein Research, at 3 (Jan. 14, 2008) (emphasis added). Analysts also have raised concerns about wireless carriers' ability to earn a return on multi-billion-dollar investments in LTE. Kevin J. O'Brien, *Mobile Data, the Next Generation: High Speeds but at What Cost?*, N.Y. Times, Feb. 15, 2010, <http://www.nytimes.com/2010/02/16/technology/16lte.html> ("Mobile Data, the Next Generation").

<sup>18</sup> John Hodulik, *Daily Rap: Of ISP price gouging and such*, UBS Investment Research, at 3 (Feb. 12, 2010) ("Hodulik, Daily Rap") (emphasis added). One recent study found that "the profitability of the larger Broadband Service Providers (BSPs) is generally equal to or below the average of S&P 500 firms. Thus, 'typical' or 'below average' is more accurate than 'substantial' as a description of these profits. Some large BSPs have very low, and even negative, profitability. Content firms like Google and eBay are substantially more profitable than all large BSPs, implying that the BSPs are not benefiting as much as others are from the surge in broadband adoption and use." George S. Ford & Lawrence J. Spiwak, *Substantial Profits in the Broadband Ecosystem: A Look at the Evidence*, Phoenix Center Perspectives No. 10-04, at 1-2 (Apr. 22, 2010), <http://www.phoenix-center.org/perspectives/Perspective10-04Final.pdf>.

<sup>19</sup> Hodulik, *Daily Rap*, *supra*, at 3 (emphasis added); see also Peter Svensson, *Verizon winds down expensive FiOS expansion*, Associated Press, Mar. 26, 2010, [http://www.usatoday.com/tech/news/2010-03-26-verizon-fiios\\_N.htm](http://www.usatoday.com/tech/news/2010-03-26-verizon-fiios_N.htm) ("Verizon is nearing the end of its program to replace copper phone lines with optical fibers that provide much higher Internet speeds and TV service. . . . The economics apparently are not attractive enough. . . . Verizon has faced skepticism from investors over the project because of the high costs.") (emphasis added).

The *Broadband Plan* itself expresses similar concerns about the need to preserve financial incentives for further wireline broadband investment. The plan acknowledges that "competition appears to have induced broadband providers to invest in network upgrades," and that "[c]onsumers are benefiting from these investments," while "[n]ew choices—at new, higher speeds—are becoming available, as well." *Broadband Plan* at 38. But the *Broadband Plan* also expresses concern that, over the long term, some wireline (i.e., legacy telco) providers "may not be able to match the peak speeds" offered by cable companies that have upgraded to DOCSIS 3.0 technology. *Id.* at 42. And it concludes: "[I]f typical users require high speeds and only one provider can offer those speeds, and expected returns to telephone companies do not justify fiber upgrades, then users may face higher prices, fewer choices and less innovation." *Id.*

Two policy imperatives follow from that concern. First, the Commission should not subject broadband providers to new regulatory burdens that reduce "expected returns," thereby deter "fiber upgrades," and ultimately lead to "fewer choices and less innovation." *Id.* Second, if the Commission is concerned that the financial structure of the industry will lead to long-term asymmetries in the raw bandwidth that broadband competitors can feasibly provide, it should reject proposals to eliminate the efficient options that could help enable lower-bandwidth (wireline and wireless) providers to bridge that performance gap, including the ability to enter into efficient QoS-enhancement arrangements for the performance-sensitive applications that need them.<sup>20</sup>

<sup>20</sup> Google cites the Supreme Court's decision in *Verizon Commc'ns Inc. v. FCC*, 535 U.S. 467 (2002), for the proposition that "wireline broadband providers have enjoyed 'an almost insurmountable competitive advantage' in local markets as a result of their ownership of network facilities." Google Comments at 23 (quoting *Verizon*, 535 U.S. at 490). This is incorrect. *Verizon* concerned circuit-switched telephony, not "broadband." As the *Broadband Plan* correctly explains (at 39), "the majority of U.S. broadband subscribers do not connect to the Internet via local-access infrastructure owned by an incumbent telephone company." Similarly inexplicable errors pervade Google's comments. For

Oh it can't do fiber, do DSL but p. art. 281

some is better than nothing

that's wireline

read - my issue

In sum, this is a low-margin and high-risk business, and the Commission cannot simultaneously undermine broadband business models with needless and ill-defined regulation while pursuing this Administration's goals of effective broadband competition and ubiquitous deployment and adoption.

Dangerous fallacies in proposals for Title II "reclassification."

Some advocates of net neutrality regulation have urged the Commission to "reclassify" broadband Internet access under Title II of the Communications Act—and destroy a dozen years of bipartisan regulatory consensus in favor of light-touch Title I oversight—on the premise that the D.C. Circuit's *Comcast* decision would otherwise deprive the Commission of "subject matter jurisdiction to enforce its Internet policy statement."<sup>21</sup> That premise is wrong. The Commission retains full "subject matter jurisdiction" over broadband Internet access under 47 U.S.C. § 151. See AT&T Comments at 208. And although the *Comcast* decision constrains the Commission's authority to impose the most highly interventionist forms of "net neutrality" regulation, the court withheld any ruling on the merits of key Title I theories that the Commission itself had formulated on appeal as bases for ancillary authority to address core violations of the *Internet Policy Statement*. In short, the Commission has not fully explored its legal options under Title I, and proposals to upend the Communications Act in response to the *Comcast* decision are as

example, Google contends that all broadband providers essentially owe the public for their supposed "monopoly and protected statuses" and "access to rights-of-way and poles." Google Comments at 22. This is wrong on two levels. First, the days of monopoly franchises are long past; no provider has preferential access to public rights-of-way over any other provider, and all providers generally compensate the public for the costs of using such rights-of-way. See, e.g., 47 U.S.C. § 253. Second, the value of such access pales in comparison to the billions of dollars in private risk capital that providers have invested—and must continue to invest—on the broadband rollout.

<sup>21</sup> George Ou, *Unjustified hysteria over DC Circuit FCC Decision*, Digital Society, Apr. 16, 2010, <http://www.digitalsociety.org/2010/04/unjustified-hysteria-over-dc-circuit-fcc-decision/> (quoting Skype's Christopher Libertelli); see *Comcast Corp. v. FCC*, No. 08-1291, 2010 WL 1286658 (D.C. Cir. Apr. 6, 2010).

premature as they are misguided. Moreover, AT&T and many others have announced their commitment to working with the Commission and Congress to ensure the enactment of appropriate supplemental statutory authority that may be needed.

Hoping to obscure just how disruptive their Title II proposals would be, Free Press and Public Knowledge contend that Internet access service was once classified as a

"telecommunications service" and that "reclassifying" it as such under Title II would simply return it to its purported former regulatory status. That is nonsense. The Commission found in 1998 that Internet access services are integrated "information services" without any "telecommunications service" component that could be subject to common-carrier regulation under Title II of the Communications Act. Over the ensuing decade it reaffirmed that conclusion repeatedly when addressing the status of various forms of broadband Internet access, including cable modem service (2002), wireline broadband (2005), and wireless broadband (2007).

Despite the efforts of Free Press and Public Knowledge to politicize this issue, these orders all involved straightforward application of the basic legal principles adopted by the Clinton Administration in 1998. The Commission has never classified any form of *broadband Internet access*—the retail service at issue here—as a "telecommunications service," either in whole or in part. Indeed, that is one reason why former Chairman Kennard refused to subject the cable modem providers of the late 1990s to "open access" requirements.<sup>22</sup> In short, the proposed reclassification would undermine, not honor, longstanding regulatory precedent.

In any event, any Title II reclassification would be pointless and destructive on the merits, because it would (1) destabilize the industry, (2) lead to a likely reversal in court after

<sup>22</sup> See AT&T Comments at 1 (quoting Chairman Kennard), see also Section VII.B.3, *infra* (discussing irrational conflation of statutory characterization issue with *Computer Inquiry* rules).

years of litigation, and (3) achieve no discernible “net neutrality” objective even if it were upheld.<sup>23</sup> First, many investment analysts have vividly warned about the investment-chilling impact of any reclassification decision. For example:

- Craig Moffett of Bernstein Research describes the reclassification proposal as the “nuclear option,” with “sweeping implications, far, far beyond net neutrality,”<sup>24</sup> explains that it “would broadly throw into question capital investment plans for all broadband carriers, potentially for years, while the issue was adjudicated,”<sup>25</sup> and notes that it would lead investors to “run for the hills.”<sup>26</sup>
- Stifel Nicolas analyst Rebecca Arbogast has explained that, “from an investment standpoint,” any Title II reclassification would “totally freak people out . . . which is not what the FCC is looking for right now.”<sup>27</sup>
- Telecom analyst Anna-Maria Kovacs has similarly expressed concern that it would “take years to know whether [any reclassification decision] is upheld in court. . . . [W]e would expect the industry—telco, wireless, and cable—to assess capital investments from this point in light of the potential for new and more extensive regulations.”<sup>28</sup>
- Tech analyst Larry Downes claims that a reclassification “would be the worst example in history of a tail wagging the dog” and perhaps “the worst idea in communications policy to emerge in the last 75 years—that is, since the [FCC] was first created in 1934.”<sup>29</sup>
- Longtime PC Magazine commentator and MarketWatch analyst John Dvorak describes the proposed Title II reclassification as “the worst possible outcome” of the net neutrality debate and “a terrible idea” that would “destroy the Internet as we know it.”<sup>30</sup>

<sup>23</sup> See Letter from National Cable & Telecommunications Association, CTIA—The Wireless Association, United States Telecom Association, Telecommunications Industry Association, Independent Telephone and Telecommunications Alliance, Verizon, AT&T Inc., Time Warner Cable, and Qwest to Chairman Julius Genachowski, FCC, GN Docket No. 09-191 (filed Feb. 22, 2010).

<sup>24</sup> Eric Savitz, *Will FCC Choose “The Nuclear Option” in Net Neutrality Fight?*, Barron’s Tech Trader Daily, Apr. 6, 2010, <http://blogs.barrons.com/techtradedaily/2010/04/06/will-fcc-choose-the-nuclear-option-in-net-neutrality-fight/> (quoting Moffett (emphasis added)).

<sup>25</sup> *Id.* (emphasis added).

<sup>26</sup> Larry Downes, *What’s in a title? For broadband, it’s Oz vs. Kansas*, CNET News, Mar. 11, 2010, [http://news.cnet.com/8301-1035\\_3-20000267-94.html](http://news.cnet.com/8301-1035_3-20000267-94.html) (“Oz vs. Kansas”) (quoting Moffett (emphasis added)).

<sup>27</sup> Josh Wein, *Major ISPs Already Said to Follow Network Neutrality Rules*, Comm’n’s Daily, 2010 WLNR 4019643, Feb. 23, 2010 (quoting Arbogast (emphasis added)).

<sup>28</sup> Anna-Maria Kovacs, *Telecom Regulatory Note: D.C. Circuit vacates FCC’s Comcast network-management order*, Regulatory Source Associates, LLC, at 2 (Apr. 7, 2010).

<sup>29</sup> *Oz vs. Kansas*, *supra* (emphasis added).

- Former Chairman Michael Powell “feat[s] a prolonged period of uncertainty and instability” in the wake of any Title II reclassification decision that would “undermine the shared goal of intensifying our nation’s investment in broadband.”<sup>31</sup>

- The *Washington Post* editorial page explains that any attempted reclassification under Title II would be “a legal sleight of hand that would amount to a naked power grab” and “could damage innovation in what has been a vibrant and rapidly evolving marketplace.”<sup>32</sup>

Indeed, the instability generated by any reclassification decision would afflict not just the broadband marketplace, but the Internet more generally—because, as the Supreme Court explained in *Brand X*,<sup>33</sup> the logic underlying any reinterpretation of this statutory scheme would apply equally to the services of many application and content providers, *whether or not they are facilities-based*. See Section VII.B.2, *infra*.

Second, for all the instability it would cause in the short to intermediate term, the proposed “reclassification” would very likely succumb to judicial rejection in the long term. Broadband Internet access services are textbook examples of integrated “information services” subject to light-touch regulation under Title I. From the perspective of consumers (and, for that matter, providers), such services are tightly integrated offerings of data-processing/data-retrieval functionalities bound up with broadband transport—just as the Commission found they were in 2002, 2005, and 2007. Simply as a factual matter, therefore, they are *not* offered as separate “ISP” and “transmission” services, as the Commission would have to find before reclassifying them. Although administrative agencies often retain discretion to alter their policy judgments,

<sup>30</sup> John Dvorak, *Net neutrality becomes a dangerous issue*, MarketWatch, Apr. 16, 2010, <http://www.marketwatch.com/story/story/print?guid=2012C86A-55C5-4CA0-821F-F203C21E2B6E>.

<sup>31</sup> Michael K. Powell, *My Take on the Appeals Court Decision*, Broadband for America, Apr. 7, 2010, <http://www.broadbandforamerica.com/blog/michael-powell-my-take-appeals-court-decision> (emphasis added).

<sup>32</sup> Editorial, *Internet oversight is needed, but not in the form of FCC regulation*, Wash. Post, Apr. 17, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/04/16/AR2010041604610.html>.

<sup>33</sup> *National Cable & Telecommunications Ass’n v. Brand X Internet Servs.*, 545 U.S. 967 (2005).

the Commission has no discretion to make up facts in order to evade statutory limits on its authority, particularly when the industry has relied heavily on the Commission's prior, correct account of the facts.<sup>34</sup> Here, a reviewing court would see any reclassification as a sudden and expedient denial of irrefutable facts, designed to nullify the *Comcast* decision and avoid clear limits on the Commission's statutory authority.

*Third*, in the starkest irony of all, *the proposed reclassification would not even support the net neutrality rules that its proponents advocate*, for two basic reasons. First, common carriers have long offered customers the option of paying extra for higher priority or shared transmission capacity. It has never been considered "discriminatory," let alone "unreasonably" so, for common carriers to offer such "priority tiering" services to those customers—in this case, content providers—who voluntarily agree to pay for them. Second, reclassification would not give the Commission new powers to impose any form of "net neutrality" regulation that it does not already have under Title I. Reclassification would artificially divide broadband Internet access into two services: a broadband transmission component, subject to Title II, and an ISP service, subject (as before) only to the Commission's ancillary jurisdiction under Title I. But the conduct that net regulation advocates seek to outlaw would be more likely to occur within the Title I ISP service than within the Title II transmission service, and would thus fall outside any Title II authority. Reclassification would thus succeed only in generating years of unnecessary litigation and uncertainty while recreating, in a more complex and destabilizing form, the same statutory authority issues the Commission already confronts today.

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<sup>34</sup> *FCC v. Fox Television Stations, Inc.*, 129 S. Ct. 1800, 1810-11 (2009) (reviewing courts should be more skeptical of an agency's policy reversal where "its new policy rests upon factual findings that contradict those which underlay its prior policy" or "when its prior policy has engendered serious reliance interests that must be taken into account").

The remainder of these comments is divided into the following sections. Section I briefly summarizes the state of the "net neutrality" debate. As we explain there, the absence of any demonstrated market problem, as well as the lack of any reason why the Commission must act before any such problem arises, would make any prescriptive regulation unwise and unlawful.

Section II addresses the Commission's proposed (and badly misnamed) "nondiscrimination" rule, which would thwart the goal of full convergence over the IP platform and raise consumer prices while "solving" no discernible problem with the Internet today. As we discuss, that rule threatens to wipe out the voluntary QoS arrangements—including (among others) paid peering, IP multicast, CDN collocation, and end-to-end differential service handling—that are needed to distribute the next generation of performance-sensitive content and applications to consumers. The advocates of this "remedy" identify no market failure that it is needed to cure. For example, as we have explained, all talk of a "terminating access monopoly" in this context is untenable because, as a practical matter, broadband providers can neither block traffic nor file tariffs—and thus cannot impose unilateral (much less supracompetitive) "access" charges for traffic termination. All available data likewise refute the notion that, if broadband providers continue prioritizing performance-sensitive traffic over shared platforms, as they have been doing for years, they will suddenly gain incentives to consign all other traffic to "the digital equivalent of a winding dirt road."<sup>35</sup>

Section III explains why the Commission should reject calls to impose net neutrality requirements on the wireless broadband industry for the first time ever. Even in the brief interval since the NPRM was released, that industry has continued to evolve in pro-consumer ways,

<sup>35</sup> Lawrence Lessig & Robert W. McChesney, *No Tolls on the Internet*, Wash. Post, June 8, 2006, <http://www.washingtonpost.com/wp-dyn/content/article/2006/06/07/AR2006060702108.html>.

expanding consumer choice and creating opportunities for application and content providers as well as device manufacturers:

- AT&T announced five new Android smartphone models—including the Aero, Dell's first entrée into the smartphone market<sup>36</sup>—and a variety of new initiatives to help application providers launch their services, including the new multi-provider Wholesale Applications Community;
- Google launched its Nexus One, and recently released a version of that phone that works on AT&T's 3G network;
- Verizon Wireless announced a partnership with Skype designed to bring the Internet calling service to nine of the provider's 3G smartphones; and
- New e-readers and other M2M devices have continued to emerge at a phenomenal pace.

As we further note, the Commission itself has recently released data confirming the technological and competitive dynamism of this market. In short, we explain, there is no competitive shortcoming in the wireless marketplace that could remotely justify subjecting it to "neutrality" rules. Such rules would accomplish nothing beyond harm to the developing wireless ecosystem. They would compromise wireless network management and lead to crippling congestion. They would undermine innovative services and business models that consumers value and that are indispensable to this Administration's education, energy, telemedicine, economic, and environmental goals. And they would thwart the Administration's broadband policies in particular by stunting the growth of wireless broadband services as an additional broadband alternative for consumers.

Section IV then addresses why the Commission should preserve substantial flexibility in any rules or guidelines it adopts for broadband network management. As we explain, the Commission would imperil the security, efficiency, and reliability of the nation's broadband

<sup>36</sup> See Victor Godínez, *AT&T to add 3 smart phones, new bundle plan*, Dallas Morning News, Mar. 23, 2010, <http://www.dallasnews.com/sharedcontent/dws/bus/ptech/stories/032310dnbusaro.1d19ec0c.html> ("AT&T to add 3 smart phones, new bundle plan").

networks if it adopted arbitrary restrictions on the discretion of network engineers to cope with rapidly evolving network-management challenges as they arise. And proposals to penalize broadband providers for working with content owners (or law enforcement) to reduce copyright infringement (or other unlawful conduct) would be both unwise and inconsistent with Section 230 of the Communications Act.

Section V explains that the scope of the proposed rules is both overinclusive, because they would apply to a category of "broadband Internet access services" that is defined far too broadly, and underinclusive, because they would apply only to an arbitrarily limited set of providers rather than to Internet gatekeepers with genuine market power. If the Commission adopts net neutrality rules, it should address the overinclusiveness concern by refining its definitions of "Internet" and "broadband Internet access" as we propose in our opening comments. And it should address the underinclusiveness concern by applying any "neutrality" and "transparency" rules to Internet bottlenecks like Google, whose dominance of the online search and search-advertising markets threatens Internet "openness"—and determines Internet "winners" and "losers"—far more than any broadband provider possibly could. It would make no sense to adopt rules that purport to address "gatekeeper" control of the Internet while ignoring the real gatekeepers.<sup>37</sup>

Section VI reiterates AT&T's support for a consumer-oriented transparency principle. As we explain, broadband providers should disclose information relevant to a customer's choice and use of broadband services. But the Commission would do far more harm than good if it

<sup>37</sup> As groups purportedly concerned about threats to Internet openness, Free Press and Public Knowledge should have ample reason to express concern about Google's dominant gatekeeper control over the Internet, its existing abuses of that control, the potential for systemic future abuses, and the subject matter of the European Commission's recently revealed investigation into those abuses. Yet both organizations have curiously chosen to remain silent about all of these concerns.

Google getting more intelco biz

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forced broadband providers to make *additional* disclosures to (non-customer) application and content providers. If anything, the transparency principle should require disclosures *from* application and content providers, since their services can affect the performance of broadband networks to the detriment of all users.

Finally, Section VII explains why the rules proposed in the NPRM would be unlawful. Quite apart from the jurisdictional limitations discussed above, the most intrusive aspects of the proposed net neutrality rules would contradict several provisions of the Act, including Sections 202(a), 230(b)(2), and 230(c)(2). The rules would also be arbitrary and capricious, given (among their other defects) the absence of any demonstrated need for new regulation after many years of success with a policy of unregulation. And they would violate the First Amendment—and, at a minimum, the doctrine of constitutional avoidance—by impairing the rights of content providers and ISPs to use the prohibited QoS arrangements to present expressive content more effectively to end users.

## DISCUSSION

### I. THE RECORD CONFIRMS THAT THERE IS NO MARKET PROBLEM THAT COULD JUSTIFY PREEMPTIVE REGULATION.

Like other advocates of “net neutrality” rules, Google claims that preemptive regulation of the Internet is necessary on the theory that “the very roots of its success are in jeopardy.” Google Comments at 1. When it reads such claims, the Commission should keep one point firmly in mind. We have heard this rhetoric before, for a very long time, and it has always turned out to be wrong.

As far back as 2001, Larry Lessig, the father of the net neutrality movement, claimed that broadband regulation was already long overdue because, he warned,

*The Internet revolution has ended just as surprisingly as it began. None expected the explosion of creativity that the network produced; few expected that explosion*

*to collapse as quickly and profoundly as it has. The phenomenon has the feel of a shooting star, flaring unannounced across the night sky, then disappearing just as unexpectedly.*<sup>38</sup>

Indeed, he insisted, recent developments around the turn of the millennium were “dismantling the very architecture that made the Internet a framework for global innovation.”<sup>39</sup> Why did Lessig think that the “Internet revolution ha[d] ended” in 2001, and what did he blame for “dismantling [its] very architecture,” to the demise of “global innovation”? More than any other factor, he blamed the dynamic that, as this Commission understands, has profoundly transformed the Internet and the world for the better: the Internet’s “move[ment] from narrowband to broadband.”<sup>40</sup> Lessig elaborated on this theme in his contemporaneous and highly influential book, *The Future of Ideas* (2001): “Everyone knows that the broadband era will breed a new generation of online services, but this is only half the story. Like any innovation, broadband will inflict major changes on its environment. *It will destroy, once and for all, the egalitarian vision of the Internet.*”<sup>41</sup>

Nine years later, without any need for prescriptive regulation, the “egalitarian vision of the Internet” is alive and well, and consumers are inestimably better off for having made the jump from narrowband to broadband. In short, Lessig was wrong in 2001, and he and the other

<sup>38</sup> Lawrence Lessig, *The Internet Under Siege*, 127 Foreign Policy 56, 56 (2001) (emphasis added), <http://lessig.org/blog/ForeignPolicy.pdf>.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 62 (“Narrowband service across acoustic modems enabled millions of computers to connect through thousands of ISPs. Local telephone service providers had to provide ISPs with access to local wires; they were not permitted to discriminate against Internet service. . . . But as the Internet moves from narrowband to broadband, the regulatory environment is changing. The dominant broadband technology in the United States is currently cable. . . . And cable has asserted the right to discriminate in the Internet service it provides.”).

<sup>41</sup> Lawrence Lessig, *The Future of Ideas* 176 (2001) (emphasis in original) (quoting with approval Charles Platt, *The Future Will Be Fast But Not Free*, Wired, May 2001, [http://www.wired.com/wired/archive/9.05/broadband\\_pr.html](http://www.wired.com/wired/archive/9.05/broadband_pr.html)).

Internet interventionists have been wrong ever since in their various rationales for net neutrality regulation.

For example, in 2006, Lessig claimed: "In the US, at least, broadband competition is dying."<sup>42</sup> And in 2007, Free Press and similar groups told the Commission that the broadband marketplace is at best a "cozy duopoly" that "dribble[s] out capacity in small increments at high prices."<sup>43</sup> Again, they were all wrong. As the *Broadband Plan* explains:

- contrary to Lessig's suggestion that broadband competition is particularly deficient "[i]n the US," the U.S. market structure is "relatively unique in that people in most parts of the country have been able to choose" among intermodal competitors, whereas most foreign consumers have not;
- this "competition appears to have induced broadband providers to invest in network upgrades";
- as a result, "typical advertised download speeds to which consumers subscribe have grown at approximately 20% annually for the past 10 years"; and
- "[c]onsumers are benefiting from these investments" in particular and "from the presence of multiple providers" in general.

*Broadband Plan* at 37-38 (emphasis added).

In 2006, Tim Wu similarly tried to justify heavy regulation of the nascent wireless broadband industry on the ground that, left to market forces, wireless providers would never permit VoIP over mobile phones or "sell a Wi-Fi phone at any price."<sup>44</sup> Wu was as wrong as Lessig and Free Press. Today, without regulatory intervention, every major wireless provider offers devices that support Wi-Fi (AT&T alone currently offers 17 such devices), as well as

<sup>42</sup> Lawrence Lessig, *Congress Must Keep Broadband Competition Alive*, FT.com, Oct. 18, 2006, <http://www.ft.com/cms/s/2/a27bdb16-5ecd-11db-afac-0000779e2340.html>.

<sup>43</sup> Comments of the Consumer Federation of America, Consumers Union, and Free Press, WC Docket No. 07-52, at 11-12 (filed June 15, 2007).

<sup>44</sup> Tim Wu, *Wireless Net Neutrality: Cellular Carterfone and Consumer Choice in Mobile Broadband*, New America Foundation Wireless Future Program, at 24 (Feb. 2007) ("Cellular Carterfone and Consumer Choice in Mobile Broadband"), [http://www.newamerica.net/files/WorkingPaper17-WirelessNetNeutrality\\_Wu.pdf](http://www.newamerica.net/files/WorkingPaper17-WirelessNetNeutrality_Wu.pdf).

really,

handsets that support VoIP (over both Wi-Fi and 3G networks). See AT&T Comments at 155. In fact, from 2008 to 2009, the number of phones shipped with Wi-Fi capabilities increased from 92.5 million to 139.3 million, and research indicates that 90 percent of all smartphones will be equipped with Wi-Fi by 2014.<sup>45</sup>

More generally, the broadband Internet ecosystem has never been healthier or more open. See AT&T Comments at 79-92. The credit for that belongs to market dynamics, not the preemptive regulation that the net neutrality movement has advocated since its inception, and which this Commission has always wisely rejected since the Kennard era of the late 1990s. See *id.* at 1. Of course, evidence of the market's continued health and openness does not stop the advocates of net regulation from sticking to their dystopian founding myths, despite the overwhelming record evidence that those myths are baseless. That evidence may never persuade them that their advocacy is wrong. But it should persuade the Commission, and it would persuade a reviewing court.<sup>46</sup>

Grasping for some market problem to justify their extreme "remedies," the opening comments of the net regulation advocates return to the same dry well: two episodes involving two broadband providers—rural telco Madison River (in 2004) and Comcast (in 2007)—over the dozen-plus years of broadband service.<sup>47</sup> But each of those episodes cuts against the advocates

<sup>45</sup> Stephen Lawson, *Wi-Fi spreading fast among mobile phones*, InfoWorld, Mar. 23, 2010, [http://www.infoworld.com/d/networking/wi-fi-spreading-fast-among-mobile-phones-4677?source=rss\\_infoworld\\_news](http://www.infoworld.com/d/networking/wi-fi-spreading-fast-among-mobile-phones-4677?source=rss_infoworld_news) (reporting the number will exceed 500 million phones by 2014).

<sup>46</sup> See, e.g., *National Fuel Gas Supply Corp. v. FERC*, 468 F.3d 831, 843-44 (D.C. Cir. 2006) ("Professing that an order ameliorates a real industry problem but then citing no evidence demonstrating that there is in fact an industry problem is not reasoned decisionmaking."); *ALLETEL Corp. v. FCC*, 838 F.2d 551, 561 (D.C. Cir. 1988) ("[A] regulation perfectly reasonable and appropriate in the face of a given problem may be highly capricious if that problem does not exist.") (internal quotation marks omitted).

<sup>47</sup> See, e.g., Google Comments at 39; Public Knowledge Comments at 23-24, 56; CDT Comments at 8, 23 & n.81. Just as the deadline for these reply comments was approaching, Free Press and Public

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of new regulation, because each was promptly and voluntarily resolved under the consumer-oriented principles adopted in the Internet Policy Statement, and each thus proves the efficacy of the existing regime. Neither of these isolated incidents could remotely justify a scheme of prescriptive regulation for the entire industry, let alone a scheme that would substantively extend far beyond the principles of the Internet Policy Statement.<sup>48</sup> Indeed, as we have explained, these incidents are logically unrelated to the proposed "nondiscrimination" rule, which would ban entire categories of commercial QoS-enhancing arrangements. Those incidents did not involve QoS arrangements, and they could therefore provide no support for adding a new ban on such arrangements. To the contrary, they confirm the sufficiency of the existing principles of the Internet Policy Statement. See AT&T Comments at 93-96. Even the CEO of BitTorrent—the putative victim of Comcast's 2007 conduct—perceives little need for prescriptive regulation

Knowledge reached deep into the barrel to produce allegations about a "third," two-year-old incident involving RCN, a cable overbuilder (i.e., competitive entrant) and CLEC that serves a few hundred thousand subscribers. Like Comcast, RCN is alleged to have used the same familiar and now-discontinued practice of "TCP resets" to "throttle" certain P2P traffic. In the nearly two years since class action lawyers initiated their very public suit against RCN, no one ever deemed the allegations serious enough to file a complaint with the Commission or (so far as we are aware) even to mention them in any FCC comments. See Class Action Complaint, *Chin v. RCN Corp.*, 08-7349 (S.D.N.Y. filed Aug. 19, 2008). Although RCN voluntarily resolved the allegations in a private settlement, Public Knowledge now claims that this nearly forgotten episode somehow "demonstrates" that "ISPs cannot be relied on to respect the open nature of the Internet in the absence of" substantive FCC regulation. Mehan Jayasuriya, *RCN Settlement Demonstrates the Perils of ISP Self-Regulation*, Public Knowledge, Apr. 20, 2010, <http://www.publicknowledge.org/node/5009>. In fact, it confirms the opposite conclusion, given that the incident was resolved without the Commission's involvement. Finally, the RCN "incident" involved alleged violations of the existing four principles, and has no conceivable bearing on proposals for a new "nondiscrimination" rule.

<sup>48</sup> See, e.g., *Fox TV Stations Inc. v. FCC*, 280 F.3d 1027, 1051 (D.C. Cir. 2002) ("[T]he Commission has not shown a substantial enough probability of discrimination to deem reasonable a prophylactic rule as broad as the cross-ownership ban, especially in light of the already extant conduct rules. A single incident since the must-carry rules were promulgated—and one that seems to have been dealt with adequately under those rules—is just not enough to suggest an otherwise significant problem.")

So this is somewhat policy  
 - perhaps I will do policy from ISP perspective  
 (this is actually somewhat convincing)

because consumer demand will keep ISPs from "try[ing] to be gatekeepers against certain websites or Internet-based services," and thus "[t]he public is our regulator."<sup>49</sup>

Because they can cite no evidence of any relevant market failure, the supporters of "net neutrality" regulation resort to abstract theoretical speculation about problems that, they say, might someday arise in the absence of such a ban. As discussed below, that speculation is analytically indefensible simply as a matter of economic theory. But even if it were credible, it could not justify imposing experimental new regulation now, before any market problem arises. Instead, such speculation could at most justify the Commission's continued commitment to watching the market closely and considering intervention if a problem actually does someday arise. See AT&T Comments at 94-96.<sup>50</sup> No commenter identifies any coherent basis, and there is none, for claiming that the Commission must act now or forever lose the opportunity to address any future market failures in the unlikely event they do arise. Any preemptive regulation would fail for that reason alone, particularly given the palpable First Amendment concerns it would raise. See Section VII.D, *infra*.

In sum, there is no need to subject the broadband Internet to prescriptive regulation of any kind, let alone to the invasive regulatory surgery advocated by Free Press, Public Knowledge, and the like. As discussed below, moreover, such regulation would be not only pointless, but affirmatively inimical to the interests of American consumers. We return to these two themes—the needlessness and harmfulness of the proposed rules—throughout these reply

<sup>49</sup> Stephen Lawson, *Broadband Has No Regulator*, *BitTorrent CEO Soys*, PCWorld, Apr. 19, 2010, [http://www.pcworld.com/businesscenter/article/194554/broadband\\_has\\_no\\_regulator\\_bittorrent\\_ceo\\_says.html](http://www.pcworld.com/businesscenter/article/194554/broadband_has_no_regulator_bittorrent_ceo_says.html) ("BitTorrent CEO Remarks").

<sup>50</sup> As longtime PC Magazine commentator John Dvorak explains: "Take on net neutrality when it is actually a problem, not while it is some imagined bogeyman doing nothing. There are real problems on the Internet and this is not one of them. It might become one someday, and it might not. Worry about it after the real problems are fixed." John Dvorak, *The Idealism of Net Neutrality*, PCMag.com, Aug. 19, 2009, [http://www.pcmag.com/print\\_article/20,1217,a=243277,00.asp?hidPrint=true](http://www.pcmag.com/print_article/20,1217,a=243277,00.asp?hidPrint=true).



comments. The Commission should keep both themes in mind as it considers specific regulatory proposals (1) to stamp out promising new means of conveying high-quality, bandwidth-intensive content efficiently and lawfully over the Internet to millions of residential subscribers (Section II), (2) to rob the wireless broadband ecosystem of its current consumer-friendly diversity by dumbing down all wireless services with one-size-fits-all "openness" mandates (Section III), and (3) to imperil network performance, cybersecurity, and copyright protections by subjecting broadband providers to an ever-present risk of regulatory sanctions whenever they act decisively to head off emerging threats to the network, individual consumers, or the rights of content providers (Section IV).

## II. THE PROPOSED "NONDISCRIMINATION" RULE WOULD BE NEEDLESS AND HARMFUL.

### A. The Proposed Rule Would Be Grossly Overbroad.

As discussed in our opening comments, the proposed "nondiscrimination" rule would be grossly overbroad in two key respects. First, as described in paragraphs 106 and 107 of the NPRM, that rule would not be merely (or even primarily) a *nondiscrimination* requirement in any meaningful sense of that term, but something far more onerous, in that it would flatly prohibit any voluntary commercial relationship in which a broadband access provider "charge[s]" an application or content provider "for enhanced or prioritized access to [an end user]" over unspecified links in the portion of the provider's network closest to that end user. NPRM ¶ 106. This is not a "nondiscrimination" rule; it is a line-of-business restriction. Second, as set forth in section 8.13 of Appendix A, the rule would ban all "discrimination," not merely "unjust or unreasonable" discrimination, which is the focus of section 202(a) of the Communications Act. In this respect as well, the proposed rule would impose a standard of conduct far more stringent than Congress saw fit to impose on monopoly-era telephone companies in 1934, even though today's broadband marketplace is much more competitive.

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Proponents of net neutrality gloss over these infirmities, supporting the proposed rule as though it were an ordinary "nondiscrimination" requirement. But decades of administrative law precedent confirm that it is nothing of the sort. It has *never* been considered "discriminatory" (much less unreasonably so) under principles of common carriage for a provider to offer different tiers of service to different purchasers, depending on their needs and preferences, even when buyers of the higher-tiered services receive greater priority than other users to shared transmission resources. For example, AT&T, Verizon, Qwest, and other providers all offer QoS-enhanced network services today to enterprise customers that wish to pay extra for them, as many do, and those customers receive priority for network capacity during periods of congestion. See AT&T Comments at 51-52; note 12, *supra*. Some legacy services in this category have been offered on a tariffed basis under Title II, see AT&T Comments at 52-53 n.86, but no one has ever suggested that enterprise customers that choose *not* to purchase such services have been "discriminated" against.

Argument should be no competition

The transmission of natural gas over monopoly pipeline facilities is similarly governed by a statutory "undue discrimination" standard that is based on the same statutory antecedent as, and is indistinguishable from, the "unreasonable discrimination" standard of Section 202(a).<sup>51</sup> Monopoly pipelines have long offered natural gas "shippers" (*i.e.*, companies that pay pipelines to transport gas from its source to end users or other pipelines) a choice of purchasing "firm" or "interruptible" service over shared transmission facilities.<sup>52</sup> "Firm" service is priced higher than

<sup>51</sup> See 15 U.S.C. § 717d(a); see also *id.* § 717e(b). See generally *Verizon*, 535 U.S. at 478 & n.3 (discussing parallel regimes under the Communications Act, the Natural Gas Act, and the Interstate Commerce Act); Notice of Proposed Rulemaking, *Competition in the Interstate Interexchange Marketplace*, 5 FCC Rcd 2627, 2644 ¶ 140 (1990) (discussing parallel "nondiscrimination" standards in Communications Act and Natural Gas Act).

<sup>52</sup> See, e.g., *Tennessee Gas Pipeline Co. v. FERC*, 972 F.2d 376, 379 (D.C. Cir. 1992); see also *Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol*, 50 Fed. Reg. 42,408, 42,435

"interruptible" service but, as its name suggests, entitles shippers to priority over other shippers that have bought lower-priced "interruptible" service, thereby enabling them to make use of finite pipeline capacity during periods of congestion.<sup>53</sup> It might be "discriminatory" for a monopoly pipeline to offer firm service to one shipper while refusing to provide firm service to a similarly situated shipper that wishes to buy it. But it is *not* discriminatory, let alone unreasonably so, for the monopoly pipeline to provide firm service to shippers that have chosen to pay extra for it—and not to shippers that have chosen the lower-priced "interruptible" alternative.<sup>54</sup>

interesting point

(1985) ("Order 436") ("[A] large percentage of a pipeline's capacity may be reserved at any given time for firm sales and firm transportation. However, customers that have reserved or 'booked' pipeline capacity and thus have first claim on its use may not always use the entire amount they have reserved. Traditionally, pipelines have taken advantage of that unused (but 'booked') capacity by offering a sales or transportation service that is subject to being terminated or 'interrupted' by the prior claim of firm sales or transportation customers. Although this interruptible service is inferior to and less valuable than firm service, its offering seeks to maximize utilization of idle pipeline capacity and therefore is in the public interest and must be encouraged by ratemaking.")

<sup>53</sup> See *Associated Gas Distributors v. FERC*, 824 F.2d 981, 1013 (D.C. Cir. 1987) ("Firm sales contracts give the customer the right to demand, and obligate the pipeline at all times to stand ready to deliver, a certain quantity of gas per day."); *Complex Consol. Edison Co. v. FERC*, 165 F.3d 992, 998 n.12 (D.C. Cir. 1999) (interruptible service "provides gas on a 'when available' basis and may be interrupted after notice to the subscriber"); *Order 436*, 50 Fed. Reg. at 42,438 (If a "customer's claim to a pipeline's capacity is interruptible, its claim is inferior to that of the firm customers. Therefore, if any of the pipeline's firm customers, including customers with converted transportation rights or customers with other firm transportation rights under this rule, demand their firm transportation, the firm customer will pre-empt the interruptible customer."); 18 C.F.R. § 284.9(a)(3) (FERC rule providing that "[s]ervice on an interruptible basis means that the capacity used to provide the service is subject to a prior claim by another customer or another class of service and receives a lower priority than such other classes of service").

<sup>54</sup> E.g., *Sunrise Energy Co. v. Transwestern Pipeline Co.*, 62 FERC ¶ 61,087, at 61,623 (1993) ("Interruptible shippers and firm shippers are simply not similarly situated. The Commission's... regulations distinguish the two types of service and permit different treatment in terms of scheduling and price based on whether the service is interruptible or firm. Firm service is inherently more reliable and, therefore, shippers pay more for such service. The provisions of [FERC's rules] requiring the nondiscriminatory rendering of firm or interruptible service... cannot be read to mean that firm and interruptible shippers are similarly situated. [Those rules] are stated separately because they refer to two different types of service.") (emphasis added).

The essential point is that paid arrangements for priority tiering have never been considered "discriminatory" (let alone *unreasonably* discriminatory) because, even though the purchasers of different service tiers are treated differently, they are by definition not buying "like" services and are by choice not similarly situated.<sup>55</sup> Thus, no court would view a prohibition on voluntary priority-tiering arrangements as a coherent application of *any* "nondiscrimination" principle, as that concept has been applied in common-carrier contexts throughout modern regulatory history. In particular, such a prohibition would be radically different in kind from, and far more draconian than, either the traditional nondiscrimination concept found in Section 202(a) of the Communications Act or the stricter nondiscrimination concept embodied in Sections 251 and 271.<sup>56</sup> Indeed, in applying even the latter concept, the

Commission itself has "expressly permitted the very type of arrangement that would now be

<sup>55</sup> See *id.*; *Competitive Telecomm.'s Ass'n v. FCC*, 998 F.2d 1058, 1061 (D.C. Cir. 1993) ("An inquiry into whether a carrier is discriminating in violation of § 202(n) involves a three-step inquiry: (1) whether the services are 'like'; (2) if they are, whether there is a price difference between them; and (3) if there is, whether that difference is reasonable."); *Tennessee Gas Pipeline Co. v. FERC*, 860 F.2d 446, 452 n.9 (D.C. Cir. 1988) ("Mere difference, however, is not discriminatory; there must also be a demonstration that the two classes of customer are similarly situated for purposes of the rate."). As a recent Phoenix Center study explains, "[S]tandard services and enhanced/prioritized services are, by definition, not functionally equivalent and thus not 'like,' so a different price for these different services is certainly not discrimination under communications law (as set forth in Section 202). . . . Economics likewise requires the goods to be 'identical,' so different prices for standard service versus enhanced or prioritized services is not discriminatory under the economic standard. It is obvious, therefore, that the FCC has defined a set of 'discriminatory' prices that would not qualify as such under meaningful legal and economic definitions of discrimination." George S. Ford & Lawrence J. Spiwak, *Non-Discrimination of Just Non-Sense: A Law and Economics Review of the FCC's New Net Neutrality Principle*, Phoenix Center Perspectives No. 10-03, at 3 (Mar. 24, 2010) ("*Ford & Spiwak*"), <http://www.phoenix-center.org/perspectives/Perspective10-03Final.pdf>.

<sup>56</sup> See AT&T Comments at 212-13 (discussing why the horizontal-competition concerns motivating Sections 251 and 271 are inapplicable here and why they would not support the proposed "nondiscrimination" rule even if they were present); see also *Ford & Spiwak*, *supra*, at 4-5 ("[C]harging different prices for different things is in no sense discrimination, whether evaluated using the logic of economics, Section 202, or Section 251. . . . [T]he FCC's application of 251(c)(2) discrimination. . . . expressly permitted the very type of arrangement that would now be expressly precluded by the agency's proposed non-discrimination rule.")

expressly precluded by the agency's proposed non-discrimination rule.<sup>57</sup>—arrangements under which a provider's customers “fully compensate[]” it “to increase the quality of access[.]”<sup>58</sup>

In short, the proposed prohibition discussed in paragraphs 106 and 107 of the NPRM is quite simply a line-of-business restriction on the sale of whole categories of QoS services to content providers. See AT&T Comments at 104-05, 109-10. Such line-of-business restrictions are traditionally and properly confined to monopolists that have been found to have acted anticompetitively. See *id.* at 109-10. Like other broadband providers, AT&T is not a monopolist in any relevant market, nor has it been found to have acted anticompetitively in any such market. The proposed “nondiscrimination” rule would thus be a radical, unexplained, and indefensible departure from all past practice.

Net regulation advocates also fail to explain how it could be defensible to adopt a rigid “discrimination” ban without the “unjust/unreasonable” qualifier found in Section 202(a), which Congress found appropriate even for the monopolistic telephony market of 1934.<sup>59</sup> Taking a stab at the issue, Google argues (at 62) that applying an “unreasonable” qualifier to any “nondiscrimination” rule would somehow make it “more murky” and “complex,” but this makes no sense. To begin with, there would be nothing straightforward about this proposed restriction, with or without the proposed “unreasonable” qualifier, as discussed in our opening comments. See AT&T Comments at 103-14. And no one has seriously suggested that Section 202 should

<sup>57</sup> *Ford & Spivak, supra*, at 5.

<sup>58</sup> First Report and Order, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, 11 FCC Red 15499, 15659 ¶ 314 (1996); see also *id.* (discussing obligations of ILECs to provide, on differentially compensated terms, either “lower” or “superior level of quality,” depending on a given customer’s request).

<sup>59</sup> 47 U.S.C. § 202(a); see AT&T Comments at 212-13 (discussing inapplicability of stricter “nondiscrimination” requirements of Sections 251 and 271-272, designed narrowly to force monopolists to cooperate with market entry by horizontal rivals); see also Section VII, *infra*.

itself be amended to remove the “unreasonable” qualifier on the ground that the qualifier is too “murky” or “complex.” Seventy-five years of experience have shown that qualifier to be both administrable and indispensable to the sound administration of the nation’s telecommunications laws. As discussed in our opening comments and further in Section VII below, the surest road to judicial invalidation is to subject competitive broadband providers to inflexible bans that Congress deliberately chose *not* to impose on the telephone monopolists of 1934.

**B. The Advocacy for the Proposed Nondiscrimination Rule Rests on Basic Misperceptions About the Nature of QoS-Enhancement Arrangements and the Preconditions for Any “Terminating Access Monopoly.”**

The proposed nondiscrimination rule is not only overbroad, but also grounded in a pervasively flawed set of assumptions about the types of commercial arrangements that are actually at issue here. Free Press and others that support a ban on QoS-enhancing services argue as though such a ban were needed to preclude a given ISP from charging unilateral “fees” (or “tolls”) to “non-customer” content providers, reasoning that those providers have “already paid” their “own” ISPs for connectivity to the Internet and should not be expected to pay “other” ISPs as well. See, e.g., Free Press Comments at 16-17; CDT Comments at 7. As discussed, however, there is no evidence that ISPs are imposing unilateral fees on content providers, and the lack of tariffing authority for broadband Internet access providers, combined with the existing no-blocking principle in the *Internet Policy Statement*, removes any theoretical leverage an ISP might have to try to extract such fees. See AT&T Comments at 123-27.

When properly understood, the existing and future QoS practices that AT&T and many others seek to preserve and advance—and that the proposed nondiscrimination rule would prohibit—should be entirely unobjectionable. AT&T seeks to enter into voluntary agreements with content providers to ensure QoS enhancements for the performance-sensitive applications and content that need those enhancements to function optimally. Such a QoS-enhancing service

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could take one of the following forms detailed in our opening comments, among many other possibilities:

- **Provider and recipient of content use the same broadband network to reach each other.** Today, AT&T and other ISPs sell providers of performance-sensitive content (e.g., Telepresence or real-time high-definition video) various DiffServ- and MPLS-related services that ensure high-quality handling of the associated IP packets over all or almost all of the links between the content provider and the content recipients. If both a content provider and a content recipient purchase the services of the same broadband network, the traffic between them never needs to leave that network, and any performance-sensitive content may be subject to differential handling from beginning to end (although AT&T does not currently prioritize Internet traffic over the last links en route to residential customers). See AT&T Comments at 59-62.

- **CDN services and CDN collocation.** In addition to providing broadband Internet access service to end-user customers, some ISPs have also begun offering CDN services in competition with non-ISP CDN providers like Akamai and Limelight. Other ISPs, whether formally providing commercial CDN services or not, may enter into bilateral arrangements for CDN collocation, where the content provider pays the ISP to cache its content within the ISP's access networks. See *id.* at 69-73.

- **IP multicast.** Some ISPs have started offering IP multicast capabilities, where the content provider pays the ISP to efficiently route its content in a single data stream to specially equipped routers, typically located deep in the ISP's access or aggregation network, that instantaneously replicate the content and send it to multiple end users that are requesting it. See *id.* at 71-72.

- **QoS peering.** Under "QoS peering" arrangements between Internet backbones, each backbone agrees to honor the QoS guarantees offered by other backbones in order to enable end-to-end QoS for performance-sensitive content and applications. Although such QoS-peering arrangements are not common today, the Internet community is actively exploring means of implementing them more widely, and organizations like **InterStream** are working to make that vision a reality. Any monetary transfer under such arrangements would occur as the result of bilateral or multilateral commercial agreements among interested content providers, ISPs, and perhaps QoS clearinghouses. See *id.* at 58-59.

These examples of how paid QoS-enhancement arrangements would play out in practice refute all the muddled rhetoric from the net regulation advocates about how content providers "already pay" their "own" ISPs for Internet access and should therefore not have to pay "extra" to "other" ISPs simply to navigate the last mile to end users on those other ISPs' networks.

Under any of the scenarios discussed above, a content provider would itself agree to become the

customer of any ISP to whom it would pay fees for arranging high-quality transmission for its content.<sup>60</sup> The net regulation advocates articulate no coherent reason why, as the NPRM could be construed to propose, the Commission should ban content providers from entering into such mutually beneficial and pro-consumer arrangements with ISPs.

Some of these advocates continue to claim that such a ban is needed to protect content providers from the "terminating access monopoly." E.g., Google Comments at 34-36 & n.116; CDT Comments at 8-9. As we have explained, however, that concern is completely misconceived. Unlike LECs terminating traffic over the PSTN, broadband providers cannot file tariffs. Nor can they freely block or degrade traffic for non-paying content providers under the existing four principles of the *Internet Policy Statement*. Absent the power to tariff or block, a broadband provider has no possible means of exercising any "terminating access monopoly" by imposing unilateral fees on unwilling content providers. AT&T Comments at 123-27.<sup>61</sup>

This point is irrefutable as a matter of both theory and historical experience. AT&T, Verizon Wireless, Sprint, and T-Mobile each have tens of millions of subscribers apiece, but none of them can file tariffs or block traffic from disfavored carriers, and thus none of them has any way to impose unilateral access charges on any other carrier, despite their size and despite their supposed "terminating access monopolies." AT&T Comments at 126-27. We explain this point

<sup>60</sup> For a further discussion of how content-transport models on the Internet have changed in just the past few years, see Christopher Yoo, *Innovations in the Internet's Architecture that Challenge the Status Quo*, 8 J. on Telecomm. & High Tech. L. 79 (2010).

<sup>61</sup> As discussed in our opening comments (at 124-25), the "CLEC access charge controversy" of ten years ago arose not because of any genuine "terminating access monopoly," but because any CLEC could legally force IXCs to pay its tariffed rates. Notably, when the Commission resolved that controversy by precluding CLECs from tariffing terminating access charges above a specified benchmark rate, it nonetheless permitted CLECs and IXCs to enter into *voluntary* arrangements for the payment of access charges above the benchmark rates for a "superior quality of access." Seventh Report and Order, *Access Charge Reform*, 16 FCC Rcd 9923 ¶ 43 (2001). The same logic should apply here: Broadband providers and content providers should be free to enter into voluntary arrangements for the provision of QoS enhancements for performance-sensitive content.

Netflix  
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services

could pay!

in detail in our opening comments—and, for that matter, in our 2007 reply comments<sup>62</sup>—and do not repeat that discussion here, because our opponents have offered no meaningful response.

C. **No Market-Distorting Ban on Voluntary QoS-Enhancement Arrangements Is Needed to Keep Broadband Providers from Sabotaging Their Best-Effort Internet Access Platforms.**

Ultimately, the opposition to these QoS-enhancement services boils down to the proposition that, if permitted to provide those services, broadband providers would have incentives to degrade the performance of their best-effort Internet access platforms to “the digital equivalent of a winding dirt road” in order to create economically inefficient incentives for all content providers to purchase such services. Net regulation advocates sometimes mischaracterize this as a concern about “vertical” foreclosure,<sup>63</sup> even though the concern they articulate has little to do with genuine vertical integration; for example, AT&T is not vertically integrated with any content studios. In any event, no matter what it is called, this “dirt road” concern is economically untenable and is refuted by all available market data. We refer the Commission to the extended treatment of this issue in our opening comments (at 127-31); in the submissions of Professors Schwartz, Faulhaber, and Farber, filed with our opening comments; and in the attached analysis of Professors Sidak and Teece.

To begin with, most major broadband providers already offer Internet access over the same pipe as managed video and voice services, including packet-prioritized IPTV and VoIP services, and if broadband providers had any incentive to degrade their best-effort platforms “to

<sup>62</sup> Reply Comments of AT&T, Inc., WC Docket No. 07-52, at 28-31 (filed July 16, 2007) (“AT&T 2007 Reply Comments”).

<sup>63</sup> See, e.g., Google Comments at 30; American Cable Association Comments at 2. The attached analysis of Professors Sidak and Teece explains why this “vertical foreclosure” theory is untenable even on its own terms. J. Gregory Sidak & David J. Teece, *Innovation Spillovers and the “Dirt Road” Fallacy: The Intellectual Bankruptcy of Banning Optional Transactions for Enhanced Delivery over the Internet*, 6 J. of Comp. L. & Econ. (forthcoming 2010) (manuscript at 36-46) (attached to these reply comments as Ex. 2) (“Sidak-Teece Paper”).

a dirt road” in order to increase revenues for their prioritized traffic, they would have done so already. Yet they have steadily *increased* the performance of their best-effort Internet access platform because, among other considerations, their customers have choices and demand ever-increasing speeds. See AT&T Comments at 127-31. As the *Broadband Plan* confirms (at 38), “competition appears to have induced broadband providers to invest in network upgrades,” and “typical advertised download speeds to which consumers subscribe have grown at approximately 20% annually for the past 10 years.” (Emphasis added.) The fact that virtually all broadband providers have steadily enhanced their best-effort platforms, even while supplementing them with packet-prioritized services over the same shared pipes, is powerful evidence that these providers will not start sabotaging that best-effort platform sometime in the future.

It bears repeating that the existing four principles *already* address concerns about efforts by ISPs to block or degrade access to *particular* content providers.<sup>64</sup> Again, therefore, the question here is not (as some net regulation advocates present it) whether ISPs could somehow extract fees from *individual* content providers by threatening to degrade their data in particular if they do not pay up. The question instead is whether a new, innovation-suppressing

“nondiscrimination” rule is needed to address concerns that ISPs could and would degrade their *entire* best-effort platforms for *the millions* of applications and content providers that do not purchase QoS services. There is no need for such a rule because broadband providers have no incentive to degrade their entire best-effort platform; if they did, they would alienate their customers by impairing access to millions of websites and Internet applications that those customers value. See *Broadband Plan* at 40. And intermodal competitors would readily exploit

<sup>64</sup> See *Internet Policy Statement* ¶ 4 (providing that “consumers are entitled to access the lawful Internet content of their choice” and “to run applications and use services of their choice”).

integrated w/  
a TV service  
U-Voxe

or not  
upgrade

any broadband provider's failure to provide state-of-the-art best-effort connectivity. See AT&T Comments at 129-31.

Repeating their familiar "cozy duopoly" rhetoric, some commenters nonetheless claim that broadband competition is insufficient to serve this function and ensure high-quality best-effort Internet connectivity over IP platforms that are shared with QoS-enhanced applications.<sup>63</sup> Again, as a threshold matter, that allegation is refuted by all evidence to date, given that broadband providers have steadily increased best-effort speeds even as they offer managed voice and video services over a shared infrastructure. But even if one were to disregard that existing evidence, there would still be no basis for concern that broadband competition is somehow inadequate to protect consumer welfare.

First, competition between fixed broadband providers alone is intense, as confirmed by annualized churn rates for such providers of approximately 30-35 percent, along with steadily decreasing prices per unit of capacity sold. See AT&T Comments at 83. The Commission's most recent broadband report, which reflects market developments as of year-end 2008, confirms the same conclusion. According to the report, roughly 92 percent of U.S. census tracts have at least two fixed terrestrial broadband services (i.e., not including satellite and wireless broadband).<sup>66</sup> And as the *Broadband Plan* adds, "[n]ew choices—at new, higher speeds—are becoming available, as well":

Clearwire offers download speeds of up to 2 Mbps service in several cities and plans to have its WiMAX service available to about 120 million people by 2011. Two satellite providers plan to launch new satellites in 2011 and 2012, with

<sup>63</sup> See, e.g., Free Press Comments at 22; Public Knowledge Comments at 47.

<sup>66</sup> Ind. Anal. & Tech. Div. Wireline Competition Bureau, FCC, *High-Speed Services for Internet Access: Status as of December 31, 2008*, at Tbl. 13 (Feb. 2010) ("FCC February 2010 Broadband Report") (confirming that 91.9 percent of U.S. census tracts have at least two fixed broadband providers—specifically, aDSL, cable modem, or FTTP services—and 57.2 percent have at least three).

ViaSat (WildBlue) expecting to advertise download speeds of up to 2-10 Mbps and Hughes Communications planning to advertise download speeds of up to 5-25 Mbps.

*Broadband Plan* at 38 (internal footnotes omitted). CNET recently echoed this same finding: "The 4G revolution in wireless won't just make Web surfing on your mobile phone faster, it could help you say good-bye to traditional cable and DSL broadband."<sup>67</sup> CNET observed that Clearwire in particular "offers average download speeds between 3Mbps and 6Mbps, which are comparable with many DSL and cable modem services on the market. As a result, consumers in the 27 markets where Clearwire currently offers service now have another choice for their broadband service. And many are deciding to ditch cable and DSL for 4G wireless."<sup>68</sup>

Even taken by itself, this competition among fixed providers would be enough—just as it always has been enough—to deter any such provider from degrading its best-efforts platform to earn higher profits for QoS-enhanced traffic. This should come as no surprise as a matter of economic theory. Once a broadband provider has built out its network to a given location, its marginal costs of serving any given customer within that location are relatively low. It thus has unusually powerful incentives to keep each customer satisfied, lest it lose all of the revenues associated with that customer while avoiding only the relatively low marginal costs.<sup>69</sup>

<sup>67</sup> Marguerite Reardon, *Can 4G wireless take on traditional broadband?*, CNET, Mar. 22, 2010 ("Can 4G wireless take on traditional broadband?"), [http://reviews.cnet.com/8301-12261\\_7-20000832-10356022.html](http://reviews.cnet.com/8301-12261_7-20000832-10356022.html). Clearwire offered service to approximately 34 million people by the end of 2009 and expects to increase that figure almost four-fold by year's end. Clearwire, News Release, *Clearwire Reports Fourth Quarter and Full Year 2009 Results*, Feb. 24, 2010 ("Clearwire 2009 Results News Release"), <http://investors.clearwire.com/phoenix.zhtml?c=198722&p=198722&p=1394717&highlight>.

<sup>68</sup> *Can 4G wireless take on traditional broadband?*, *supra*.

<sup>69</sup> See, e.g., Timothy J. Tardiff, *Changes in Industry Structure and Technological Convergence: Implications for Competition Policy and Regulation in Telecommunications*, 4 Int'l Econ. & Econ. Pol. 109 (2006); Dennis L. Weisman, *When Can Regulation Defer to Competition for Constraining Market Power?: Complements and Critical Elasticities*, 2 J. Competition L. & Econ. 101, 102 (2006) ("[P]rice increases that produce even small reductions in demand can generate large losses in contribution to joint

Complete over cost  
Cooperate on regulation

not as much as other things ← comparable

but can't  
make enough

On top of this competition among *fixed* (wired and wireless) broadband providers, the recent broadband report shows that 46 mobile wireless broadband providers across the United States are now offering competitive alternatives to fixed broadband services.<sup>70</sup> Within the next two or three years, mobile wireless broadband networks are expected to offer best-efforts connectivity at throughput rates—“between 4 and 12 Mbps, with sustained speeds of up to 5 Mbps”—that rival what fixed broadband providers offer consumers today.<sup>71</sup> Such services are already substitutes today for fixed broadband services, and this will become increasingly true in the next few years, as (1) providers upgrade to the greater capabilities of advanced 3G and 4G technology and (2) additional millions of consumers purchase wireless broadband-enabled laptops, netbooks, and devices like the Apple iPhone and iPad, the Verizon/Motorola Droid, the Sprint/HTC Hero and Touch, the T-Mobile G1, and Google’s Nexus One, which combine portability, high bandwidth Internet connectivity, and user-friendly Web interfaces. The ink would not be dry on any order in this proceeding before wireless broadband services—fixed and mobile—drive the final nail into any “duopoly” theory of regulation, which, as discussed, would be flawed even on its own terms.

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and common costs because the firm’s revenues decline much more than the costs it can avoid. It is in this manner that high margins can serve to discipline the (de)regulated firm’s pricing behavior.”), *Sidak-Teecce Paper* at 39-40. *see also Broadband Plan* at 37 (“modern analyses find that markets with a small number of participants can perform competitively”). This phenomenon arises in high-fixed-cost markets where, to earn even normal profits, a provider must charge an average price that far exceeds its short-run incremental costs. Broadband is such a market. *See Sidak-Teecce Paper* at 39-40.

<sup>70</sup> *FCC February 2010 Broadband Report* at 23, Tbl. 10.

<sup>71</sup> *Broadband Plan* at 41 (citing Robert C. Atkinson & Ivy E. Schultz, *Broadband in America, Where It Is and Where It Is Going*, at 23, Figure 8 (Columbia Institute for Tele-Information, Nov. 11, 2009), [http://www.broadband.gov/docs/Broadband\\_in\\_America.pdf](http://www.broadband.gov/docs/Broadband_in_America.pdf)); *see* Phil Goldstein, *T-Mobile upgrades 3G footprint to HSPA 7.2*, *FierceWireless*, Jan. 5, 2010, <http://www.fiercewireless.com/story/mobile-upgrades-3g-footprint-hspa-7-2/2010-01-05> (reporting T-Mobile has announced it plans to deploy technology with peak data speeds of 21 Mbps across most of its network this year).

In short, there is no evidence here of a market failure, let alone a market failure that could justify straitjacketing the Internet with this misconceived ban on whole categories of QoS-enhancing arrangements. In the absence of such evidence, the supporters of the proposed QoS ban resort to abstract theoretical speculation about problems that, they say, *might* someday arise in the absence of such a ban.<sup>72</sup> As discussed, that speculation would not justify preemptive regulation even if it had potential theoretical merit, because no one has identified any reason why the Commission would need to intervene now, solely on the basis of theory, instead of waiting to see if that theory becomes market reality and intervening only if it does. In any event, the proffered speculation about the theoretical possibility of future market failures is analytically unsound even on its own terms.

In particular, the short essay by Nicholas Economides, attached to Google’s comments, offers no rational basis even for speculative economic concern that, if broadband providers continue offering QoS-enhanced services for certain content and applications, they could someday develop incentives to degrade their best-effort platforms. In Exhibit 2 to these reply comments, Professors David Teece and Gregory Sidak rebut Professor Economides’ submission in detail, and we refer the Commission to their analysis. They identify, among others, the following flaws in the Economides submission (and in the companion piece by Christiaan Hogendorn, also commissioned by Google):

- Professor Economides’ analysis rests on the untenable premise that broadband providers might somehow exploit their supposed terminating access monopoly.<sup>73</sup> As discussed above (and in previous rounds of comments), that premise is false, because broadband providers can neither file tariffs nor threaten to block traffic for nonpayment.

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<sup>72</sup> *E.g.*, Nicholas Economides, *Why Imposing New Tolls on Third-Party Content and Applications Threatens Innovation and Will Not Improve Broadband Providers’ Investment* (Jan. 2010) (attached as Appx. A to Google Comments) (“*Economides Paper*”).

<sup>73</sup> *See, e.g.*, *Economides Paper* at 3-4.

- Economides' analysis assumes that all IP packets are completely homogenous in all respects, including in the performance-sensitivity of their associated content and in the value that consumers attach to the high-performance transmission of particular content. Because IP packets are in fact heterogeneous in these and other respects, Economides' conclusions break down entirely.
- The economic model that Economides invokes is a model that—as he explicitly acknowledges—applies only to the potential incentives of *monopolists*.<sup>74</sup> No one credibly suggests that any relevant market here—either the market for broadband services to consumers or the equally important market for QoS enhancements (see AT&T Comments at 117-19)—is a “monopoly.” Again, any such claim would run headlong into the Commission’s own findings in the *Broadband Plan* and elsewhere about broadband competition.
- Economides’ analysis also ignores the strongly complementary nature of demand for broadband Internet access and content.
- The invocation of “externalities” or “spillovers” by Economides and Hogendorn as a basis for the proposed ban on QoS enhancements is economically untenable and absurdly overinclusive. Among other considerations, most Internet services—indeed, innumerable goods and services in our economy generally—produce substantial externalities without thereby triggering any need for regulation. Economides and Hogendorn identify no reason, because there is none, why the positive externalities generated by the Internet ecosystem warrant *any* regulatory measures, let alone *these* proposed regulatory measures, as opposed to a myriad of other, less intrusive means of promoting desired Internet applications and content. And they also fail to account for the *negative* externalities their proposed regulation would generate.

In short, these economic theories are deeply at odds with more than a decade of actual experience in the broadband marketplace, they do not make sense even as an academic matter, and they cannot plausibly support the rules proposed in the NPRM.

**D. Proponents of the Strict “Nondiscrimination” Rule Identify No Logical Basis for Distinguishing Between the QoS-Enhancement Techniques They Would Permit and Those They Would Forbid.**

Although they are leading advocates of the proposed “nondiscrimination” rule, CDT and Google do not advocate banning *all* individualized arrangements between ISPs and content providers to ensure the high-quality delivery of content to the ISP end users receiving that

<sup>74</sup> *Id.* at 4, 13.

content. To the contrary, both CDT and Google would permit *CDN collocation*, under which a content provider negotiates with an ISP to cache its content deep within the ISP’s access network. See AT&T Comments at 69-70; see also *id.* at 27-30, 35-36 (discussing CDN services generally). CDT cites such arrangements as a basis for concluding that the NPRM’s “formulation [of the proposed nondiscrimination rule is] too broad.” CDT Comments at 24. In CDT’s view, the Commission should not preclude “a broadband Internet access service provider [from] offer[ing] caching, which enables content providers to store commonly requested content on servers that are closer to intended recipients.” *Id.*

Similarly, in its official blog, Google claims that CDN collocation arrangements are pro-consumer and acknowledges that it “has offered to ‘colocate’ caching servers *within broadband providers’ own facilities*.”<sup>75</sup> Google has entered into such arrangements both in the United States and abroad. Citing a recent Arbor Networks study, *Wired* reports that “Google has been deploying banks of servers *inside* [consumer ISP] networks, so traffic to Google’s servers never has to leave an ISP, cutting down on lag time and transit costs. Arbor estimates that *more than half of the ISPs in Europe and North America are home to a bank of servers known as a Google Global Cache*.”<sup>76</sup> Google has illustrated its CDN caching arrangements—and underscored how

<sup>75</sup> Richard Whitt, Washington Telecom & Media Counsel, Google, *Net neutrality and the benefits of caching*, Google Public Policy Blog, Dec. 15, 2008 (“*Google CDN-Collocation Blog Post*”), <http://googlepublicpolicy.blogspot.com/2008/12/net-neutrality-and-benefits-of-caching.html> (emphasis added). Google posted this blog entry in response to disclosures by two investigative journalists that Google had “approached major cable and phone companies that carry Internet traffic with a proposal to create a fast lane for its own content.” Vishesh Kumar & Christopher Rhoads, *Google Wants Its Own Fast Track on the Web*, Wall St. J., Dec. 15, 2008, <http://online.wsj.com/article/SB122929270127905065.html>.

<sup>76</sup> Ryan Singel, *Google’s Traffic Is Giant, Which Is Why It Should Be Your ISP*, *Wired*, Mar. 16, 2010 (emphasis added), [http://www.wired.com/epicenter/2010/03/google-traffic/?utm\\_source=feedburn](http://www.wired.com/epicenter/2010/03/google-traffic/?utm_source=feedburn); see Craig Labovitz, *How Big Is Google?*, Arbor Networks, Mar. 16, 2010, <http://asert.arbornetworks.com/2010/03/how-big-is-google/> (“Labovitz, *How Big Is Google?*”).



they “improve[] users’ experience accessing Google services” (in contrast to the services of *non-collocating content providers*)—in the following presentation to Latin American ISPs:<sup>77</sup>

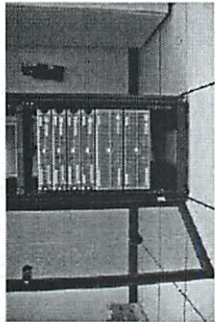
### Google Global Cache

#### Motivation

- Explosion of broadband access and rich, multimedia content continues to drive demand on Internet backbone networks
- This increases the cost of Internet Service Providers (network upgrades, transit costs, etc..)

#### Google Global Cache

- Allows Large ISP to serve content from the edge of their own network.
- Eases backbone congestion on the service provider’s network well as traffic on peering and transit links
- Saves money and improves users’ experience accessing Google services.
- GGC can be also deployed in IXPs, to server content to participants, locally!



Similarly, the *Guardian* recently reported that Google and other content providers are negotiating with British ISPs to “pay them, rather than the likes of Akamai, and get a guaranteed service even at peak times.”<sup>78</sup> One of those ISPs, BT Wholesale, explains that such CDN collocation arrangements will “enable Communication Providers to charge Content Providers for content delivery thus allowing the Communication Provider to be part of the value chain.”<sup>79</sup>

In its blog, Google has struggled to explain how such CDN collocation arrangements could be consistent with its proposal to ban *other* types of QoS-enhancing arrangements (such as

<sup>77</sup> This presentation is publicly available at <http://www.lacnic.net/documentos/lacnicxi/presentaciones/Google-LACNIC-final-short.pdf>.

<sup>78</sup> Richard Wray, *BT and Google in talks over creating video delivery network for ISPs*, The Guardian, Dec. 7, 2009, <http://www.guardian.co.uk/business/2009/dec/07/bt-google-isp-digital-video>.

<sup>79</sup> BT Wholesale, Wholesale Content Connect, [http://www.btwholesale.com/pages/static/Products/Broadband/Wholesale\\_Content\\_Connect.html](http://www.btwholesale.com/pages/static/Products/Broadband/Wholesale_Content_Connect.html).

packet-prioritization services) between content providers and ISPs serving individual content recipients.<sup>80</sup> Curiously, however, Google has omitted this complication from its comments here. Perhaps Google wishes to keep the Commission from thinking too hard about whether it is logically defensible to *prohibit* the alternative QoS-enhancing arrangements Google wishes to keep rival content providers from using, such as packet prioritization, while *permitting* the QoS-enhancing arrangements that Google wishes to exploit to its own commercial advantage. As discussed below, that distinction is not logically defensible. And the Commission could not reasonably avoid that problem if it were inclined to adopt its proposed “nondiscrimination” rule but also wished to carve out an exemption for CDN collocation, as CDT and Google hope it does.

#### 1. In Endorsing CDN Collocation, Net Neutrality Proponents Acknowledge That Paid Performance Enhancements Yield Considerable Benefits for Consumers.

There is no question that CDN collocation arrangements, like CDN services generally, enhance end users’ experience of the content at issue. That is their whole point. And content providers that purchase CDN services, including CDN collocation, enjoy distinct performance advantages over content providers that purchase no such enhancements. Akamai explains that it “helps even the smallest entrepreneurs to expand their presence on the Web by offering a better and faster customer experience.” Akamai Comments at 4. Although Akamai does not say so in its comments, this is a highly lucrative business, and “the smallest entrepreneurs” need significant financial resources before they can pay for these CDN services—or, as Google has done, build out their own CDNs.<sup>81</sup> Entrepreneurs that *cannot* obtain such financing will tend to

<sup>80</sup> *Google CDN-Collocation Blog Post*, *supra* (emphasis added).

<sup>81</sup> See AT&T Comments at 34-36; ITIF Comments at 14-15 (observing that Akamai’s earnings far exceeded those of major broadband providers during recent reporting periods).

lose out in the contest for end users because they will be offering a slower and less reliable customer experience than their CDN-equipped rivals. See AT&T Comments at 34-36.<sup>82</sup>

As we have explained, the CDN phenomenon illustrates a central precept of any sensible Internet policy. AT&T Comments at 34-41. Although the commercial Internet is an exceedingly well-functioning marketplace, it is still a *marketplace*, where financial resources help decide which applications and content providers succeed and which do not. In this respect, the Internet is now, and always has been, decidedly *non-neutral*. In Akamai's words, providers of feature-rich content that pay extra to receive Akamai's state-of-the-art CDN services, including its Dynamic Site Accelerator ("DSA") solution, "have created immersive [consumer] experiences, *greater loyalty*, [and] *higher site conversions*, and have generated *more revenue*."<sup>83</sup>

This does *not* mean, of course, that large companies necessarily win out over small companies, because the capital markets help start-ups with promising business plans pay the high price of advanced CDN functionality. But it is quite wrong to assert, as most advocates of net

<sup>82</sup> The Transmission Control Protocol (TCP) used by most applications on the Internet has a built-in bias, transmitting data over long distances to end users at slower speeds than data transmitted over short distances. Among their other benefits, CDNs help content providers overcome that bias by shortening the distance to end users, thereby increasing the transmission speed. See George Ou, *The bias against long distance Internet file transfer*, digital society, Feb. 20, 2010, [http://www.digitalsociety.org/2010/02/the-](http://www.digitalsociety.org/2010/02/the-bias-against-long-distance-internet-file-transfer/)

<sup>83</sup> Akamai White Paper, *Beyond Caching: The User Experience Impact of Accelerating Dynamic Site Elements across the Internet*, at 1 (Nov. 2008) (emphasis added) ("Akamai White Paper"), [http://www.ibusiness.de/wrapper.cgi/www.ibusiness.de/files/jb\\_2532165951\\_1259489113.pdf](http://www.ibusiness.de/wrapper.cgi/www.ibusiness.de/files/jb_2532165951_1259489113.pdf). Akamai adds: "While many of today's leading businesses rely upon traditional content delivery networks (CDNs) . . . most of these CDNs," unlike Akamai and a few others, "have not evolved to support rich interactive content" and "have not developed the advanced technology needed to accelerate dynamic elements." *Id.* at 4. Akamai also touts the ubiquity of its global CDN, boasting that "85% of the world's Internet users are within a single network hop of an Akamai Edge server." *Id.* at 5. In its comments, Akamai claims that it "does not operate at the physical transmission layer" in that it does not own backbone facilities, but in the next breath it acknowledges that it connects its cache servers to the Internet content of its customers "through leased bandwidth." Akamai Comments at 12. In other words, Akamai is indeed in the business of physically transmitting content from one corner of the Internet to another, albeit through leasehold interests in transmission facilities rather than outright ownership.

neutrality regulation do in their sloppier moments, that the Internet treats companies with financial resources or options the same way it treats companies without those resources or options. It does not treat them equally at all. It dramatically favors the former over the latter, and it always has. Akamai itself makes this point eloquently:<sup>84</sup>

### Summary

#### How Performance Correlates to Revenue—It's the User Experience

Gartner Group states, "Impatience is Your Number 1 Competitor"<sup>4</sup>. It is no longer acceptable for a user to begin viewing a portion of a site, while waiting for the rest to load. However, achieving sub-second responsiveness by trading off dynamic site features and continuing to deliver stale and static content will still drive customers away.

The evolution toward dynamic sites and the way of Rich Internet Applications is, in essence, about giving users the ability to interact with web based data in an exciting, user-friendly and intuitive manner. When customers find products and services more easily and make more informed comparisons more rapidly, conversions grow.

The next milestone for world-class online organizations is to tackle both challenges at the same time: creating extremely compelling, rich and dynamic online experiences with lightning-fast responsiveness. Below are two DSA customers who have solved these challenges and in turn, kept customers engaged longer, led them deeper into the site and turned visitors into more revenue.

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Inefficiencies of the public internet will not simply improve overtime, yet the evolution toward completely dynamic and immersive customer experiences continues unabated. Therefore maintaining high performance of Rich Internet Applications and dynamic site elements is the key to an engaging customer experience and translates into revenue for world-class online businesses.

No matter how internally conflicted, the support that Google and CDT have shown for CDN collocation represents a significant step forward in this debate. There can be no question that such arrangements are efficient and pro-consumer, and the same can be said of other QoS strategies such as IP multicast, which likewise involve arrangements between content providers and broadband providers for the efficient transmission of content packets to end users. All of these arrangements, however, are at least arguably covered by the flat ban on QoS "enhance[ments]" discussed in paragraphs 106 and 107 of the NPRM. That by itself illustrates the need to dispense with the proposed nondiscrimination rule in its current form.

<sup>84</sup> This excerpt is taken from the Akamai White Paper at 8.

2. **CDT and Google Offer No Rationale for Treating CDN Collocation Differently from Other Performance-Enhancement Techniques, Including Packet Prioritization for Performance-Sensitive Content.**

Ultimately, Google and CDT identify no plausible basis for distinguishing as a policy matter between CDN collocation arrangements, which they condone, and packet-prioritization techniques, which they condemn. They are right about CDN collocation and wrong about packet prioritization.

No less than packet-prioritization arrangements, CDN collocation arrangements require content providers to enter into special arrangements with broadband providers. What, then, do the pro-regulation advocates say is especially pernicious about giving content providers the additional option of purchasing QoS enhancements rather than—or in addition to—CDN services? CDT, Google, and others endorse ISP arrangements that produce efficient competitive advantages for some providers over others if, but only if, no *physical packets receive any priority* within an ISP's router. They persist in the misconception that the use of DiffServ and other longstanding packet-prioritization techniques results in a "zero-sum game" between prioritized and unprioritized packets.<sup>85</sup> Prioritization of some packets, they say, necessarily comes at the cost of *deprioritizing* other packets. But this zero-sum rhetoric is specious, and any policy decision based on it would be indefensible.

As network engineers have long understood, the prioritization of some packets on a network does not necessarily—or even usually—have any material effect on the vast majority of non-prioritized applications over the same network.<sup>86</sup> Consider the vastly different QoS needs of

<sup>85</sup> See, e.g., Free Press Comments at 18-19; Google Comments at 64.

<sup>86</sup> See *Second Reed & Tripathi Paper* at 22 ("[the assumption] that QoS prioritization means that non-prioritized applications will experience poorer performance than prioritized ones" is a "flawed premise"). Moreover, as discussed in Section II.F.2, *infra*, the use of DiffServ and other packet-prioritization techniques enable broadband providers to *increase* the aggregate amount of revenue-

a file-transfer session and streaming real-time video over the Internet. If the file-transfer session takes half a second longer than otherwise, users will not care and probably will not even notice.

But if jitter and packet delay in the video stream cause the screen to freeze on a third-and-long pass into the end zone, users will notice and will view the application as a failure. As

BitTorrent's CEO recently explained: "Neutral and priority can—in fact they do—coexist."<sup>87</sup>

Indeed, because some applications *need* prioritization while others do not, a ban on packet prioritization would produce decidedly *non-neutral* results for the reasons discussed in our opening comments (at 37-41). First, it would require network engineers to treat packets identically despite the radically different sensitivity of their associated applications to latency, jitter, and loss. The government should not inflict that foolish consistency on the Internet ecosystem, as even leading proponents of net neutrality regulation have explained.<sup>88</sup> Doing so would render the IP platform an inhospitable environment for performance-sensitive applications and thereby defeat the promise of convergence. Second, even if all applications were *equally* sensitive to latency and jitter, which they obviously are not, application developers can choose

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generating traffic with varying performance needs that can be supported on a shared, multi-purpose network with a particular amount of bandwidth, which is what makes it economically viable for broadband providers to deploy higher-capacity, triple-play networks in the first place. Thus, the zero-sum arguments advanced by net regulation proponents are inherently flawed because they incorrectly *assume* that a given multi-purpose broadband network (and its associated bandwidth) would exist in the first place *without* DiffServ and similar packet-prioritization techniques. But without those techniques, many of these higher-capacity networks (e.g., U-verse) would not get built, and consumers would be left with lower-capacity, legacy broadband networks (e.g., ADSL) that provide broadband Internet access services at far lower speeds.

<sup>87</sup> *BitTorrent CEO Remarks*, *supra* (quoting Eric Klinker).

<sup>88</sup> See, e.g., *Keeping the Internet Neutral?: Tim Wu and Christopher Yoo Debate*, 59 Fed. Commun. L.J. 575, 577 (2007) (Tim Wu: "[A]n absolute ban on discrimination would be ridiculous . . . there are good and bad types. And what I think is going on in the network neutrality debate—the useful part of it—is getting a better grip on what amounts to good and bad forms of discrimination on information networks."); Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. Telecomm. & High Tech. L. 141, 142 (2003) (observing that "the Internet's greatest deviation from network neutrality" has consisted of its traditional "favoritism of data applications, as a class, over latency-sensitive applications involving voice or video").

various transport protocols, such as UDP and certain TCP variants, to wrest bandwidth from competing applications on the same pipes. See AT&T Comments at 37-39. As Sandvine explains, therefore, “[a]n unmanaged network is not a neutral network.” Sandvine Comments at 3.

Again, QoS services of any kind—whether they involve conventional CDN services, CDN collocation, IP multicast, or packet-prioritization—do allow the providers with the know-how and means to obtain those services to outperform their less sophisticated or less capitalized rivals, at least in the provision of performance-sensitive content. But that commercial advantage cannot logically serve as a basis for opposing packet prioritization if it is not a basis for opposing the commercial advantages produced by other types of QoS enhancements, such as the CDN services that no one proposes to ban.

CDT further suggests that, if the Commission revises its proposed nondiscrimination rule to make clear that CDN-collocation arrangements are permitted, the Internet ecosystem would have no further “need” for other QoS-enhancement technologies, such as packet-prioritization. CDT Comments at 28. This too is specious. The Internet presents an endless array of network-management challenges that require highly context-specific solutions. In designing such solutions, network engineers have often turned to the DiffServ- and MPLS-based prioritization techniques that AT&T and others use today in the provision of enterprise-grade Internet access services and residential IPTV services over triple-play platforms, among other services. See AT&T Comments at 50-56. Determining which solution is the best and most cost-effective for a given situation is best left to network engineers, not to regulators who, no matter how skilled or well-intentioned, could not possibly anticipate all future developments in this uniquely dynamic technological environment. Again, moreover, there is not even a threshold need to limit the tools

available in the engineer’s toolbox, since no one can articulate any plausible reason to be more concerned about differential service handling than about CDN collocation.

Finally, there is no merit to Google’s argument that “[p]riority charging arrangements circumvent the currently unregulated Internet transit marketplace, where pricing on backbones today reflects the value of traffic,” and “threaten to negate the market efficiency of the existing arrangements.” Google Comments at 35. Google’s choice of language here—“existing arrangements”—is revealing. What Google dislikes about alternative QoS-enhancing arrangements is that they give content providers an *additional option* for reaching individual end users efficiently and thus present *additional competition* for existing content-distribution models dominated today by companies like Google itself, which is rapidly expanding its dominance on the Internet by exploiting the billions of dollars it has sunk in its own CDNs. See AT&T Comments at 28-29. This Commission’s purpose, however, is not to snuff out new technologies that “circumvent . . . existing arrangements,” but to encourage creative disruption as a source of long-term consumer welfare. Here, that means rejecting Google’s efforts to ban efficient alternatives to the “existing arrangements” that happen to suit Google’s interests so well.

This observation illustrates a larger point about Google’s regulatory agenda. While Google claims that it is pursuing net neutrality regulation “to make the next Google possible,”<sup>89</sup> the regulation it favors would conveniently help keep the next Google from arising.<sup>90</sup>

<sup>89</sup> Rick Whitt, *Hey FCC, keep the Internet open — and awesome!*, Google Public Policy Blog, Jan. 14, 2010, <http://googlepublicpolicy.blogspot.com/2010/01/hey-fcc-keep-internet-open-and-awesome.html>.

<sup>90</sup> See George Ou, *Two Hypocrisies in a Garage*, Digital Society, Nov. 23, 2009, <http://www.digitalsociety.org/2009/11/the-hypocrisy-of-google-and-skype/> (“Google frequently says that they’re worried for the next Google having a chance to succeed and Skype has expressed similar concerns for the next Skype. The problem is that when it has come to their actions, it seems like Google and Skype are really worried about the next Google and Skype succeeding and they behave in a way to make sure that the next innovators fail.”).

Unforeseeable competitive threats to Google—or any other dominant Internet-based company—are more likely to arise if the Internet’s commercial arrangements remain free to evolve with technology and new entrants remain free to choose among a range of technological options for transmitting content to end users cost-efficiently. New entry is much *less* likely to succeed if Google persuades the Commission to relegate Google’s would-be rivals to efforts to duplicate Google’s multi-billion-dollar content-delivery networks. See AT&T Comments at 118-19. As one analyst has explained: “The competition between Google, Microsoft, Yahoo and other large content players has long since moved beyond just who has the better videos or search. The competition for Internet dominance is now as much about infrastructure—raw data center computing power and about how efficiently (i.e., quickly and cheaply) you can deliver content to the consumer. And here again, Google is at the head of the pack.”<sup>91</sup> It is surely no coincidence that Google’s regulatory advocacy in this proceeding would entrench Google at “the head of the pack” in the market for Internet content distribution by foreclosing alternative models that compete with Google’s own.<sup>92</sup>

E. The Commission Could Not Reasonably Forbid Business-to-Business QoS Arrangements on the Theory That Broadband Providers Should Enter into QoS Arrangements with Individual Content Recipients Instead.

The capacity of any broadband network is both *shared* (among different users and/or uses) and *finite*, and best-effort routing can thus subject Internet content to latency, jitter, and packet loss during inevitable and unpredictable spikes in demand for these shared network

<sup>91</sup> Labovitz, *How Big Is Google*, *supra*.

<sup>92</sup> In response to Google’s tortured efforts to explain why it insists on keeping its search platform closed while advocating “openness” everywhere else in the Internet ecosystem, a Gartner analyst observed: “The art of business in the 21st century is figuring out how to open up your suppliers’ and competitors’ business while keeping yours tightly sealed. And in that endeavor Google has proven highly successful.” Brian Prentice, *The Truth of Open*, Gartner Blog, Dec. 22, 2009, [http://blogs.gartner.com/brian\\_prentice/2009/12/22/the-truth-of-open/](http://blogs.gartner.com/brian_prentice/2009/12/22/the-truth-of-open/); see also Matt Asay, *Google—not necessarily more open than thou*, CNET News, Dec. 22, 2009, [http://news.cnet.com/8301-13505\\_3-10420220-16.html](http://news.cnet.com/8301-13505_3-10420220-16.html).

resources. By definition, latency and jitter can completely devalue *performance-sensitive* content (*e.g.*, real-time high-definition video) while leaving *non-performance-sensitive* content unharmed (*e.g.*, bulk file transfers). Differential packet handling is an efficient solution to this problem—and, as discussed below, it is far more efficient than investment in wasteful overcapacity—because it allocates scarce resources (in this case, shared bandwidth during periods of congestion) to the uses or users that value them the most. The question is what *market mechanism* should be used to perform that allocation task efficiently and in the best interests of consumers.

In innumerable economic contexts, the efficient solution to any such resource-allocation problem is to rely on price signals: *i.e.*, require the parties requesting the use of scarce resources to pay for them so that they internalize the opportunity cost of that choice. See AT&T Comments at 139. Here, too, price signals can and should play an indispensable role in the efficient identification of high value, performance-sensitive applications that *need* to be prioritized in order to realize their high value for consumers. See *id.* The question, then, is *who* is in the best position to convey those price signals by paying for prioritization.

Like other advocates of a flat ban on QoS arrangements between broadband providers and content providers, the Open Internet Coalition argues: “[I]n order to align market incentives properly, it is those end users [*i.e.*, content recipients] who want prioritization that should pay; all others should not. Broadband Internet access providers easily can accomplish this by charging different prices to different end users[.]”<sup>93</sup> This argument makes no theoretical or

<sup>93</sup> Open Internet Coalition Comments at 31. Of course, broadband providers offer individual end users different bandwidth tiers (*e.g.*, 3 Mbps, 6 Mbps, 10 Mbps, 50 Mbps), as well as temporary boosts in bandwidth in some contexts, and no one argues that this is problematic. But despite the Coalition’s confused contrary suggestion (*id.*), increasing the bandwidth offered to end users is no substitute for the QoS arrangements that are needed to ensure proper handling of performance-sensitive content, because

practical sense. Although the Coalition appears to assume otherwise, both a *provider* and a *recipient* of Internet content are “users” of network resources, and either or both could choose to become an “end user” of any given broadband network by entering into a commercial relationship with it. Again, when a content provider enters into a voluntary QoS-enhancement arrangement with a broadband provider, it *becomes the latter’s customer* for that purpose. See Section II.A, *supra*.

The question is thus *which class* of “end users”—content providers or content recipients—is in the best position to decide (and thus convey price signals about) how to allocate shared network resources to the performance-sensitive content that needs those resources the most, in the manner that users *value* the most. The answer to that question, just like the answers to many other questions about efficient resource-allocation, should be left to the market. The Commission should not preempt that answer with prescriptive rules that foreclose market experimentation. And in particular, it should not impose the flat ban proposed in paragraphs 106 and 107 of the NPRM, which would prohibit content providers from purchasing, at their option, performance-enhancing services from ISPs.

Foreclosing that option would be especially unreasonable because, in a range of circumstances, content providers may stand in a better position than content recipients to make efficient decisions about *which content* requires *which QoS enhancements* in order to function optimally. See AT&T Comments at 139–40. First, most residential end users cannot be expected

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that content must traverse many *shared*, and therefore potentially congested, links from the content source en route to the data recipients. See AT&T Comments at 65. Indeed, the Coalition’s contrary suggestion is not only false but meaningless in the context of wireless and cable modem broadband services, where *all* links in any transmission, including over the “last-mile” access network, are shared.

today to have the technical sophistication needed to make such selections.<sup>94</sup> These are traditionally decisions made by IT professionals, and the government should not force residential consumers to play that unaccustomed role whenever they wish to receive performance-sensitive content that requires QoS enhancements. Second, it may often be operationally more straightforward for a network provider to contract with content providers to flag certain packets for differential handling from the *origin* of a data transmission than to try to accomplish the same task by working with the *recipients* of that data transmission. Third, the transaction costs of requiring broadband providers to deal with and bill millions of different content recipients on such issues would generally far exceed the transaction costs of dealing with a relative handful of content providers. The bottom line is that the Commission would accomplish no legitimate purpose and could cause harmful unintended consequences if it confined broadband providers to contracting solely with content recipients rather than content providers about these complex class-of-service issues.

Finally, the Commission should understand that most of the parties supporting the proposed “nondiscrimination” rule would actually forbid *any* differential packet handling, *even when requested by “end user” recipients of content*, although their comments may appear to suggest otherwise. Public Knowledge, for example, would condone recipient-initiated QoS enhancements, but only over the final *unshared* links to the requesting end users. See Public Knowledge Comments at 47–50. But that approach would be tantamount to forbidding all such enhancements. *All* of the links on which network prioritization is needed for QoS-sensitive

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<sup>94</sup> For example, customers of AT&T’s enterprise-class Internet access service can choose to have their data transmitted over AT&T’s network in any of four different traffic classes and can select among 25 pre-defined profiles for allocating bandwidth among those four traffic classes.

content are links *shared* by traffic involving other recipients.<sup>95</sup> By definition, any such prioritization, even if requested by the recipients of the content, would give those recipients' packets priority over some other end users' packets on the same network. Again, there should be nothing remotely troubling about that outcome, since some applications need priority and others do not. Our point is simply that the absolutist ban on packet prioritization proposed by most advocates of net neutrality regulation would, if applied consistently, ban prioritization whether requested by the *provider* of performance-sensitive content or the *recipient*. That is reason enough to reject the incoherent proposals by those same advocates to place the burden on end users receiving QoS-sensitive packets to request prioritization for them.

#### F. The Proposed "Nondiscrimination" Rule Would Harm the Public Interest.

##### 1. The Proposed "Nondiscrimination" Rule Would Cede America's Global Leadership in Internet Technology.

As discussed in our opening comments (at 103-14), the proposed "nondiscrimination" rule, as written, would nip in the bud a huge range of pro-consumer network practices—but only in the United States. Over the past few years, and after careful study, the Commission's foreign counterparts in Britain, Canada, the European Union, and Japan have all followed the OECD's 2007 recommendation against any regulatory "involve[ment] at the level of network-to-network traffic exchange" and against any rules that would "demand neutral packet treatment for content providers."<sup>96</sup> These foreign regulatory authorities have all resisted calls to impose the equivalent of the "nondiscrimination" rule proposed here even though, as the *Broadband Plan* explains,

<sup>95</sup> By definition, the *unshared* link to an individual recipient is "shared" only by members of that recipient's business or household. Permitting "prioritization" over that portion of the network means little more than allowing each end user to configure the router at its own premises to prioritize some types of traffic over others. An end user's management of his or her home or office network does not begin to provide the prioritization needed for performance-sensitive applications *over the Internet*.

<sup>96</sup> See A&T Comments at 87-93 (quoting OECD, *Internet Traffic Prioritisation: An overview*, at 5 (Apr. 6, 2007)).

there is far less intermodal broadband competition in those countries than in the United States—and thus the case for intrusive regulatory intervention is, if anything, stronger there than here.<sup>97</sup>

If the Commission were to become the first regulatory authority to ban whole categories of business-to-business QoS arrangements, it would deny American consumers the benefit of the next generation of Internet technologies, even while foreign Internet companies begin deploying those new technologies on behalf of foreign consumers. Given their greater regulatory flexibility, foreign broadband providers would surpass their American counterparts in the deployment—over a fully converged IP platform—of various performance-sensitive services critical to their national welfare. Ironically, many of the performance-sensitive Internet-based services that the nondiscrimination rule would imperil are central to this Administration's own broader policy objectives, ranging from remote healthcare applications to telecommuting to e-learning to Smart Grid control systems and other green initiatives.

In short, any rigid "nondiscrimination" rule would obliterate two decades of American leadership in promoting the Internet's growth through a deliberate policy of unregulation, and it would likewise cede American technological leadership to foreign telecommunications companies. It is difficult to imagine a regulatory initiative more at odds with this Commission's stated plan to promote the further evolution of broadband as "a platform to create today's high-performance America—an America of universal opportunity and unceasing innovation, an America that can continue to lead the global economy, an America with world-leading, broadband-enabled health care, education, energy, job training, civic engagement, government

<sup>97</sup> See *Broadband Plan* at 37 ("Unlike many countries, the majority of U.S. broadband subscribers do not connect to the Internet via local-access infrastructure owned by an incumbent telephone company. . . . As a result, the U.S. market structure is relatively unique in that people in most parts of the country have been able to choose from two wireline, facilities-based broadband platforms for many years.")

performance and public safety." *Broadband Plan* at 3. *No one* that supports the proposed ban on QoS enhancements seriously faces up to these concerns.

More generally, supporters of the proposed "nondiscrimination" rule either do not understand or do not care about the other severe costs of Internet regulation, including the costs of regulatory uncertainty. They appear oblivious to the facts that (1) if America's broadband deployment goals are to be met, broadband providers must voluntarily invest tens of billions of dollars in private risk capital to build out broadband facilities; (2) no one is guaranteeing them a return on that investment; and (3) the investment community believes that residential broadband is a low-margin, high-risk business. See p. 13, *supra*. The upshot is this: Investment and innovation by high-tech companies, including broadband providers, will lag if they are relegated to the role of dumb pipes or if their business models must perpetually account for the fact that, years hence, a court or regulatory body will invalidate their products or services for violating an amorphously broad and poorly articulated "nondiscrimination" rule.

If five years ago the Commission had adopted Public Knowledge's proposed ban on using dynamic bandwidth allocation to offer IPTV and managed VoIP services over the same IP platform as broadband Internet access, it would have deterred hundreds of broadband providers from making the collective multi-billion-dollar investments needed to provide today's state-of-the-art triple-play services to consumers.<sup>98</sup> As a result, those consumers would have been stuck with much slower best-effort Internet connections than they enjoy today, not to mention fewer choices for video and voice services.<sup>99</sup> As we explain below, the Commission should be

<sup>98</sup> NECA Trends 2009 Report at 11.

<sup>99</sup> Free Press and others ask the Commission to take comfort from the fact that the two-year "nondiscrimination" commitment included in the AT&T-BellSouth Merger Order did not cripple AT&T's investment in its fiber-based build-out. But it is hardly surprising that this commitment did not thwart

especially attuned to this risk in the wireless context, where, as ITIF's Richard Bennett has explained in a recent paper, "we're still at a very early stage [of] development," and the "flowering of the Mobile Internet" is still a work in progress, easily "strang[ed] . . . with excessive regulation."<sup>100</sup>

## 2. The Proposed Nondiscrimination Rule Would Degrade Service Quality, Raise Prices, and Exacerbate the Digital Divide.

As discussed in our opening comments, the proposed nondiscrimination rule would also harm consumers, particularly those in the most vulnerable and price-sensitive communities, by forcing broadband prices up. It would have that effect for two independent reasons, neither of which is subject to serious dispute.

First, to the extent the Commission prohibits broadband providers from prioritizing Internet applications that need prioritization, one of two outcomes must logically follow: Either (1) performance-sensitive applications will perform poorly or not at all during periods of peak usage or (2) broadband providers will be forced to waste money by overinvesting in raw capacity designed to process all traffic, even non-performance-sensitive traffic, with the same service levels as performance-sensitive traffic. Either outcome would harm consumers. If a given broadband provider does not invest in wasteful overcapacity, the result will be degraded consumer experiences with performance-sensitive Internet applications. But if the provider does invest in wasteful overcapacity, it will incur radically higher costs than it would otherwise incur

passed on to consumers

AT&T's investment plans, given that it was temporary (and has now expired), did not apply to mobile wireless broadband, and was heavily qualified to exclude the forms of packet-prioritization most prevalent during the term of the commitment: those used in connection with enterprise-grade services and residential IPTV services. See Mem. Op. and Order, AT&T Inc. and BellSouth Corporation Application for Transfer of Control, 22 FCC Rcd 5662, Appendix F, at 5814-15 (2007).

<sup>100</sup> Richard Bennett, Information Technology & Innovation Foundation, *Going Mobile: Technology and Policy Issues in the Mobile Internet*, at 1 (Mar. 2010), [http://www.itif.org/files/100302\\_GoingMobile.pdf](http://www.itif.org/files/100302_GoingMobile.pdf) ("Bennett, *Going Mobile*").



if prioritization were permitted—costs that will be passed along to consumers in the form of higher retail rates. See AT&T Comments at 45-47.

As noted, Free Press concocts a junk-science rationale for concluding that DiffServ and other packet-prioritization techniques actually increase network costs, and that network providers would thus somehow save money by building fatter and dumber networks rather than prioritizing traffic that needs priority over traffic that does not. See p. 49, *supra*. In this, Free Press's misguided advocacy is directly at odds with the network-engineering community, which has long concluded that compelling this approach would raise network costs—and thus prices—dramatically.<sup>101</sup> See AT&T Comments at 45-47, 65-69.

Internet pioneer David Farber and former Chief Economist Gerald Faulhaber have explained this point lucidly in the paper attached to our opening comments: "Internet traffic varies by time of day and is highly variable, or 'bursty.' Installing capacity sufficient to carry all demand all the time"—i.e., Free Press's proposed approach—"could well involve providing capacity dozens of times larger than average demand with a concomitant increase in costs to customers to pay for capacity that sits idle for all but an hour a year." AT&T Comments, Ex. 1, Faulhaber and Farber, at 25-26. Cisco likewise observes that prioritizing the most performance-

<sup>101</sup> Some have argued that the alternative network known as Internet2 somehow demonstrates the efficiency of a "fat dumb pipe" approach to network management, e.g., Open Internet Coalition Comments at 42 n.61; Google Comments at 36, but it shows no such thing, as we have explained. See *AT&T 2007 Reply Comments* at 11. Internet2 is a non-profit research project that is funded through service fees, member dues, and grants, and its constituent members, including many of the nation's universities, are themselves the beneficiaries of public network-research funding. Internet2 intentionally operates with far higher-than-normal excess capacity so that it can perform its principal function: research and experimentation with new networking technologies. If a commercial broadband provider were required to operate with as much excess capacity as Internet2, it would have no alternative but to raise end-user rates substantially.

sensitive 10 percent of a network's traffic can more than double that network's available bandwidth in real terms, with corresponding cost savings for network users.<sup>102</sup>

These are not merely theoretical observations. They are widely accepted facts in the network engineering community, and they underpin a vast range of existing network services provided to enterprise customers (in the form of class-of-service functionality) and millions of residential consumers (in the form of prioritized IP video traffic). See AT&T Comments at 56-63, 65-69. As two Cisco engineers have explained in a white paper published by the IEEE: "Aggregate overprovisioning of bandwidth . . . represents an expensive option for the [service provider] and can be difficult to ensure in all cases, such as in the presence of denial-of-service attacks and network failures . . . DiffServ provides a solution to this problem. . . . [and] is currently the preferred technology for large-scale IP quality-of-service deployments."<sup>103</sup> Broadband providers "can realize DiffServ's benefits either in terms of using less bandwidth to achieve the same [performance], or in supporting more aggregate traffic for the same provisioned bandwidth."<sup>104</sup> Other network-engineering experts have reached the same conclusions.<sup>105</sup> Indeed, the Commission's own staff recently explained that "[d]ifferent

<sup>102</sup> Cisco, *A Discussion with the FCC on the Open Internet*, at 17 (Dec. 8, 2009), [http://www.openinternet.gov/workshops/docs/ws\\_tech\\_advisory\\_process/Cisco%20FCC%20Network%20Management%20Presentation%20120809.pdf](http://www.openinternet.gov/workshops/docs/ws_tech_advisory_process/Cisco%20FCC%20Network%20Management%20Presentation%20120809.pdf).

<sup>103</sup> Clarence Filisfil & John Evans, "Deploying DiffServ in Backbone Networks for Tight SLA Control," *IEEE Internet Computing*, Jan.-Feb. 2005, at 59 ("Deploying DiffServ in Backbone Networks for Tight SLA Control") (emphasis added); John Evans & Clarence Filisfil, "Deploying DiffServ at the Network Edge for Tight SLAs, Part 1," *IEEE Internet Computing*, Jan.-Feb. 2004.

<sup>104</sup> *Deploying DiffServ in Backbone Networks for Tight SLA Control* at 63 (emphasis added). See, e.g., Murat Yuksel et al., *Value of Supporting Class-of-Service in IP Backbones* (2007), <http://www.cse.unr.edu/~yukseml/my-papers/iwqos07.pdf> ("RPI Study"); RPI, Press Release, *Undifferentiated Networks Would Require Significant Extra Capacity*, June 29, 2007, <http://news.rpi.edu/update.do?artcenterkey=2204> (quoting RPI professor Shivkumar Kalyanaram, coauthor of the RPI Study: "The study makes clear that there are substantial additional costs for the extra capacity required to operate networks in which all traffic is treated alike, and carrying traffic that needs to still be assured performance as specified in service level agreements (SLAs).").

applications require different performance parameters," and that whereas broadband "[s]peed primarily determines user experience" for "[n]on real-time" applications, "[b]oth speed and quality determine user experience" with "[r]eal-time applications" such as "streamed video and music" and "2-way video gaming."<sup>106</sup> With Commission staff also estimating that the deployment of ultra-fast broadband to all corners of the United States will cost a staggering \$350 billion, policymakers cannot responsibly contemplate inflicting severe restrictions on, let alone a complete prohibition on, the use of DiffServ and related technologies. Free Press's demand for such a prohibition reveals, once more, its complete ignorance of the complex engineering topics and investment realities that it professes so loudly to understand.<sup>107</sup>

Second, even apart from the unnecessary costs of wasteful overcapacity, any regulation that forecloses important sources of business-to-business revenue for broadband providers in this two-sided marketplace would inevitably raise the rates that those providers charge to residential end users. See AT&T Comments at 135-36 & Ex. 3 (Schwartz) at 18. No one offers any meaningful basis for doubting that straightforward economic analysis, which is set forth in the declaration of Professor Marius Schwartz that accompanies our opening comments. To the contrary, in their less guarded moments, the proponents of net regulation have conceded that the proposed "nondiscrimination" rule could in fact lead to higher prices for ordinary residential

<sup>106</sup> September 2009 Staff Presentation at 19, 24 (emphasis added and omitted).

<sup>107</sup> See Free Press Comments at 103 ("No showing has yet been made that any application needs prioritization to function."); *Dismantling Digital Deregulation*, Free Press, at 76 (May 2009) ("No Internet packets should be given priority over others—whether the priority comes in the form of access, latency or bandwidth.")

subscribers. It would be, in the words of Tim Wu, "a subsidy to the creative and entrepreneurial at the expense of the passive and consumptive"—i.e., ordinary American consumers.<sup>108</sup>

That outcome would undermine one of this Administration's key objectives: bridging the digital divide. That is one reason why former Chairman Kennard has opposed any economic regulation of new broadband networks, ranging from the "open access" rules proposed in 1999 to the net neutrality proposals proposed in Congress in 2006. As he explained in 1999: "We sometimes get so caught up in the policy debates about broadband . . . that we forget what we need to do to serve the American public. . . . We have to get these pipes built. But how do we do it? We let the marketplace do it."<sup>109</sup> And he reaffirmed the same point seven years later, writing in the *New York Times* that "[p]olicymakers should rise above the net neutrality debate and focus on what America truly requires from the Internet: getting affordable broadband access to those who need it."<sup>110</sup> The Commission should heed these same concerns now.

<sup>108</sup> Robin S. Lee & Tim Wu, *Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality*, 23 J. Econ. Perspectives 61, 67 (2009); see also Prepared Statement of Vinton G. Cerf, Vice President and Chief Internet Evangelist, Google Inc., before the U.S. Senate Comm. on Commerce, Science, & Transportation, Hearing on "Net Neutrality," Feb. 7, 2006, at 6 (arguing applications such as multi-player real-time gaming or streaming video should be "subject to additional customer charges based on the access speeds required (as opposed to the source, destination, or content of the traffic)—but without discriminating based on who is providing the service") (emphasis added); Google Comments at 37 & n.118 ("Broadband providers often argue that if broadband openness rules are codified, they will have diminished incentives to invest in their networks, resulting in overall public harm. . . . Under the circumstances, this argument is somewhat puzzling since last-mile network providers generally are free to set their prices to consumers for broadband Internet access, constrained only by what the market will bear.") (emphasis added); Open Internet Coalition Comments at 31 ("If there is a need for additional investment because of demand for priority delivery by some users, economic theory states that in order to align market incentives properly, it is those end users who want prioritization that should pay; all others should not.")

<sup>109</sup> See William Kennard, *The Road Not Taken: Building a Broadband Future for America*, FCC (June 15, 1999), <http://www.fcc.gov/Speeches/Kennard/spwek921.html> (quoted in AT&T Comments at 1).

<sup>110</sup> Kennard, *Spreading the Broadband Revolution*, *supra*, at 2.

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III. THE COMMISSION SHOULD REJECT THE PROPOSAL TO IMPOSE NET NEUTRALITY RULES ON WIRELESS BROADBAND INTERNET ACCESS SERVICES FOR THE FIRST TIME.

A. The Wireless Broadband Market Is Functioning Extremely Well Without Regulatory Intervention.

While “net neutrality” regulation would be needless and harmful for any broadband platform, this is particularly so for wireless broadband platforms. As the record confirms, the nascent wireless broadband industry is characterized by vigorous competition, massive consumer uptake, high consumer satisfaction, a flourishing and independent applications market, and new and evolving service models. Wireless consumers can choose among a wide range of unique and innovative offerings, including “open” and “managed” models of many types. As Google acknowledges, “[i]ncreasing reliance on wireless services is extending rapidly to broadband Internet access”; “mobile data and Internet traffic will increase 66 times between 2008 and 2013”, and before the end of 2010, “mobile broadband penetration will surpass fixed penetration globally.” Google Comments at 78 (internal quotation marks omitted; emphasis added).

The logical conclusion is that, because competition and private-sector innovation have made wireless broadband one of the greatest success stories in the modern economy, it would be absurd to straitjacket that industry now with intrusive new regulatory obligations. But that is just what Google proposes. Google and its ideological compatriots argue that the government should impose new regulations on wireless broadband services precisely *because* the market has succeeded so well in satisfying consumer interests. *See id.* This has it exactly backwards. The dynamism of today’s wireless broadband ecosystem is the product of competition, and competition will continue promoting consumer interests more effectively than regulation possibly could.

Without regulatory intervention, wireless providers already offer their customers over 170,000 broadband applications over a diverse range of handsets.<sup>111</sup> According to numbers the Commission itself has cited, over \$4.2 billion in mobile applications were sold last year alone.<sup>112</sup>

And just last month, 24 mobile operators in the United States (including AT&T, Verizon Wireless, and Sprint) and from across the globe (including Europe, Russia, China, Japan and South America) formed an alliance that will establish a unified, open platform to facilitate development of even more applications.<sup>113</sup> Known as the Wholesale Applications Community, this group’s mission is to “establish a simple route to market for developers, in turn, providing access to the latest and widest range of innovative applications and services to as many customers as possible worldwide.”<sup>114</sup> As the group explained, this initiative will bring substantial benefits for applications developers:

For the developer, particularly small developers, the alliance will create an environment in which they can flourish and create applications in a straightforward and effective manner. Today, the route to market for developers is challenging, requiring them to approach multiple operators. The alliance will provide a single gateway for developers to access a vast potential customer base

<sup>111</sup> Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene Dortch, Secretary, FCC, WT Docket No. 09-66, GN Docket Nos. 09-157, 09-51, Attachment at 7 (filed Feb. 12, 2010) (“*CTIA Feb. 12 Competition Ex Parte*”). AT&T’s own online application store, the “AppCenter,” currently offers over 90,000 applications from more than 115 content providers. AT&T, *Description of AT&T’s Practices to Encourage Choice and Innovation in Wireless Devices and Applications* at 13 (“*Wireless Devices and Applications Appendix*”) (attached to these reply comments as Ex. 3). Developers are not required to offer their applications through AT&T’s AppCenter to reach AT&T customers; indeed, AT&T has helped developers bring over 4,000 applications to its network outside the AppStore. AT&T also offers MediaNet, a wireless Internet applications portal with access to applications from a wide variety of providers. *Id.* at 14.

<sup>112</sup> *Mobile Broadband: A 21st Century Plan for U.S. Competitiveness, Innovation and Job Creation*, Prepared Remarks of Chairman Julius Genachowski, FCC, New America Foundation, Washington, D.C., at 3 (Feb. 24, 2010) (“*Genachowski, Mobile Broadband*”), [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-296490A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296490A1.pdf).

<sup>113</sup> Adrian Kerr, *Mobile Operators Join Forces to Develop Open Apps Platform*, Wall St. J., Feb. 15, 2010, <http://online.wsj.com/article/SB10001424052748704431404575066732629109538.html>.

<sup>114</sup> Wholesale Applications Community, <http://wholesaleappcommunity.com>.

(over three billion) with limited cost to the developer and this in turn will provide the maximum possible return on investment for them.

In addition, the alliance will utilize existing technical standards, rather than creating new ones to allow developers to access operators' assets, for example network capabilities or APT's (Application Programming Interfaces) more easily. In practice this means that developers will only have to create one version of their application and this can be used on multiple types of devices and operating systems (such as Symbian, Android, Windows etc) which is not the case today.<sup>115</sup>

Even while that industry-wide initiative is getting underway, wireless providers have been working closely with developers in many different ways to encourage the introduction of applications and services over their networks and devices.<sup>116</sup> AT&T, for example, invites developers to provide applications that work over AT&T's network through its extensive devCentral website, which offers tools, information, software kits, and online assistance.<sup>117</sup> AT&T has also announced initiatives to offer live technical support for developers, as well as the AT&T Sandbox, a virtual network environment designed to allow developers to test their applications before launching.<sup>118</sup> AT&T also offers the "Apps Beta" program, a cutting edge offering that allows developers to test applications with customers prior to launch and to use

<sup>115</sup> *Id.*

<sup>116</sup> Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-191 & WC Docket No. 07-52, Attachment at 7, 11-12 (filed Feb. 5, 2010) ("*CTIA Feb. 5 Ex Parte*"). In late January, Apple announced that there are 140,000 applications offered over its own app store standing alone. See *Apple now largest mobile device company in the world*, AppleInsider, Jan. 27, 2010, [http://www.appleinsider.com/articles/10/01/27/apple\\_now\\_largest\\_mobile\\_device\\_company\\_in\\_the\\_world.html](http://www.appleinsider.com/articles/10/01/27/apple_now_largest_mobile_device_company_in_the_world.html).

<sup>117</sup> See *Wireless Devices and Applications Appendix* at 1-2, 10-11. AT&T has also undertaken initiatives to make it easier for businesses to develop and deploy the applications they need in an enterprise environment. For example, AT&T offers the "AT&T Workbench for iPhone," an application service that helps businesses easily provision, deploy, and control enterprise web applications for work in a highly secure, reliable, and manageable fashion. AT&T, Press Release, *New AT&T Workbench Available for iPhone*, Mar. 23, 2010, <http://www.att.com/gen/press-room?pid=4800&cdv=news&newsarticleid=30664>.

<sup>118</sup> See AT&T, Press Release, *AT&T Launches Major Initiative to Bring "Apps to All"*, Jan. 6, 2010, <http://www.att.com/gen/press-room?pid=4800&cdv=news&newsarticleid=30353>; *Wireless Devices and Applications Appendix* at 15. AT&T is currently rolling out its new Developer Dashboard and other tools to further enhance and streamline the application approval process. *Id.*

customer feedback as part of the development process.<sup>119</sup> More than 20,000 application developers participate in the devCentral portal, and AT&T's recent decision to deploy five different devices based on the Open Handset Alliance's open Android platform will undoubtedly attract an even broader community of developers.<sup>120</sup> Verizon, Sprint, and T-Mobile similarly offer a range of platform options and work with developers to encourage deployment of new applications.<sup>121</sup> And to ensure that applications are developed over the entire range of new wireless products, AT&T offers developers the AT&T M2M Developer Kit, focusing in particular on the development of applications for the "machine-to-machine" (M2M) space.<sup>122</sup>

Without regulatory intervention, wireless providers also support an astonishingly broad range of devices, from traditional handsets to the latest netbooks, e-readers, and other innovative, category-defining products that did not even exist a few years or even months ago. As CTIA reports, U.S. wireless providers have worked with manufacturers to introduce some of the most advanced smartphones in the world, including over 24 introduced in 2008 and 2009 alone. *CTIA Feb. 5 Ex Parte*, Attachment at 7. AT&T's offerings run the gamut from the fully "open" and unmanaged service/device options provided over the Android platform—including handsets by new market entrants, like Dell's Android-based Aero<sup>123</sup>—to products like the Apple iPhone, which provides consumers with a more secure, managed user experience as well as the ability to

<sup>119</sup> *Wireless Devices and Applications Appendix* at 12.

<sup>120</sup> AT&T, Android Smartphones, <http://www.wireless.att.com/cell-phone-service/cell-phone-sales/promotion/ces.jsp>.

<sup>121</sup> See *CTIA Feb. 5 Ex Parte*, Attachment at 10-12; Sprint Nextel Comments at 7; T-Mobile Comments at 39; Verizon Comments at 28.

<sup>122</sup> See AT&T, Emerging Devices, <http://www.att.com/edo/>.

<sup>123</sup> See *AT&T to add 3 smart phones, new bundle plan, supra*.

access an extensive family of applications available from Apple's App Store.<sup>124</sup> AT&T offers its customers a choice of over 100 different handsets, running every major operating system, at any given time.<sup>125</sup> In addition, most major wireless providers, including AT&T, have "bring your own device" policies, under which consumers may connect any compatible device of their choosing to the providers' networks.<sup>126</sup> For example, now that Google has issued a Nexus One designed to work on AT&T's 3G network, consumers can use that handset over AT&T's network simply by purchasing a SIM card and a voice and data plan from AT&T.<sup>127</sup>

AT&T also works closely with device manufacturers to facilitate operation of their independent devices over AT&T's network. For example, AT&T gives device makers and enterprises assistance and information to enable them to certify their devices for operation over the AT&T network; AT&T will perform extensive compatibility testing and provide resources

<sup>124</sup> As Richard Bennett points out, while the iPhone model is more managed than some other options, "Apple has approved more applications for the iPhone than have been written for all other smartphones combined. The evidence clearly shows that this model of enabling innovation is a clear success." Bennett, *Going Mobile* at 67. A recent New York Times piece observes: "[B]y just about any measure, the iPhone software platform has been, out of the gate, the most innovative in the history of computing. More than 150,000 applications have been created for it in less than two years, transforming the iPhone into an e-book reader, a flight control deck, a musical instrument, a physician's companion, a dictation device and countless other things that were impossible just 24 months ago. Perhaps more impressively, the iPhone has been a boon for small developers. As of now, more than half the top-grossing iPad apps were created by small shops." Steven Johnson, *Rethinking a Gospel of the Web*, N.Y. Times, Apr. 9, 2010, <http://www.nytimes.com/2010/04/11/technology/internet/11every.html>. Further, the iPhone has compelled other competitors, including traditional PC makers, to develop their own innovative mobile offerings, which "experiment with varying kinds of business models and technologies. For consumers, it could all be good." J. Ashlee Vance & Nick Bilton, *After iPad, Rivals Offer Variations on a Theme*, N.Y. Times, Apr. 11, 2010, <http://www.nytimes.com/2010/04/12/technology/12slate.html>.

<sup>125</sup> See *Wireless Devices and Applications Appendix* at 3.

<sup>126</sup> See, e.g., *id.* at 1, 4.

<sup>127</sup> Nancy Gohring, IDG News Service, *Google Starts Selling Full-price Nexus One on AT&T*, PCWorld, Mar. 16, 2010, [http://www.pcworld.com/article/191646/google\\_starts\\_selling\\_fullprice\\_nexus\\_one\\_on\\_atandt.html](http://www.pcworld.com/article/191646/google_starts_selling_fullprice_nexus_one_on_atandt.html).

and support to resolve any issues.<sup>128</sup> The devices AT&T has certified run the gamut from Internet-enabled phones, to laptops and netbooks, to smartphones, to e-readers and personal navigation devices, as well as a whole new category of innovative M2M devices.<sup>129</sup> In fact, AT&T has certified more than 370 wireless specialty consumer and M2M devices through 2009.<sup>130</sup> And together with Ericsson, AT&T recently announced the launch of its enhanced AT&T Connection Kit for Device Developers, which provides assistance to developers seeking to build and integrate emerging M2M devices with AT&T's network.<sup>131</sup>

To support all these offerings, and to provide even faster and more robust wireless broadband services, wireless providers are spending billions on technology and spectrum, all in an environment of vigorous competition among multiple existing wireless broadband providers. The *Broadband Plan* reports that wireless providers spent \$10 billion on broadband deployment in 2008 and approximately \$12 billion in 2009.<sup>132</sup> The Commission's own recent report shows that, as of year-end 2008, there were 46 providers offering high-speed mobile wireless Internet

<sup>128</sup> See *Wireless Devices and Applications Appendix* at 1-2. AT&T performs similarly extensive testing on M2M and emerging devices. *Id.* at 7-8.

<sup>129</sup> See *id.* at 1; AT&T, Enterprise Device Certification, <http://developer.att.com/developer/index.jsp?page=goToMarketDetail&id=3800061>.

<sup>130</sup> See *Wireless Devices and Applications Appendix* at 5; AT&T, Devices, Network Compatible Program, [http://developer.att.com/developer/device\\_list.jsp](http://developer.att.com/developer/device_list.jsp); AT&T, Press Release, *AT&T Supports More Than 370 Wireless Specialty Devices*, Jan. 26, 2010, <http://www.att.com/gen/press-room?pid=4800&cdv=news&newsarticleid=30437>. AT&T's Emerging Device Organization, see <http://www.att.com/edo>, offers "comprehensive step-by-step information on the processes, technical guidelines, and other requirements for new devices intended to be used on AT&T's network." *Wireless Devices and Applications Appendix* at 6. AT&T has developed "systems that allow devices to be activated 'out of the box,'" so that they can be used by the customer without further intervention from AT&T or any third party; AT&T also offers innovative billing and customer support systems for M2M products. *Id.*

<sup>131</sup> AT&T, Press Release, *AT&T and Ericsson to Expand 3G Ecosystem with AT&T Connection Kit for Device Developers*, Mar. 23, 2010, <http://www.att.com/gen/press-room?pid=4800&cdv=news&newsarticleid=30671>.

<sup>132</sup> *Broadband Plan* at 40.

they now sell through providers

access in the United States. Consumers in most states have a choice among at least three such providers, while some can choose from among as many as nine.<sup>133</sup>

In addition, relatively low entry barriers ensure a proliferation of new service options for consumers. Clearwire, the nation's preeminent WiMAX provider and the recipient of extensive financial support from the cable industry and Google, offered service to 34 million people in the United States by the end of last year and plans to cover up to 120 million people by the end of 2010.<sup>134</sup> The Commission's 700 MHz and AWS auctions gave rise to new wireless broadband entrants including Cox, Stelera Wireless, and others. *CTIA Feb. 5 Ex Parte*, Attachment at 2, n.4. Cox recently announced the successful completion of voice calling and high-definition video streaming over wireless networks using LTE technology in Phoenix and San Diego, and the company intends to compete as a provider of bundled voice, data, video and wireless plans.<sup>135</sup> And in a February 12 *ex parte* updating the record on wireless competition, CTIA provided many examples of intensive investment and network development by large, small, established, and new players throughout the wireless broadband marketplace.<sup>136</sup> As the Commission found, "Mobile broadband services are relatively new and their competitive dynamics are changing rapidly."<sup>137</sup>

<sup>133</sup> See *FCC February 2010 Broadband Report* at 23, Tbl. 10, 44-45, Tbl. 20.

<sup>134</sup> *Clearwire 2009 Results News Release*, *supra*.

<sup>135</sup> Cox, Press Release, *Cox Successfully Demonstrates the Delivery of Voice Calling, High Definition Video Via 4G Wireless Technology*, Jan. 25, 2010, <http://cox.mediaroom.com/index.php?s=43&item=469>; Doug Mahoney, *Cable Technology - Cox Cable Heats Up Wireless*, Cable.TMCnet.com, Jan. 29, 2010, <http://cable.tmcnet.com/topics/cable/articles/73944-cox-cable-heats-up-wireless.htm>.

<sup>136</sup> *CTIA Feb. 12 Competition Ex Parte*, Attachment at 1-4; see also T-Mobile Comments at 14 (explaining that wireless broadband providers engage in spirited competition about the openness and breadth of their broadband platforms and the number and quality of the applications their customers can reach).

<sup>137</sup> *Broadband Plan* at 40.

Given this robustly diverse, dynamic, and competitive ecosystem of wireless services, devices, applications, and operating systems, it should come as no surprise that, as CTIA puts it: "The United States wireless industry is an innovation, investment and job leader within the United States, and a beacon that other countries strive to replicate around the world. U.S. consumers enjoy the lowest prices, the highest minutes of use, the most mobile web surfing, the most competitive choices, the newest handsets (which are launched first in the U.S.), high speed networks (with both WiMax and LTE leadership), and an amazing array of over 150,000 applications."<sup>138</sup>

Against this backdrop, Google's central argument here—that regulation is necessary because of the very success of wireless innovation—is nonsensical. Providers that have invested billions in their networks and that have attracted customers on the strength of their broadband offerings have every incentive to continue offering consumers an attractive, robust mix of services, and to keep their platforms as attractive and user-friendly as possible to the widest range of device manufacturers and application and content providers. It is likewise in their interest to continue offering diverse options to all types of end users, from individual consumers to utilities, device makers, auto manufacturers, and others. Providers have no incentive to suddenly start degrading their services, because doing so would simply drive their customers to take their business to one of many competitive alternatives.

There is also no basis for the latest round of doom-saying that accompanies the calls for regulation of these nascent services. As discussed in Section I above and in CTIA's February 5

<sup>138</sup> CTIA Comments at i. See also T-Mobile, *The Evolving Global Wireless Ecosystem*, International CTIA Wireless Conference 2010 (Mar. 24, 2010) (describing positive trends in data usage and investment in the U.S. wireless market).

submission,<sup>139</sup> the market has discredited, time after time, each of the dire predictions made by Tim Wu (chairman of Free Press's board of directors) and the other leading advocates of wireless broadband regulation. For example, Wu and others claimed just a few years ago that wireless operators would never support Wi-Fi, VoIP, or Bluetooth.<sup>140</sup> But market forces, all on their own, drove providers to work with manufacturers to deliver all three of these options and, on top of that, to support an unprecedented proliferation of wireless devices and applications in general.<sup>141</sup> Nothing in the record suggests that *this* time around, the predictions of doom might be more plausible.

A few advocates of net regulation continue to allege isolated instances of misconduct by wireless broadband providers, but those allegations have no more merit than their discredited predecessors. For example, New America Foundation accuses AT&T of prohibiting unlocked devices on its wireless network. NAF Comments at 34. But that allegation, which NAF does not bother to support, is demonstrably false. AT&T has had a "bring your own device" policy for quite some time, which enables customers to use any compatible device of their choosing on AT&T's network. As AT&T's website explains: "[Y]our device, your way. You've got the choice: either conveniently get a phone through AT&T for guaranteed worry-free functionality, or bring any GSM Phone and we'll connect it to our network."<sup>142</sup> AT&T's online "Answer

Center" offers specific advice for customers who need support for devices they have brought to the network.<sup>143</sup> And, of course, AT&T also works with developers to certify their devices for use over AT&T's network, which offers customers a wide variety of reliable options.

Also unfounded was the charge made in the opening comments that AT&T was refusing to work with Sling Media to allow the SlingPlayer Mobile application to operate over the AT&T 3G network. Since mid-December, even before comments were filed in this proceeding, AT&T had been conducting tests to ascertain that SlingPlayer Mobile was optimized to conserve wireless network resources. Following those tests, on February 4, AT&T and Sling announced that SlingPlayer Mobile would be supported on AT&T's broadband 3G network.<sup>144</sup> Sling Media was "delighted with AT&T's decision to approve the SlingPlayer Mobile app on their 3G network" because it "gives customers the best experience possible for watching their home TV while on the go."<sup>145</sup>

The private resolution of that issue illustrates how consumer demand prompts wireless providers to support a full range of diverse offerings, consistent with reasonable network-management concerns, without any need for regulatory coercion. AT&T has underscored its willingness to collaborate with other developers as well to ensure that their applications are

network. Most US GSM cell phones work on 850/1900 MHz, while most other GSM country networks work on 900 or 1800 MHz. Check your device manufacturer website to see which frequencies your phone supports. Most major device manufacturers support 'tri-band' or 'quad-band' GSM phones that operate at multiple radio frequencies for maximum local compatibility and partial to full compatibility while traveling out of your home country."

<sup>139</sup> See AT&T, Answer Center, <http://www.wireless.att.com/answer-center/main.jsp?r=solutionTab&solutionId=KB59257> ("I purchased an unlocked phone overseas or via a non-AT&T wireless services website/store. How do I get technical support for my device?").

<sup>140</sup> AT&T, Press Release, *AT&T and Sling Media Collaborate on SlingPlayer Mobile App for 3G Mobile Broadband Network*, Feb. 4, 2010, <http://www.att.com/gen/press-room?pid=4800&cdv=nws&newsarticleid=30467&mapcode=> ("AT&T-Sling Press Release").

<sup>145</sup> *Id.*

<sup>139</sup> See *CTIA Feb. 5 Ex Parte*, Attachment at 1-13.

<sup>140</sup> See, e.g., *Cellular Cartefone and Consumer Choice in Mobile Broadband*, *supra*, at 24.

<sup>141</sup> See generally *CTIA Feb. 5 Ex Parte*; *CTIA Feb. 12 Competition Ex Parte*; AT&T Comments at 155; T-Mobile Comments at 5; Verizon Comments at 25-27. Indeed, Verizon Wireless recently announced that it will support Skype's Internet calling service on nine of Verizon's 3G smartphones. See Julianne Peppone, *Verizon smartphones to get Skype app*, CNNMoney.com, Feb. 16, 2010, [http://money.cnn.com/2010/02/16/technology/verizon\\_skype/](http://money.cnn.com/2010/02/16/technology/verizon_skype/).

<sup>142</sup> AT&T, Customers, Devices, <http://choice.att.com/flash/customersdevices.aspx> (emphasis added). See also AT&T, Customers, FAQ, Devices, <http://choice.att.com/customers/faq.aspx?id=4.5&group=Devices> ("Can I use my Non-AT&T phone on the AT&T network? Your phone must be tuned to the 850/1900 MHz radio frequency and must not be exclusively programmed to any other operator's

optimized to address security, privacy, and network-resource concerns. For example, AT&T has announced that it will provide developers with the specific wireless network optimization requirements for video and other applications via the devCentral website. *Id.* As Chairman Genachowski has recognized, the market-based collaboration between Sling and AT&T ensures that “consumers benefit.”<sup>146</sup> It is hard to see how the Commission could believe that a set of burdensome rules would achieve a better result.

Finally, some net regulation advocates complain that not all wireless providers permit tethering, or that they do not permit it on every device and with any service plan.<sup>147</sup> As a preliminary matter, many providers *do* offer tethering plans today, including both AT&T and Verizon Wireless. But the fact that some providers may not, or that providers do not offer tethering over every device or on every service plan, should be irrelevant to this “net neutrality” proceeding. As CTIA explains in its comments (at 10), “[w]hether or not customers can tether mobile phones to other devices has no bearing on their ability to access content on the Internet or how ‘open’ the Internet is to that customer.”

Some advocates claim that tethering limitations prevent a user from “connect[ing] the device of her choice to the network or us[ing] the application of her choice on that device.” EFF Comments at 30. But this is confused wordplay. Tethering is not an “application” provided over the Internet; it is simply the *use* of network resources. And a consumer’s ability to attach any compatible device to the network also does not depend on the ability to tether, although pro-regulation advocates often conflate the two issues. Quite apart from their tethering plans, AT&T and many other wireless broadband providers offer a variety of service plans under which a

<sup>146</sup> *AT&T Wireless Gives OK to Sling’s Mobile TV Application*, localtechwire, Feb. 5, 2010, [http://localtechwire.com/business/local\\_tech\\_wire/news/blogpost/696818/](http://localtechwire.com/business/local_tech_wire/news/blogpost/696818/) (emphasis added).

<sup>147</sup> See EFF Comments at 28-29; Free Press Comments at 123-24.

consumer can attach the laptop of her choice *directly* to their networks by means of wireless access cards.<sup>148</sup>

**B. The Proposed Rules Would Harm Wireless Networks, Services, and Consumers, and Frustrate the Administration’s Goals for the Future of Wireless Broadband.**

As discussed, the wireless broadband marketplace is functioning as well as any competitive market possibly could, and there is nothing for the Commission to “fix” with new prescriptive regulation. To the contrary, the proposed regulatory intervention would merely undermine consumer welfare.

As many commenters and the NPRM itself have observed, and as discussed in the initial declaration of Professor Reed and Dr. Tripathi and reiterated in their attached reply declaration, the wireless ecosystem is particularly sensitive to congestion and interference, which makes “air a more challenging medium for data communication than copper or optical fiber.”<sup>149</sup> Network management is therefore a fundamental requirement in the wireless environment. It already is essential today to ensure quality delivery of voice services.<sup>150</sup> It will be even more essential on tomorrow’s next-generation networks, which will deliver voice and all other services in IP, and

<sup>148</sup> Even Free Press seems to concede this point. See Free Press at Comments at 123 (noting that tethering should not be covered under the device attachment rule). Ultimately, tethering is a pricing issue. Customers that engage in tethering typically consume more network resources than the average wireless broadband user, and it is appropriate that they pay more than lower-volume users. That sort of tiered retail pricing is efficient and protects lower-capacity users from subsidizing the costs of higher-capacity users. Net regulation advocates cannot logically oppose tiered retail pricing arrangements, including tethering charges, on the one hand, while contending that providers should invest endlessly in capacity on the other. The cost of that investment must ultimately be recovered, and recovering it from the customers most responsible for congestion is the most efficient and equitable way of allocating that cost.

<sup>149</sup> See Bennett, *Going Mobile* at 18; see also AT&T Comments at 156-57; see generally Jeffrey H. Reed & Nishith D. Tripathi, *The Application of Network Neutrality Regulations to Wireless Systems: A Mission Infeasible*, at 21-24 (attached as Ex. 2 to AT&T Comments) (“First Reed & Tripathi Paper”); *Second Reed & Tripathi Paper* at 2-3 (summarizing prior points).

<sup>150</sup> See Bennett, *Going Mobile* at 40 (explaining that equal treatment of all packets is a “dubious notion” that is “especially harmful to the Mobile Internet because it’s disruptive to phone calls, which require low-latency service regardless of the network’s current state”).



challenges. But even over the longer term, after more spectrum is made available for broadband uses, providers serving “a population whose appetite for bandwidth doubles every year” will always, at some point, confront the hard limits of their spectrum.<sup>156</sup> Efficiency gains will provide some relief, but efficiency gains in wireless systems have lagged behind those in the wireline world.<sup>157</sup> Professor Reed and Dr. Tripathi explain:

[A]lthough development of new spectrally efficient technologies such as LTE and WiMAX undoubtedly help wireless operators provide a better experience to many users, even with advanced 4G technologies, wireless capacity is still expected to be a severe constraint. . . . [C]ongestion and other performance issues will always present significant challenges in operating wireless networks.

*Second Reed & Tripathi Paper* at 21. Accordingly, “both infrastructure expansion and deployment and optimization of network management mechanisms are critical to the success of a cellular technology.” *Id.* at 20. Providers must thus retain the discretion to “harmoniz[e] application needs by raising and lowering priorities, booking bandwidth reservations for isochronous applications, and applying congestion-based pricing measures[.]”<sup>158</sup>

Most advocates of net regulation pay vague lip service to the network-management complications faced by wireless providers, but they dismiss these concerns with the simplistic suggestion that the Commission could interpret “reasonable network management” liberally in

<sup>156</sup> Bennett, *Going Mobile* at 41. As de la Vega noted, mobile broadband usage is growing at a rate that outpaces every other broadband platform, and rapidly increasing smartphone usage generates 10 times the amount of traffic generated by average non-smartphone usage. *de la Vega Presentation* at 15.

<sup>157</sup> Bennett, *Going Mobile* at 2 (observing that the data rates of wireless systems “have doubled roughly every 30 months” while “the data rate of optical fiber doubles every nine months”).

<sup>158</sup> *Id.* at 65. As AT&T Mobility’s de la Vega notes, another important development will also be essential to ensuring that available spectrum can support growing mobile broadband usage: the development of more efficient applications. As discussed below, *see* note 276, *infra*, recent studies illustrate that applications consume network resources very differently even when providing similar services. For example, different video providers use the network more or less efficiently even when providing access to the same exact video. As stakeholders in the health of the Internet ecosystem, application developers must share in the collective effort to ensure that broadband resources are used as efficiently as possible for the benefit of all users. *See, e.g., de la Vega Presentation* at 22 (“Ensuring Application Efficiencies”).

which will require network operators to balance voice (including emergency calling) with an explosion in spectrum-hungry mobile video services and other performance-sensitive applications, from mobile gaming to critical M2M services like wireless Smart Grid control systems and wireless medical devices.<sup>151</sup>

More spectrum will be essential to accommodate this expanding usage. As Chairman Genachowski has recognized, “[s]pectrum . . . really is the oxygen of mobile broadband service,”<sup>152</sup> but the available supply has not kept up with the exploding demand. AT&T Mobility CEO Ralph de la Vega recently explained that, unless the Commission acts promptly to address the “looming spectrum crisis,” anticipated growth in wireless data usage will outstrip available capacity in the very near term.<sup>153</sup> The Commission has somewhat brightened the future of wireless broadband with its announcement of plans to free up 500 MHz of additional spectrum. But in the Commission’s own words, it “takes quite some time from the beginning to [the] end of a Commission strategic spectrum reallocation process.”<sup>154</sup> In fact, the Commission’s plan is designed to be implemented “over the next decade.”<sup>155</sup>

Thus, for the foreseeable future, more spectrum is not a substitute for network management, and it makes no sense for the Commission to limit the latter when it knows the limited supply of the former is confronting wireless providers with increasingly severe

<sup>151</sup> See Marguerite Reardon, *Cisco predicts wireless-data explosion*, CNET News, Feb. 9, 2010, [http://news.cnet.com/8301-30686\\_3-10449758-266.html](http://news.cnet.com/8301-30686_3-10449758-266.html); Lynnette Luna, *Cisco predicts bulk of mobile data traffic will be video content by 2014*, FierceBroadbandWireless, Feb. 11, 2010, <http://www.fiercebroadbandwireless.com/story/cisco-predicts-bulk-mobile-data-traffic-will-be-video-content-2014/2010-02-11>.

<sup>152</sup> Genachowski, *Mobile Broadband*, *supra*, at 4.

<sup>153</sup> See Ralph de la Vega, President/CEO, AT&T Mobility and Consumer Markets, Chairman of the Board, CTIA, *United States: Leading the Mobile Broadband Revolution*, CTIA Conference, at 18 (Mar. 23, 2010), [http://www.att.com/Common/merger/files/pdf/RDLV\\_CTIA.pdf](http://www.att.com/Common/merger/files/pdf/RDLV_CTIA.pdf) (“*de la Vega Presentation*”).

<sup>154</sup> Genachowski, *Mobile Broadband*, *supra*, at 5, 7.

<sup>155</sup> *Id.* at 5 (emphasis added).

the wireless context. *See, e.g.*, Google Comments at 81-82. Tellingly, however, they give no real-world examples of what measures they might deem uniquely (or at least more) “reasonable” in that context and thus exempt from the liability scheme they wish to impose. This would be small comfort to wireless providers. The threat of regulatory second-guessing would inevitably chill network engineers from taking the hour-by-hour steps needed to meet constantly evolving network-management challenges.<sup>159</sup> And nebulous assurances of leniency in the enforcement process would do little to keep them from erring on the side of extreme conservatism to the detriment of consumers.

In fact, net regulation proponents make only an empty gesture when they acknowledge the unique challenges of wireless broadband. In the next breath, these same groups advocate absolute rules that would be unworkable in the wireless context, while making no allowance whatsoever for variances in the wireless ecosystem. For example, Free Press insists that no provider should ever prioritize any Internet application in any context, and it acknowledges no need for any exceptions to that rule, even for wireless. Free Press Comments at 103. CDT likewise argues that network management should never be deemed “reasonable” if it is designed to support “quality of service.” CDT Comments at 40. And all the usual net regulation advocates assert that network management should never qualify as “reasonable” if it is employed to manage capacity constraints. In the words of the Open Internet Coalition (at 46), the “crutch of network management” needs to be removed, so that providers are compelled to invest in more bandwidth rather than manage the capacity they have.<sup>160</sup> The Public Interest Advocates take that

<sup>159</sup> *See, e.g., Second Reed & Tripathi Paper* at 2 (“[A]fter-the-fact, *ad hoc* determinations of the ‘reasonableness’ of engineering and business decisions would be extremely damaging to the evolution of wireless technology and the incentive for innovation and investment in the wireless industry.”).

<sup>160</sup> *See* Free Press Comments at 97-98 (“Permanent states of congestion and congestion management indicate larger problems with the network that should be remedied through investment in capacity, not

one step further, insisting that network management should be limited to a narrow category of activities that could be employed only “to ensure the network’s survival.” Comments of Access Humbolt, et al., at 8 (“Public Interest Advocates Comments”). And in Public Knowledge’s version of this rule (at 45-46), a network operator must demonstrate that prioritization is “essential to the network’s operation” (or legally compelled) to avoid liability.

These proposals would undermine wireless broadband services in a broad variety of ways, none of which the net regulation advocates even try to grapple with:

- On LTE networks, voice will appear as IP packets within a unified IP data stream. Thus, given the NPRM’s limited exemption for *traditional* wireless voice services, NPRM ¶ 156, a blanket “no prioritization” rule would block efforts to *prioritize VoIP within and across LTE networks* (and between wireless and wireline networks). *See* AT&T Comments at 175. One user’s online video game would receive the same priority as his neighbor’s 911 call. The prospect of such irrational homogenization would chill investment in LTE technology and prolong reliance on legacy wireless services, devastating the Administration’s hopes for a widespread transition to broadband services and to 4G wireless broadband services in particular.<sup>161</sup>
- As discussed in our opening comments, the prioritization ban would preclude innovative M2M services that need special QoS guarantees, including those needed to help the Administration meet its environmental and energy-conservation goals, such as wireless Smart Grid control systems.<sup>162</sup>

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perpetual management of scarcity.”); Google Comments at 69 (“[N]etwork management techniques to address congestion should not become permanent solutions to network capacity issues.”).

<sup>161</sup> Richard Bennett notes, “Closer coordination between VoIP and mobile network internals would provide a better overall experience for more users[.]” Bennett, *Going Mobile* at 34. And without such “coordination” and appropriate QoS, VoIP over wireless networks would suffer the pitfalls of “implementation of a delay-sensitive application over a network service that doesn’t limit latency.” *Id.* at 36. CDT is perhaps the sole proponent of net neutrality regulation to recognize that such regulation could severely degrade voice on wireless broadband networks—a recognition that leads it to acknowledge that voice, at least, might always have to be specially prioritized. CDT Comments at 52.

<sup>162</sup> AT&T Comments at 176; *see also* T-Mobile Comments at 33; Comments of Communications Workers of America at 10 (“CWA Comments”); Motorola Comments at 15. As we have explained, Smart Grid monitors that oversee the health and operation of the central power system must be assured of nearly instantaneous, accurate transmission to detect a fault. In contrast, a meter periodically sending or reacting to electricity usage readings from a residence can tolerate substantial latency and would likely require only best-effort transmission. *See* AT&T Comments at 176-77; *see also Second Reed & Tripathi Paper* at 23 (explaining that Afterbach and DeHaven’s proposal to impose a nondiscrimination rule

- The proposed rules would eliminate a variety of existing business models for specialized wireless broadband services and devices, such as Amazon's Kindle, the Barnes & Noble Nook, and Internet-connected GPS devices from Garmin, TomTom and others.<sup>167</sup> All of these offer customers limited connectivity to the Internet and thus, under the logic of net regulation advocates, either "block" or "prioritize" certain sites or content. The same is true of Smart Grid devices, wireless heart monitors, wireless vending machine readers, and the like. The proposed rules might similarly jeopardize AT&T's ability to support (or preclude Cisco from offering) Cisco's recently announced mobile HealthPresence Telemedicine Solution units, which will allow a patient to receive "immersive" health care consultations through "advanced video collaboration."<sup>168</sup>
- Even apart from their effect on these specialized services, the proposed rules would undermine a broad variety of wireless business models and service offerings. Wireless application stores, which feature certain applications, would be suspect. Wireless devices that come prepackaged with a specific browser or preloaded with Google maps, for example, may have to be scrapped. Business models like the iPhone that seek to protect customers from applications with security flaws or insufficient privacy protections or from offensive (but not unlawful) material like the notorious "Baby Shaker" application<sup>169</sup> might no longer be available to consumers. And child- or senior- or enterprise-focused offerings that either highlight or limit certain applications and content would have to be eliminated as well.<sup>170</sup>

or the potential impacts on other users, is a recipe for disaster in the wireless environment. The FCC's differentiation among services, users, and resource consumption is inherent in any efficient strategy of wireless network management (and, more specifically, any rational QoS implementation strategy).<sup>167</sup>

<sup>167</sup> This would be a huge loss. In Bennett's words, the ability to offer such innovative services through "economically and technologically efficient price discrimination" has "open[ed] up whole new business models that benefit the consumer." Bennett, *Going Mobile* at 33. Bennett notes, for example, that Kindle customers "enjoy benefits of the purchasing power of large content suppliers [e.g. Amazon] and the benefits of "customized transport services." *Id.* A rule that required precise parity among all packets would jeopardize such offerings—if nothing else, by making them cost-prohibitive. *See also Second Reed & Tripathi Paper* at 23 (making similar point).

<sup>168</sup> *See Cisco Launches HealthPresence Telemedicine Solution, Providing Increased Access to Quality Medical Care Worldwide*, CNNMoney.com, Mar. 1, 2010, <http://money.cnn.com/news/newsfeeds/articles/markwire/0591318.htm> ("Cisco Launches HealthPresence Telemedicine Solution").

<sup>169</sup> *See* MG Siegler, *Feel Like Shaking A Baby To Death? There's An App For That*, Tech Crunch, Apr. 22, 2009, <http://techcrunch.com/2009/04/22/feel-like-shaking-a-baby-to-death-theres-an-app-for-that/> ("Baby Shaker, a new app which, displays a picture of a baby and plays crying sounds. To make it stop, you have to shake your iPhone really hard, after which the crying will stop and two X's will be placed over the baby's eyes—implying, of course, that the baby is dead."); Prince McLean, *Apple apologizes over Baby Shaker app*, AppInsider, Apr. 23, 2009, [http://www.appinsider.com/articles/09/04/23/apple\\_apologizes\\_over\\_baby\\_shaker\\_app.html](http://www.appinsider.com/articles/09/04/23/apple_apologizes_over_baby_shaker_app.html).

<sup>170</sup> As we discuss below, however, any effort by the FCC to limit efforts by ISPs to offer services that have been specially screened to eliminate "objectionable" material would contravene Congress's express protection for such conduct in Section 230 of the Act, 47 U.S.C. § 230.

- As all informed participants understand, wireless providers cannot readily acquire more spectrum and may never have enough spectrum to handle exponentially increasing wireless data usage.<sup>163</sup> Thus, if they were saddled with vague prohibitions on the use of network management to address capacity constraints, they would have to choose between facing a constant and potentially intolerable risk of litigation and simply allowing their network performance to deteriorate.
- The wireless broadband ecosystem would become less and less friendly to many complex applications (such as streaming video and gaming) with high sensitivity to latency, loss, and jitter, which account for an increasing share of wireless data usage. Clearwire explains (at 12): "If in the name of treating all data bits equally . . . the network provider is unable to perform sufficient network management, via a 'discriminatory' practice or otherwise, all subscribers in that sector who attempt to download a video stream will experience slowed, inconsistent quality when attempting his or her particular download." Some services, like wireless video conferencing or wireless telemedicine, might never develop.<sup>164</sup> As even Google has conceded, this is the danger of "turn[ing] wireless carriers into operators of 'dumb pipes[.]'"<sup>165</sup> The "mobile success" of cutting-edge application and content providers "depends on advanced sophisticated networks capable of providing security and features such as dynamic load balancing." *Id.*<sup>166</sup>

requiring per-megabyte pricing for all data transfers would prohibit a smart meter business model, making those services too expensive).

<sup>163</sup> *See* AT&T Comments at 147-48 (discussing increasing pace of wireless data traffic) (citing *Surfing hertz*, Fin. Times, Dec. 1, 2009, <http://uk.finance.yahoo.com/news/surfinghertz-ftimes-96092862ecc.html>); *see also* Genachowski, *Mobile Broadband*, *supra*, at 4 ("Mobile data usage is not just growing, it's exploding."); Tim Conneally, *Report: Streaming video drove 72% global increase in mobile data consumption*, betanews, Feb. 8, 2010, <http://www.betanews.com/article/Report-Streaming-video-drove-72-global-increase-in-mobile-data-consumption/1265650049> ("A new study from subscriber management company Allot Communications today says that worldwide mobile broadband consumption increased approximately 72% in just the second half of 2009."); Bank of America Merrill Lynch, *Mobile Data: Traffic Jam Ahead?*, at 1, 6 (Feb. 2, 2010) ("Bank of America Merrill Lynch, *Mobile Data: Traffic Jam Ahead?*, at 1, 6 (Feb. 2, 2010) ("Bank of America Merrill Lynch, *Mobile Data: Traffic Jam Ahead?*, at 1, 6 (Feb. 2, 2010) and concluding that "[a]s data traffic grows and voice is increasingly carried as packet data, we see increasing need for data traffic prioritization (and a strong argument against heavy-handed net neutrality policies)"); Phil Bellaria, Director, Scenario Planning, & John Leibovitz, Deputy Chief, Wireless Telecommunications Bureau, *Message from the iPad: Heavy Traffic Ahead*, BlogBand, broadband.gov, Feb. 1, 2010, <http://blog.broadband.gov/authordid=10475> ("Bellaria & Leibovitz, *Message from the iPad*") (describing "a new round of reports of networks overburdened by a data flow they were not built to handle").

<sup>164</sup> *See, e.g.*, Alcatel-Lucent Comments at 16 ("Looking forward, [prioritized] managed service treatment will clearly be beneficial for any inter-person communications service, such as video calling, video conferencing, interactive videoconferencing . . . , as well as for e-health and e-learning, and remote monitoring/security services, all of which depend on such interactive communications services.");

<sup>165</sup> Scott Morrison, *Google CEO Seeks to Assure Wireless Carriers*, Wall St. J., Feb. 16, 2010, <http://online.wsj.com/article/BT-CO-20100216-711871.html> ("Google CEO Seeks to Assure Wireless Carriers").

<sup>166</sup> *See also* Second Reed & Tripathi Paper at 3 ("Requiring a wireless network to allow connections of . . . any applications at all times, without regard to current capabilities and limitations of that network

No proponent of net neutrality regulation has ever contested the validity of these concerns. Nor have net regulation advocates ever explained why their misconceived “neutrality” dogma should trump the engineering flexibility that wireless providers must exercise in the real world to meet the Administration’s objective for wireless broadband: “fundamental[ly] transform[ing] our society and economy.”<sup>171</sup>

The Commission has already recognized that imposing “open access” requirements on wireless broadband providers could well suppress innovation and investment. In adopting the “open platform” rules it designed for the 700 MHz C Block spectrum, the Commission expressed serious concern about the potential for such “drawbacks,” and it thus decided to “impose the open platform requirement only on a limited basis”—i.e., only to C Block licensees.<sup>172</sup> Those concerns remain relevant and untested, since neither the Commission nor the industry has yet had the chance to evaluate the impact of the Commission’s C Block requirements. If anything, those concerns are more acute now than ever, given the looming spectrum crisis and the recent explosion in wireless data usage.

More generally, subjecting the entire industry to open access rules would undermine the Administration’s national broadband goals. Private enterprise is expected to invest some \$23 billion in 2010 alone in order to build out America’s wireless broadband infrastructure.<sup>173</sup> Restrictive new rules would sow uncertainty throughout the industry and undermine the case for such investment. And as AT&T has previously discussed, imposing such rules now, before the C Block experiment has begun, would unwisely and unlawfully thwart the investment-backed

<sup>171</sup> Genachowski, *Mobile Broadband*, *supra*, at 3–4 (specifically citing services affecting education, health care, energy, public safety, and government, as well as job creation and economic growth).

<sup>172</sup> Second Report and Order, *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, 22 FCC Red 15289, 15364 ¶205 (emphasis added) (“700 MHz Order”).

<sup>173</sup> See *de la Vega Presentation* at 7.

expectations of the many 700 MHz auction winners who paid billions of dollars more for spectrum *unencumbered* by open-platform requirements. See AT&T Comments at 152-54.

In terms of utter disregard for the real-world future of wireless broadband, however, no one holds a candle to the authors of the Aflerbach/DeHaven paper submitted by the New America Foundation, which advocates the complete homogenization of wireless services and an effective ban on provider-specific innovation or service differentiation.<sup>174</sup> Professor Reed and Dr. Tripathi include a detailed refutation of this paper in their attached report, explaining the many respects in which it substitutes fantasy for engineering facts and basic common sense. As discussed there and below, the Aflerbach/DeHaven proposal suffers from two basic infirmities. First, the end state the authors envision would require a complete top-to-bottom overhaul of the entire wireless ecosystem, consuming many years and many billions of dollars, given how much the marketplace *currently* depends on provider-specific solutions to particular wireless challenges rather than on industry-wide standards.<sup>175</sup> Second, the imagined end state itself, if it could ever be achieved, would be dystopian, not utopian. The radical homogenization that Aflerbach and DeHaven favor would be the precise opposite of what consumers value and what the Commission should support: innovation, dynamism, and multilayered competition.

In a nutshell, Aflerbach and DeHaven ask the Commission to force wireless networks to become generic conduits, stripped of any of the unique features and capabilities that differentiate providers in today’s market and thus foster competition and consumer choice. Although the

<sup>174</sup> Andrew Aflerbach & Matthew DeHaven, *Any Device and Any Application on Wireless Networks: A Technical Strategy for Evolution* (Jan. 13, 2010) (attached as Appendix A to New America Foundation Comments) (“NAF Paper”).

<sup>175</sup> See, e.g., *Second Reed & Tripathi Paper* at 8-12 (summarizing the wide gulf between the marketplace as it exists today and as hypothesized by Aflerbach and DeHaven, and the substantial costs, time, upheaval, and customer displacement that would be involved in any effort to make such a transition).

authors refer to their proposal as advocacy for an “any device, any application” model, it is nothing of the sort. As discussed, almost every major provider *already* supports an “any device” model by permitting consumers to use unlocked devices that are compatible with the provider’s network interface.<sup>176</sup> And each offers or soon will offer fully “open” platforms that are specifically designed to permit “any application” to be offered over wireless networks and devices. Such platforms include the Android model, ubiquitously available today, as well as the model that will emerge from the Wholesale Applications Community discussed above.

What Aflerbach and DeHaven propose is something far more radical. They would like to see wireless networks dumbed down to include only the capabilities found in generic network standards. To ensure that all devices could work without any distinction on every network, they would preclude *any* evolution or differentiation of network technology unless specifically approved by the FCC or a third party. And when using these dumb networks, consumers would be condemned to degraded service in which *no* application—including apparently voice—could be treated differently in any respect. In Richard Bennett’s words, “designing the intelligence out of our networks” may be “a lovely ideal for network engineers dreaming about abstract networks, but it’s neither practical for real networks nor a valid foundation for legally enforceable regulation in the year 2010.” *Going Mobile* at 34.

<sup>176</sup> See *Second Reed & Tripathi Paper* at 5; *Wireless Devices and Applications Appendix* at 1. As Professor Reed and Dr. Tripathi observe, most consumers choose *not* to bring their own device to the network; instead, they choose provider-subsidized devices. Yet Aflerbach and DeHaven appear to be proposing a *mandatory* “bring your own device” framework, which would bar the provider-supplied device choice most consumers clearly prefer today. Reducing consumer choice is a negative in its own right. But the collateral effects would be troubling as well. This mandate would significantly increase consumer costs by eliminating manufacturer handset subsidies. The impact is best illustrated by the \$529 cost of the unsubsidized Google Nexus One. See Google, Nexus One, <https://www.google.com/phone/choose?hl=en&gl=US&s7e=>. Costs would be even higher in the “do anything on any spectrum” devices the authors hypothesize. Forcing all consumers to absorb those higher costs would ultimately suppress demand, and would thus defeat the nation’s broadband goals as well as consumer interests. *Second Reed & Tripathi Paper* at 5, 10.

*Networks and Devices*. At first glance, it might seem that Aflerbach and DeHaven are simply advocating the creation of a third-party certification body with a “full set of requirements” that would allow manufacturers to build a “device that is ready to connect to any provider network.” NAF Paper at 29. On its face, that notion appears benign. In fact, as the authors acknowledge, this is how certification works today. For example, manufacturers of GSM devices today *already* make use of certification from the PTCRB Type Certification Review Board in order to ensure that “a device is compliant with the appropriate technological standards, regulatory requirements (FCC and/or IC) and certain operator requirements (e.g. Over-the-Air RF performance)” and that the device can therefore operate on any GSM network using the same spectrum band.<sup>177</sup> In other words, any manufacturer can already build a GSM phone that should be compatible with, and generally operable on, any GSM network that uses the appropriate spectrum bands.

But Aflerbach and DeHaven are not remotely content with this type of standardization. They are frustrated by, and want to eliminate entirely, any of the *provider-specific* certification that is indispensable to supplement third-party certification, and they would thus consign certification *on all issues* entirely to third parties. That would be a fool’s errand, because third parties could never supplant the need for individual provider testing and certification.

First, standards cover many but not all aspects of the network, and providers employ a host of advanced, network-specific technology to enhance their service capabilities. See *Second Reed & Tripathi Paper* at 5. Indeed, many components of the network are optional, and there are often multiple approaches for achieving certain network functions, so that solutions vary from

<sup>177</sup> See PTCRB Certification, <http://www.cetecomusa.com/mobile/ptcrlb-gcf.aspx>; see also What is the PTCRB?, <http://www.ptcrlb.com>. In addition, manufacturers typically submit to voluntary Global Certification Forum (GCF) certification, which involves field trials and SIM testing, among other conformance evaluations. See *id.*

provider to provider and network to network. Consider a seemingly simple and straightforward function, like the signal that a network sends to a user's handset to notify her that she has voicemail. There is no GSM network "standard" for this function, and GSM providers may employ a variety of different approaches to deliver a voicemail message indicator to a handset. As a result, a customer using a GSM device that has not been synchronized with a particular network through provider-specific testing and certification may be able to retrieve her voicemails through the device, but compatibility issues would keep her from receiving the message-waiting indicator from the network. Similarly, there is no standard way that GSM data networks recognize and authenticate a new device, since the worldwide SIM card standard does not include the necessary configuration data. Thus, typically, the network operator works with its partner manufacturers (or with developers that certify devices for the network) to ensure that the device will have a recognizable access point name ("APN") or a recognized network password to enable recognition and authorization.<sup>178</sup>

Further, as Drs. Reed and Tripathi explain, even where a standard does dictate function design, network providers often have considerable leeway regarding the specific implementation of the standard. For example, a standard may dictate how a phone locks on to a base station during network acquisition, but network operators have developed provider-specific mechanisms to accomplish this task efficiently, with minimal handset power usage. See, e.g., *Second Reed Tripathi Paper* at 9. Similarly, standards dictate the general rules for a handset to select among several available systems within a network, but providers have leeway within those rules to develop specialized network-selection algorithms that improve network and handset

<sup>178</sup> A manual work-around is available where a consumer seeks to bring a non-certified, "unrecognized" device to the network.

performance. *Id.* at 14. Providers often compete based on these and other ways in which they differentiate themselves by innovating above and beyond the basic performance dictated by a standard. See *id.*

Finally, many networks include a mix of technologies, architectures, uses, and local radio environments, and "network operators are thus best positioned to evaluate the performance of new devices on their networks." See *id.* at 5. For example, because AT&T's network is a composite of several legacy networks that were combined through mergers, there are several different voicemail-indicator technologies just within AT&T's network alone. Every handset that is certified for AT&T's network must therefore be tested to ensure that it can work with each technology.

In short, not every device works equivalently, or perfectly, with every compatible network, even with third-party certification. Providers therefore engage in extensive compatibility testing to ensure optimum performance from both the handset's and the network's perspectives.<sup>179</sup> Indeed, in 2009 alone, AT&T's certification process identified approximately 1,200 significant device-specific performance or compatibility issues that had to be resolved before the launch of the relevant devices on AT&T's network.<sup>180</sup> This process is thus clearly beneficial—and it has hardly been a stumbling block for device manufacturers or consumers: As

<sup>179</sup> See, e.g., Bennett, *Going Mobile* at 42 ("The mobile network . . . endpoint has to perform a variety of power control, modulation, and coding decisions that go far beyond the capabilities of IP. Before a handset can be cleared for access to the mobile network, the operator has to ensure that it's going to be well behaved under the range of circumstances that affect other users and the network. So the device freedom notion must be leavened with a great deal of consideration for the responsibility invested in the handset by the wireless network for management and effective operation of the overall network."). See *Second Reed & Tripathi Paper* at 12-16 (explaining that carrier-specific testing is critical to ensuring, *inter alia*, interoperability with different types of network equipment, software stability and reliability, and device performance); see also *id.* at 5, 12-16 (detailing the extensive, complex, and labor intensive real-world testing process employed by wireless providers).

<sup>180</sup> *Wireless Devices and Applications Appendix* at 1, 3 (describing the importance of carrier-specific testing).

CTIA notes, there are over 630 wireless handsets in the United States today, *CTIA Feb. 12 Competition Ex Parte* at 4, and AT&T's vendor-friendly certification process has already resulted in the certification of over 370 devices. The *Broadband Plan* reports that in 2009, U.S. consumers had access to over 850 different certified mobile devices. *Broadband Plan* at 18.

Nevertheless, because Aflerbach and DeHaven wish to obliterate any hint of provider differentiation, they propose to tear down the existing industry structure and begin anew. Under their plan, the FCC or some third party would review every single component of every provider's network (apparently without regard to concerns about proprietary information) and identify any requirements that are not "necessary to protect the network from harm." NAF Paper at 31. Those requirements, they say, "should be *eliminated*" so that all GSM (or CDMA or LTE) networks in the United States can all become absolutely uniform. *Id.* (emphasis added).<sup>181</sup>

This is a senseless proposal. To begin with, it would inflict billions of dollars in wasteful, presumably uncompensated transition costs on the industry and its consumers, all in the pursuit of a badly misconceived vision: an entirely homogenous wireless ecosystem bereft of differentiation and choice. Under the ensuing regime, no existing provider would have any incentive to continue developing innovative capabilities for its network. Nor could any new entrant grab a toehold in the market by deploying niche network features. Nor could consumers choose among providers on the basis of provider-specific capabilities. This wanton dumbing-down of the wireless ecosystem would fly in the face of the NPRM's proposed "Competitive

<sup>181</sup> To be sure, the authors allow for the possibility that technical requirements "beyond the existing GSM standards" might be allowed for a particular network—but only if "purely functional and approved by third-party technical experts in a public forum." NAF Paper at 34. As Professor Reed and Dr. Tripathi point out, in the real world, these frozen, uniform network standards would rapidly "be obsolete or would require significant changes due to the fast pace of cellular/wireless technology evolution." *Second Reed & Tripathi Paper* at 6. The authors thus either intend to freeze technology in place today (or at least slow the pace of innovation significantly) or are proposing a plan that would be unworkable almost immediately.

Options" rule, which stresses the importance of "competition among network providers." NPRM, Appendix A § 8.11.

As even Google acknowledges, there is little to be gained from "turn[ing] wireless carriers into operators of 'dumb pipes' that only conduct bytes between a customer's device and the Internet."<sup>182</sup> Consider the basic voicemail-indicator example, discussed above. Since a voicemail indicator is not necessary to "protect the network from harm," the Aflerbach-DeHaven regime would compel every provider either to eliminate the function altogether or to agree on a homogenous standard for every single network (and device). Similar functionalities would likewise have to be homogenized. *No* provider could innovate in any way.

One illustrative casualty would be the enormously popular innovation known as "visual voicemail," first featured on the iPhone as the result of close, network-based collaboration between Apple and AT&T. This feature alerts a subscriber to her voice messages, displays the details of the message via a graphical interface on the iPhone, and makes it easier for the subscriber to find, listen to, and replay specific voicemails. AT&T similarly collaborated with Apple to modify the network to allow application providers to send "update" notifications to a variety of different applications running on the iPhone. If Aflerbach and DeHaven had their way, AT&T would have to eliminate these features from its network, and the next time a manufacturer approached AT&T with a similar pro-consumer idea, AT&T would have to reject it as well. To be sure, AT&T could submit the idea to the designated industry standards body, but no competitive advantage could be gained from this or any other innovative idea, so there would be little incentive to do so.

<sup>182</sup> *Google CEO Seeks to Assure Wireless Carriers, supra* (citing statement of Google CEO Eric Schmidt).

Stripped down, bland wireless networks would not be the only fall-out from the Aflerbach/DeHaven regime. The *devices* that emerged from that regime would likewise be less sophisticated, less interesting, and, ultimately, less numerous. As Professor Reed and Dr. Tripathi put it, this approach would be “a prescription for reduced innovation in both devices and networks” that “plainly would not advance consumers’ interests.” *Second Reed & Tripathi Paper* at 19. Worse still, the resulting devices would also be lower in quality, since third-party certification entities typically vouch for mere *compliance* with a standard, not for “quality” or consumer experience, the way individual providers do today. *See id.* at 15-16 (describing provider testing to ensure quality of device and device components).

Moreover, any given customer would have no straightforward way to trace any performance problems to their source (e.g., the device, the operating system, the application, the network, interference from other users) and no workable customer-assistance mechanism.<sup>183</sup> All consumers would indefinitely face the same quandary that confronted the customers of Google’s Nexus One immediately after its release, who were given no clear guidance about whether to address their complaints to the device manufacturer, to Google, or to the service provider, and who found themselves bounced among all three.<sup>184</sup> Aflerbach and DeHaven actually acknowledge this risk of consumer confusion, but dismissively assert that “the carrier customer service model will resemble the model of the wired Internet—and consumers will likely recognize and adjust to that model in the wireless market.” NAF Paper at 38-39. In other words,

<sup>183</sup> *See Second Reed & Tripathi Paper* at 5, 10-11 (noting lack of accountability and the customer dissatisfaction likely to follow in the framework proposed by Aflerbach and DeHaven).

<sup>184</sup> *Id.* at 10-11; TechGadgetsNews, *Customer Service Problems for Google Nexus One*, <http://www.techgadgetsnews.com/customer-service-problems-for-google-nexus-one/> (discussing widespread customer confusion about whether Google, T-Mobile, or manufacturer HTC should be responsible for handling customer service complaints).

rather than allowing consumers the choice of maintaining the extremely popular, pro-consumer “managed” service/device options available to them in today’s wireless marketplace, Aflerbach and DeHaven would unapologetically *force* all consumers to fend for themselves. It is difficult to imagine a more overtly anti-consumer proposal.<sup>185</sup>

Finally, under the Aflerbach-DeHaven regime, providers would remain responsible for compliance with regulatory obligations such as E911 and the like, but they would be at the complete mercy of device manufacturers for implementation and oversight of those requirements.<sup>186</sup> Unless the Commission is prepared to revamp its regulatory framework entirely to refocus all such requirements on device manufacturers rather than service providers, the latter would have no viable mechanism to ensure that those requirements are met. And of course, a customer unable to make an E911 call would ultimately suffer the consequences, as Aflerbach and DeHaven tacitly concede when they acknowledge that consumers could not look to their service providers in the event of “E-911 problems caused by device-related failures or incompatibility.”<sup>187</sup>

*Applications.* Although misleadingly styled as an “any application” proposal, the Aflerbach-DeHaven plan has nothing to do with ensuring that wireless networks can *support*

<sup>185</sup> Customers would also be likely to have *more* complaints under the Aflerbach and DeHaven approach. Providers usually project capacity usage based on the types of devices in their supply chain, and they predict and manage expected interference accordingly. A mandatory bring-your-own device rule would seriously impair network operators’ ability to perform such forecasts and plan accordingly, and network users would suffer the consequences. *See Second Reed & Tripathi Paper* at 17.

<sup>186</sup> *See id.* at 5-6, 16 (discussing how the Aflerbach and DeHaven proposal would complicate the provision of E-911 services).

<sup>187</sup> NAF Paper at 38. The authors suggest that wireless providers could send compliance-related information and upgrades to devices via over-the-air forced upgrades. But they do not explain how the network provider could communicate with each and every independent device operating on its network, or how it could ensure that the relevant upgrades are implemented on devices over which it has no control. If the “any devices” consumers are expected to bring to the network must not only work on any network but also contain updatable software, the devices are likely to be more expensive and less consumer-friendly than those consumers use today. *See Second Reed & Tripathi Paper* at 17-18.



“any application.” Afterbach and DeHaven do not question the effectiveness of (or even address) the various open-development platforms and provider-sponsored application-development initiatives that characterize the wireless broadband market today. Instead, they wish to prohibit both (1) any QoS enhancement for any application in any network and (2) any measures designed to manage applications that use “extensive capacity.” NAF Paper at 51. Their preferred regime would thus hammer down not only any distinctions among *networks*, but any distinctions in the way providers treat *packets* crossing their networks—including, apparently, packets associated with voice telephony.

This mandated dumbing-down of broadband networks would be as harmful to consumers as it is unnecessary to preserve the openness of the Internet. Scarcity is an unavoidable fact of life in the wireless environment, and it necessitates ongoing network management. Afterbach and DeHaven fully acknowledge that we live in an era of increasing “continuous, high bandwidth video and audio communications” over wireless networks; that the “amount of capacity required by [each] individual user” is “increas[ing] dramatically”; that “[s]pectrum availability and use is one of the most significant challenges in wireless communications”; and that “availability of spectrum constrains the capacity (number of phone calls and/or aggregate data speed) a carrier can offer.” NAF Paper at 46, 59. But they brush away all these concerns in light of what they call “immediately foreseeable advances” in technology, including “use of currently-unused spectrum.” *Id.* at 58.

This is fantasy. As discussed, there is *no* “immediately foreseeable” solution to the spectrum crisis, and the Commission’s own proposed spectrum solutions, as outlined in the *Broadband Plan*, are only a first step in resolving the impending spectrum crisis and, in all

events, will take at least a decade to implement.<sup>188</sup> Afterbach and DeHaven propose various spectral-efficiency and spectrum-reuse techniques as though they were a recently discovered cure-all. *Id.* at 59-60. In fact, however, as the *Broadband Plan* observes, “[t]he spectral efficiency of wireless technologies has increased by a factor of roughly 40 or more since the early days of second-generation (2G) wireless.”<sup>189</sup> As discussed in our opening comments (at 163-64), there are limits to the gains such techniques can offer. Again, even with the advent of 4G technologies, “data traffic in wireless networks is growing much faster than technological improvements in spectral efficiency.” *Second Reed & Tripathi Paper* at 21.

Afterbach and DeHaven further suggest that providers could solve all bandwidth problems simply by offering customers bandwidth tiers.<sup>190</sup> In their view, as long as high-capacity users *paid* for higher capacity on spectrally constrained, dumbed-down networks, there could be no congestion issues, and everyone would be perfectly happy. But this, too, is wrong. To be sure, providers can—and some will—begin to address congestion challenges, in part, by adopting usage-sensitive data plans.<sup>191</sup> But such plans will be a complement to, not a substitute for, efficient network management, and in the words of Professor Reed and Dr. Tripathi, simply “can never be a complete solution.”<sup>192</sup>

First, regardless of any usage-based pricing tiers, network operators will still need to employ application-based network management to ensure that a “lower-tier” customer’s voice

<sup>188</sup> See p. 77, *supra*.

<sup>189</sup> *Broadband Plan* at 41.

<sup>190</sup> They also propose variations, such as certain levels of “guaranteed” performance. But due to the dynamic nature of wireless network operations and uses, providers simply cannot “guarantee” performance for any user at all times. *Second Reed & Tripathi Paper* at 6-7 & 23.

<sup>191</sup> Even Google recently indicated that it had no opposition to such “tiered pricing.” *Google CEO Seeks to Assure Wireless Carriers, supra* (citing statement of Google CEO Eric Schmidt).

<sup>192</sup> *Second Reed & Tripathi Paper* at 7; see, e.g., *id.* at 22-24.

911 call or an electric utility's Smart Grid control-device signal can get through, without interruption or failure, even when the customer's "higher-tier" neighbors are all streaming video over their wireless devices. In Bennett's words, "[t]he implication of ignoring the application and only considering the volume of traffic it generates is that some applications won't work well all of the time; this is the case on the wired Internet, and it's even more often the case on the more fully utilized mobile Internet." *Going Mobile* at 41.

Second, the adoption of usage tiers could not address sudden spikes in congestion that inevitably arise from the inherent mobility of wireless customers, who can put huge strains on the network at unexpected times or locations—because of a demonstration, for example, or a major traffic accident. See *Second Reed & Tripathi Paper* at 23-24. Under the Afflerbach/DeHaven regime, providers would have to allow voice calls to fail whenever an unexpectedly large aggregation of users in a cell suddenly decided to use bandwidth-intensive data applications.

Afflerbach and DeHaven dismiss these concerns on the theory that "the over-the-air" access layer of the wireless network mitigates disruption to the network simply by *dividing transmission timeslots between all connected users*." NAF Paper at 55 (emphasis added). In other words, the authors believe that harmful congestion can never arise because, left to its own devices, the wireless network will simply split up available capacity among all users and traffic. But as anyone with a GSM wireless device is aware, even time-slot-based wireless networks can be and often are overloaded in particular cells, and network congestion can most definitely cause network failure or at least call dropping and interruption.<sup>193</sup> In any event, as Professor Reed and

<sup>193</sup> Contrary to the authors' belief, wireless networks are also vulnerable to DOS and other malicious attacks. See, e.g., *Second Reed & Tripathi Paper* at 15.

Dr. Tripathi demonstrated in their first paper in this proceeding, the result of blind, completely "equal" sharing among all applications on a pure best-efforts basis would be poorer quality and capacity for all applications and users.<sup>194</sup> In particular, differentiation based on scheduling algorithms can *maximize* network throughput by dedicating network resources to the user or channel with the best conditions at a given moment, and the result is improved *average* throughput across all applications and users.<sup>195</sup>

This may explain why, in the final analysis, Afflerbach and DeHaven seem to recognize that there might be an appropriate role for prioritization or other quality-of-service measures in the wireless network after all. They suggest that their "any application" world would permit "enhanced QoS services on an individual sign-up basis." NAF Paper at 52. But as discussed in Section II.E above, the Commission cannot sensibly force the market to rely on "individual sign-ups]" for "enhanced QoS."<sup>196</sup> In a range of contexts, that approach could be far less feasible than allowing the network provider, which has responsibility for ensuring maximum performance for all network users, to work directly with application providers, who will have the best idea of what network performance they actually need and how to value that performance. And on a more practical level, how would individual end users even know whether a particular application required performance enhancements? How would they know what *level* of enhancement was appropriate? How would customers know whether the application or content

<sup>194</sup> See *First Reed & Tripathi Paper* at 44; *Second Reed & Tripathi Paper* at 7.

<sup>195</sup> See *First Reed & Tripathi Paper* at 43-44; see also *Second Reed & Tripathi Paper* at 22; Bennett, *Going Mobile* at 24-25 ("scheduling] packets . . . boost[s] the overall efficiency and effectiveness of the wireless network up to accepted wireline standards").

<sup>196</sup> As further discussed in Section II.E, most advocates of "net neutrality" regulation would prohibit even *consumer-initiated* QoS enhancements to the extent those enhancements would apply to "shared" network links. Since all aspects of the wireless network are shared among multiple end users, net regulation advocates would presumably oppose all consumer-initiated QoS enhancements on the wireless platform.

provider whose service they want to enhance has agreed to participate in making such enhancements available (e.g., by marking packets transmitted to end users)? And finally, does network technology today even permit the customer-defined enhancement or prioritization of the sort they propose? And *could* it, if the network is dumbed down to its bare GSM standards compliance, as would be necessary to accomplish the authors' device proposal? Aflerbach and DeHaven themselves suggest that that their proposal "may or may not exactly match the capabilities of the wireless protocol." But, having said this, they move blithely on. NAF Paper at 53.

Towards the end of their paper, in perhaps its strangest passage of all, Aflerbach and DeHaven appear to renounce much of what has come before. They suggest, in passing, that one way to address performance enhancements and network management would be for "Internet-based service providers"—i.e., applications and content providers—to "sign up for *guaranteed minimum* QoS parameters for *all* their traffic, analogous to Service Level Agreements (SLAs) already provided by commercial wireline carriers for customers requiring premium treatment." *Id.* at 52 (emphasis added). While Aflerbach and DeHaven should know that it is impossible to offer "guaranteed" service quality in the dynamic and unpredictable wireless environment, *see Second Reed & Tripathi Paper* at 23, we at least agree with them that network providers *should* be free to work out QoS arrangements with the content and application providers, who are the entities best positioned to know what performance enhancements, if any, their services need. That approach allows for the development of high-quality services within and across networks and ultimately spreads the costs most efficiently. And even Google has recognized that the industry would be best served overall if wireless providers "work with third-party applications

developers to better serve customers."<sup>197</sup> But this is precisely what the NPRM would prohibit (NPRM ¶¶ 106-07, Appendix A § 8.13)—and what Aflerbach and DeHaven denounce throughout the rest of their implausible and contradictory discussion.

### C. The Proposed Rules Would Frustrate the Administration's Goals for Wireless Broadband by Seriously Undermining Wireless Investment Incentives.

As NTIA, DOJ, and the Commission have all underscored, a central goal of this Administration's broadband policy is to make wireless broadband a full player in the broadband marketplace, able to compete head-on with fixed broadband services.<sup>198</sup> In Chairman Genachowski's words, "[n]o area of the broadband ecosystem holds more promise for transformational innovation than mobile."<sup>199</sup> Yet a regulatory framework that limits network management, forces homogenization of wireless service offerings, and dismantles established wireless business models would turn this policy objective on its head.

Meeting the Administration's ambitions for wireless broadband will require two different types of assurances. First, the Commission needs to free up substantially more broadband spectrum, as it has now proposed to do. As Commission staff recently confirmed, "[w]idespread use of smartphones, 3G-enabled netbooks, and now, perhaps, the iPad and its competitors demonstrate that wireless broadband will be a hugely important part of the broadband ecosystem," and providers "*will be able to deal with congestion issues . . . only if they have*

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<sup>197</sup> *Google CEO Seeks to Assure Wireless Carriers*, *supra* (citing statement of Google CEO Eric Schmidt).

<sup>198</sup> See Ex Parte Letter from Lawrence E. Strickling, U.S. Dep't of Commerce, to Julius Genachowski, Chairman, FCC, GN Doc. No. 09-51, at 4 (filed Jan. 4, 2010); Ex Parte Submission of the U.S. Dep't of Justice, GN Docket No. 09-51, at 22 (filed Jan. 4, 2010).

<sup>199</sup> Genachowski, *Mobile Broadband*, *supra*, at 2.

adequate spectrum.”<sup>200</sup> But as important as it is to free up more spectrum, it is not a complete or immediate solution. Wireless broadband providers must also have the network-management tools they need to meet the diverse needs of their customers in this rapidly converging environment. The Commission would stunt the growth of wireless broadband if it adopted “neutrality” rules that arbitrarily limit those tools. Such measures would only increase needless congestion, reduce quality of service, and, in the words of Richard Bennett, “severely impair[] the functionality of the mobile network” and its ability to support performance-sensitive applications and content.<sup>201</sup>

The Commission would similarly defeat the promise of the wireless broadband platform if it imposed rules that make it impossible for wireless providers to earn a return on their investments or that subject them to the risk of fines, complaints, and protracted litigation. Such rules could also snuff out promising new business arrangements for the provision of Smart Grid technologies, wireless streaming video services, the next Kindle, or the next generation of personal navigation or telehealth devices. The Commission recognized as much when it refused to extend open-access requirements to spectrum licensees generally and instead confined them to the C Block, finding that it could not “rule out the possibility that such a requirement may have unanticipated drawbacks[.]”<sup>202</sup> Those concerns proved valid, given that imposition of the

<sup>200</sup> Bellaria & Leibovitz, *Message from the iPad*, *supra* (emphasis added). Indeed, “there’s no substitute for more spectrum when it comes to making wireless networks faster and more capable[.]” because “[t]he advances in efficiency that allow wireless networks to carry more data don’t move as fast as they do for wireline networks[.]” Bennett, *Going Mobile* at 20. But as we have explained, limited spectrum is not the only challenge to wireless efficiency. See *supra* note 149 and accompanying text.

<sup>201</sup> Bennett, *Going Mobile* at 40.

<sup>202</sup> 700 MHz Order, 22 FCC Rcd at 15364 ¶ 205 (emphasis added).

requirements radically depressed the per-MHz-POP bids for the C Block as compared to all other, unencumbered 700 MHz spectrum.<sup>203</sup>

As with all aspects of the broadband rollout, the vast majority of the financing needed for wireless broadband will have to come in the form of private risk capital, and the financial challenges are formidable. As a recent Bank of America report explained, wireless network operators’ capital expenditures will almost certainly have to increase in order to fund upgrades to 3G and 4G and to “adjust to new smartphone traffic patterns,” and these expenditures already may be difficult for providers with “poor structure[.] . . . data pricing that is already too low[,] or weak spectrum positions.”<sup>204</sup> The cost of building LTE networks will range from the hundreds of millions to the billions. One research firm has estimated that the first-year costs alone of an LTE upgrade will cost a typical provider \$1.8 billion.<sup>205</sup> Another estimate predicts that providers collectively will pay \$8 billion over the next three to five years.<sup>206</sup> And analysts already are questioning how quickly wireless providers will be able to recoup that investment, “unless they can develop services that exploit L.T.E.’s potential”—the very issue this NPRM draws into question.<sup>207</sup>

<sup>203</sup> See, e.g., George S. Ford, Thomas M. Koutsky & Lawrence J. Spivak, *Using Auction Results to Forecast the Impact of Wireless Carriage Regulation on Wireless Networks*, Phoenix Center Policy Bulletin No. 20, at 13 (May 2008) (“[W]e predict the Upper C block should have sold for approximately \$7.9 billion . . . . The actual price for the block was about \$4.75 billion, which suggests that the open access regulations trimmed \$3.1 billion from the winning bids, or nearly a 40% loss in revenues. These calculations imply that because of the open platform mandate, the Upper C block licenses were nearly 40% less valuable than they would have been if those regulations had not been in place.”).

<sup>204</sup> *Bank of America Mobile Data Report* at 1.

<sup>205</sup> *Mobile Data, the Next Generation*, *supra*.

<sup>206</sup> David Goldman, *AT&T, Verizon and Sprint 4G: Not so fast*, CNNMoney.com, Feb. 23, 2010, [http://money.cnn.com/2010/02/23/technology/4g\\_networks/index.htm?cnn=yes&hpt=Mfd](http://money.cnn.com/2010/02/23/technology/4g_networks/index.htm?cnn=yes&hpt=Mfd).

<sup>207</sup> *Mobile Data, the Next Generation*, *supra*.

Any decision to saddle wireless providers with "open access" obligations as they contemplate making this financially daunting LTE transition, shortly after the Commission induced them to bid billions at auction on the promise that they would *avoid* such obligations outside the C-Block, would be not only unlawful and unfair, but also deeply at odds with the Administration's core broadband goals. Wireless providers cannot be expected to deploy new networks, invest in new technology, and bid for new spectrum (if and when it becomes available) if the value of their existing spectrum holdings plummets in response to the imposition of after-the-fact "open access" requirements that foreclose business opportunities and create mass regulatory uncertainty. The predictable consequence of such ill-conceived requirements would be litigation and stasis, not the investment and deployment this Administration hopes to trigger.

\* \* \*

In sum, the record confirms the need for multi-layered network management in the wireless broadband environment, including the importance of prioritizing performance-sensitive applications (such as voice). The record also confirms that a blunt "nondiscrimination" framework would undermine the varied business models that have made the wireless marketplace such a flourishing and diverse ecosystem today. And the record further confirms that wireless networks already offer consumers a wide range of choices, including options for consumers who prefer more managed platforms and options for other consumers who prefer "open" platforms. The options in the latter category include (1) the Android model, now offered by many providers; (2) the bring-your-own-device options offered by every major provider; and (3) various netbook and tethering plans, also offered by AT&T, Verizon Wireless, and others. In short, consumers who want full "openness" can easily obtain it, and forcing providers to conform to open-access regulations for *every device* and *every plan* would simply truncate consumer

choice, not enlarge it. Finally, the record is bereft of evidence of any real-world harms that could conceivably justify regulatory intervention.

If, as the Administration hopes, wireless is to help define America's broadband future, the Commission cannot sensibly eliminate the consumer options and healthy investment incentives that have made this industry the brilliant success it has become. Nor could the Commission sensibly limit wireless network management when, as the record confirms, the result would be a severe drop in quality of service and an abandonment of performance-sensitive applications. More generally, the Commission cannot reasonably straitjacket wireless broadband network operators so that they can offer nothing more than a dumb, tragic "commons" in which edge providers must fight through the noise for a chance to be heard. Instead, the Commission should support wireless broadband by freeing up more spectrum, as it has proposed; by allowing the C-Block experiment to play itself out, with whatever lessons it offers; and, in the interim, by permitting the wireless marketplace to continue its astonishing success story, free from needless regulatory burdens.

#### IV. "REASONABLE NETWORK MANAGEMENT" SHOULD BE DEFINED BROADLY.

##### A. Internet Service Providers Need Significant Flexibility to Address a Host of Rapidly Evolving Threats to Their Networks.

For the reasons discussed in AT&T's opening comments, it is essential that the Commission's definition of "reasonable network management" give network engineers sufficient flexibility to respond to the multitude of challenges that they face. Although the need for such flexibility is most acute in the wireless context, all broadband providers need latitude to address the variety of issues that can undermine the efficient operation of their networks and reduce the quality of the services they offer their customers. *See* AT&T Comments at 183-88. As Verizon explains, "[c]onsumer welfare is best promoted by allowing network operators to have wide

birth to experiment and use different techniques, recognizing that competitive market forces will cause them to use those approaches that best create consumer value.” Verizon Comments at 84; see also *id.* at 81-84.

The Commission should accordingly clarify that network management will be deemed presumptively “reasonable” if it is intended to address a legitimate provider interest. It also should reject suggestions by various interest-group commenters to narrow the range of “legitimate provider interests” and to limit the types of management techniques that may be considered “reasonable.” There is no way to impose such restrictions in advance without causing harm to the network by delaying or altogether deterring critical network-management measures. That is especially the case in the wireless ecosystem, where—as just discussed—the technology itself is still evolving; where usage patterns, application types, service requirements, and security threats are still emerging; and where there is no agreed-upon body of recognized responses, needs, or practices.

At the same time, where a standards-setting body or trade association *has*, in fact, promulgated “best practices” for network management, a provider’s compliance with such standards should be deemed presumptively reasonable. See, e.g., Comcast Comments at 52-56. The IETF issues relevant technical standards, for example. And the technical primer submitted by the Fiber-to-the-Home Council suggests that other management techniques might also qualify as recognized “best practices.” That said, the Commission’s rules must remain flexible, because a provider may need to look beyond industry standards to meet its particular network-management challenges. And as CDT points out, compliance with a standard might not always be *dispositive*, since judgments may have to be made about how the standard is applied. CDT Comments at 45. However, the fact that a network-management technique comports with an

industry standard should be deemed presumptive evidence of “reasonable network management.”

**B. The Narrow Definitions of “Reasonable Network Management” Proposed by Some Commenters Would Diminish the Quality and Security of the Network and Stifle Innovation.**

In the NPRM (at ¶ 137), the Commission acknowledged that it had applied too stringent an approach in the *Comcast* proceeding, where it held that a reasonable network practice must (i) “further a critically important interest,” and (ii) “be narrowly or carefully tailored to serve that interest.”<sup>208</sup> The Commission should follow its tentative decision to reject that standard. For one thing, confining network management to “critical” interests would seriously constrain network management, which is used to handle congestion and service-quality concerns that may fall short of “critical,” even if they are nevertheless important. For example, network management is widely used today to ensure quality of service for the delivery of IPTV subscription video. Is this a “critical” interest? Similarly, in the wireless context, network management is employed today to prioritize voice calls, most of which are likely mundane calls with no “critical value.” But in both cases, prohibiting the management practice would detract from the quality of services that consumers value.

Likewise, a rule requiring that each network-management technique be narrowly tailored would force engineers and lawyers to analyze each measure to determine whether there are more flexible alternatives and whether any diminution in effectiveness could justify a broader approach. This would complicate every network-management decision, slow response times, and deter some network-management measures (and related technological development)

<sup>208</sup> Mem. Op. & Order, *Formal Complaint of Free Press and Public Knowledge Against Comcast Corp. for Secretly Degrading Peers-to-Peer Applications*, 23 FCC Rcd 13028, 13055-56 ¶ 47 (2008) (“*Comcast Order*”), vacated, *Comcast Corp. v. FCC*, No. 08-1291, 2010 WL 1286658 (D.C. Cir. Apr. 6, 2010).

altogether. That result would be inconsistent with the Commission's pledge to ensure that "broadband Internet access service providers [have] substantial flexibility to take reasonable measures to manage their networks, including but not limited to measures to address and mitigate the effects of congestion on their networks or to address quality-of-service needs, and to provide a safe and secure Internet experience for their users." NPRM ¶ 108. And it would also be at odds with the Administration's heightened concern about cybersecurity risks to "telecommunications and other computer networks," which Director of National Intelligence Dennis Blair has called "severely threatened" and at risk of a "crippling attack."<sup>209</sup> In his words, "[m]alicious cyberactivity is occurring on an unprecedented scale with extraordinary sophistication." *Id.* Providers facing these sorts of risks should be encouraged to act quickly and comprehensively in defense of this nation's infrastructure—not to take excessively timid half measures to avoid a risk of regulatory second-guessing.

These points hardly seem controversial. Yet advocates of net neutrality regulation are prepared to give no ground in their pursuit of some purported ideal of "openness," regardless of the effect on real-world customers or the nation's cybersecurity. Free Press accordingly urges the Commission not to "retreat" from the "strict scrutiny" standard applied in *Comcast*,<sup>210</sup> but makes no effort to explain how this standard could be squared with the Commission's concerns about the potentially devastating costs of such rigidity. And in this respect, Free Press is not alone. While other interest-group commentators give lip service to the notion that the *Comcast* standard might have been too strict, the substitute approaches they advocate would be no less

<sup>209</sup> Mark Mazzetti, *Senators Warned of Terror Attack on U.S. by July*, N.Y. Times, Feb. 2, 2010, <http://www.nytimes.com/2010/02/03/us/politics/03intel.html> ("Senators Warned").

<sup>210</sup> Free Press Comments at 91-92 (quoting *Comcast Order*, 23 FCC Rcd at 13055-56 ¶ 47), see generally *id.* at 88-104.

(and in some cases more) onerous. As noted, the Public Interest Advocates would limit network management to situations so severe as to "threaten the network's survival." Public Interest Advocates Comments at 8. And the Open Internet Coalition, Public Knowledge, and CDT would limit network management to "narrowly tailored" measures designed to address a specific, temporally defined threat, determined to be proportional to that threat, and calculated to "result[] in as little discrimination or preference as is reasonably possible."<sup>211</sup>

For the reasons just described, these approaches would impair ISPs' ability to serve their customers' needs. No provider should be forced to wait to respond to a security or congestion threat until it is significant enough to threaten the network's very "survival." And even the less extreme proposals suffer from the same drawback as the *Comcast* "strict scrutiny" standard: They would compel engineers to determine in advance whether a measure is narrowly tailored enough to avoid liability, and to err on the side of excessive caution. These are luxuries that may not be available to an engineer seeking to address a threat to network security or to preserve network performance in the wake of a sudden spike in usage or a rogue application.<sup>212</sup> There would rarely be settled precedents to guide an engineer's decisions—and whatever precedents do exist would be valuable for only a short period. And since there are many legitimate management techniques, no decision would be immune from debate about whether there might have been a more effective, more narrowly tailored practice to achieve the desired end. See

<sup>211</sup> Open Internet Coalition Comments at 46-50; see also Public Knowledge Comments at 35, 40 (requiring narrow tailoring); EFF Comments at 18-19 (requiring ISPs to apply for a Commission waiver—with strict conditions—before engaging in any activity that could curtail lawful activity in the course of blocking unlawful content or conduct).

<sup>212</sup> Effective security frequently requires quick fixes, which can include exigent measures to block a suddenly infected website. See, e.g., Scott Morrison, *Symantec Takes Aim at Mobile Hackers*, Wall St. J., at B7A, Mar. 10, 2010, <http://online.wsj.com/article/SB2000142405274870478490457511670217803884.html>. Such approaches are becoming more important in the wireless context, as consumers increasingly transition to more powerful smartphones for their Internet use. *Id.*

NCTA Comments at 29. An after-the-fact “strict scrutiny” approach would therefore leave providers at the mercy of Monday-morning quarterbacking. That threat would suppress technological creativity in responding to rapidly evolving network pressures.

Advocates of net neutrality regulation would go further still. They would bar certain management practices outright, such as any use of DiffServ or similar prioritization techniques. For example, Public Knowledge contends (at 45-46) that prioritization should be permissible only where it is “essential” to the network’s operation or undertaken at “the direction of courts, appropriate governmental agencies or law enforcement authorities.” And Free Press argues (at 103) that *no* application ever needs prioritization to ensure its operation or quality.

These commenters would specifically preclude use of prioritization even to address congestion (in all but the rarest cases).<sup>213</sup> In their view, such network-management techniques should be permissible only where congestion is limited in time and place (*i.e.*, because of unexpected spikes in usage), and providers should face liability if they use these techniques over time to address limited bandwidth efficiently, rather than investing in network overcapacity.<sup>214</sup>

These proposals fly in the face of widely accepted network-engineering principles, which for years have led network engineers to avoid wasteful overcapacity by distinguishing between applications that *need* prioritization to function optimally and those that do not. *See* Sections II.D.2 and II.F.2, *supra*. And these proposals would harm American consumers while producing

<sup>213</sup> *See* Free Press Comments at 82-84, 101-04; Public Knowledge Comments at 40-41, 45; Open Internet Coalition Comments at 42-46.

<sup>214</sup> *See, e.g.*, Open Internet Coalition Comments at 46 (urging the Commission to prohibit the “crutch of network management”); Free Press Comments at 97-98 (the need for congestion management indicates “larger problems with the network” that should be addressed solely through increases in network capacity); *see also* Google Comments at 69. Free Press and its cohorts apparently believe that broadband providers faced with such rigid network-management constraints would necessarily invest in more capacity rather than accept a reduced level of network performance and quality. It is ironic that these advocates assume that the market could be effective in forcing operators’ hands in this way—even while they insist that the market is *not* effective enough to ensure that providers will keep their networks open.

no discernible benefit. In particular, any ban on differential service handling for performance-sensitive traffic would either (1) raise customers’ costs by requiring inefficient investment in excessive capacity or (2) degrade network and application performance to the detriment of all.<sup>215</sup>

Even Google now appears to acknowledge that providers might sometimes have to, and should be free to, differentiate among types of traffic on the basis of their disparate performance needs.<sup>216</sup> The proposed ban on differential service handling would particularly devastate wireless broadband networks, since limits on available spectrum preclude wireless providers from simply “invest[ing] in more capacity.” As a result, the ban would essentially compel wireless providers to allow their networks to become congested and their service to deteriorate.

Not surprisingly, the same commenters that oppose prioritization call for elimination of the catch-all portion of the “reasonable network management” definition, which would permit providers to engage in “other reasonable network management practices.” *See* NPRM ¶ 135. They claim that this undefined term would give broadband access providers too much flexibility. *See, e.g.*, Public Knowledge Comments at 36; Free Press Comments at 87. But this takes us back to where we began. Such flexibility is essential given the diverse and rapidly evolving nature of the challenges faced by network engineers and the changing needs of a diverse customer base. The “reasonable” qualification on the catch-all provision would ensure that network-management practices are not anticompetitive or unreasonably excessive in scope. As the Commission acknowledged in the NPRM, “we do not presume to know now everything that

<sup>215</sup> Such a rule also would prematurely restrict the lawful uses of the new, best-practice prioritization tools that Covad and others have been developing, which can be used to provide “network traffic management for applications dependent on high delivery and low latency.” Covad, Press Release, *Covad Completes Intelligent Network Platform with Nationwide MPLS VPN, New QoS/CoS Capabilities*, Feb. 16, 2010, [http://www.covad.com/web/about/newsroom/pressroom/pr\\_2010/news\\_release\\_10-0216.html](http://www.covad.com/web/about/newsroom/pressroom/pr_2010/news_release_10-0216.html).

<sup>216</sup> *Google CEO Seeks to Assure Wireless Carriers, supra* (citing statement of Google CEO Eric Schmidt).



providers may need to do to provide robust, safe, and secure Internet access to their subscribers, much less everything they may need to do as technologies and usage patterns change in the future. [Also], we believe that additional flexibility to engage in reasonable network management provides network operators with an important tool to experiment and innovate as user needs change.” NPRM ¶ 140.

**C. Excluding Reasonable Measures to Address Unlawful Content or Conduct from the Definition of “Reasonable Network Management” Would Disserve the Public Interest.**

Advocates of net neutrality regulation also object to those parts of the Commission’s proposed network-management definition that would give operators flexibility to “prevent the transfer of unlawful content of . . . prevent the unlawful transfer of content.”<sup>217</sup> They contend that the network-management exception should be limited exclusively to “performance management” and “security” concerns (under their narrow definitions of those terms). *See, e.g.,* Public Knowledge Comments at 38. But the narrowed “network management” exception they advocate would defeat the interests of consumers as well as content and application providers. And it would violate both congressional policy and the express provisions of Section 230 of the Communications Act.

These commenters first contend that network providers do not need an exception from the proposed net neutrality rules to police “unlawful content” or the “unlawful transfer of content,” because those rules, on their face, apply only to “lawful” content and applications.<sup>218</sup>

<sup>217</sup> Open Internet Coalition Comments at 52-67 (quoting definition of reasonable network management in NPRM, Appendix A § 8.3); Public Knowledge Comments at 37-44, 53-63; CDT Comments at 42-43; EFF Comments at 11-14; Joint Comments of Computer and Communications Industry Assoc., et al., at 2-6 (“Joint Commenters on Copyright Infringement Comments”).

<sup>218</sup> *See* Open Internet Coalition Comments at 52-53; Public Knowledge Comments at 42; CDT Comments at 42; EFF Comments at 11-14; Joint Commenters on Copyright Infringement Comments at 2; *see also* NPRM ¶¶ 16, 139; *id.* Appendix A §§ 8.5, 8.7, 8.9 and 8.13.

This argument is disingenuous. As these commenters well know, whether content (or a particular “transfer of content”) is unlawful is not always clear.<sup>219</sup> The relevant standards differ from jurisdiction to jurisdiction; whether those standards are met is a fact-specific inquiry, and there are many gray areas. There is no perfect mechanism that would permit broadband providers to target and block *only* unlawful content, and some overinclusiveness will sometimes be inevitable. A provider acting in good faith to address intellectual-property violations, child pornography, or other unlawful conduct online might very well unintentionally affect some lawful conduct and content. Without an exemption from the net neutrality rules for practices designed to prevent the transfer of unlawful content, a broadband provider could face liability for an inadvertent misstep that resulted in even temporary blocking of content that turns out after the fact to be lawful. That prospect would deter ISPs from cooperating with content providers and law enforcement to protect legitimate property rights and our most vulnerable populations. Moreover, the regime proposed by these commenters would be not only unwise, but unlawful. First, Section 230 of the Communications Act categorically shields all Internet service providers from liability for “any action . . . in good faith to restrict access to or availability of material that the provider . . . considers to be obscene, lewd, lascivious, filthy, excessively violent, harassing, or otherwise objectionable, whether or not such material is constitutionally protected.” 47 U.S.C. § 230(c)(2). As discussed further below, exposing ISPs to liability when their network-management practices incidentally affect lawful content—or when they offer a broadband service that limits “offensive” or “unwanted” content—would violate both the letter and the spirit of that provision. *See* Section VII.A, *infra*. As courts have recognized repeatedly,

<sup>219</sup> *See, e.g.,* CDT Comments at 43 (“[D]etermining when individual communications are unlawful may be easier said than done.”).

Congress specifically intended Section 230 to enable Internet service providers to take actions to remove defamatory content, protect children, and support law-enforcement efforts without any fear that they would be subjected to liability for doing so.<sup>220</sup> Unless the Commission reaffirms an appropriately broad interpretation of that provision, the resulting regulatory uncertainty and threat of liability will deter broadband providers from cooperating with law enforcement to promote important social interests.

The Digital Millennium Copyright Act ("DMCA") likewise protects ISPs from liability when they are engaged in good-faith efforts to police infringement, even if they mistakenly disable access to *lawful* material. The relevant provision states that "a service provider shall not be liable to any person for *any claim* based on the service provider's good faith disabling of access to, or removal of, material or activity claimed to be infringing or based on facts or circumstances from which infringing activity is apparent, *regardless of whether the material or activity is ultimately determined to be infringing.*" 17 U.S.C. § 512(g)(1) (emphasis added). As the legislative history makes clear, this provision is "intended to protect providers when they remove, disable or block access to material and [to] remove possible disincentives to cooperate with copyright owners by taking steps to prevent infringement. These paragraphs ensure that a person who responds to information indicating infringement by removing, disabling or blocking

<sup>220</sup> See, e.g., *Batzel v. Smith*, 333 F.3d 1018, 1029-30 & n.14 (9th Cir. 2003) ("[Section 230(c)(2)] encourages good samaritans by protecting service providers and users from liability for claims arising out of the removal of potentially 'objectionable' material from their services. . . . This provision insulates service providers from claims premised on the taking down of a customer's posting such as breach of contract or unfair business practices"; see also *Langdon v. Google, Inc.*, 474 F. Supp. 2d 622, 630-31 (D. Del. 2007) ("§ 230 specifically proscribes liability" "for decisions relating to the monitoring, screening, and deletion of content from their network" and "bars lawsuits seeking to hold a service provider liable for its exercise of a publisher's traditional editorial functions—such as deciding whether to publish, withdraw, postpone, or alter content") (internal quotation marks omitted); *Green v. America Online*, 318 F.3d 465, 472 (3d Cir. 2003); *Mainstream Loudoun v. Bd. of Trustees of Loudoun County Library*, 2 F. Supp. 2d 783, 790 (E.D. Va. 1998).

access to material will not be penalized for having done so." H.R. Rep. 105-551(I), at 26 (1998).<sup>221</sup>

The Commission should therefore affirm its commitment to include within the scope of "reasonable network management" all good-faith efforts by broadband providers to prevent and police unlawful content or conduct. Otherwise, the resulting threat of liability would chill such efforts and, in turn, could deter content providers from making high-value content available over the Internet in the first place. In that respect, any narrow construction of "reasonable network management" would inflict the same basic consumer harm as the proposed ban on mutually beneficial QoS agreements between broadband and content providers: Each would suppress the efficient dissemination of high-value and high-quality content over the Internet. See Section II.A, *supra*.

Moreover, as the Commission recognizes, providers also must have flexibility to "address traffic that is unwanted by users." NPRM, Appendix A § 8.3. Traffic that is unwanted but not unlawful (or even suspected to be unlawful) might include spam or harassing communications.<sup>222</sup> Similarly, parents of young children might deem "unwanted" lawful but adult-oriented Internet content, or sites promoting hate speech or other material. See Anti-Defamation League Comments at 1-2. The Commission should make clear that the proposed provision concerning

<sup>221</sup> Some commenters argue that by defining "reasonable network management" to include policing unlawful content, the Commission will induce ISPs to aggressively "police" or "filter" their networks, and will allow or at least encourage ISPs to go beyond the applicable limits such as the wiretapping laws when they do so. See, e.g., Public Knowledge Comments at 54-56; CDT Comments at 42-43; Joint Commenters on Copyright Infringement Comments at 2-3; Open Internet Coalition Comments at 53-66. That is nonsense. The sole effect of the Commission's definition would be to ensure that the "policing" conduct at issue is not a basis for liability under the *net neutrality regime*. Broadband access providers would remain subject to any restrictions (and/or exemptions) provided for in any other applicable law.

<sup>222</sup> See, e.g., Messaging Anti-Abuse Working Group Comments at 1-7 (discussing the role of network management in addressing various forms of "online abuse such as botnets, malware, phishing and denial of service attacks").

“unwanted” traffic not only permits providers to offer tools that a *subscriber* can use to block such content, but also permits the providers themselves to perform that screening function, as Section 230(c)(2) expressly entitles them to do. For example, the Commission should clarify that a provider may offer a tailored, family-friendly wireless broadband service that provides access to a partially “walled garden” on the Internet, and that the provider’s support for that service would be consistent with “reasonable network management.”

A wireless broadband provider might need to employ other types of “management” as well that are not readily defined as either “preventing unlawful content/conduct” or “addressing content unwanted by users.” For example, recent news reports describe a wireless application that can be downloaded onto a wireless device by a third party (by obtaining physical access to the device) and then used by that party to track and eavesdrop on the device’s user from afar.<sup>213</sup> While the application might have legitimate uses (as in the parent-child context), it can also be used for unsavory and possibly unlawful purposes, as in the stalking scenario described in the news stories. Yet it is not clear that the “reasonable network management” exception would permit a wireless provider to limit or block access to this application. For one thing, there is no way to determine, for certain, whether it is “unwanted” by the consumer. All the broadband provider (and application provider) would know is that someone with physical access to the device is actively downloading the application, suggesting (even if wrongly) that it *is* “wanted.” A provider that opts to provide a “safer” environment and block the application altogether should not have to worry that it is acting outside the scope of the “reasonable network management” exception if it turns out that, in some cases, it is blocking fully lawful uses of the application.

<sup>213</sup> See, e.g., *Being Stalked Through Your Cell Phone*, ABC News, Mar. 8, 2010, <http://news.yahoo.com/video/tech-1574965/being-stalked-through-your-cell-phone-18511556>.

Nor should it have to wait for a court order, as some net regulation advocates would surely propose, before taking action to protect its customers.

In sum, to enhance customer choice and the public interest, the Commission should clarify that “reasonable network management” is not to be read narrowly, and instead encompasses reasonable efforts by providers to offer users a safer, “mediated” environment (e.g., as with the iPhone model).

V. EVEN APART FROM THE SUBSTANTIVE FLAWS DISCUSSED ABOVE, THE SCOPE OF THE COMMISSION’S PROPOSED NET NEUTRALITY REGIME WOULD BE BOTH OVERINCLUSIVE AND UNDERINCLUSIVE.

A. The Commission Should Narrow the Definitions of “Internet Access Service” and Related Terms to Focus the Rules on the Open-Ended Internet-Connectivity Services That They Are Meant to Address.

Our opening comments explained that the broad definitions of “Internet access service” and related terms in the Commission’s proposed rules would inappropriately sweep in services and service/device offerings that use the Internet Protocol addressing scheme, but plainly are not “broadband Internet access services” as that term is normally used. See AT&T Comments at 96-102. Examples include wireless Smart Grid meters and heart monitors, VPN services, e-readers, GPS devices with Internet connectivity, Telepresence services, and subscription video services like U-verse that support limited access to discrete provider-chosen content and applications.

Even the most fervent advocates of net neutrality regulation cannot bring themselves to say that the wireless Internet access portion of a remote heart monitor or Smart Grid meter should have to support web browsing—or that customers have a right to place VoIP calls over Amazon’s Kindle or Garmin’s GPS device. But recognition of such absurd “rights” would be a necessary implication of the Commission’s proposed definitions and rules, and net neutrality

proponents simply ignore such consequences.<sup>224</sup> The one (limited) exception is CDT, which, alone among the pro-regulation advocates, recognizes that VPNs, “dedicated connections [such as Telepresence] between corporate offices and business partners,” and other “high speed data links giving consumers a special communications connection with particular entities or for particular functions” should be exempted from the reach of any net neutrality rules. CDT Comments at 47-48.

Of course, AT&T agrees. But the manner in which CDT proposes to carve these services out is to label them as “managed services,” rather than redefine “Internet access services” to exclude such services in the first place. *See id.* And many other commenters that advocating back the overbroad reach of the Commission’s proposal likewise would do so by defining “managed services” expansively.<sup>225</sup> While we agree with their concerns about the NPRM’s nebulous approach to “managed services,” we think their definitional approach is backwards. As explained in our opening comments (at 99-102), it is nonsensical to begin with an overbroad definition of the services that are covered and then proceed to carve services out one by one. That approach would create unnecessary and investment-chilling regulatory uncertainty, and it would require the Commission to confront an endless succession of intractable categorization disputes.

<sup>224</sup> Without explanation, Free Press asserts that “the proposed rules in the *Notice* would not in any way impact enterprise services.” Free Press Comments at 128. While AT&T is pleased that Free Press takes this position, the language of the proposed rules does not appear to effectuate this exclusion.

<sup>225</sup> *See, e.g.*, Cisco Comments at 14-15 (characterizing Telepresence as a managed service, along with “telemedicine, telepharmacy, telepsychiatry, remote patient monitoring, Metro Ethernet, wireline, VoIP, data center services, and disaster recovery center services”); Sprint Comments at 37 (noting that “managed services might be provided in such areas as telemedicine, smart grid and eLearning”); Comments of the Telecommunications Industry Ass’n at 37-39 (“TIA Comments”) (discussing “managed services used in the business sector,” including “software, hardware and other IP networking services that are designed to suit the individual needs of the users and their business requirements,” as well as services provided to consumers and government entities); NCTA Comments at 37.

It makes far more sense to modify the definitions in the NPRM so that the rules focus, in the first instance, on the services that the Commission *means* to focus on: services offering open-ended Internet connectivity. *See id.* For more than a decade, regulatory concerns focused on “Internet access” have involved services that offer users the “ability to run a variety of applications, including World Wide Web browsers, FTP clients, Usenet newsgroups, electronic mail clients, Telnet applications, and others,”<sup>226</sup> and the Commission should maintain that focus here. The Commission should accordingly modify the definition of “Internet access service” to mean a service that offers to the public the capability to transmit data to, and receive data from, all or substantially all endpoints that have a unique IANA-assigned Internet address that is publicly announced and globally reachable (either directly or through a proxy).<sup>227</sup> Such services, and the Internet-based applications, content, and services provided by means of such services, should be the sole focus of any net neutrality rules.

Of course, this approach might still leave some classification questions to be answered regarding certain services. But that task would pale in comparison to the widespread uncertainty that would prevail if the Commission were to adopt the exceptions-based “managed services” approach that many commenters advocate. The record reflects no agreement whatsoever on what “managed services” are—much less a concrete definition that would provide any predictability to providers seeking to assess the classification of the services they offer.

<sup>226</sup> Report to Congress, *Federal-State Joint Board on Universal Service*, 13 FCC Red 11501, 11537 ¶ 76 (1998) (“*Report to Congress*”).

<sup>227</sup> AT&T Comments at 99. CDT notes that some broadband providers use “carrier-grade NAT,” or network address translation, “to assign private, non-globally unique IP addresses to their residential customers.” CDT Comments at 10. AT&T does not disagree that addresses of this type assigned by a broadband service provider should be included in the definition of Internet access service.

Indeed, most parties that advocate an overbroad definition of "Internet access service," subject to various "managed service" carve-outs, do not even propose a definition of the latter term at all. Instead, they simply provide examples of services they believe should be classified as such, without identifying any unifying characteristic.<sup>228</sup> Public Knowledge takes that a step further, suggesting that the Commission affirmatively *avoid* defining "managed services" for the time being, because "the record is not yet clear on what types of services would fall under this category." Public Knowledge Comments at 32. But that approach would suppress a wide range of consumer-friendly services under a vastly overbroad definition of "Internet access service" that would be subject, for the foreseeable future, to no carve-outs at all.

The few commenters that do propose definitions of "managed" or "specialized" services offer little more. CDT, for example, suggests that so-called "specialized" services should be defined as those in which the *broadband provider* exercises substantial control over the services' functions . . . [and] selects particular content partners or decides what particular, specialized capabilities to offer." CDT Comments at 48 (emphasis in original). CDT also proposes a category of "managed" services that it views as distinct from specialized services, which would consist of "guaranteed or highly secure connectivity" provided to enterprise users. *Id.* at 47. But these proposed definitions would be as unworkable as they are vague.

As an initial matter, AT&T agrees, of course, that neither "managed" nor "specialized" services should be subject to net neutrality requirements (assuming they could be adequately

<sup>228</sup> See, e.g., Bright House Networks Comments at 12; Covad Comments at 8-10; American Cable Ass'n Comments at 17; Comcast Comments at 64-65. Notably, given language in the NPRM suggesting that managed services *might* be subject to some level of regulation, Comcast and others feel compelled to narrow the category of managed services to exclude services such as cable television and telecommunications services. See Comcast Comments at 62; NCTA Comments at 37-38. This uncertainty further illustrates the extent to which the proposed approach would almost certainly create several layers of industry-rolling uncertainty.

defined, which we do not believe is the case). But it is not clear that CDT's definitions are sufficiently broad to encompass services that plainly should be exempt, such as a telemedicine or Smart Grid monitoring. CDT seems to believe that any telemedicine service would necessarily fall within its proposed definition of "managed service" (i.e., "enterprise connectivity"). See *id.* But while CDT's definition might cover some telemedicine services, such as those facilitating communications among several hospitals, it would not appear to cover others, such as a remote heart monitor worn by a patient or any number of other Internet-based healthcare applications.<sup>229</sup> Yet at the same time, telemedicine does not seem to fit within CDT's definition of a "specialized" service either, because it would not likely be a service over which a *"broadband provider* exercises substantial control." In other words, it is uncertain how or whether various telemedicine services would fit within CDT's proposed regulatory framework. The same would be true of a wirelessly-enabled vending machine that communicates its operating condition and inventory to its owner, or various other applications and services.

What is more, CDT undermines its own proposed approach by suggesting, along with Public Knowledge, that something cannot be a managed service if it "shares bandwidth" with "Internet access service."<sup>230</sup> In particular, CDT specifically rejects a definition of managed service that would allow a broadband provider to "sell[] priority treatment to a content provider . . . and deliver[] that content provider's content to subscribers via the same bandwidth as all

<sup>229</sup> For instance, Cisco describes its HealthPresence Telemedicine Solution as "an advanced, care-at-a-distance technology platform that allows patients to connect with doctors and clinicians for health care consultations." *Cisco Launches HealthPresence Telemedicine Solution*, *supra*. Ericsson and Philips similarly offer mobile health devices that are designed to support remote monitoring of vital signs and support the exchange of real-time, electronic information between the doctor and patient. See Ericsson, *Ericsson Mobile Health, Mobile Monitoring* (2006), [http://www.neutron.in/uploads/product/pdf/16\\_pdf.pdf](http://www.neutron.in/uploads/product/pdf/16_pdf.pdf); Philips, *Philips Remote Patient Monitoring* (2007), [http://www.healthcare.philips.com/npwpc/main/shared/assets/documents/homehealthcare/telehealth/rpm\\_452296227751.pdf](http://www.healthcare.philips.com/npwpc/main/shared/assets/documents/homehealthcare/telehealth/rpm_452296227751.pdf).

<sup>230</sup> CDT Comments at 48; see also Public Knowledge Comments at 33-34.

other Internet traffic." CDT Comments at 48. Thus, CDT's ostensibly broad definition of a "managed service" is in fact not so broad at all. Indeed, its proposed restriction could mean that AT&T's U-verse video service, which "shares bandwidth" with AT&T's U-verse broadband Internet access service, might suddenly be deemed an "Internet access service" that violates the net neutrality rules by "prioritizing" U-verse TV packets over others. It would also mean that more than 200 other IPTV providers in the United States would face a similar fate, as well as the myriad other services provided over connections where bandwidth is shared with Internet access, including cable VoIP, VPNs, and many others.<sup>21</sup> That outcome should be unthinkable. It would also seem to contradict the Commission's own (still amorphous) understanding of "managed" service, which seems designed to encompass video subscription services. See NPRM ¶ 148 (including "subscription video services" as an example of "managed" or "specialized" services).

On the other end of the spectrum, Alcatel-Lucent would define "managed services" as those "that have some level of guaranteed quality of service" and include one or more of the following: "guaranteed (low) packet loss, . . . guaranteed (low) packet delay, . . . secure connectivity, . . . guaranteed bandwidth." Alcatel-Lucent Comments at 12-13. And Cisco would define the category to include any service with "the need for minimal latency, minimal jitter, guaranteed bandwidth, and—in at least some cases—heightened network security." Cisco Comments at 15. These broad definitions might very well protect many relevant services and

<sup>21</sup> A recent report shows that, of the companies participating in NECA's traffic-sensitive pool, "[t]wo hundred ten companies report IPTV deployment" and "57 more companies plan to deploy IPTV in 2010." *NECA Trends 2009 Report* at 11. Moreover, "NECA members and affiliates are offering a variety of services over the broadband network to stimulate demand for broadband services and increase adoption. Video on demand, over-the-top video services, gaming, home networking and security are some examples of trials and experimental services." *Id.* Under CDT's and Public Knowledge's definitions of managed services, all of these services could be deemed Internet access services subject to the net neutrality rules, with profoundly unsettling consequences for all those providers and the consumers they serve.

end up narrowing the reach of the net neutrality rules, but it could be extremely difficult to determine how to translate these highly subjective, qualitative concepts into bright-line definitional boundaries that provide meaningful guidance to broadband stakeholders.<sup>22</sup>

While the Commission should not adopt any prescriptive net neutrality rules at all, if it does so, it should start with stable, clear, and usable definitions. The proposed net neutrality regime would lead to enough litigation and uncertainty *without* the added burden of protracted debates about the correct categorization of every single service that might be offered today or developed in the future in this dynamic industry. And as we explained in our opening comments, if history is any guide, it could take *years* to resolve such classification questions. Indeed, the still unanswered question of VoIP classification was first presented to the Commission in 1995.<sup>23</sup> If the Commission's goal is to advance the "consumer benefits" that managed services offer, see NPRM ¶ 149, it would be nonsensical to adopt a rule that subjects *all* services to potential net neutrality regulation until or unless the Commission blesses them (after protracted litigation) as a "managed service." The Commission should instead revise its proposed definitions to focus only on open-ended, broadband Internet access services, as AT&T has previously proposed.

<sup>22</sup> These proposals all focus on traffic handling that is superior to best-effort, but would appear to neglect the potentially significant demand for services that are *inferior* to best-effort and priced accordingly. So-called "scavenger class" services may be ideally suited for certain non-critical, machine-to-machine applications that need only minimal network performance but whose business models depend on driving costs down as low as possible. See, e.g., *Second Reed & Tripathi Paper* at 23 (discussing the value of such low-cost models); Bennett, *Going Mobile* at 33 (similar).

<sup>23</sup> ACTA Petition, *Provision of Interstate and International Interexchange Telecommunications Service via the "Internet" by Non-tariffed, Uncertified Entities*, RM-8775 (filed Mar. 4, 1995).

**B. The Commission Should Clarify That All Internet Gatekeepers with Market Power Are Subject to Any Net Neutrality Regime.**

Some parties suggest that the Commission should narrow the scope of this proceeding (and the relevant definitions) to focus exclusively on last-mile broadband Internet access providers.<sup>234</sup> That result would be unprincipled and indefensible. If the Commission expands or codifies the principles in the *Internet Policy Statement*, it should apply any such rules evenhandedly to all providers that (1) offer information services provided via broadband Internet access (*i.e.*, network, application, service, and content providers); (2) have market power; and (3) serve a “gatekeeper” role that significantly influences how consumers experience the Internet.

Commenters across the spectrum agree, stressing, for example, that Google plays a role at least as significant as any broadband provider in affecting how customers experience the Internet, what applications and content they can access, and how application and content providers can reach Internet end users.<sup>235</sup> Indeed, the record evidence concerning this issue is so fundamental to “neutrality concerns” that the Commission may not simply ignore it and focus solely on a single class of information service providers that pose much more attenuated concerns. Doing so would be “the very embodiment of arbitrary action.”<sup>236</sup> Once presented with evidence of a relevant concern, the agency “should at least consider” whether action on that issue “is required to fulfill the agency’s legal obligations” and its stated policy concerns.<sup>237</sup> Further,

<sup>234</sup> See, e.g., Google Comments at 3-4; Akamai Comments at 10; Level 3 Comments at 5.

<sup>235</sup> See, e.g., NCTA Comments at 48-49; Verizon Comments at 37-39; Comcast Comments at 34-36; Time Warner Comments at 21-23.

<sup>236</sup> *Air Line Pilots Ass’n v. FAA*, 3 F.3d 449, 455 (D.C. Cir. 1993) (citing *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 29, 43 (1983) (agency acts arbitrarily by “entirely fail[ing] to consider an important aspect of the problem”).

<sup>237</sup> *Foundation on Economic Trends v. Heckler*, 756 F.2d 143, 160 (D.C. Cir. 1985).

the agency’s “reasoned consideration of these important aspects of the problem should reflect an articulated, ‘rational connection between the facts found and the choice made.’” *Id.* (citing *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168 (1962)).

In particular, it would not be sufficient for the Commission to assert, as the NPRM and several parties suggest, that “the question of Internet openness at the Commission has traditionally focused on providers of broadband Internet access services.” NPRM ¶ 101. *see also* Free Press Comments at 129. This focus on “tradition” is ironic (and hypocritical) given that the parties who cling to it are in many cases the same parties who suggest that the Commission should up-end years of regulatory precedent and reclassify “information services” as (or as including) “telecommunications services” in order to assert Title II jurisdiction over broadband Internet access services.<sup>238</sup> But it is also irrelevant. The NPRM’s goal is to stamp out “risk to our interconnected and interdependent Internet.” Separate Statement of Commissioner Copps at 1. And to that end, the Commission cannot responsibly disregard the overwhelming role that search engines, and Google’s in particular, play in affecting consumers’ access to online content and applications and vice versa.<sup>239</sup>

CDT suggests that the Commission can reject calls to regulate entities other than broadband providers on the theory that only ISPs can challenge the “open . . . architecture” that “fosters speech and innovation” on the Internet. CDT Comments at 22. But Google has in fact used its hold over search and search advertising to suppress speech and to kill innovative services that compete with Google’s own offerings or those of its partners. In particular, we

<sup>238</sup> See, e.g., Public Knowledge Comments at 21; CDT Comments at 22.

<sup>239</sup> See Comcast Comments at 34-35 (noting the “significant role that Google and other application and service providers play in the Internet ecosystem” and citing articles to the effect that when Google “burie[s]” a site in its search results, “the site might as well not exist”).

have explained that Google has (1) repeatedly abused its dominant gatekeeper position to choke off speech over the Internet and favor the political messages it supports over those of its opponents; (2) blocked consumers' access to applications that interfered with its *financial* interests or the financial interests of its partners; and (3) used its control over powerful content sites such as YouTube to affect which complementary products can be used even to *access* the Internet.<sup>240</sup> Google's announced expansion into the television and set-top-box market will only increase its ability to influence what content users see and how they see it.<sup>241</sup> And its recent decision to begin factoring page-download speed into its search algorithm rankings means that Google will engage in yet another breach of the "neutrality" rules it wishes to impose on others. In particular, this new algorithm favors websites that can afford CDN services (like those Google itself offers) over websites that cannot. Such favoritism is precisely the concern that animates net neutrality regulation advocates.<sup>242</sup>

Furthermore, the European Commission recently launched an informal antitrust investigation against Google with respect to complaints by three separate companies with

<sup>240</sup> See A T&T Comments at 202-05 (citing numerous sources, including: "Fiery Missives" and Other Emotional Tactics Driving Net Neutrality Debate, Digital Straight Talk, June 14, 2006, [http://www.digitalstraighttalk.com/2006/06/14/fiery\\_missives\\_and\\_other\\_emot\\_1.shtml](http://www.digitalstraighttalk.com/2006/06/14/fiery_missives_and_other_emot_1.shtml); Thomas Lowenhaupt, *Search Neutrality*, Connecting nyc Inc., Dec. 29, 2009, <http://www.coactivate.org/projects/campaign-for-nyc-blog/2009/12/29/search-neutrality>; *Foundem's Google Story*, Oct. 14, 2009, <http://www.searchneutrality.org/foundemgoogle-story>; Scott Cleland, *Google's Search Engine Discriminates in Favor of New York Times—per Ken Auletta*, "Googled" author, The Precursor Blog, Nov. 11, 2009, <http://www.precursorblog.com/content/google-search-engine-discriminates-favor-new-york-times-kenauletta-googled-author>; Lew Irwin, *We Have Been De-googled!*, IMDB, Nov. 28, 2009, <http://www.imdb.com/news/ni1239504>; and Howard Berkes, *Google's Voice Is Silent in Some Rural Areas*, Nat'l Public Radio, Nov. 2, 2009, <http://www.npr.org/templates/story/story.php?storyId=114341718>).

<sup>241</sup> Nick Bilton, *Google and Partners Seek TV Foothold*, N.Y. Times, Mar. 17, 2010, <http://www.nytimes.com/2010/03/18/technology/18webtv.html?hp>.

<sup>242</sup> George Ou, *New Google search ranking shuns Net Neutrality*, Apr. 13, 2010, <http://dailyealter.com/2010/04/13/new-google-search-ranking-shuns-net-neutrality/#ixzz06pu114y>.

operations in France, Germany, and the United Kingdom.<sup>243</sup> At least two of those complaints argue that Google has anticompetitively manipulated its algorithms to push its competitors far down in search results, and all allege that Google is unfairly "cho[k]ing off competition."<sup>244</sup> Relatedly, Foundem, in its comments in this proceeding, has alleged that Google "arbitrarily penaliz[es] rivals and systematically favor[s] its own services" through its Universal Search mechanism, which lists Google's own affiliated services ahead of any others when returning search results, "independently of the ranking algorithms [Google] uses to determine the relative placement of all other results."<sup>245</sup> According to Foundem, this enables Google to ensure itself a "virtually unassailable competitive advantage" in "any field it chooses." Foundem Comments at 3. And Consumer Watchdog recently urged the Department of Justice to expand its ongoing review of the Google Books settlement to examine whether and how "Google may use its search algorithms to manipulate Internet search results to favor its own products."<sup>246</sup>

Moreover, compared to broadband providers, Google affects a much greater percentage of Internet users on a nationwide and even global basis. As we have discussed, Google controls

<sup>243</sup> Paul Meller, *EU Confirms Google Antitrust Probe*, PCWorld, Feb. 24, 2010, [http://www.pcworld.com/businesscenter/article/190114/eu\\_confirms\\_google\\_antitrust\\_probe.html](http://www.pcworld.com/businesscenter/article/190114/eu_confirms_google_antitrust_probe.html) ("EU Confirms Google Antitrust Probe").

<sup>244</sup> Julia Holtz, *Google Senior Competition Counsel, Committed to Competing Fairly*, Google Public Policy Blog, Feb. 23, 2010, <http://googlepublicpolicy.blogspot.com/2010/02/committed-to-competing-fairly.html>; see also *EU Confirms Google Antitrust Probe*, *supra*.

<sup>245</sup> Foundem Comments at 1, 3. Others likewise have recognized the pro-Google bias in Google's search practices. See, e.g., *Wallet Blog*, *Google Breaches Hypocrisy on Net Neutrality*, TheStreet.com, Apr. 19, 2010, <http://www.thestreet.com/story/10728367/1/google-breaches-hypocrisy-on-net-neutrality.html> ("Big search engines promote content that benefit[s] them. . . . Google can effectively steer online traffic to biased content, and most people don't even realize it. . . . A search for a mortgage quote on Google returns an advertisement at the top of the page for a Google Compare Mortgage Rates tool. Unlike an ad nearby for LendingTree, Google adds a handy, clickable button for immediate rate comparison. This extra feature may make Google's ad much more attractive, and since it's also the first thing on the page, it creates another unfair advantage for Google services.");

<sup>246</sup> Letter from John M. Simpson, Consumer Watchdog, to Christine Varney, Assistant Attorney General for Antitrust Division, Dep't of Justice, at 1 (filed Feb. 24, 2010) ("Consumer Watchdog Letter"), <http://www.consumerwatchdog.org/resources/ltrvarney022410.pdf>.



around 71 percent of the Internet search market (and estimates suggest as high as 85 percent of the global search market).<sup>247</sup> And in the vitally important Internet search-advertising and search-syndication markets, the Department of Justice found that “Google is by far the largest provider of such services, with shares of more than 70 percent in both markets.”<sup>248</sup> Google’s market power is supported by “billions of dollars of data center construction, . . . creation of a global backbone to deliver content to consumer networks,” and the placement of “Google Global Cache (GGC) servers within consumer networks around the world.”<sup>249</sup> CDT’s assertion (at 4) that “[a]n individual or small start-up company can buy a connection from a single provider of broadband Internet access and immediately reach the whole of the Internet” overlooks the harsh reality of Google’s dominance. Google has demonstrated again and again that it can keep a new start-up company from being seen by most of the Internet.<sup>250</sup> As Consumer Watchdog asserts, “Google is

<sup>247</sup> AT&T Comments at 199-200. See Foundem Comments at 3 (reporting 85 percent share of global search market) (citing <http://marketshare.hitslink.com/search-engine-market-share.aspx?qprid=5>).

<sup>248</sup> U.S. Dep’t of Justice, Press Release, *Yahoo! and Google Inc. Abandon Their Advertising Agreement*, Nov. 5, 2008, <http://www.usdoj.gov/opa/pr/2008/November/08-at-981.html>. See also AT&T Comments at 199-202. That dominance may be extended even further as Google enters the mobile sphere. See Tony Bradley, *Google Strives to Extend Search Dominance*, PCWorld.com, Jan. 23, 2010, [http://www.pcworld.com/businesscenter/article/187563/google\\_strives\\_to\\_extend\\_search\\_dominance.html](http://www.pcworld.com/businesscenter/article/187563/google_strives_to_extend_search_dominance.html) (“Google’s recent acquisitions, namely AdMob and Teracast, position Google to raise the bar for Web-based search advertising, and extend its search advertising empire to the exploding mobile search arena.”); Letter from Sen. Herb Kohl, Chairman, Subcomm. on Antitrust, Competition Policy & Consumer Rights, to Jonathan Leibowitz, Chairman, FTC (filed Apr. 6, 2010), [http://kohl.senate.gov/newsroom/pressrelease.cfm?custonel\\_dataPageID\\_1464=3555](http://kohl.senate.gov/newsroom/pressrelease.cfm?custonel_dataPageID_1464=3555) (“Google [has] a dominant share of internet search and internet search advertising on traditional desktop and laptop personal computers (PCs), as well as a strong and growing mobile advertising business[.]” presenting particular concerns due to “the likely importance of the smart phone advertising market in the future”).

<sup>249</sup> Labovitz, *How Big Is Google*, *supra*.

<sup>250</sup> See AT&T Comments at 203-05; Letter from Robert W. Quinn, Jr., AT&T, to Sharon Gillett, Chief, Wireline Competition Bureau, FCC, WC Docket Nos. 07-135 & 07-52 (filed Oct. 14, 2009); Letter from Robert W. Quinn, Jr., AT&T, to Sharon Gillett, Chief, Wireline Competition Bureau, FCC, WC Docket Nos. 07-135 & 07-52 (filed Sept. 25, 2009).

effectively the Internet’s gatekeeper for many consumers. Whether a website is ever visited can depend entirely on where it lands in a Google search.”<sup>251</sup>

In contrast, the largest broadband Internet access provider serves only approximately 20 percent of the U.S. broadband subscriber base.<sup>252</sup> Any such provider could at most theoretically foreclose access only to a small percentage of Internet users (and even then, only to those that connect to the Internet exclusively through one broadband access provider, and not those who may have a connection both at home and at work, or who use both wireline and wireless broadband Internet access). And unlike Google, the vast majority of broadband providers have never been the subject of credible allegations of such anticompetitive conduct.

In short, no responsible scheme of “net neutrality” regulation could exclude powerful Internet gatekeepers with real market power simply on the ground that the Commission has not *previously* faced up to this concern. And, as we explain below, any legal theory that would give the Commission jurisdiction to address the “openness” obligations of broadband Internet access providers would extend just as readily to other information services like Google, which necessarily use interstate and international telecommunications to deliver services to the public.

<sup>251</sup> *Consumer Watchdog Letter*, *supra*, at 1.

<sup>252</sup> See AT&T Comments at 118 (citing Comments of Verizon and Verizon Wireless, WC Docket No. 07-52, at 51 (filed June 15, 2007); Alex Goldman, *Top 23 U.S. ISPs by Subscriber: Q2 2008*, ISP Planet, Dec. 2, 2008, <http://www.isp-planet.com/research/rankings/usa.html>).

VI. THE COMMISSION SHOULD CONSIDER ADOPTING A CONSUMER-ORIENTED TRANSPARENCY PRINCIPLE.

A. The Record Supports Reasonable and Transparent End-User-Focused Disclosures, Subject to Network Management and Security Considerations.

There is broad support for the principle that providers should disclose useful, comprehensive, and comprehensible information relevant to consumer choice.<sup>253</sup> Prescriptive rules should not be necessary to accomplish that objective, however. As several commenters have noted, the broadband market already has made such disclosure a “competitive imperative.”<sup>254</sup> Indeed, the competitive broadband market is already driving providers toward transparent disclosures far more effectively than any set of rules could.<sup>255</sup>

As AT&T has made clear in the Commission’s *Truth-in-Billing* docket, it may nonetheless be useful to standardize disclosures across the broadband marketplace. AT&T has advocated an industry-wide effort to identify certain basic consumer-focused disclosures that all commercial providers (including content and application providers) in the Internet ecosystem should offer their existing and would-be customers.<sup>256</sup> Commenters in this proceeding similarly have advocated a technical advisory process or other means of arriving at industry guidelines to

<sup>253</sup> See, e.g., AT&T Comments at 188-96; Verizon Comments at 49-50; Comcast Comments at 44-50; NCTA Comments at 41-45; Time Warner Comments at 98-102.

<sup>254</sup> See, e.g., Comcast Comments at 44-45 (“Comcast has long recognized that clear communication with our customers is an important part of a successful relationship. . . . [A]nd it is a competitive imperative to continue to keep customers informed about our HSI service.”); AT&T Comments at 189 (citing HughesNet, Frequently Asked Questions – Connection Speeds, <http://www2.hughesnet.com/faqs/internet-connection-speeds.htm>; HughesNet, Frequently Asked Questions – Fair Access Policy, <http://www2.hughesnet.com/faqs/fair-access-policy.htm>); T-Mobile Comments at 37.

<sup>255</sup> See AT&T Comments at 188 (discussing the effect of competition on disclosure practices); Verizon Comments at 49 (“Transparent and meaningful disclosures to consumers enable them to make educated choices and thereby facilitate competition.”); see also T-Mobile Comments at 37; BT Americas Comments at 2-3; Time Warner Comments at 98-99.

<sup>256</sup> Comments of AT&T Inc., CG Docket No. 09-158, at 33-35 (filed Oct. 13, 2009) (“*AT&T Truth-in-Billing Comments*”). See also Bennett, *Going Mobile* at 4 (suggesting stakeholders form a working group to advise the FCC, but recognizing that “the means by which a particular user-visible effect [i.e., transparency] is produced are less important than the effect itself”).

set a general framework for the uniform disclosure of information.<sup>257</sup> AT&T would be pleased to participate in a process designed to identify core categories of information that consumers need in order to make educated broadband choices, and to design forms of disclosure that could be used across the broadband ecosystem by all relevant stakeholders.

The Commission should support such a voluntary, industry-driven process rather than adopt prescriptive rules.<sup>258</sup> And it should explicitly reject the long lists of proposed disclosure requirements submitted by the net regulation advocates, each of which seeks to outdo the next. The Open Internet Coalition, for example, insists that providers should disclose both the “exact details” of what might trigger every single network-management measure that might be used to address “interference,” and the “percentage” of all customers who might be affected by each particular network-management practice. Open Internet Coalition Comments at 88-89. The Open Internet Coalition also would require a comprehensive discussion of providers’ network and service design decisions, including details such as “differences on how pipes [sic] are being allocated” or the specific “amount of capacity dedicated to Internet traffic.” *Id.*

Not to be outdone, Public Knowledge would require every provider to explain “why” each network-management measure it uses is necessary, “who is affected” by each practice,

<sup>257</sup> See, e.g., ITIF Comments at 25; Comcast Comments at 41-50.

<sup>258</sup> In all events, the Commission should reject the transparency rule proposed in the NRRPM, which would require disclosures of any information consumers and application and content providers need to “enjoy the protections” of the net neutrality rules. NRRPM, Appendix A § 8.15. The NRRPM provides no guidance regarding what type of disclosures might be required to help consumers enjoy “rights” that include ambiguous concepts such as an “entitlement to competition,” for example. *Id.* § 8.11. Nor is it clear that any information is required to ensure that a consumer enjoys the fact that her provider “may not prevent . . . users from running . . . lawful applications.” *Id.* § 8.7. We assume that the rule is actually intended to require providers to disclose any ways that network-management practices could *limit* the consumer’s enjoyment of the service (or her net neutrality “rights”), but that is not what the rule says. The proposed wording is too amorphous to offer providers any useful guidance and would be difficult for the Commission to enforce. As several commenters stress, the rule would therefore result in “significant differences of opinion” and “endless . . . litigation.” BT Americas Comments at 2; NCTA Comments at 41-42.

“when” the management will occur, “what type of Internet traffic (e.g. application, class of application, protocol)” might be subject to management, and precise details concerning how each management technique will “affect a user’s Internet experience, including the specific impact on speeds.” Public Knowledge Comments at 65. Public Knowledge would also extend the transparency requirement to cover privacy issues that have no connection to this proceeding. *Id.*<sup>259</sup> CDT seeks (among other things) an explanation of a provider’s “purpose” in employing any particular management technique. CDT Comments at 33. Google, whose own search algorithms remain shrouded in secrecy, seeks identification of “any content/message examination processes (e.g., DPI), . . . traffic routing processes based on sender/receiver or type of traffic, . . . actual transmission and capacity rates of the service . . . as well as actual maximum and minimum transmission capacity rates that consumers may experience in a given day.”

Google Comments at 65. And EFF contends that providers must disclose any practices that might be “undertaken to address the needs of law enforcement, public safety or national security or homeland security authorities.” EFF Comments at 23.<sup>260</sup>

The Commission cannot reasonably adopt a transparency requirement so protean that it can be stretched to cover all these different categories of information, most of which extend well beyond anything a consumer would need in order to make an educated decision about his choice or use of any service. For example, so long as a consumer obtains the amount of broadband Internet access bandwidth provided for in the terms of his contract, there is no apparent reason he

<sup>259</sup> See also Open Internet Coalition Comments at 88; CDT Comments at 37-38. As AT&T has recognized in previous comments, see *AT&T Truth-in-Billing Comments* at 21; Comments of AT&T Inc., GN Docket No. 09-57, at 56-59 (filed June 8, 2009), privacy is a serious concern for consumers and for all those who provide Internet-based services. But that issue is unrelated to the issues presented in this docket. Indeed, none of the commenters relates such disclosures back to “enjoyment” of the net neutrality protections, which would be the animating criterion for compelled disclosure under the proposed transparency rule.

<sup>260</sup> See also Free Press Comments at 116; Public Interest Advocates Comments at 7.

needs to know what complex algorithms his provider uses from month to month or minute to minute to allocate that bandwidth among the various services it offers over its pipes (i.e., IP video service, broadband Internet access service, government emergency service, and others). Similarly, if a customer understands that usage over a certain cap is subject to throttling, there is no reason why she must also be told what percentage of other users is likely to be affected by that threshold—or why the provider has chosen the particular threshold.<sup>261</sup>

Further, if the Commission were to mandate a disclosure statement covering all the categories of information that pro-regulation advocates would compel providers to disclose, the resulting document would be far from “transparent.” It would be so long, so dense, and so technical that no consumer could find it useful. Meanwhile, the information that consumers actually need to make informed service selections and usage decisions would be harder to find within this mass of information.<sup>262</sup> As the Commission itself recognizes: “[T]oo much detail may be counterproductive if users ignore or find it difficult to understand those details.” NPRM ¶ 126. And as Sprint points out, the FTC has voiced similar concerns about excessively detailed

<sup>261</sup> A common-sense analogy draws into relief just how absurd some of the parties’ proposed disclosure requirements would be. A swimmer comparing two health clubs needs to know when the pool is available for swimming laps and how many lanes are made available. But she does not need to know why the club has chosen that number of lanes or picked certain hours and not others for lap swim. And while the club should certainly disclose that there are times when the pool might be closed for maintenance or special events, the customer should have no entitlement to obtain a list of every possible maintenance issue that could result in closure or every possible special event that might arise. If there are too many closures of the pool for any reason, or too few lap lanes made available, the customer will eventually cancel her membership and switch to another health club. And as with health clubs, so with broadband Internet access providers. Consumer awareness of competitive options accounts for the high rate of broadband churn described in AT&T’s opening comments.

<sup>262</sup> See, e.g., NCTA Comments at 43-44; see also *AT&T Truth-in-Billing Comments* at 14 (explaining that to meet consumers’ stated desire for clear, understandable, and concise disclosures, AT&T strives to provide sufficiently detailed information without overwhelming consumers with minutiae).

disclosures by broadband Internet access providers.<sup>263</sup> The FTC has well-established experience in overseeing consumer disclosures generally, and this Commission should heed that agency's concerns here.

Moreover, the types of disclosures these advocates request would be entirely impracticable. Network-management practices must regularly adapt to unforeseen challenges in the continuously changing Internet ecosystem. *See* AT&T Comments at 194. Even if a provider could list every single technique it might use, and explain what types of circumstances might merit such network management, a consumer would have no idea when or whether current network conditions actually required application of one of these techniques (unless the consumer somehow had her own network operations center and could monitor traffic 24x7 in the same way that network operators do). The various proposed disclosure requirements would be particularly unworkable for wireless broadband networks. As Cricket points out, wireless providers could not possibly identify with particularity all the different factors that might affect a customer's speed or service and how service might be affected over the course of any particular day and for which users or applications. The number of users, potential sources of interference, and innumerable other factors can affect service from moment to moment. *See* Cricket Comments at 24.

In addition, network-management techniques evolve over time. As we have explained, that is particularly the case in the wireless broadband market, which is still young, and in which providers deploy new technological upgrades frequently. Compelled disclosures of particular techniques (or of the applications to which particular techniques might be applied) would quickly

<sup>263</sup> *See* Sprint Nextel Comments at 16 (quoting Federal Trade Commission, *Staff Report: Broadband Connectivity Competition Policy*, at 133 (2007), <http://www.ftc.gov/reports/broadband/v070000report.pdf>).

become outdated. *See, e.g.*, NCTA Comments at 42; T-Mobile Comments at 40. That fact alone makes highly detailed disclosures less reliable and useful to consumers.

Even more ludicrous, and potentially alarming (if taken seriously), are proposals to make providers give 30 days' notice *before* changing any network-management practice or adopting a new one. *See, e.g.*, Open Internet Coalition Comments at 90-91; Public Knowledge Comments at 66. It would be irrational in the extreme to prohibit providers from addressing imminent network problems simply because they have not included the necessary management techniques in their existing disclosure statements. That approach would inevitably degrade day-to-day network performance. And any such rule would subvert the Administration's critical cybersecurity goals—and ignore its concern that “[m]alicious cyberactivity is occurring on an unprecedented scale with extraordinary sophistication.”<sup>264</sup> The “escape hatch” offered by the Open Internet Coalition (at 90)—which would permit a provider to make a showing after the fact why it could not meet the thirty-day requirement—would still create a presumption against any not-yet-disclosed change in network-management practices, and providers would have strong disincentives to avoid after-the-fact enforcement proceedings by erring on the side of conservatism in addressing cybersecurity threats.<sup>265</sup> At a time when such threats have never been greater,<sup>266</sup> it would be not only irrational but potentially catastrophic to create a regime that

<sup>264</sup> *Senators Warned, supra*.

<sup>265</sup> CDT wisely concedes that requiring providers to explain or justify network-management changes may be unduly burdensome. *See* CDT Comments at 37.

<sup>266</sup> Recent events bear out the Administration's warning that cybersecurity threats are rapidly intensifying. *See, e.g.*, Ellen Nakashima, *More Than 75,000 Computer Systems Hacked in one of Largest Cyber Attacks, Security Firm Says*, Wash. Post, at A03, Feb. 18, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/02/17/AR2010021705816.html> (“More than 75,000 computer systems at nearly 2,500 companies in the United States and around the world have been hacked in what appears to be one of the largest and most sophisticated attacks by cyber criminals discovered to date, according to a northern Virginia security firm. The attack, which began in late 2008 and was discovered last month, targeted proprietary corporate data, e-mails, credit-card transaction data and login credentials at

presumes network operators guilty whenever they take expeditious steps to protect their customers and networks from harm.<sup>267</sup>

It is equally senseless to suggest, as some groups do, that consumers should be given the right to terminate their contracts based on any change in a network-management practice.<sup>268</sup> Some new network-management techniques have no effect whatsoever on the consumer's ultimate experience; they affect only *how* the network operator ensures that experience without in any way affecting the quality of the experience. Other new techniques might simply update pre-existing ones and might well improve the consumer's experience or even expand permissible uses of the service. An unlimited right to cancel based on *any* change would make no sense and would subvert legally protected contract rights. Wireless providers like AT&T that comply with CTIA's Code of Conduct already permit customers to cancel their contracts with no early termination fee if the provider modifies "the material terms of [its] subscribers' contracts in a

manner that is materially adverse to subscribers[.]"<sup>269</sup> No more could be reasonably or fairly required for any broadband service. Any other rule would (1) discourage providers from adopting state-of-the-art management techniques; (2) engender Talmudic debate about whether particular new network-management measures are encompassed by existing disclosures; and/or (3) raise end-user prices across the board to reflect the costs of increased consumer churn caused by this expansive termination right. Any of those effects would subvert consumer welfare.

**B. There Is No Basis for Requiring Additional Disclosures to Content and Application Providers.**

The Commission should not mandate disclosures that application and content providers might decide they need for their own "enjoyment" of the net neutrality regime. There is no need for such a rule, and it would succeed only in threatening network performance and security.

As NCTA explains, "[c]ontent and application providers continue to offer new services that are almost unimaginable until they appear[.] . . . in part . . . because any information that is necessary has generally been available" to them. NCTA Comments at 42. Indeed, the Internet is an "innovate without permission" ecosystem precisely *because* individual edge providers do *not* need special information from network operators. In the wireline context, for example, new applications and content are offered every day to AT&T's broadband Internet access users, without *any* interaction between AT&T and the application or content provider. It thus is simply wrong to suggest, as the Open Internet Coalition does (at 87), that broadband networks feature "hundreds of potential variances from agreed-upon Internet standards" and that disclosure of such variances is necessary to ensure that independent applications and content work on the

companies in the health and technology industries in 196 countries[.]"; Rochelle Garner, *Data Theft's Cost Firms \$2 Million Each a Year (Update 1)*, Bloomberg.com, Feb. 22, 2010, [http://www.bloomberg.com/apps/news?pid=email\\_en&sid=axchpm.hfxac](http://www.bloomberg.com/apps/news?pid=email_en&sid=axchpm.hfxac) ("In a survey of 2,100 information-technology executives worldwide, 75 percent of respondents reported cyber attacks last year."); Alejandro Martinez-Cabrera, *Consumers Found Vulnerable to E-Mail Threats*, S.F. Chron., Feb. 20, 2010, <http://www.sfgate.com/cgi-bin/article.cgi?file=/a/2010/02/20/BU201C4DQR.DTL> (noting industry concerns that the "threats continue to become more abundant and diverse while users still underestimate the problem and consumer education is lacking").

<sup>267</sup> For similar reasons, the Commission should also reject the proposal that providers report detailed network-management information to the FCC. See NPRM ¶ 128; Google Comments at 67 (proposing that providers report directly to the Commission); see also Free Press Comments at 119-20; CDT Comments at 37. In any event, since every major provider already publicizes its terms, conditions, and other customer disclosures by posting them online, it is unclear what benefit a duplicative FCC filing requirement could offer to any interested party. The costs of such a requirement are more certain, since a filing with the federal government would expend legal and other resources that would not otherwise be necessary.

<sup>268</sup> See, e.g., Open Internet Coalition Comments at 91 ("[I]f a user objects to the change, then the user should have the right to cancel the contract within a reasonable period without penalty or termination charges."); see also Free Press Comments at 117.

<sup>269</sup> CTIA, *Consumer Code for Wireless Service*, Principle Seven, [http://files.ctia.org/pdf/The\\_Code.pdf](http://files.ctia.org/pdf/The_Code.pdf).

various systems. Notably, the Open Internet Coalition provides not one example of such a “variance” that has frustrated a would-be developer.

To be sure, an application provider might want to know whether a particular network operator imposes bandwidth caps or some other technique that could make it harder for that operator’s customers to make use of the relevant application. But such information would already generally be disclosed as part of any operator’s disclosures to customers and would thus already be available to the application provider as well.<sup>270</sup>

In the wireless broadband ecosystem, content and application providers do require network- and device-specific information to ensure optimal performance of their services over particular wireless devices. But the market is already supplying them with all the information they need and more. As discussed above, wireless providers actively invite collaboration with application developers and publicly post information to facilitate development of applications on their platforms.<sup>271</sup> And the recently announced Wholesale Applications Community will go a step further, using existing technical standards to help developers access operators’ “network capabilities or API’s (Application Programming Interfaces) more easily” so that “developers will only have to create one version of their application and this can be used on multiple types of devices and operating systems (such as Symbian, Android, Windows etc[.]).”<sup>272</sup> Moreover, the wireless application market is thriving under the existing disclosure model. As CTIA reports, analysis project that consumers worldwide will spend \$6.2 billion in mobile application stores in 2010 to download over eight billion applications. In the United States alone, the number of

<sup>270</sup> See NCTA Comments at 42; Comcast Comments at 47; Time Warner Comments at 98-102.

<sup>271</sup> See Section III.A, *supra*; see AT&T Comments at 189; T-Mobile Comments at 39; Verizon Comments at 59.

<sup>272</sup> See Wholesale Applications Community Website, <http://www.wholesaleappcommunity.com/>.

wireless broadband applications grew by almost 28 percent in just five months over the end of last year.<sup>273</sup> There is no problem here that any disclosure remedy is needed to correct.

The Open Internet Coalition’s call for the equivalent of the legacy CEI/ONA rules is especially confused and unjustified.<sup>274</sup> Those rules arose in an environment where the Bell Operating Companies controlled closed, proprietary networks, permission was often needed for information service providers to offer their services, and there was some risk that the BOCs would withhold that permission unless compelled to provide it. Further, as SureWest notes, the Commission concluded in 2005 that the CEI/ONA rules would chill investment and preclude broadband providers from adopting new technologies and deploying new services.<sup>275</sup> It would be indefensible for the Commission to ignore that prior determination and adopt an equivalent rule here.

What makes the application- and content-provider focus of the proposed transparency rule particularly troubling is that, if anything, it is *broadband providers* that suffer from an information disadvantage when contending with application and content providers. Millions of content and application providers offer their services over broadband platforms every day, using a virtually endless range of software and network protocols. The networks’ inherent “openness” is hospitable to all these different services, but that same openness makes the network *vulnerable* to harm from these services. And when harm does occur—whether in the form of interference, congestion, or malicious attacks—the network provider must often engage in complex analysis

<sup>273</sup> CTIA Feb. 12 Competition Ex Parte, Attachment at 7.

<sup>274</sup> See Open Internet Coalition Comments at 90; see also CDT Comments at 36 n.122.

<sup>275</sup> See SureWest Communications Comments at 6-7 (citing Report and Order and Notice of Proposed Rulemaking, *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, 20 FCC Rcd 14853, 14877, 14887-90 (2005), *aff’d*, *Time Warner Telecom, Inc. v. FCC*, 507 F.3d 205 (3d Cir. 2007)).

to identify the source of the problem. Disclosure by content and application providers is therefore a more important concern than disclosure to them.<sup>276</sup>

Indeed, consumers would benefit if *all* members of the Internet ecosystem, including application and content providers, were required to play by the same transparency rules. Even Google, in its joint submission with Verizon, agrees that “[p]roviders throughout the Internet space should give users clear and meaningful information concerning Internet services, applications and content to facilitate informed choices.”<sup>277</sup> Such disclosures would ensure that consumers understand when an application might, for example, (i) interfere with (or consume too much of) their Internet access service; (ii) interfere with their use of other applications or affect computer equipment; or (iii) employ search or other algorithms that make certain Internet content or applications less accessible. See AT&T Comments at 195.

#### C. Any Transparency Requirement Must Account for Reasonable Network Management Needs.

Free Press, CDT, and others suggest that the transparency requirement should *not* be subject to a “reasonable network management” exception. In other words, they contend that a

network operator should not be permitted to withhold information (from consumers or content/application providers) on the basis that disclosure could undermine network-management goals. See Free Press Comments at 120-21; CDT Comments at 32-33. According to CDT, “[d]isclosure of security management practices [alone] poses the risk of malicious circumvention[.]” whereas “disclosure of congestion management policies largely does not.” CDT Comments at 33.

That is wrong. Savvy content and application providers *will* use network-management information to their advantage, and they *will* try to circumvent management practices when possible. Indeed, the Open Internet Coalition concedes (at 91) that application providers “may use transparency to circumvent legitimate network management tools”—though it fails to discuss how its extreme disclosure position deals with that risk (or explain why it says such risk is “small”). Similarly, FCC staff have identified several procedures that customers (and application and content providers) could use to get around network operators’ congestion-control mechanisms. See AT&T Comments at 194. It would be patently irrational for the Commission to permit reasonable network-management techniques (as it must), yet simultaneously require disclosures that would undermine the efficacy of those very techniques.

In any event, CDT’s proposed distinction between security management practices and congestion management policies is unworkable. Network-management techniques do not fall neatly into “security”- and “non-security”-related boxes. The same management practices that are used to control congestion might also be useful in preventing or responding to a denial-of-service attack. By the same token, a bad actor could very well use congestion management information (such as bandwidth limitations or the like) to circumvent the operator’s protections

<sup>276</sup> Indeed, a recent study illustrates starkly how different applications and browsers can make very different use of network resources. For instance, BlackBerry email service has been shown to be far more network-efficient than its competitors, in part because BlackBerry employs efficient file viewers and better text-compression algorithms. Rysavy Research, *Mobile Broadband Capacity Constraints and the Need for Optimization* at 27 (2010). Its browser also is more efficient, using a third less data on average than its competitors’ browsers due to various object-compression mechanisms. *Id.* at 28. AT&T has also found that a customer can consume very different amounts of bandwidth depending on which of several different wireless video applications he uses to view a particular video. See Tannay Parker, *AT&T’s fierewireless.com/tialive/story/is-rinne-campaigns-spectrally-efficient-mobile-video/2010-03-24*. Customers should have this information at their fingertips, so that they can decide how best to use their service—a concern that would be even more important if providers adopt metered pricing. Disclosure of this information also would be useful to network operators seeking to improve allocation of network resources.

<sup>277</sup> Google & Verizon Joint Submission at 3 (filed Jan. 14, 2010) (emphasis added); see also Verizon Comments at 49-50; Comcast Comments at 46; Time Warner Comments at 99; NCTA Comments at 45.

and launch a denial-of-service attack or some other malicious action against the network.<sup>278</sup> CDT's recognition (at 34) that highly detailed *security* disclosures "would likely provide too much information to those with malicious intent while not reaping any substantial marginal benefit over a more generic disclosure" should thus apply to *all* network-management disclosures.<sup>279</sup> Too much detail would endanger all network users, as well as major commercial operations and emergency communications that depend on the Internet. As MPAA and others explain, moreover, disclosures of all network-management information could endanger efforts to protect copyright owners and otherwise police unlawful content. Detailed disclosures could provide a blueprint to those seeking to engineer around the relevant limitations.<sup>280</sup>

Finally, as we have explained, the technological details of network management are often proprietary and allow broadband providers to differentiate the quality of their services to end users.<sup>281</sup> Disclosure of such information would dissuade providers from putting much effort into the development of a variety of network-management techniques because, in many cases, rivals

<sup>278</sup> Free Press is thus simply wrong when it insists (based on its non-existent network-operating experience) that "[e]ven detailed disclosure of methods and triggers for network management is feasible without introducing danger to network security[.]" Free Press Comments at 117-18.

<sup>279</sup> As Professor Reed and Dr. Tripathi explain, detailed technical disclosures about network-management practices could compromise network security and risk the release of proprietary intellectual property. *Second Reed & Tripathi Paper* at 27. They accordingly reject the Afflerbach and DeHaven proposal, NAF Paper at 45, and a sentiment echoed by other commentators that network operators be required to document all their network-management measures and their network's performance. They are especially critical of a proposed third-party "verification" system that would in theory ensure that the provider is not employing undisclosed network-management techniques. *See id.* at 29; *Second Reed & Tripathi Paper* at 26-27. Any such approach would be invasive, it would endanger the provider's proprietary information as well as customer information, and it would be costly and logistically overwhelming. *See Second Reed & Tripathi Paper* at 26-27.

<sup>280</sup> *See, e.g.*, Motion Picture Ass'n of Am. Comments at 21; Recording Industry Association Comments at 16; *cf.* Broadcast Music, Inc. Comments at 1 ("BMI's principal concern is to ensure that any net neutrality rules adopted by the Commission do not have any unintended adverse impact on the ability of copyright licensing organizations to protect the copyright interests of the songwriting and publishing communities.')

<sup>281</sup> *See* AT&T Comments at 194-95; *see also* Bennett, *Going Mobile* at 4 (explaining that "[c]ertain details of practice represent trade secrets and need not be disclosed" under a transparency rule).

could simply free-ride on their innovations. The result would be inferior network management over time.

## VII. THE PROPOSED RULES WOULD BE UNLAWFUL.

As discussed in our opening comments, the proposed rules would be not only unwise, but unlawful. Among other concerns, they would exceed the Commission's statutory authority, contradict specific substantive provisions of the Communications Act, violate the APA's ban on arbitrary and capricious rulemaking, and infringe the First Amendment rights of content providers and ISPs alike. The commenters supporting the proposed rules have identified no sound basis for doubting these legal conclusions.

### A. Adoption of the Proposed Rules Would Exceed the Commission's Ancillary Authority and Violate Specific Provisions of the Communications Act.

Any exercise of Title I authority must be "reasonably ancillary" to specific, "statutorily mandated responsibilities" of the Commission.<sup>282</sup> And, as the D.C. Circuit just concluded, the theories of ancillary jurisdiction on which the Commission relied in the *Comcast Order*, which are similar to the theories set out in the NPRM here, failed that test.<sup>283</sup> But those theories were far from exhaustive. For example, citing *Chenery*, the *Comcast* court withheld any decision on the merits of central Title I rationales that the Commission had presented on appeal (but not in the underlying order) as bases for addressing core violations of the *Internet Policy Statement*,

<sup>282</sup> *American Library Ass'n v. FCC*, 406 F.3d 689, 700 (D.C. Cir. 2005); *see* AT&T Comments at 214-22.

<sup>283</sup> *Comcast Corp. v. FCC*, No. 08-1291, 2010 WL 1286658 (D.C. Cir. Apr. 6, 2010).



including anticompetitive blocking of disfavored content or applications.<sup>284</sup> And, of course, Congress can confer new statutory authority on the Commission as it deems necessary.<sup>285</sup>

That said, the more intrusive aspects of the proposed rules would contradict specific provisions of the Communications Act no matter what the source of the Commission's jurisdictional authority. *See* AT&T Comments at 209-14. *First*, Section 3(44) bars the Commission from regulating an entity as a common carrier when it is providing information services,<sup>286</sup> yet the broad "nondiscrimination" requirement proposed in the NPRM would do just that. Advocates of net neutrality regulation tend simply to ignore Section 3(44), however, and thus provide no response to its legal implications. And Section 3(44) would impose important limits on the Commission's regulatory authority even if the Commission adopted ill-conceived proposals to "reclassify" broadband Internet access service under Title II, because key portions of that service would remain information services subject only to Title I and thus beyond the scope of permissible common-carrier regulation. *See* Section VII.B.5, *infra*.

*Second*, the proposed nondiscrimination requirement would be far more stringent than the Section 202(a) "unreasonable discrimination" standard, which Congress has deemed sufficient even for legacy telephone monopolies, and it would impose an inflexible line-of-business restriction that Congress has never imposed on any common carrier in any remotely analogous

<sup>284</sup> *Id.* at \*18 (citing *SBC v. Cheney Corp.*, 318 U.S. 80, 87-88 (1943)).

<sup>285</sup> The Commission retains authority under existing legal theories to implement key provisions of the *Broadband Plan*, including making more spectrum available and providing universal service support for broadband. *See* Austin Schlick, *Implications of Comcast Decision on National Broadband Plan Implementation*, Blogband, Apr. 7, 2010, <http://blog.broadband.gov/?entryid=356610> ("The Comcast/BitTorrent opinion has no effect at all on most of the Plan."). *See generally* 47 U.S.C. §§ 151, 254; *id.* § 1502(b) (codifying Section 706(b) of the Telecommunications Act of 1996); Letter from Gary Phillips, AT&T, to Marlene Dortch, FCC, GN Docket No. 09-51 (filed Apr. 12, 2010).

<sup>286</sup> 47 U.S.C. § 153(44).

circumstance.<sup>287</sup> The Commission cannot lawfully subject *non-monopolist* providers to regulatory obligations that Congress deliberately *refrained* from imposing on *monopoly* providers of genuine common-carrier services.<sup>288</sup> The advocates of net neutrality regulation do not face up to this concern either.

*Third*, the proposed rules—no matter what their purported jurisdictional basis—would unlawfully subject ISPs to liability for engaging in precisely the type of editorial discretion that Section 230(c) explicitly preserves for all Internet providers. That provision states:

Protection for "good samaritan" blocking and screening of offensive material . . . (2) Civil liability. No provider . . . of an interactive computer service shall be held liable on account of—(A) any action voluntarily taken in good faith to restrict access to or availability of material that the provider or user considers to be obscene, lewd, lascivious, filthy, excessively violent, harassing, or otherwise objectionable, whether or not such material is constitutionally protected[.]

47 U.S.C. § 230(c) (emphasis added). Section 230(c) authorizes—indeed, encourages—ISPs to eliminate "objectionable" content from their services.<sup>289</sup> For example, Section 230(c) protects (1) a broadband provider's right to offer a pornography-free or racism-free Internet access service; (2) a wireless provider's right to provide a child-friendly service with filtered Internet

<sup>287</sup> *See* AT&T Comments at 212-13 (discussing Sections 251/252 and 271/272).

<sup>288</sup> *See id.* at 209-13; *see also* Section II.A, *supra*, *see generally* *FCC v. Midwest Video Corp.*, 440 U.S. 689, 700-02 (1979).

<sup>289</sup> *See, e.g., Batzel*, 333 F.3d at 1030 n.14 ("[Section 230(c)(2)] encourages good samaritans by protecting service providers and users from liability for claims arising out of the removal of potentially 'objectionable' material from their services. . . . This provision insulates service providers from claims premised on the taking down of a customer's posting such as breach of contract or unfair business practices."); *Langdon*, 474 F. Supp. 2d at 630-31 (dismissing claim against information service providers concerning suppression of political speech, holding that "§ 230 specifically proscribes liability" "for decisions relating to the monitoring, screening, and deletion of content from their network" and "bars lawsuits seeking to hold a service provider liable for its exercise of a publisher's traditional editorial functions—such as deciding whether to publish, withdraw, postpone, or alter content") (internal quotation marks omitted); *Green*, 318 F.3d at 472 (Section 230(c)(2) "allows AOL to establish standards of decency without risking liability for doing so"); *Mainstream Loudoun*, 2 F. Supp. 2d at 790 ("[A]s its name implies, § 230 was enacted to minimize state regulation of Internet speech by encouraging private content providers to self-regulate against offensive material[.]").

access; and (3) a wireless provider's right to preclude access to "offensive" applications such as the notorious "Baby Shaker" application over its service and devices.<sup>290</sup> The rules proposed here, however, would unlawfully bar *all* of these tailored services and would impose civil liability on providers for offering them (unless they could demonstrate a network-management basis for their editorial decisions).

More generally, any stringent form of "net neutrality" regulation that seeks to stamp out editorial discretion by broadband providers would contradict a larger statutory principle illustrated by Section 230(c): that broadband providers may and sometimes should exercise such editorial discretion, and that the government should not interfere when they seek to do so. As explained by a sponsor of what ultimately became Section 230, Congress enacted that provision to "establish as the policy of the United States that we do not wish to have content regulation by the Federal Government of what is on the Internet, that *we do not wish to have a Federal Computer Commission with an army of bureaucrats regulating the Internet* because frankly the Internet has grown up to be what it is without that kind of help from the Government."<sup>291</sup> Congress ultimately enacted that principle in Section 230(b)(2), which establishes "the policy of the United States" to let the Internet develop "unfettered by Federal or State regulation." 47 U.S.C. § 230(b)(2). The rules proposed here would violate that congressional purpose.

**B. The Commission May Not and Should Not Try to Shoehorn Broadband Internet Access Services into Title II.**

In an effort to circumvent limitations on the Commission's Title I authority, several commenters have proposed that the Commission reclassify broadband Internet access service as

<sup>290</sup> See note 169, *supra*, for a discussion of this application. As discussed, a provider is also similarly entitled to take steps to preclude the use of its service for distribution of material that is likely to violate (or that will help others violate) the rights of intellectual property holders. See Section IV.C. *supra*.

<sup>291</sup> 141 Cong. Rec. H8470-01, H8470 (1995) (statement of Rep. Cox) (emphasis added).

(or as containing) a "telecommunications service" subject to regulation under Title II.<sup>292</sup> On February 22, 2010, AT&T, several other companies, and five major trade associations representing the entire broadband industry filed an extensive analysis of this reclassification proposal.<sup>293</sup> As that analysis explained, the proposal would be untenable as a legal matter, would plunge the industry into years of litigation and regulatory chaos, and would threaten to extend common-carrier regulation not just to broadband Internet access providers, but also to huge swaths of the Internet at large, betraying decades of bipartisan support for keeping the Internet unregulated. *Id.* at 1. Yet for all that—in perhaps the greatest irony of all—the proposed reclassification would not even authorize the net neutrality rules these advocates hope to impose. See Section VII.B.5, *infra*. The Commission should steer clear of this regulatory dead end.

**1. The Commission Lacks Statutory Authority to Reclassify Broadband Internet Access Service as a Title II Service.**

As discussed below, a long line of Commission decisions from 1998 to 2007, along with a Supreme Court decision from 2005 and a Third Circuit decision from 2007, confirm that Internet access service is a Title I "information service" with no Title II "telecommunications service" component. Nothing has changed in the meantime to justify the opposite outcome. And if the Commission sought to up-end twelve years of bedrock regulatory precedent anyway, a reviewing court would view that about-face not as a reasoned response to changed

<sup>292</sup> See, e.g., Reply Comments of Public Knowledge on NBP Public Notice No. 30, GN Docket No. 09-47 (filed Jan. 26, 2010) ("Public Knowledge NBP Reply Comments"), *see also* CDT Comments at 22; Free Press Comments at 31-32. Although any such reclassification would go far beyond the bounds of any proposal noticed in this proceeding, we nonetheless address it here, given the serious threat it would pose to the Internet as a whole.

<sup>293</sup> Letter from National Cable & Telecommunications Association, CTIA—The Wireless Association, United States Telecom Association, Telecommunications Industry Association, Independent Telephone and Telecommunications Alliance, Verizon, AT&T Inc., Time Warner Cable, and Qwest to Chairman Julius Genachowski, FCC, GN Docket No. 09-191 (filed Feb. 22, 2010) ("*Industry Title II Letter*").

circumstances, but as a nakedly political effort to reverse judicial constraints on the Commission's Title I authority to regulate the Internet. That type of sea-change in this area of law would have to come from Congress, not the Commission.

A "telecommunications service" subject to Title II common-carrier regulation is defined, in relevant part, as "the offering of telecommunications for a fee directly to the public . . . regardless of the facilities used," and "telecommunications" in turn is defined as "the transmission . . . of information of the user's choosing, *without change in the form or content of the information as sent and received.*" 47 U.S.C. §§ 153(43), (46) (emphasis added). In contrast, an "information service," which lies outside the scope of Title II, is the "offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information *via telecommunications.*" *Id.* § 153(20) (emphasis added). In 1998, the Commission first concluded that these two statutory categories are "mutually exclusive."<sup>294</sup> This means that a service offered to consumers on a functionally unified basis cannot be said to consist of both a "telecommunications service" and an "information service."

It must be one or the other, and if it contains data-processing or data-storage/retrieval functionalities, it is a unified "information service."<sup>295</sup> As discussed below, any contrary conclusion would have profoundly unsettling consequences for the Internet at large because, in the Supreme Court's words, it would "subject to common-carrier regulation non-facilities-based ISPs that own no transmission facilities."<sup>296</sup>

<sup>294</sup> *Report to Congress*, 13 FCC Red at 11507 ¶ 13. Below, we refer to this finding as the "mutual exclusivity" position.

<sup>295</sup> See *id.* at 11538-40 ¶¶ 78-80.

<sup>296</sup> *National Cable & Telecommunications Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 994 (2005) ("Brand X").

Starting in 2002 and continuing through 2007, the Commission applied this statutory interpretation to various broadband Internet access services and concluded that they are all properly construed as integrated "information services" without "telecommunications service" components.<sup>297</sup> That is so, the Commission found, because the service offered to consumers inherently includes a range of integrated data-processing functions, including email, web-hosting, DNS look-up, and often caching.<sup>298</sup> These findings all involved a straightforward application of the "mutual exclusivity" position the Commission had adopted in 1998. Although most (but not all) ISPs in 1998 were "non-facilities-based" in that they owned no last-mile transmission facilities connecting them to their end users, the emergence of broadband ISPs did not alter the statutory analysis because, as the Supreme Court has explained, "the relevant definitions *do not distinguish facilities-based and non-facilities-based carriers.*"<sup>299</sup>

The Supreme Court affirmed the Commission's statutory classification decisions in its 2005 *Brand X* decision.<sup>300</sup> As the Court explained, "[i]t is common usage to describe what a company 'offers' to a consumer as what *the consumer perceives to be the integrated finished*

<sup>297</sup> See, e.g., *Report to Congress*, 13 FCC Red at 11537-39 ¶¶ 76-79; Declaratory Ruling, *Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities*, 17 FCC Red 4798, 4822-23 ¶¶ 38-40 (2002) ("Cable Modem Order"), *aff'd* *Brand X*, 545 U.S. 967 (intermediate history omitted); Report and Order, *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, 20 FCC Red 14853, 14855-56 ¶¶ 1-3 (2005) ("Wireline Broadband Order"), *aff'd* *Time Warner Telecom v. FCC*, 507 F.3d 205 (3d Cir. 2007); Declaratory Ruling, *Appropriate Regulatory Treatment for Broadband Access to the Internet over Wireless Networks*, 22 FCC Red 5901, 5902 ¶ 2 (2007) ("Wireless Broadband Order").

<sup>298</sup> See *Cable Modem Order*, 17 FCC Red at 4822-23 ¶ 38; *Wireless Broadband Order*, 22 FCC Red at 5910-11 ¶¶ 25-26.

<sup>299</sup> *Brand X*, 545 U.S. at 997 (emphasis added). The definitions also do not turn on the degree of competition in any market, as Public Knowledge appears to suggest (NBP Reply Comments at 10-11). In any event, even if the degree of competition were a relevant criterion, the broadband Internet access market is considerably more competitive today than it was in 2002, 2005, or 2007, given the proliferation of fixed (e.g., Clearwire) and mobile (e.g., Sprint and T-Mobile) wireless broadband services.

<sup>300</sup> The Third Circuit subsequently affirmed the same analysis in 2007, in upholding the extension of the FCC's statutory classification analysis to wireline (telco) broadband Internet access services. See *Time Warner Telecom*, 507 F.3d 205.

product, even to the exclusion of discrete components that compose the product[.]” *Brand X*, 545 U.S. at 990 (emphasis added). And thus “[t]he entire question is whether the [broadband Internet access] products here are functionally integrated (like the components of a car) or functionally separate (like pets and leashes). That question turns not on the language of the Act, but on the factual particulars of how Internet technology works and how it is provided[.]”<sup>301</sup> The Court found that the Commission had properly answered that question by concluding that ISPs offer consumers a bundle of functionally integrated telecommunications and data-processing components, including the DNS look-up and caching services just mentioned.

The Commission could not reasonably reverse course now unless it could somehow find that, in the three years since its last order on this topic, broadband Internet access providers have suddenly stopped providing a functionally integrated combination of transmission and data-manipulation functions when they offer broadband Internet access to consumers. But the Commission could not credibly make such a finding because there has been, in fact, no such change in the way such services are offered to consumers, as discussed below, the data-manipulation functions of this service are now, if anything, *more* functionally integrated with broadband transmission than they were in 2002. In short, the Commission was right in 2002, 2005, and 2007, and it would be wrong if it abruptly reversed course now.

Public Knowledge argues that the data-processing and transmission components of broadband Internet access service are no longer “integrated” because, it says, consumers no longer rely on their ISPs for email and certain other functionalities. Public Knowledge NBP Reply Comments at 8. That is untenable on two levels. To begin with, millions of consumers continue to view ISP-provided email and similar applications as integral components of the

<sup>301</sup> *Brand X*, 545 U.S. at 991.

broadband Internet access services offered to them, and Public Knowledge cites no basis for concluding that they do not.<sup>302</sup> More important, as the Commission explained in 2002, Internet access services are integrated information services “regardless of whether subscribers use all of the functions provided as part of the service, such as e-mail or web-hosting, and regardless of whether every cable modem service provider offers each function that could be included in the service.”<sup>303</sup> And such services necessarily involve other integral data-processing functionalities, such as DNS look-up.

Indeed, as the Supreme Court has indicated, the functional integration of broadband transmission with DNS look-up or caching is sufficient by itself (though not necessary) to make the ensuing service a unitary “information service”:

*A user cannot reach a third-party's Web site without DNS, which (among other things) matches the Web site address the end user types into his browser . . . with the IP address of the Web page's host server. See P. Albitz & C. Liu, DNS and BIND 10 (4th ed. 2001) (For an Internet user, "DNS is a must. . . . [N]early all of the Internet's network services use DNS. That includes the World Wide Web, electronic mail, remote terminal access, and file transfer"). . . . Similarly, the Internet service provided by cable companies facilitates access to third-party Web pages by offering consumers the ability to store, or "cache," popular content on local computer servers. . . . In other words, subscribers can reach third-party Web sites via "the World Wide Web, and browse their contents, [only] because their service provider offers the "capability for . . . acquiring, [storing] . . . retrieving [and] utilizing . . . information." "The service that Internet access providers offer to members of the public is Internet access," "not a transparent ability (from the end user's perspective) to transmit information."<sup>304</sup>*

<sup>302</sup> Indeed, Public Knowledge itself concedes that broadband providers do include “enhanced services such as email accounts and home pages” within the broadband Internet access services offered to consumers. Public Knowledge NBP Reply Comments at 8. AT&T, for example, includes the following as part and parcel of its residential Internet access service: security screening, spam protection, pop-up blockers, parental controls, online email and photo storage, instant messaging, and the ability to create a customized browser and personalized home page that automatically retrieve games, weather, news, and other information selected by the user.

<sup>303</sup> *Cable Modem Order*, 17 FCC Red at 4822-23 ¶ 38 (emphasis added).

<sup>304</sup> *Brand X*, 545 U.S. at 999-1000 (emphasis added; some citations and internal brackets omitted) (quoting *Report to Congress*, 13 FCC Red at 11538-39 ¶¶ 76-79); see also *Cable Modem Order*, 17 FCC

These points are all as valid and dispositive today as they were when the Supreme Court affirmed them in 2005—and in 2007, when the Commission most recently reaffirmed them.<sup>305</sup> Public Knowledge suggests in passing that unusually tech-savvy consumers can obtain access to third-party DNS look-up services. See Public Knowledge NBP Reply Comments at 2 & n.7. Whether or not that is true, it is irrelevant to the statutory characterization issue. Again, the relevant question is “what the consumer perceives to be the integrated finished product, even to the exclusion of discrete components that compose the product[.]” *Brand X*, 545 U.S. at 990. And virtually all consumers today rely on their broadband providers to include DNS look-up functionality as an integral part of broadband Internet access service. No less today than a few years ago, broadband transmission and DNS look-up functionality “are functionally integrated (like the components of a car),” not “functionally separate (like pets and leashes).” *Id.* at 991. For purposes of determining what a purchaser is “offered,” it makes no difference that some users could theoretically seek out third-party DNS look-up services in addition to those combined with their broadband services, just as it makes no difference that a consumer could buy a car at a car dealership and then replace the wheels or install custom seats. Just as a car dealer is not properly viewed “as ‘offering’ consumers the car’s components in addition to the car itself” (*id.* at 990), a broadband provider is not properly viewed as offering consumers the individual components of broadband Internet access; it is properly viewed as offering them a single integrated service. And because that service includes DNS look-up and other enhanced functionalities, it is properly classified as an information service.

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Red at 4822 ¶ 38 n.153 (explaining that even if users do not use email and other cable modem service offerings, “[i]n nearly every cable modem service subscriber, . . . accesses the DNS that is provided as part of the service.”).

<sup>305</sup> See *Wireless Broadband Order*, 22 FCC Red at 5908-09 ¶ 18.

Moreover, as discussed in the *Industry Title II Letter* (at 8-9), broadband Internet access service is, if anything, even more integrated with such enhanced functionalities today than it was in 2002, 2005, or 2007. For example, apart from such traditional functionalities as DNS look-up and caching, a significant and growing number of providers now offer Internet access services with various network-oriented, security-related information-processing capabilities that are used to address threats against their networks and their customers. These include processing Internet access traffic flows to check for telltale patterns of worms, viruses, botnets, denial-of-service attacks, and the like; scrubbing email traffic to remove spam; and other techniques that involve interaction with stored information (e.g., databases of known computer threats) to address security and other concerns. In many cases, a consumer cannot even use the Internet access service of her choice *without* receiving the enhanced functionality provided by these security features.<sup>306</sup> Although agencies have some discretion to change their minds on policy issues, that discretion is not unbounded. Here, the Commission could not overcome the basic and persistent facts that have led it to characterize broadband Internet access repeatedly as a unitary “information service” without a “telecommunications service” component, because those facts are even more persuasive today than they were in 2002, 2005, or 2007. As the Supreme Court explained in its recent *Fox* decision, an agency must “provide a more detailed justification than what would suffice for a new policy created on a blank slate” when “its new policy rests upon *factual findings that contradict those which underlay its prior policy*” or “when its prior policy

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<sup>306</sup> See also *Industry Title II Letter* at 8 (discussing the broad variety of enhanced features that providers offer as “part and parcel of their residential Internet access service . . . all of which involve ‘generating, acquiring, storing, transforming, processing, retrieving [and/or] utilizing’ information”).

has engendered *serious reliance interests* that must be taken into account.<sup>307</sup> Here, the Commission could not reclassify broadband Internet access services without both

(1) “contradict[ing]” the still-unchanged facts (such as the integrated and pervasive use of DNS look-up) that it and the Supreme Court have correctly deemed sufficient to characterize broadband Internet access as a unitary “information service,” and (2) defeating the “serious reliance interests” the industry has developed in the maintenance of the existing investment-friendly regime for the past decade.

**2. Any Reinterpretation of This Statutory Scheme Would Destabilize the Internet as a Whole by Threatening to Extend Title II Regulation to Application and Content Providers, Whether “Facilities-Based” or Not.**

Just as there has been no material change in the basic *facts* about how broadband Internet access services are offered to consumers, there is likewise no basis for reconsidering the purely *legal* component of the Commission’s decision to characterize those services as unitary “information services”: its longstanding interpretation of the relevant statutory definitions.

Again, the Commission first concluded in 1998 that “Congress intended the categories of ‘telecommunications service’ and ‘information service’ to be mutually exclusive,” such that an integrated service must be either an “information service” or a “telecommunications service” but not both.<sup>308</sup> That “mutual exclusivity” conclusion is not only reasonable, but compelled by the plain statutory language, which focuses on what the provider is “*offering*” to consumers.<sup>309</sup> And

<sup>307</sup> *FCC v. Fox Television Stations, Inc.*, 129 S. Ct. 1800, 1810-11 (2009) (emphasis added).

<sup>308</sup> *Report to Congress*, 13 FCC Red at 11508 ¶ 13.

<sup>309</sup> The *Brand X* Court held: “*Even if it is linguistically permissible to say that the car dealership ‘offers’ engines when it offers cars, that shows, at most, that the term ‘offer,’ when applied to a commercial transaction, is ambiguous about whether it describes only the offered finished product, or the product’s discrete components as well.*” *Brand X*, 545 U.S. at 990 (emphasis added). In other words, the Court upheld an interpretation of the statute that was consistent with the Commission’s 1998 interpretation on the ground that the statute was “at most” ambiguous. The Court did not—and, to affirm

if a provider offers transmission integrated with data-processing, storage, or retrieval functionalities, it is by definition *not* offering the *sine qua non* of a “telecommunications service”—“transmission . . . without change in the form or content of the information as sent and received.”<sup>310</sup>

Quite apart from the statutory language, the Commission’s mutual-exclusivity position is also the only way to make sense of this statutory scheme as a whole, because the alternative would absurdly extend Title II regulation to much of the Internet and obliterate a key congressional objective: keeping the Internet “unfettered by Federal or State regulation.”<sup>311</sup> Although Free Press and others favoring reclassification appear confused by this point,<sup>312</sup> it is straightforward. Indeed, the Supreme Court made this very point itself in *Brand X*. In that case, the parties advocating a broader scope for Title II—*i.e.*, the ideological precursors to Free Press and Public Knowledge here—had urged the Court to reject the Commission’s mutual-exclusivity position precisely because they wished to impose Title II regulation on broadband Internet access providers. The Supreme Court rejected their argument. As it explained, if the Communications Act were construed to “classif[y] as telecommunications carriers all entities that use

the Commission, did not need to—exclude the possibility that the statute *compelled* that 1998 reading. As discussed in the text, both the statutory text and the broader statutory framework do compel that reading.

<sup>310</sup> 47 U.S.C. § 153(43) (definition of “telecommunications”; emphasis added); see *id.* § 153(46) (defining “telecommunications service” as “the offering of telecommunications for a fee directly to the public . . . regardless of the facilities used”).

<sup>311</sup> 47 U.S.C. § 230(b)(2); see *Brand X*, 545 U.S. at 994-95 (observing that the principal statutory argument for Title II classification “entails mandatory common-carrier regulation of entities that the Commission never classified as ‘officers’ of basic transmission service,” and expressing “doubt that Congress meant to ‘work[] this abrupt shift in Commission policy’”); see generally, *Whitman v. American Trucking Ass’n, Inc.*, 531 U.S. 457, 468 (2001) (“Congress . . . does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions—it does not, one might say, hide elephants in mouseholes.”).

<sup>312</sup> See Letter from Ben Scott, Free Press, to Julius Genachowski, FCC, GN Docket No. 09-191 (filed Feb. 24, 2010) (“*Free Press Feb. 24 Letter*”).

telecommunications inputs to provide information service,” as these parties urged, the Act “would subject to mandatory common-carrier regulation *all information-service providers that use telecommunications as an input to provide information service to the public.*” *Brand X*, 545 U.S. at 994.

The same logical conclusion would be as unavoidable today as it was in 2005 or 1998 because the statutory definitions remain exactly the same. Thus, if the Commission now reversed its 1998 mutual-exclusivity finding and embraced the statutory construction urged by the losing side in *Brand X*, finding that an entity that “offers” an integrated information service simultaneously “offers” a Title II telecommunications service too, it would logically extend common-carrier regulation not only to broadband Internet access providers, but also to the innumerable application and content providers that, in the Court’s words, “use telecommunications as an input to provide information service to the public.”<sup>313</sup> Indeed, that statutory reinterpretation would “subject to common-carrier regulation *non-facilities-based* ISPs that *own no transmission facilities*,”<sup>314</sup> because, as the Court further explained, “the relevant definitions do not distinguish *facilities-based* and *non-facilities-based* carriers.”<sup>315</sup>

<sup>313</sup> *Brand X*, 545 U.S. at 994. Free Press claims that, in *Brand X*, the Supreme Court “explicitly rejected” the very conclusion that the Court in fact drew. *Free Press Feb. 24 Letter* at 2. This claim is insurmountable. The Court held that the position urged by the advocates of Title II reclassification would logically extend Title II regulation to all non-facilities-based Internet providers. The Court cited that logical consequence, and its inconsistency with longstanding federal policy to keep the Internet unregulated, as a basis for upholding the Commission’s conclusion not to classify broadband Internet access as a Title II service. *Brand X*, 545 U.S. at 994-95. What the Court “explicitly rejected,” therefore, was Free Press’s position here: that “information services” with a “telecommunications” component are simultaneously “telecommunications services.”

<sup>314</sup> *Brand X*, 545 U.S. at 994 (emphasis added). Although the *Brand X* Court focused on the fate of “non-facilities-based ISPs” because those were at issue in that case (which concerned an earlier version of “open access” obligations), there would be no statutory basis for distinguishing for these purposes between non-facilities-based ISPs and other types of Internet-based application and content providers. Again, the proposed recharacterization would, in the Supreme Court’s words, reach “*all* information-service providers that use telecommunications as an input to provide information service to the public.”

That result would comport with decades of telecommunications regulation. Contrary to suggestions that the Communications Act of 1934 somehow embodies a “layers” model of regulation that applies common-carriage obligations only to facilities-based providers, facilities ownership has always been irrelevant to the applicability of Title II, and *non-facilities-based* resellers of wireless or long-distance services to the public have always been regulated under Title II.<sup>316</sup> Likewise—and contrary to the suggestion in Justice Scalia’s *Brand X* dissent (see 545 U.S. at 1010-11)—the Commission could not limit the consequences of any reclassification decision by concluding that a provider offers “telecommunications services” only if it owns “downstream” transmission facilities in the last mile to actual customer locations. As an initial matter, the Commission could not adopt that position for the simple reason that the *Brand X* majority rejected it, see *id.* at 994, 997, and the Commission cannot overrule the Supreme Court. In any event, this position contradicts a basic precept of telecommunications law: that ownership of last-mile infrastructure is completely irrelevant to whether a provider is properly characterized as a “telecommunications carrier.” Even apart from the resellers noted above, traditional interexchange carriers like MCI and the legacy AT&T Corp. have always been classified as classic “telecommunications carriers” even where they have relied on “downstream” third-party

*id.* (emphasis added). That category in fact includes all information-service providers, because information services are provided “via telecommunications” by definition. 47 U.S.C. § 153(20).

<sup>315</sup> *Brand X*, 545 U.S. at 997.

<sup>316</sup> See, e.g., Declaratory Ruling and Report and Order, *Regulation of Prepaid Calling Card Services*, 21 FCC Rcd 7290, 7293-94, 7312 ¶¶ 10, 65 (2006) (“all prepaid calling card providers” are subject to regulation as telecommunications carriers”), vacated in part on other grounds by *Qwest Servs. Corp. v. FCC*, 509 F.3d 531 (D.C. Cir. 2007); Order to Show Cause and Notice of Opportunity for Hearing, *Nova Communications, Inc., Affinity Network Incorporated and Nova Limited Partnership*, 18 FCC Rcd 6952, 6953-54 ¶ 3 (2003) (switchless long distance reseller is subject to regulation under Title II); Report and Order, *Regulatory Policies Concerning Resale and Shared Use of Common Carrier Services and Facilities*, 60 FCC 2d 261 ¶ 8 (1976) (“[A]n entity engaged in the resale of communications services is a common carrier, and is fully subject to the provisions of Title II.”), *aff’d sub nom. AT&T v. FCC*, 572 F.2d 17 (2d Cir. 1978); see also *Trans Nat’l Commc’ns, Inc. v. Overlooked Opinions, Inc.*, 877 F. Supp. 35, 38 (D. Mass. 1994) (discussing 1976 order).

networks (such as ILECs) to bridge the last mile between them and their subscribers. Here, if the Commission were to conclude that broadband Internet access includes a “telecommunications service” because it involves the transmission of data, the same conclusion would logically apply to any Internet-based service that involves data transmission, whether or not the service provider itself owns or operates “last mile” facilities.

Akamai’s business model exemplifies how the logic of reclassification would affect the broader Internet. Boasting that it “routinely delivers between ten and twenty percent of all Web traffic,”<sup>317</sup> Akamai provides CDN services to its many thousands of customers by arranging for the transmission of their data to cache servers around the globe. Akamai’s services are free from Title II regulation because, even though they necessarily require massive data transmission, Akamai sells them in conjunction with classic information-service functionality: *i.e.*, the same, caching and data-retrieval services that the *Brand X* Court cited as a sufficient basis for deeming broadband Internet access services outside the scope of Title II. *Brand X*, 545 U.S. at 999-1000.

Suppose, though, that the Commission reinterpreted this statutory scheme so that a functionally integrated information service could (or must) also be (or include) a “telecommunications service.” That statutory logic would apply to Akamai as much as to any broadband provider, no matter who owns the transmission facilities used in the provision of Akamai’s service—because, again, “the relevant definitions do not distinguish facilities-based and non-facilities-based carriers.” *Id.* at 997; *see also* note 314, *supra*. It would therefore make no difference whether Akamai sells CDN services by means of facilities that it owns in fee

<sup>317</sup> Akamai, Customer Stories, <http://www.akamai.com/html/customers/index.html>. Akamai divides its services into two categories: “Enterprise Services,” for its largest and most sophisticated customers, and “Standard Services,” which involve “streamlined implementation of Akamai solutions” and “core services.” Akamai, Enterprise Services, <http://www.akamai.com/html/solutions/enterprise.html>; Standard Services, [http://www.akamai.com/html/solutions/standard\\_services.html](http://www.akamai.com/html/solutions/standard_services.html).

simple, fiber capacity that it leases from others, or third-party transmission services that it uses as wholesale inputs. *See* note 83, *supra*. Under any of those scenarios, Akamai would become subject to Title II for the transmission service it provides, just as a conventional long distance (or wireless) carrier is subject to Title II common-carrier regulation today whether it owns its own transmission facilities, leases them from others, or merely resells other carriers’ services to its own end users.<sup>318</sup>

In this regard, Akamai would hardly be alone. The *Industry Title II Letter* discusses the limitless variety of Internet-based service providers that would suddenly be swept into the Title II regime as the logical result of this statutory reinterpretation, including:

- *VoIP and VoIP-related providers such as Vonage, Skype, and Google Voice*, which would suddenly be treated identically to traditional long-distance carriers.
- *Internet transport companies like Level 3, Savvis, Cogent, and Limelight*, which offer backbone, Internet access, and content-delivery services to thousands of large and small business customers by means of facilities they either own or lease. In a single stroke, the Commission could subject the core of the Internet ecosystem, including all traditionally unregulated peering and transit arrangements, to common-carrier regulation designed for the legacy telephone network.
- *Providers of online video services like Netflix and Hulu* (or photo- or video-sharing services like Photobucket and Facebook) that self-provide or lease transmission capacity to offer content over the Internet.

<sup>318</sup> Free Press offers the following syllogism for the proposition that Level 3, Netflix, Google, Akamai, and other Internet companies could somehow avoid Title II regulation if Free Press’s position became law: (1) these providers purchase some telecommunications services today as inputs for their own services; (2) they are not regulated as Title II carriers today; and (3) therefore they would not be regulated as Title II carriers tomorrow. *Free Press Feb. 24 Letter* at 1-2. If there is logic here, it is impossible to discern. The relevant question is how to characterize the services *these providers offer to the public*, not—as Free Press appears to believe—how to characterize the services they *purchase from others as inputs*. The latter question has no logical bearing on the former. Today, the services these providers offer the public are generally classified as “information services,” even though they contain “telecommunications” inputs, some of which these providers have purchased in the form of “telecommunications services” from others. But the finished services these providers offer the public would have to be reclassified as including a “telecommunications service” if, as Free Press and others demand, the Commission reversed the statutory interpretation it has followed since 1998. That is why Free Press’s position should send off alarm bells in every corner of the Internet ecosystem.



- *Providers of e-readers, like Amazon.com (the Kindle) and Barnes & Noble (the Nook), and providers of GPS devices, that include bundled 3G connectivity in the purchase price of their devices.*<sup>319</sup>
- *Companies like Google that provide advertising-supported Internet search services and arrange for the transmission of search results and advertising messages to end users.* Google charges fees to countless businesses in exchange for a critical service that Google dominates: the paid and tiered transmission of content chosen by those businesses to end users who use Internet search engines. Any statutory reinterpretation that rejects the 1998 “mutual exclusivity” conclusion would necessarily convert Google into one of the world’s largest common carriers—indeed, the most globally dominant provider of telecommunications services in history. Under controlling law, it would of course make no difference that Google has few “last-mile” transmission facilities to supplement its unrivaled backbone/CDN infrastructure, just as an absence of “local” facilities did not shield the post-divestiture AT&T Corp. from dominant-carrier regulation as an interexchange carrier in the 1980s and early 1990s.
- For similar reasons, *providers of cloud-computing services, like Amazon.com, that enable the transmission of customer data to and from cloud computing server farms.*

Under the proposed reclassification, all of those providers (among many others) could suddenly face a broad and complicated range of unfamiliar regulatory duties under Title II with respect to the transmission function they “offer” to consumers. These duties could include the pricing, interconnection, and compulsory-service obligations of Section 201; the nondiscrimination obligations of Section 202(a); the complaint procedures of Section 208; the service-discontinuation provisions of Section 214; the interconnection and resale obligations of Section 251(a); various recordkeeping, reporting, and accounting requirements; and, for any provider deemed “dominant,” the compulsory tariffing provisions of Sections 203, 204, and 205.

These are not new concerns. As discussed, the Supreme Court flagged them in 2005, and the Commission has recognized them since 1998. As the Commission explained in the *Report to Congress*, if it were to “interpret[] the statute as breaking down the distinction between information services and telecommunications services, so that some information services were

<sup>319</sup> *Industry Title II Letter* at 10-12 & n.39.

classified as telecommunications services, it would be difficult to devise a sustainable rationale under which *all, or essentially all, information services did not fall into the telecommunications service category.*<sup>320</sup> The Commission wisely rejected that outcome because it feared, correctly, that any “presumption in favor of Title II regulation” would “chill innovation” and thwart “the deregulatory and procompetitive goals of the 1996 Act.”<sup>321</sup> It should heed that same concern now.

### 3. The Commission Should Avoid Confusing the Statutory Classification Issue Presented Here with the Distinct Non-Statutory Issues Presented Under the Computer Inquiry Rules.

As in the *Brand X* litigation, some advocates of regulatory intervention have muddled the issues by confusing the statutory classification question with the separate regulatory distinctions—between “facilities-based” and “non-facilities-based” providers—that the Commission drew in connection with the *Computer Inquiry* rules.<sup>322</sup> The Commission should be careful to avoid this confusion.

Designed for the monopoly telephone world of the 1970s and 1980s, the *Computer Inquiry* rules required certain facilities-based providers—wireline telcos, but not cable or wireless companies—to “unbundle” the transmission component of any information service they

<sup>320</sup> *Report to Congress*, 13 FCC Red at 11529 ¶ 57 (emphasis added).

<sup>321</sup> *Id.* at 11525 ¶ 47.

<sup>322</sup> See, e.g., Susan Crawford, *An Internet for Everybody*, N.Y. Times, Apr. 10, 2010, <http://www.nytimes.com/2010/04/11/opinion/11crawford.html?scp=2&sq=susan%20crawford&st=ese> (“Until August 2005, the commission requiring high-speed access to the Internet over telephone lines not discriminate among Web sites.”); Gigi Sohn, *It’s Time to Save the Broadband “Cop on the Beat,”* Public Knowledge Blog, Mar. 15, 2010, <http://www.publicknowledge.org/node/2957> (“Prior to the 2005 Brand X decision, which upheld the FCC’s decision to regulate broadband Internet access services under Title I, the FCC regulated only those services under Title II.”); Susan Crawford, *Plain-language explanation—part I*, Susan Crawford Blog, Mar. 2, 2010, <http://scrawford.net/blog/plain-language-explanation-part-i/1314> (“[B]ecause telephone companies had been required to offer pure transmission (general-purpose, basic transport) historically, they were telecommunications (basic) providers even when what they were selling was DSL access to the Internet.”).

offered and offer it as a tariffed telecommunications service. They then sold that service not to consumers, but to other information service providers, which incorporated that transmission as an input into the broadband Internet access services that they in turn sold to consumers as unified "information services."<sup>323</sup> Repeating a mistake made in some passages in Justice Scalia's *Brand X* dissent, some recent commentary misunderstands how these arrangements operated. For example, Justice Scalia asserted that consumers who purchase DSL-based broadband Internet access must "get both someone to provide them with a physical connection and someone to provide them with applications and functions such as e-mail and Web access."<sup>324</sup> In fact, even under the *Computer Inquiry* regime, a consumer purchased only one service from a given ISP, which may or may not have been the same provider that supplied the underlying DSL transport (i.e., the input into the retail Internet access service) behind the scenes. As a result, broadband consumers did not then, just as they do not now, purchase "separate" DSL transmission and Internet access services in virtually any context.<sup>325</sup> Instead, they have always purchased a single

<sup>323</sup> See *Cable Modem Order*, 17 FCC Red at 4825 ¶ 43 (discussing rules); *Wireline Broadband Order*, 20 FCC Red at 14875-77 ¶¶ 41-43 (same).

<sup>324</sup> *Brand X*, 545 U.S. at 1009 (Scalia, J., dissenting). In a footnote that is difficult to reconcile with the quoted passage, Justice Scalia acknowledged that, "[i]n the DSL context, the physical connection is generally resold to the consumer by an ISP that has taken advantage of the telephone company's offer." *Id.* at 1009 n.3. He added: "The consumer knows very well, however, that the physical connection is a necessary component for Internet access which, just as in the dial-up context, is not provided by the ISP." *Id.* That proposition is both factually questionable and legally irrelevant. First, it is by no means clear that consumers know or care which inputs an ISP self-provides and which it obtains from others. More important, the proposition is legally irrelevant because the issue is not what consumers "know," but what they perceive as being "offered." For example, most consumers "know" that auto manufacturers rely on third parties to make the tires on a car, the upholstery in the seats, and the raw steel used to make the chassis. But in the *Brand X* majority's words (*id.* at 990), it would be "odd" indeed to say that auto dealers "offer" consumers tires, upholstery, and steel when they offer them a finished car.

<sup>325</sup> Today, some rural telcos still voluntarily offer DSL transmission functionality on a common-carriage basis to ISPs, which in turn use that functionality as an input into the retail Internet access services they sell to consumers. Again, the relevant question here is the classification of the latter services, not the transmission inputs. And of course an information service does not become (or contain) a "telecommunications service" simply because the information service provider bought a "telecommunications service" as an input.

inextricable bundle of transport and data-processing functionality, and that retail bundle has always been classified as a unitary "information service" without a "telecommunications service" component.

As discussed, the *Computer Inquiry* rules required any "facilities-based" wireline telco that offered a retail information service to offer the transmission components of that service as a wholesale "telecommunications service." As the *Brand X* Court explained, however, that regulatory obligation had nothing to do with the characterization of the underlying retail services that triggered this obligation, which were always considered "information services" (known as "enhanced services" before the 1996 Act). In the Court's words, "[t]he differential treatment of facilities-based carriers was . . . a function not of the definitions of 'enhanced-service' and 'basic service,' but instead of a choice by the Commission to regulate more stringently, in its discretion, certain entities that provided enhanced service. *The Act's definitions, however, parallel the definitions of enhanced and basic service, not the facilities-based grounds on which that policy choice was based.*"<sup>326</sup>

In short, the facilities-based/non-facilities-based distinction inherent to the *Computer Inquiry* rules assumed significance only after the Commission concluded that a particular service was properly characterized as an "information service." The distinction had (and has) no logical bearing on the antecedent question of whether a service should be so characterized in the first place. And the Commission has never found that the retail broadband Internet access services that wireline providers sell to end users are Title II "telecommunications services" or that, in selling those retail services, those providers should be regulated as common carriers. Those

<sup>326</sup> 545 U.S. at 996 (emphasis added).

retail services are unitary information services and always have been, and they have always fallen outside the scope of Title II.<sup>327</sup>

The *Computer Inquiry* rules also have nothing much to do with net neutrality, because they addressed a completely different set of regulatory concerns.<sup>328</sup> The rules entitled independent ISPs such as Earthlink and AOL to become the *telcos'* customers by purchasing wholesale transmission capacity from them. These alternative ISPs provided the same basic information-service functionalities that broadband Internet access providers offer today, including DNS look-up and email, and they purchased transmission lines from the telephone companies and included them as inputs in the finished services they sold to consumers. In contrast, the proposed “nondiscrimination” rule (as described in paragraphs 106 and 107 of the NPRM) would ban application and content providers from entering into entire categories of commercial arrangements with broadband providers.

Finally, the *Computer Inquiry* rules should not be revived even if they could serve some discernible “net neutrality” objective, as some pro-regulation commentators erroneously assume they do. Again, these rules were designed in and for the one-wire monopoly environment of the

<sup>327</sup> In a recent, cryptic *ex parte* letter, Google repeatedly distinguishes between “broadband transmission and connectivity services.” Letter from Richard S. Whitt, Google, to Marlene H. Dortch, FCC, GN Docket Nos. 09-51, 09-191, WC Docket No. 07-52, at 1 (filed Mar. 22, 2010); see also *id.*, *Potential Basis for Government Oversight of Broadband Networks*, attachment (distinguishing between “Net Access” and “Broadband”). Again, A&T and other broadband Internet access providers do not offer consumers “broadband transmission” services detached from the enhanced functionalities needed to access the Internet, and few consumers would buy such services if they were offered.

<sup>328</sup> The Commission adopted those rules in the early 1980s, when legacy telephone companies owned essentially all of the facilities needed to transmit data traffic. The Commission never applied them to cable companies and, in 2005, the Commission formally eliminated these rules for wireline broadband Internet access services, explaining that, as the broadband market had evolved over the preceding two decades, telephone companies not only faced competition, but lagged behind their chief intermodal competitors (cable modem providers). *Wireline Broadband Order*, 20 FCC Red at 14875 ¶ 41 (“We decline to continue to impose any *Computer Inquiry* requirements on facilities-based carriers in their provision of wireline broadband Internet access service.”).

1980s, and the Commission could not articulate any defensible rationale for inflicting them on any class of providers in the competitive broadband Internet access market of today.<sup>329</sup> And it is altogether unclear how, simply as an engineering matter, the Commission could force all broadband Internet access providers, including cable modem systems and wireless networks, to “unbundle” the transmission components of shared network infrastructure.

#### 4. Forbearance Could Not Eliminate the Harms to the Internet Caused by Expanding the Scope of Title II Regulation.

Some have argued that the Commission could alleviate the radical policy consequences of reclassification—for broadband providers and the rest of the Internet ecosystem—if it selectively invoked its statutory forbearance authority for some providers and some services.<sup>330</sup> This argument, too, has a back-to-the-future quality about it, because the Commission considered and rejected *this very argument* in 1998. As it explained:

An approach in which a broad range of information service providers are simultaneously classed as telecommunications carriers, and thus presumptively subject to the broad range of Title II constraints, could seriously curtail the regulatory freedom . . . important to the healthy and competitive development of the enhanced-services industry. . . . In response to this concern, Senators Stevens and Burns maintain that the Commission could rely on its forbearance authority under Section 10 of the Act to resolve any such problems. . . . *Notwithstanding the possibility of forbearance*, we are concerned that including information service providers within the “telecommunications carrier” classification would effectively impose a presumption in favor of Title II regulation of such providers.

<sup>329</sup> *Cable Modem Order*, 17 FCC Red at 4802, 4825 ¶¶ 6, 43-44 (discussing competitiveness of broadband marketplace and explaining why it would be inappropriate to apply the *Computer Inquiry* rules); *Wireline Broadband Order*, 20 FCC Red at 14876-98 ¶¶ 42-85 (offering numerous reasons for eliminating the *Computer Inquiry* rules, including the competitiveness of the market); *id.* at 14876 ¶ 42 (“[T]he *Computer Inquiry* obligations are inappropriate and unnecessary for today’s wireline broadband Internet access market. . . . [T]he *Computer Inquiry* rules were developed before separate and different broadband technologies began to emerge and compete for the same customers. Further, these rules were adopted based on assumptions associated with narrowband services, single purpose network platforms, and circuit-switched technology.”) (internal footnotes omitted).

<sup>330</sup> See, e.g., Public Knowledge Comments at 21; CDT Comments at 22; see 47 U.S.C. § 160 (authorizing the Commission to forbear from the enforcement of certain regulatory requirements against certain classes of providers upon making certain findings).

Such a presumption would be inconsistent with the deregulatory and procompetitive goals of the 1996 Act. In addition, uncertainty about whether the Commission would forbear from applying specific provisions could chill innovation.<sup>331</sup>

Moreover, although the Commission has forbore from certain Title II obligations for certain providers, it has stated that it will *not* forbear from Sections 201, 202, and 208, reasoning that those provisions “codify[] the bedrock consumer protection obligations of a common carrier,”<sup>332</sup> even non-dominant ones.<sup>333</sup> Those provisions alone, however, would convert thousands of previously unregulated Internet companies—ranging from Akamai and Skype to Google, Netflix, and Amazon—into “common carriers” subject to unaccustomed claims of “unjust” rates or “unreasonable” discrimination whenever they arrange for the provision of transmission functionality to their customers.<sup>334</sup>

In any event, the Commission cannot forbear on a whim; instead, it must find that specific statutory criteria are satisfied. Forbearance disputes have always been subject to years of administrative and then appellate litigation, and that would certainly be true of the unprecedented tsunami of forbearance requests the Commission would invite with any reclassification decision. The ensuing uncertainty about the ultimate resolution of those requests would, in the understated words of the 1998 *Report to Congress*, “chill innovation” for many

<sup>331</sup> *Report to Congress*, 13 FCC Red at 11524-25 ¶¶ 46-47 (emphasis added). The Commission further explained that, despite the prospect of forbearance, any classification of information service providers as “telecommunications carriers” would still “encourage states to impose common-carrier regulation of such providers,” since Section 10 does not itself “preclude a state from imposing requirements derived from state law,” and could further encourage “foreign regulators” to “impos[e] the full range of telecommunications regulation on information services,” including “market access restrictions or above-cost accounting rates.” *Id.* at 11525-26 ¶ 48 (emphasis added).

<sup>332</sup> Mem. Op. and Order, *PCIA’s Petition for Forbearance for Broadband Personal Communications Services*, 13 FCC Red 16857, ¶ 15 (1998).

<sup>333</sup> *Id.* ¶¶ 15-31; see also Mem. Op. and Order, *Qwest Petition for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Broadband Services*, 23 FCC Red 12260, 12291-92 ¶ 64 (2008).

<sup>334</sup> 47 U.S.C. §§ 201(b), 202(a).

years.<sup>335</sup> And even if the courts affirmed the Commission’s forbearance decisions, those decisions would be vulnerable to reversal by subsequent Commissions because they would be highly context-specific and subjective. Industry and Wall Street concern about that prospect would only be exacerbated by the event that would give rise to this new generation of forbearance requests: this Commission’s hypothesized willingness to jettison a decade of Supreme-Court-approved precedent and disrupt a huge sector of the economy by reclassifying broadband Internet access service under Title II.

##### 5. Reclassification Would Not Authorize the Commission to Impose Net Neutrality Regulation in Any Event.

In a final irony, even if the Commission *did* reclassify broadband Internet access service as Public Knowledge and others have proposed, it would not achieve a key policy objective motivating Public Knowledge’s proposal: a statutory source of authority for “net neutrality” regulation as envisioned in the NPRM. If anything, reclassification would cut in the opposite direction.

First, reclassification would underscore the invalidity of the NPRM’s proposed flat ban on certain QoS-enhancement services—both (1) because the rule would outlaw priority-tiering services that have always been considered *non*-discriminatory (and permissible) under traditional common-carrier precedent and (2) because the rule lacks the “unreasonable” qualifier that Congress deliberately attached to Title II’s “discrimination” ban. See Section II.A, *supra*. For example, if Title II applied here, a content provider that has purchased a QoS-enhancement service might complain that the seller (a broadband provider) has “unreasonably discriminated” against it under Section 202(a) if the seller has sold the *same* service to another, similarly

<sup>335</sup> *Report to Congress*, 13 FCC Red at 11525 ¶ 47.

situated content provider at a lower price. But neither a content provider nor anyone else could complain that the broadband provider has engaged in “discrimination,” let alone “unreasonable” discrimination, if it provides end-to-end QoS enhancements *only to those content providers that wish to purchase them* because of the QoS-sensitivity of their content. *See* Section II.A, *supra*.<sup>336</sup>

Second, Title II reclassification would create no new legal basis for enforcing even the existing principles of the *Internet Policy Statement*; it would simply regenerate the Commission’s existing jurisdictional challenges in more complex form. This point is as important as it is often overlooked. If broadband Internet access service were reclassified as proposed, broadband providers would presumably be characterized as providing two related sets of services: various information services (such as, among other possibilities, DNS look-up, email, protocol conversion, and caching) and their associated “telecommunications services” (the transmission components).<sup>337</sup> Of these putative component services, only a “telecommunications service” could be subject to Title II regulation because, as Congress determined, “[a] telecommunications carrier shall be treated as a common carrier under this Act *only to the extent that it is engaged in providing telecommunications services*,” as distinct from information services.<sup>338</sup> Yet any broadband provider that hypothetically chose to block particular websites (whether for good or bad reasons) could do so by means of its DNS look-up functionality or

<sup>336</sup> For that reason among others, it is unclear what Public Knowledge hopes to accomplish by inviting the Commission to reclassify QoS-enhancement services sold to content providers as “telecommunications services.” *See* Public Knowledge Comments at 15-17. In any event, these Internet transport, caching, and data-manipulation services have been provided for many years by such unregulated information service providers as Akamai and Limelight, who would surely be surprised to discover themselves subject for the first time to Title II regulation. Public Knowledge appears simply not to have thought through this or any of the other many unintended consequences of its proposal.

<sup>337</sup> 47 U.S.C. §§ 153(20), (46).

<sup>338</sup> 47 U.S.C. § 153(44) (emphasis added).

some “higher layer” mechanism—which, under any approach to this statutory scheme, would have to be considered an “information service” beyond the reach of Title II regulation. The same would be true of, for example, an ISP’s decision to deploy its caching capabilities differently, depending on the source or nature of various content and applications.

In short: Reclassifying broadband Internet access service under Title II would serve no “net neutrality” objective even as it threatens to inflict common-carrier regulation on the Internet as a whole. It is a terrible idea.

### C. Adoption of the Proposed Rules Would Be Arbitrary and Capricious.

As discussed in all of our submissions in these dockets, the Commission’s proposed rules would be arbitrary and capricious because, among their other defects:

- there is no market problem they are needed to solve;
- they would be adopted to promote a “neutrality” ideal that has never accurately characterized the commercial Internet in the first place;
- they would be poorly tailored to address any markets problem that might someday arise;
- the harms they would cause to consumers and competition would far exceed any harms they might plausibly be thought to prevent;
- there is no persuasive reason to adopt them now rather than later, in the unlikely event some problem does arise; and
- any application of “net neutrality” rules to wireless providers in particular would be irrational not only for those reasons, but also because it would violate the Commission’s own commitment to keep wireless providers unregulated while the C-Block “openness” experiment plays itself out—a commitment on which those providers relied when paying billions of dollars extra for non-C-Block spectrum.

For those reasons and the others addressed throughout our submissions, the proposed rules would violate the APA’s ban on “arbitrary and capricious” agency orders. *See, e.g.,* AT&T Comments at 223-35.

**D. The Rules Would Violate the First Amendment and, at a Minimum, the Rule of Constitutional Avoidance.**

As AT&T and many others have explained, the proposed rules would violate the First Amendment rights of broadband access providers, both in their role as content providers offering their own or licensed content *and* in their role as carriers of the content of others. As we show below, the contrary arguments made by net regulation advocates are unpersuasive. But as a preliminary matter, these rules would be unlawful even if both sides had plausible arguments. In the absence of specific and unambiguous statutory authorization, agency rules violate the doctrine of constitutional avoidance even if they merely raise substantial *questions* under the First Amendment.<sup>339</sup> Indeed, the “constitutional avoidance canon of statutory interpretation trumps *Chevron* deference,” because Congress is presumed not to have delegated close constitutional calls to administrative agencies.<sup>340</sup> Here, of course, there is no specific statutory directive that unambiguously authorizes the Commission to adopt the proposed rules, but there are nonetheless very substantial questions about the constitutional validity of those rules. For that reason alone, the proposed rules would be unlawful.

In any event, the Commission’s proposed rules would in fact violate the First Amendment, as discussed in our opening comments (at 235–44). Although the rules would be subject to strict scrutiny for the reasons addressed below, they would not survive even intermediate scrutiny because they are not narrowly tailored to address a demonstrated problem.

<sup>339</sup> See *Edward J. DeBartolo Corp. v. Florida Gulf Coast Bldg. & Constr. Trades Council*, 485 U.S. 568, 575 (1968); see also Verizon Comments at 109–11.

<sup>340</sup> *Univ. of Great Falls v. NLRB*, 278 F.3d 1335, 1340–41 (D.C. Cir. 2002).

It is hornbook law that speculative harm cannot justify an infringement of protected speech.<sup>341</sup> As AT&T has previously explained, the proposed rules here cannot be said to “materially advance[] an important or substantial interest by redressing past harms or preventing future ones”<sup>342</sup> because the record contains no evidence of a real-world problem that these rules could possibly address.<sup>343</sup> And the Commission likewise could not defend the rules as narrowly tailored to avoid “burden[ing] substantially more speech than is necessary to further the government’s legitimate interests”<sup>344</sup> because, again, *no* restrictions on free expression are necessary to further such interests. As discussed, the only two net neutrality “violations” brought to the Commission’s attention since the advent of broadband were resolved voluntarily without the proposed rules.<sup>345</sup> The successful resolution of those incidents under the existing regime confirms that no experimental new forms of regulatory intervention are necessary. Again, the proposed “nondiscrimination” rule would be a particularly inapt response to those incidents because they did not even involve the type of conduct—the sale of QoS-enhancing services—that the rule would prohibit.<sup>346</sup>

<sup>341</sup> See *Edenfield v. Fane*, 507 U.S. 761, 770–71 (1993); *Interactive Digital Software Ass’n v. St. Louis County*, 329 F.3d 954, 959 (8th Cir. 2003); *Fox Television Stations, Inc. v. FCC*, 280 F.3d 1027, 1041 (D.C. Cir. 2002). See also AT&T Comments at 237–38 (containing a more comprehensive discussion of the FCC’s duty to identify record evidence demonstrating a likelihood of harm).

<sup>342</sup> AT&T Comments at 237 (quoting *Satellite Broad. & Comm’n’s Ass’n v. FCC*, 275 F.3d 337, 355–56 (4th Cir. 2001)).

<sup>343</sup> “The FCC must show a record that validates the regulations” it wishes to adopt. *Time Warner Entm’t Co. v. FCC*, 240 F.3d 1126, 1130 (2001).

<sup>344</sup> *Turner Broad. Sys., Inc. v. FCC*, 512 U.S. 622, 662 (1994) (quoting *Ward v. Rock Against Racism*, 491 U.S. 781, 799 (1989)).

<sup>345</sup> See Section I, *supra* (discussing the *Madison River* and *Comcast* controversies and the two-year-old RCN non-controversy, settled without the Commission’s involvement).

<sup>346</sup> See Section I, *supra*.

Moreover, quite apart from these defects, the proposed rules would be fatally *underinclusive* as well.<sup>347</sup> First, because the proposed rules would *not* preclude the use of third-party CDNs to give some content and application providers enormous advantages over others, they would be entirely ineffective in furthering the Commission's stated purpose: keeping the Internet from "distinguish[ing] between a budding entrepreneur in a dorm room and a Fortune 500 company." NPRM ¶ 4. As they do now, well-financed content and application providers would still have enormous performance advantages over poorly financed entrepreneurs, including those in "dorm room[s]," and the Commission would succeed only in foreclosing competitive options for the latter if they cannot or do not wish to purchase state-of-the-art CDN services. *See* Section II.D, *supra*. And the rules would be fatally underinclusive in a second respect as well: They would enforce strict "neutrality" obligations in a competitive portion of the Internet ecosystem while altogether ignoring the much more serious bottleneck concerns posed by powerful Internet gatekeepers such as Google.

Google, Free Press, and others claim, however, that broadband Internet access is not protected First Amendment "speech." CDT, for example, argues that broadband providers are merely "communications conduits" that exercise no editorial control and cannot claim First Amendment protection. CDT Comments at 31. Free Press likewise insists that Internet service providers do not engage in conduct that "ris[es] to the level of speech." Free Press Comments at 137. As an initial matter, that argument rests on a false factual premise, because broadband providers like AT&T do in fact own or lease their own content and are thus speakers in their own

<sup>347</sup> *See* AT&T Comments at 240 (quoting *Nat'l Fed'n of the Blind v. FCC*, 420 F.3d 331, 345 (4th Cir. 2005) ("Regulation of speech 'can violate the First Amendment by restricting *too little* speech, as well as *too much*.'") (emphasis added)); *see also Turner*, 512 U.S. at 659 ("Regulations that discriminate among media, or among different speakers within a single medium, often present serious First Amendment concerns.").

right. *See* AT&T Comments at 236 n.517. But the Google/Free Press argument fails on more fundamental levels as well.

First, their argument is wholly beside the point, since the proposed rules would obviously implicate—and violate—the First Amendment rights of *any content and application providers* that want to provide high-quality services over the broadband platform. For example, the Motion Picture Association of America (representing many individual content providers) and Amazon.com have indicated an interest in entering into creative arrangements with broadband access providers to offer enhanced services to customers. Motion Picture Ass'n of Am. Comments at 18; Amazon.com Comments at 4. As the Supreme Court has repeatedly held, the First Amendment protects not only the right to speak, but also the right of speakers "to select what they believe to be the most effective means for so doing."<sup>348</sup> In other words, if a content provider wishes to pay extra to give its viewers a particularly high-quality and vivid form of Internet content, the government cannot constitutionally forbid it to do so, just as the government cannot forbid a newspaper to publish high-resolution color photographs in order to level the playing field for rival newspapers.

Second, in a broad range of circumstances, broadband providers do exercise significant editorial control as providers of Internet access services—as Congress itself recognized in enacting Section 230(c)(2) (*see* Section VII.A, *supra*). For example:

- a wireless broadband provider may wish to package its service with particular applications (such as the iPhone App Store) or to restrict certain applications or content (such as "Baby Shaker" or pornography) because of taste, the average age of the user class, or other concerns;

<sup>348</sup> *Meyer v. Grant*, 486 U.S. 414, 424 (1988). *See also Riley v. Nat'l Fed'n of the Blind*, 487 U.S. 781, 790-91 (1988) ("[T]he government, even with the purest of motives, may not substitute its judgment as to how best to speak for that of speakers and listeners. . . .").

- the home page of an Internet access service may feature specific content, such as the Yahoo! features on AT&T's home page;
- a provider might wish to offer a children-only or senior-only service, or a service marketed to a specific type of enterprise; or
- a provider might wish to offer special-purpose devices, such as the next Amazon Kindle or Garmin GPS device, which, under the proposed rules, would have to contain either unlimited Internet connectivity or none at all.

See AT&T Comments at 98, 106-07, 181-82; see also Verizon Comments at 112. By foreclosing some or all of these options, the proposed rules would violate the constitutional (and statutory) right of broadband providers to engage in editorial discretion.<sup>349</sup> As Judge Kavanaugh recently explained, a distributor of content is "constitutionally entitled to exercise 'editorial discretion over which [material] to include in its repertoire'"—and thus the "Government cannot compel . . . distributors to operate like 'dumb pipes' or 'common carriers' that exercise no editorial control."<sup>350</sup>

Google and other net regulation advocates argue that, despite any impact the net neutrality rules might have on broadband providers' (and others') speech, the FCC has "ample authority to enforce the public's 'collective right' to have communications media 'function consistently with the ends and purposes of the First Amendment,'" and the courts will uphold "government actions intended to ensure that the people 'retain their interest in free speech[.]'"<sup>351</sup>

<sup>349</sup> While broadband service providers may include multiple messages in their service offerings, this does not preclude classification of Internet service providers as First Amendment speakers. See *Hartley v. Irish-American Gay, Lesbian and Bisexual Group of Boston*, 515 U.S. 557, 568-70 (1995) ("combining multifarious voices, or . . . failing to edit [one's] themes to isolate an exact message" "does not forfeit constitutional protection").

<sup>350</sup> *Cablevision Sys. Corp. v. FCC*, 597 F.3d 1306, 1321-22 (D.C. Cir. 2010) (Kavanaugh, J., dissenting) (citation omitted). The *Cablevision* majority resolved the First Amendment issue on threshold procedural grounds and thus did not address it on the merits.

<sup>351</sup> Google Comments at 49-50. See also Public Knowledge Comments at 17 (asserting that nondiscrimination supports First Amendment values "by facilitating the free flow of information") (citing *Turner*, 512 U.S. at 663).

This is complete nonsense. For more than three decades, the Supreme Court has made clear that rules designed to suppress some voices in order to "enhance the relative voices" of others (1) are inherently content-based and (2) "contradict basic tenets of First Amendment jurisprudence."<sup>352</sup> Thus, although the NPRM likewise seeks to justify these rules as forcing broadband providers to accommodate a diverse range of voices,<sup>353</sup> that rationale would not *relax* the level of constitutional scrutiny; it would ensure *strict scrutiny*.<sup>354</sup> "The First Amendment is not an authorization for the Government to restrict the speech of some so as to enhance or equalize the influence of others. Indeed, the Supreme Court has described such a theory as 'wholly foreign to the First Amendment.'"<sup>355</sup>

To support its contrary proposition, Google relies heavily on the Supreme Court's 1969 decision in *Red Lion Broadcasting v. FCC*. Google's need to rely on that embattled and inapposite precedent is highly instructive. The *Red Lion* Court upheld the Commission's "fairness doctrine," which required a broadcaster to give airtime to opposing viewpoints on

<sup>352</sup> *First Nat'l Bank of Boston v. Bellotti*, 435 U.S. 765, 791 n.30 (1978); see also AT&T Comments at 243 n.583 (quoting *Turner*, 512 U.S. at 655 (must-carry rules are not content-based because they "do not grant access to broadcasters on the ground that the content of broadcast programming will counterbalance the messages of cable operators") (emphasis added)); *Citizens United v. FEC*, 130 S. Ct. 876, 921 (2010) (Roberts, J., concurring) (quoting *Buckley v. Valeo*, 424 U.S. 1, 48-49 (1976) ("[R]estrict[ing] the speech of some elements of our society in order to enhance the relative voice of others is wholly foreign to the First Amendment[.]").

<sup>353</sup> See NPRM ¶¶ 70, 75-78, 116; AT&T Comments at 241-43.

<sup>354</sup> See *Turner*, 512 U.S. at 642 ("Our precedents thus apply the most exacting scrutiny to regulations that suppress, disadvantage, or impose differential burdens upon speech because of its content").

<sup>355</sup> *Cablevision*, 597 F.3d at 1328 (Kavanaugh, J., dissenting) (quoting *Buckley*, 424 U.S. at 49). See also *Meyer*, 486 U.S. at 424 (same); *Pacific Gas & Elec. Co. v. Pub. Utils. Comm'n*, 475 U.S. 1, 20 (1986) (citing *Bellotti*, 435 U.S. at 785-86). Judge Kavanaugh likewise noted that the government's desire to ensure that consumers have the same access to content over every delivery platform is not a legitimate basis for the Commission to interfere with the platform owners' First Amendment rights, for the same reasons that the government could not justify "telling Barnes & Noble what publisher's books it had to sell[.]" *Cablevision*, 597 F.3d at 1328 (Kavanaugh, J., dissenting).



issues previously addressed on its channel.<sup>356</sup> The Court upheld that regulation under a more lenient standard of review only because, in 1969, the broadcast spectrum was viewed as so inherently "scarce" that the government had to grant limited rights of private access to it in order to ensure genuine public debate.<sup>357</sup> But no one could credibly suggest that *the Internet* has any of the "scarcity" properties that underlay the *Red Lion* decision. Any Internet connection allows end users to reach *millions* of information sources worldwide, not the three or four broadcast television channels available locally when *Red Lion* was decided. Indeed, the Supreme Court has already so held. As it has explained, in refusing to apply a lower standard of scrutiny to Internet speech restrictions: "[U]nlike the conditions that prevailed when Congress first authorized regulation of the broadcast spectrum, the Internet can hardly be considered a 'scarce' expressive commodity."<sup>358</sup>

Accordingly, the proposed rules would be subject to strict scrutiny, and they would fail that test for all the same reasons that, as discussed above, they would fail intermediate scrutiny.

**E. The Proposed Rules Would Violate the Takings Clause and, at a Minimum, Exceed the Commission's Authority by Exposing the Public Fisc to a Substantial Risk of Just-Compensation Liability.**

As discussed in our opening comments, the proposed rules raise significant Takings Clause concerns because they threaten to impose an uncompensated taking of property on

broadband Internet access providers.<sup>359</sup> This is particularly the case in the wireless broadband context, where providers paid *billions* of dollars for spectrum in reliance on the Commission's express assurance that such spectrum would remain unencumbered by the type of "open platform" requirements imposed on the C Block 700 MHz spectrum, at least until the results of that experiment—which has not yet even begun—are in. *See* Section III.B, *supra*; *see also* AT&T Comments at 152. As the D.C. Circuit has explained, the Commission may not adopt policies that expose the public fisc to the risk of just-compensation liability unless Congress has explicitly authorized it to adopt those policies.<sup>360</sup> And as we have discussed, Congress has not remotely authorized the Commission to adopt the policies at issue here.

<sup>356</sup> Google Comments at 49-50 (citing *Red Lion Broad. Co. Inc. v. FCC*, 395 U.S. 367 (1969)).  
<sup>357</sup> *Red Lion*, 395 U.S. at 390 ("Because of the scarcity of radio frequencies, the Government is permitted to put restraints on licensees in favor of others whose views should be expressed on this *unique* medium.") (emphasis added).  
<sup>358</sup> *Reno v. ACLU*, 521 U.S. 844, 870 (1997). *See also Turner*, 512 U.S. at 637 ("[T]he rationale for applying a less rigorous standard of First Amendment scrutiny to broadcast regulation, whatever its validity in the cases elaborating it, does not apply in the context of cable regulation."); *Cablevision*, 597 F.3d at 1328 (Kavanaugh, J., dissenting) ("[W]hen a market is competitive, direct interference with First Amendment free speech rights in the name of competition is typically unnecessary and constitutionally inappropriate.")

<sup>359</sup> AT&T Comments at 244-48.

<sup>360</sup> *See Bell Atl. Tel. Cos. v. FCC*, 24 F.3d 1441, 1445-47 (D.C. Cir. 1994) (explaining that the constitutional avoidance doctrine, and not *Chevron* deference, should be applied in reviewing the FCC's decision to require physical collocation, and holding: "Applying the strict test of statutory authority made necessary by the constitutional implications of the Commission's action, we hold that the Act does not expressly authorize an order of physical co-location, and thus the Commission may not impose it."). The doctrine of constitutional avoidance limits the Commission's ability to adopt rules that would raise takings issues in an "identifiable class of cases," as the proposed rules would. *Id.* at 1145 ("Within the bounds of fair interpretation, statutes will be construed to defeat administrative orders that raise substantial constitutional questions.")

## CONCLUSION

For the foregoing reasons, the Commission should retain the existing four principles but not harden them into prescriptive rules; it should add neither a rule nor a principle resembling the strict "nondiscrimination" rule proposed here; it should consider adopting a "transparency" principle but orient it to the information consumers need to make informed choices among providers; and it should allow the wireless broadband marketplace to continue evolving unimpeded by regulatory intervention.

D. Wayne Watts  
Paul K. Mancini  
Gary L. Phillips  
Jack S. Zinman  
AT&T INC.  
1120 20th Street NW, 10th Floor  
Washington, D.C. 20036  
202-457-3053 (phone)  
202-457-3073 (facsimile)

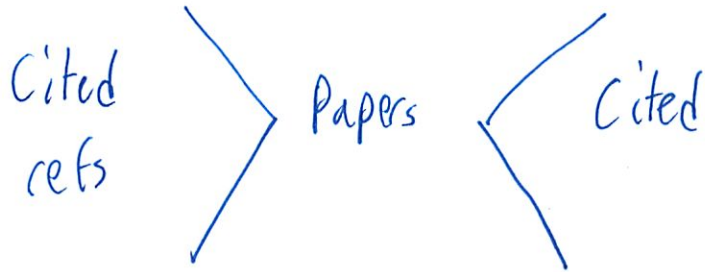
Respectfully submitted,

/s/ Jonathan E. Nuechterlein  
Jonathan E. Nuechterlein  
Lynn R. Charyfan  
Heather M. Zachary  
Anne H. Sherwood  
WILMER CUTLER PICKERING  
HALE & DORR LLP  
1875 Pennsylvania Ave., NW  
Washington, D.C. 20006  
202-663-6850 (phone)  
202-663-6363 (facsimile)

April 26, 2010

For Thur's Paper on citation

Hear about this week in recitation or next



Most papers never cited

Only 7% have  $\geq 1$  citation

Claims by looking at citations can see map of controversy

No specific discipline they pull papers from

Very basic stats network analysis

Tells us level of consensus of field

For short term can use web of knowledge

- from the 1950s

- journal must be serious

---

insider trader is replacing law w/ economics

- a new breed of lawyers trained in economist

2

Diff groups saying diff things for each aspect of  
Controversy

Timeline of incoming citations

- quickly die or slowly die?

Citations only from field - or others as well?

temporal diff interesting

like in econ the pro-~~books~~<sup>papers</sup> is coming back

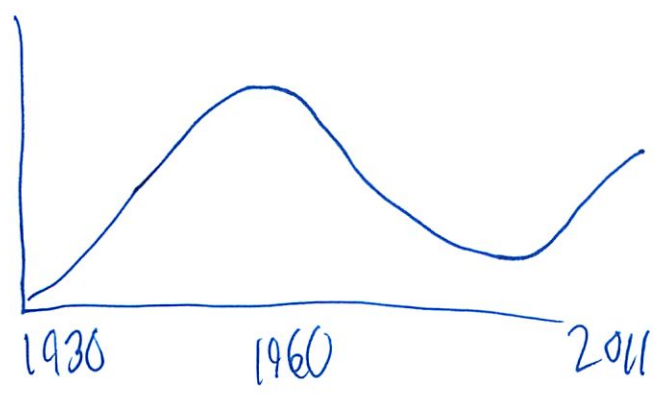
- originally 1936

- normalize by # of papers published in the field  
that year

- same that citations ~~was~~ ~~perfect~~ to career 1960s

- today so easy to cite a lot

- ~~the~~ dynamic changes by paper



(3)

Studying how scientists remember their ancestors

- castic - but → strategy

- do you want to be in field

- or different field

Can do  $k^2$  measure - prob that papers will  
be in cited map vs actual  
"inter citation"

Articles creating a bridge  
reshape field by citing many  
↳ <sup>then</sup> have be cited a lot

(oh vertical axis = year)

---

Sarah

- finished PhD at MIT

- ethnographic study of ~~national~~ natural gas

- teaches Risk and Media Lab Civic Media

- Citizen monitoring of oil + natural gas

- Public Laboratory for environmental research  
non profit

(4)

Work in science and advocacy

Bush/Cheney changed regulation

- can be close to house
- can be forced to have a well - forced pooling
- fracking
  - pumping liquid underground
  - exempted from clean water act
  - done 10x
- Lots of wells next to each other
  - 1 mill gal fluid
- Hazardous chemicals
- Lots of waste
- Landowners getting sick
  - Hard to attribute to 1 co or 1 practice
- 200 ~~truck~~ truck deliveries per well
- heavy engines
- 2BF chemical
  - same as dispersant for gulf oil spill

5

Corps have a lot of info tech  
to know about mapping oil + gas

Wanted to settle

- those value went way down
- Also can't talk about it

Oil + Gas are big industries

- companies are huge social actors

Public / Property Owner has a-symmetric info

Companies put out PR campaigns

Schools get royalty \$ for gas ~~and~~ extraction

- economic need vs health

Can we build tech infrastructure so land owners can coordinate

~~Bush admin exempted~~

EPA put together external panel of experts

- 5/7 industry
- Used all industry science

(6)

So in 05 - exempted from safe drinking act

Epidemiology - takes 10 years

~~File~~

If transport toxics - must file w/ fire departments

Diff people have diff problems

At MIT - oil + gas companies are highly involved

Cos get special access to MIT

That's where they hire tech experts

Don't think much about the communities involved

People take the big pay check

~~Landman~~ Landman Report Card - rate industry reps

- get bargaining rates

- tears apart neighborhoods

Geotagging news

Companies don't really talk to each other



②

Well watch

- imported databases

Built generic scraper

Trying to give public more access

- not just environmental access

Need to record exposure

Recursive tool - companies support their own infrastructure

---

Non "Public Laboratory"

- Grass roots mapping  
of BP spill

Pictures from digital cams on balloons better  
than satellites

- infrared too

- see plume

Balloons on camera to show protests

⑧

"Bucket Brigade" - collect air samples

- cost \$500 sample

- only EPA approved

Can we make a hydrogen sulfide sensor

- electronic

- or with film ~~film~~ IS1

## STS.001 Recitation

Nov 11/3

3rd paper: analyze graphics, charts, tables, diagrams  
Whats the use of ~~the~~ them

Due 11/22

Part of final project

How non-textual evidence is in controversy

Interesting when people disagree on a graph

---

### last Tue Sarah's Presentation

All Integrated #s and antidotes

Wasn't jumping to conclusions too hard unlike  
other presenters

- bounded reasonable

- More scientific than the others

What are the problems w/ epidemiologists

How do you react to uncertainties

By not bringing oil/gas to market,  
you are slowing country - most impact - no jobs

②

Once they sign the lease - they are out of the picture

Energy + Health - individual at center of it

- Allow cos to play w/ your genetic material - personalized medicine
- Dramatic change
- Fate of land is in hands of people with small plots of land
- Individuals made responsible
  - just for lease

Wells very distributed

- minor liabilities
- BP oil spill too?

- investigation endless

- shift blame from one person to other

Oil industry very entrenched in America

[ bumper sticker is a uniquely American thing  
[ only US political outlet

- Conflate domestic production w/ national security

3

Few politicians say anything bad about it  
~~Political discussions in US~~

(Discussion of US politics)

Humanistic flavor of presentation

- people are worth saving
- must be alternative

Maps and Terrain very diff things

Precautionary principle

- not in US at all
- big in Europe
- <sup>they</sup> read Beck about risks
- Fracking banned in Europe
- principle that guides EU before new industries launch
- We don't trust experts because they are in field
- politics comes before science

4

have citizen conferences often in Europe

~~Obama~~ Had one in US after 9/11 - what to do w/  
the 9/11 plot

- lots of competing views

Europe does for GM, Fracking, etc

~~Don't~~ Principle: weigh citizens' views ~~and~~ w/ experts

Sarah is trying to equip these communities w/ tools  
that let them articulate their views.

---

If we are concerned about jobs - why we care  
about local people's ~~well~~ health

People who don't live near fracking are fine w/ it

---

next Tue: 2 ladies from Harvard + MIT

WTO / EU food classification / labeling

- US wants generic labeling

- EU wants more details

(5)

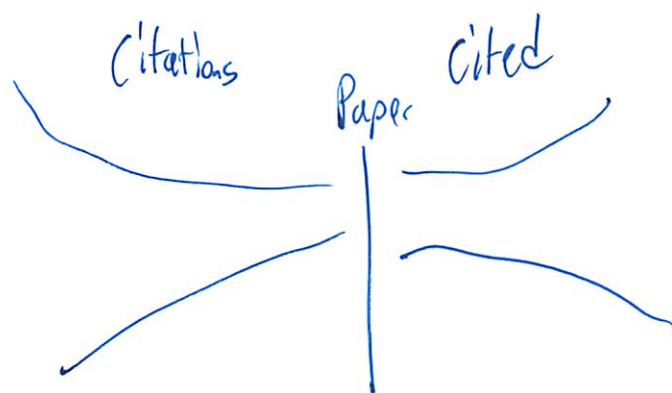
Take these commodities and explain it more  
US is doing it too now to protect against Asian foods  
Is a cheese in Normandy and Northern Italy same?  
Is it just protectionism?

---

Article for today ~~Shred~~ Shred + Bearman

---

Can you say something about sci consensus by looking  
at reference over time



Detect transformations over time

Need to create windows to only capture part  
- less interested in this reverence to the past

(6)

Depends on field:

- Bio doesn't like citing > 5-10 years old

Prof: Alex should look into it

---

~~Not  
Neutralize  
& Parasite~~

E PARASITE

↳ Hearings 11/16

Firewall of China in US

Extrem version of Senate ProtectIP

Broader SD PA



## Michael E Plasmeier

---

**From:** Vincent Antonin Lepinay <lepinay@MIT.EDU>  
**Sent:** Friday, November 04, 2011 10:20 AM  
**To:** Vincent Antonin Lepinay  
**Subject:** [STS.011] For Tuesday and Thursday

**Follow Up Flag:** FollowUp  
**Flag Status:** Flagged

Dear all

On Tuesday we have two guest speakers

Heather Paxson from MIT and Cristina Grasseni from Harvard who will talk about the much debated question of expertise and safety about food. The background of their presentation is the bitter conflict between the US and the EU about intellectual property protection for agricultural products, the "geographical indication" labeling mechanism that allows names of some agricultural products to be protected.

An article needs to be read to understand the extend of the protection and the claims made by the EU producers in their quest to protect their "names". It is on stellar as usual.

For Thursday, we rotate.

Tom will be with recitation group 1 and he asks that group members send him visual documents from their controversy so he can help you figure out how to understand the use of diagrams and other fancy visuals in the controversy.

I will be with recitation group 2. You have to read the paper posted for Nov 3, by Bearman and Schwed. I will ask some of you to explain the new method developed in this paper. I also want you to go to web of knowledge - from the MIT libraries site - and start playing with the database. Practically, that means figuring out which keywords will allow you to retrieve the articles that are central to your controversy. Once you think you have found the keywords, send me an email. Hopefully, we can practice in class with your data - which would save you that much work on your own....

Vincent

3

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 JOURNAL TITLE: Food & foodways  
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 ARTICLE TITLE: The Future of a Tradition  
 ARTICLE AUTHOR: Pierre Boisard  
 VOLUME: 4  
 ISSUE:  
 MONTH:  
 YEAR: 1991  
 PAGES: 173-207  
 ISSN:  
 OCLC #: 10063778  
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# STS.001 Lecture

## Food Names, etc

11/11/18

2 guests  
- MIT + Harvard

Prof. Heather Paxson - MIT Anthropologist - US focus  
Prof. Christina - EU focus

Overall: expertise

↳ who is

↳ what is their currency?

↳ when is a body of expertise transferable

↳ becomes science

↳ Boyle + Hobbes: lab restricts people who can see experiment

Controversy: cheese + regionalality

- body of expertise tied to region

- open to taste

- context: globalization + WTO

- how do you define a good?

- some people want to generalize

②

## Heater Paxoo

- ~~an~~ artisan cheese movement 1980s
- originally people make cheese to preserve milk
- 'industrialization'

Do you classify by native or region?

- terrain
- water
- soil
- ambient bacteria
- microclimate

- "terroir" - taste of a place

- localized food

- "Comte" - french alps

↳ AOC = name control

- people claim tradition/history

- foods typical of a region

- American <sup>artisanal</sup> cheese popular now

- Americans enamored by terroir

- what ~~is~~ animals, etc

- what <sup>breed of</sup> you feed them

(3)

Codifying traditional standards  
Very bureaucratic - rep by committee  
Would not work in US

Place of manufacture is important

But individual brand / farm

- no longer shared regions

- but about particular farm

individualism + entrepreneurialism

talking about coastal ~~farms~~ <sup>factories</sup> - not 'years of history

terroir

distinctiveness

Controversy about use of terroir in US

- neighbors - are they the exact same?

Very little actually known what leads to terroir

People researching in Europe - what makes things special

Claims where people claim place matters

What animals eat affects taste

(9)

## Technical or branding?

Not descriptive claims but prescriptive

- humane treatment of animals
- Use of land
- etc

One co: sellers at Jasper Mill

- have aging facility  
multi-million \$
- doing distribution to high end shops
- to create a regional branding
  - reverse engineer ADC
- but fits w/ American aspects
- so value add w/ co branding
  - whatever the recipe
  - value consistency

Some people who sell at farmers market don't like consistency  
 - some individual producers don't agree  
 - want to professionalize artisan cheese  
 - just whatever. animals are eating

5

Professional + Standardization : be more precise

keep records

test PH, Temp

not by clock / automated / etc

want to use sci

Regional cheese + milk marketing boards

- nothing to do w/ artisan cheese

- CA its all about big

- WI, VT knows can't compete in quantity

- also push quality - not quantity

Very loose food safety

- Bush defunded FDA

- can go years w/o inspector

Cellers people : afraid of getting people sick

- most pasturized

Now: demand > supply

6

But midmarket is problem

- custom made but standard
- not fair
- don't have margins to pay extra cost

More farmers market movement than taste

People buy artisan because not standardized?

- so is standardization efforts counter productive?
- is Whole Foods artisan?

---

① Cristina Grassini - Harvard + Bergamo

from northern Italy  
"re-invention of food"?

to boost local development

Sparks controversy on authenticity

- where do you draw boundaries?
- very political
- self folklorization
  - role of traditional cheese maker



7

- Global hierarchy of value
  - ↳ Michael Herzfeld: artisans
  - how preserve knowledge
- "audit cultures"
  - ↳ Marilyn Stratton
- "structure of common difference"
  - ↳ Richard Wilk
  - ↳ connections/circuits - not object itself
  - homogeneity + difference
    - ↳ expectations of tradition
    - ↳ but different from rest
- (aws bread to be functional for 1 purpose
- Self forlorization
  - Bito fair
    - in concrete pavilion
    - ~~can~~ build a "fake" world inside
    - other folklore inside

Cultural tourism - culinary tourism

- big biz
- 'indigenas' people ↪ can get grants

8

Some of these people ~~and~~ spend more time on coal  
than their actual traditions

---

Calibrate - tools, ingredients, procedure

find credit - lab studies, def of protocols, ~~politics~~

Package - media visibility, promotion

Use protection, bandries

---

Slow food is political movement now

Need proof when apply to EU for name control

Bitto cheese

- 15th century 1st started

- but revitalized 1970s

Consortium established

- bandry enlarges every 10 years

- ~~all~~ DOP

- ends w/ covering entire province  
↳ still small

9

Administrative area - little connection w/ historical

Large battle

Consortum liberalizes recipe as well

- all year

- and more cow content

historical group drops out

I can't call it Bitto - consortum owns name

DOP is EU wide term

AOC is just French term

DOP is just Italian

Slow yearly migration - need to milk there

- tired cows - transient situation

Strachino is name

- simple short recipe

Taleggio - name expanded to whole northern Italy in ~1910

~~with~~

- how these 20 valley farmers want to use

- but can't use name controlled name more specifically

(10)

So they get up new name

Did not close boundary fast enough

In 6 years have not gone DOP

Slow Food standards stricter

but even some of these farmers can't be that strict

need to put cans inside at night

trying to ↑ production

Markets niche - but extended

Gourmet chefs

Eatery

Restaurants

Very expensive - very upmarket

Trade Shows

- more pressures than actual food

- make contacts for orders

(5 min later)

What does it show you?

Images

- differences:

- what ~~are~~ are types:

- completely normal

- " schizy

- diff ages:

- doing diff things:

- brain always like that:

Big inductive leaps

Court cases

- jury educated:

Correlations - look at a bunch

Doctors make these jumps

Could have lot of #'s

↳ one per pixel

Not very persuasive

(2)

deep red - what is the difference?

L windowing / false coloring

Need scale next to

2% diff

18%

---

Man 'img encountered?

! (download from web later)

~~Some journals have image policy~~

- have image editor to make sure

Intended audience

How framed

- text around

- ~~some~~ arrows calling out

③

How comprehensive is it?

Can't show everything on a map

How is it assembled?

What beliefs do you need to ~~assemble~~ understand  
tech knowledge

Similar images in other ~~things~~ similar papers

---

Need to prioritize what you look at  
- lot to catch eye

---

Example: microscope image vs cartoon

Cartoon tells ya what you see

trains ya what to look at when look at actual pic

Might be wrong

I can only see things trained to see

④ Some fields start w/ cartoon of <sup>what</sup> think like  
Then use microscope to check  
it's a hypothesis

---

Where do HF come from:

- a farm
- one country
- avg
- grass fed / corn fed
- caged chicken
- after you use water - can you reuse it
- so many diff kinds of fish
- need to know contextual details
- easy to undermine if w/ someone who knows what they are talking about



5

American Physical Society

- fairly nuanced

But leaving out possible boxes

teleology - series of events, process of change  
to an implied goal

- some scientists think bunk

- other things may be happening

- goal may not be what's going towards

- Karl Marx

- society evolves to this

idealized

What's the point you are trying to make?

---

Green washing

- put colors in

2/3 book bindings in environmental ads

BP's logo

---

Visual Geopolitics

- adjust size of country

6

What fish?

What scale?

Domestic or global

methods

- specific arguments

Map is weird

- Bar chart would work?

Maps presume we care about national data

- Where in china big?

- National border may not matter

- Political

---

## Visual Typologies

---

You start making conclusions for author

Comparisons might not actually exist

# Visualizing Science

**NORMAL**



**SCHIZO**



## Putting Images into Context

What *arguments* does the image make, both explicitly and implicitly?

How is the image encountered?

- Setting, genre, format, publication, intended audience

How is the image framed?

- Text, labels, captions, empty space, other graphics
- How "self-evident" is the image supposed to be?
- How "comprehensive" is it (e.g. map, timeline, list)?

How is the image assembled?

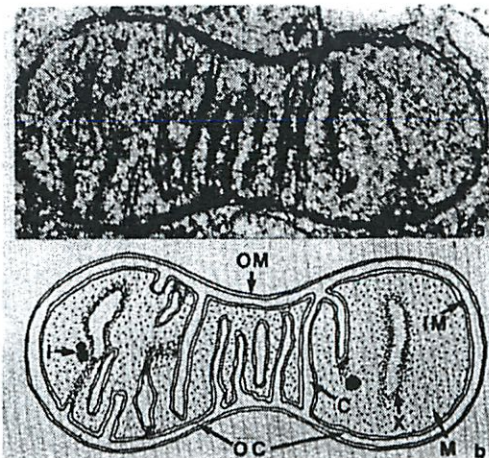
- What does it simplify or leave out? What aspects does it focus on?
- Does it draw equivalences of type or scale?
- What ideas, beliefs, or technical training are required to understand the image as the author(s) originally intended?

How is the main content represented?

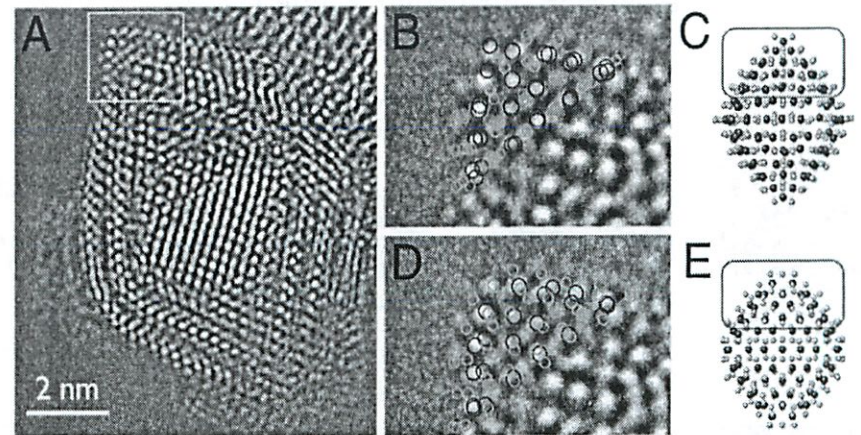
- Comparisons to natural images, schematic cartoons
- Coloring? Dramatic shadows, effects?

## Visual Heuristics (I)

- How does the image represent space & scale?
- How does it "train" the eye?
- Translation between "natural" image and schematic cartoon



## Visual Heuristics (II)



01/10

## Visual Numbers

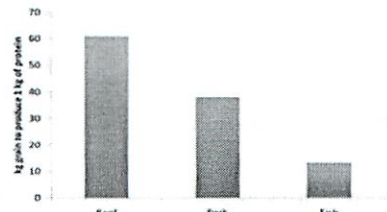


Figure 3  
Conversion efficiency for animal food production.

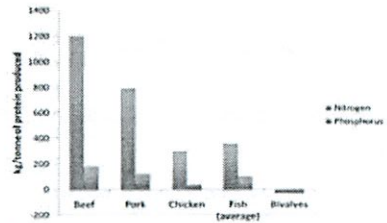


Figure 4  
Emissions for animal food production.

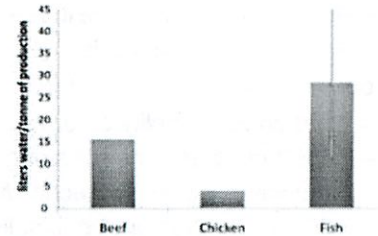
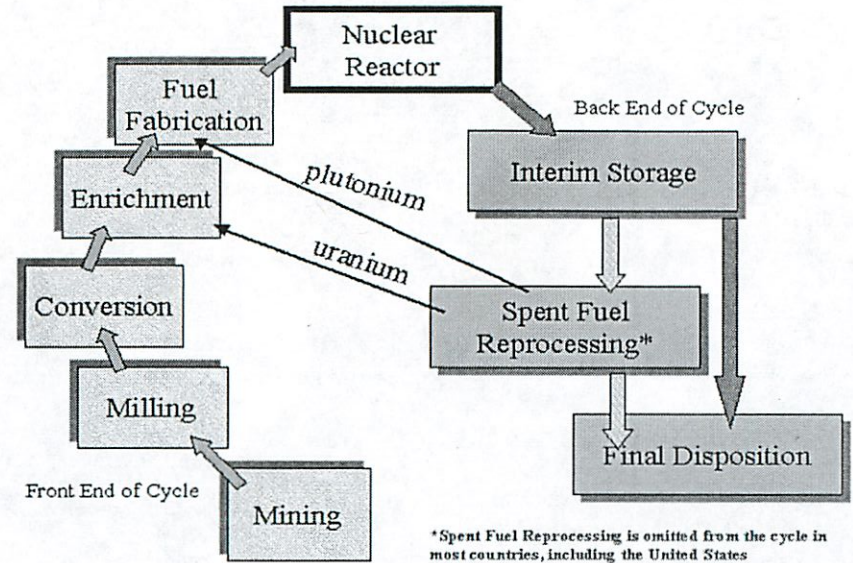


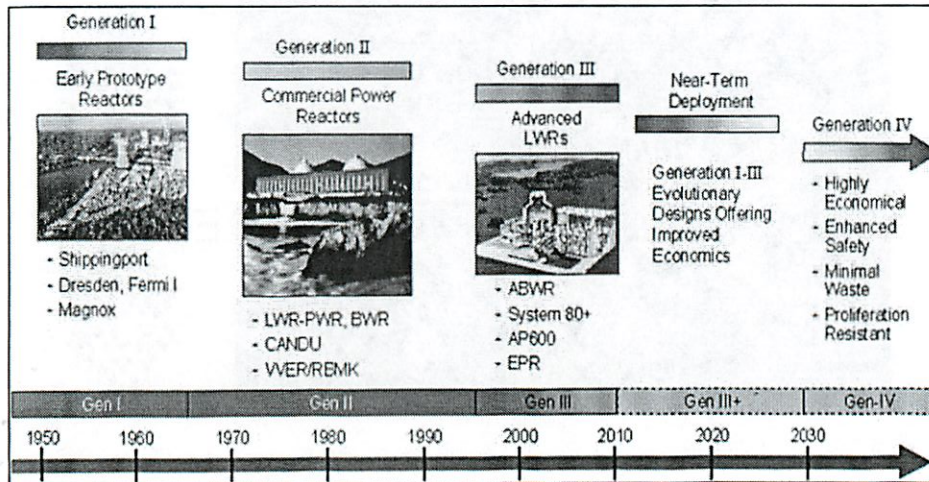
Figure 5  
Water use for animal food production.

## Visual Correlations

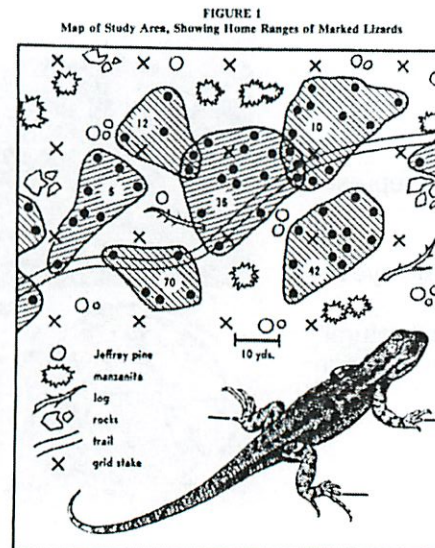


## Visual History

The Evolution of Nuclear Power (Fig 5) <sup>23</sup>



## Visual Scales



# Visual Geopolitics

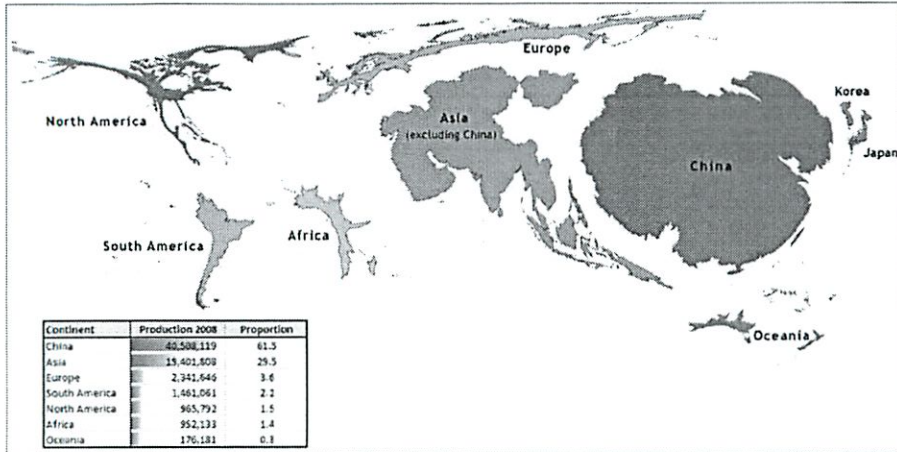
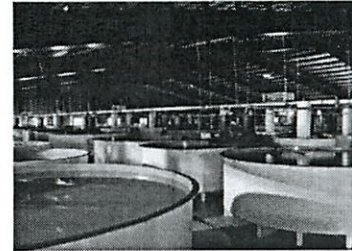


Figure 1  
World aquaculture production by continent in 2008 (China treated separately). Land areas are adjusted proportionally to reflect production volumes.

# Visual Typologies

Recirculating tanks



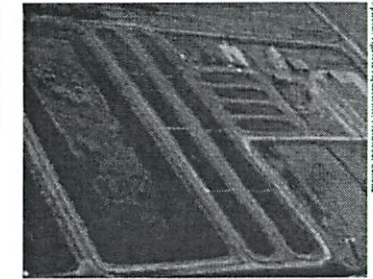
Flow-through systems



Raceways



Inland ponds



**THINK TWICE**  
ABOUT EATING FARMED SALMON

SALMON ATLANTIC STEAK  
FARM RAISED  
COLOR ADDED

TOTAL PRICE  
\$32.97

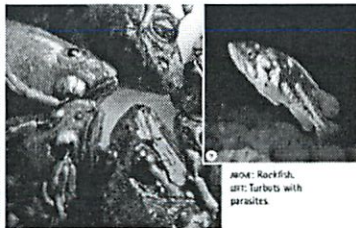
PERK COST  
**DEVASTATING**

90% of farmed salmon's structure prices are made of devastating costs.

Injured and Dangerous

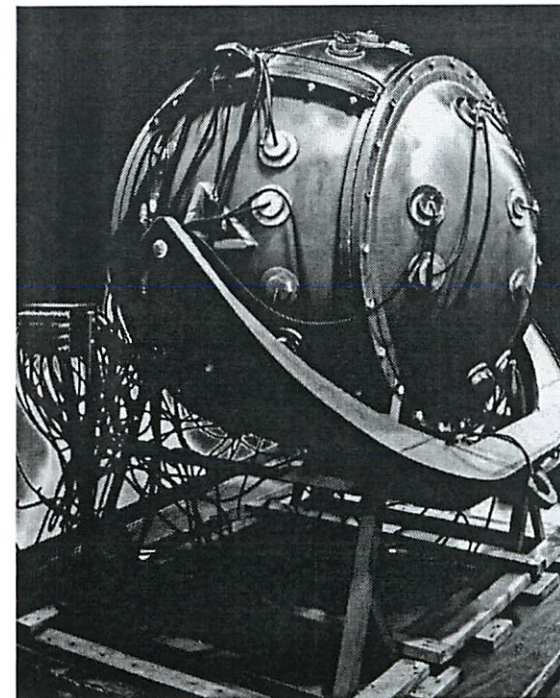
www.farmedanddangerous.org

## Visual Rhetoric



NOTE: Rockfish, not: Turbids with parasites

**Beyond the Sea**



Is this propaganda?

## Be Reflexive!

- How have I worked with images during this presentation?
- How will you use images in your website?

## Michael E Plasmeier

---

**From:** Vincent Antonin Lepinay <lepinay@MIT.EDU>  
**Sent:** Friday, November 11, 2011 11:22 AM  
**To:** Vincent Antonin Lepinay  
**Subject:** [STS.011] Tuesday

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Dear all

We have a fabulous guest speaker on Tuesday. Jon Stanley, one of the most subtle legal expert of privacy laws, will come and talk of the recent jurisprudence in US legal system of the computer fraud act, or in simple terms how much of a public/private space is your hard drive, the web and your use of the digital channels.

This will be very useful to all of you to hear about the nature of a controversy that is about "digital infrastructures" where the nature of evidence is still debated by the various actors.

A short but dense paper needs to be read. You will also learn about the style of legal reasoning.

Jon knows this is a CI class and he is used to law schools' socratic method, so do not forget to read the paper so you know what it is about.

Enjoy the long week end

vincent

Recitation Thur canceled

Tue's lecture may change

next Thur: Thanksgiving

1st and 8th Recitations only ones remaining

Presenting on 13th

---

## Evolving Law + Tech Relationship

- John Demars<sup>(?)</sup> from Elchemy  
↳ was research council
- tech changes fast
  - law changes slow
  - looks back to precedent
  - creates risks

thinks it will get technical

how law + tech interact

do courts ~~event~~ even admit that everything had changed  
he was a stage hand  
went into digital law



2

Certain patterns he sees again & again

1992 - required tobacco companies to put <sup>their</sup> paperwork online  
32 million files

he was hired to deal w/ the data

AG farmed it out to 3 large law firms

Dial up connection

Crashed law firm systems

↳ shut down law firm offices

he had broadband at home

- become first lawyer to work at home

he didn't fully understand consequences

↳ but filed it

is it really evidence

tobacco cos didn't see

1. widespread broadband

2. Open source tools

3

Lawyers pretty clever in tobacco industry

Universities did community work to search papers

- lawyers would give them questions

Small firms could not compete before

The costs he saw

Coming together of components

- 'blissful' ignorance of other stuff

In many jurisdictions this was "first impression"

of putting documents online = public

Free Conference Call software

- make recordings or transcriptions

- how protected are they?

- even if get service that guarantees more security

↪ Interesting question - just scratch surface

4

Is there a reasonable expectation of privacy w/ clear text email

- lawyers don't want to teach clients to use encryption
- people claim they use encryption
- but people don't want to do
- instead disclaimer
  - he thinks its nonsense
  - can't point to decision

6-18 months spent on motion to dismiss

↳ if one wins - then signal to settle

- no precedent set
- so legal issues do not get solved

Lawyers very slow + conservative

- if got ~~the~~ Ancient Greek lawyer he could basically do a standard contract case

5

But very little cases

- Circuit courts are split
- only 1 relevant Supreme Court case

~~MA~~

- the does data breach notification

MA: individual letters \$2.87/letter

or mass notification

10-20 mill people

No guidance on if website is ok

Only some Congressional testimony

Clients hate it

Insurance cos hate it more - what triggers insurance?

patten repeats itself again + again

MERS - mortgage electronic registration system

One of central players in fin crisis

Rockwell P Ludden paper on it

⑥ History of title registration steeped in British Common law

- lots of complex terms not used anymore
- People fought over land a lot back then
  - physical violence
- put in lots of hoops for land transactions
- Still a huge issue
- arcane process - very slow

---

Then along came fin instruments that can transfer ownership of mortgages

- bundles
- securitization

So title moving quickly

Owner should go to company recording office

But system does not work if want to do quick

Fin + Real Estate people - register online

⑦

Throw out all the history  
~~and~~ Create something new

Mess agent will always be 2nd agent  
- but can't do that in US

No one able to stop them

- very little discussion

- State + Federal legislators did not ~~at~~ approve

Now cases in front of court who owns what

30% of mortgages in US <sup>illegal</sup> - can't foreclose

~~USA~~ <sup>since you don't <sup>own</sup> ~~have~~ it</sup>

All fiction:

Fine until real estate market collapsed

Then people started looking for loopholes

You could buy house

but may want title insurance

- will have problems when try to sell

8

Banks don't know how much bad debt

Trying to settle Obama + AGs for 50 states

Vs people that don't want to lose house  
and ambitious people AGs

---

He has more of a process argument  
than substantive

---

Break

Must stipulate in foreclosure that reviewed documents

But fell into robo signings

Assembly live of stamping documents

---

Lots of procedural arguments

How to facilitate change?

Better system than MEAs

Should have thought at tech advances more

9

First mover advantage

Legal guidelines that protect

Took 20 years for car to be adopted

Society had time to set up laws

Telephone + TV

No time to study or understand consequences

Have better tools to study?

Facebook - defamation?

Did you access it from work?

Over company equipment at home? Over VPN?

Lots of discussions at conferences

- but no case law

---

Computer Fraud + Abuse Act

very broad reaching

as long as could affect commerce



(10)

Almost every thing could be a protected computer

1984 - first version

Movie and hospital radiation ~~laws~~ hacking got  
laws passed

not used for first 4 years

1989 - ~~Ken~~ MIT researcher sends virus to MIT  
to prove how vulnerable it is

"Mores"

~~Ken~~ Sets precedent

"Mens rea" - I didn't mean to do it  
Mental State

Plus a bunch of other arguments

Access deemed to be unauthorized

↳ Mores Test

not clearly designed

Violated norms of "computer community"

(11)

Judge has no guidance to look back on

Battle of metaphors

↳ to something judge actually understands

What is the reasonable expectation of privacy

If you connect to internet its like putting

"Open house" sign on front yard

- open invitation

Terms are still enforceable

therefore - you've lost reasonable expectation of privacy

therefore they downloaded a program on your computer

So then opposing console has to match metaphor

Only allow them into living room - not bedroom

↳ Put it to something judge understands

Most lawyers don't even know of CFAA

(2)

Then also using it for bullying

Internet is not free zone

- Some Terms of Use - ISP
- MIT's internet
- etc

- everyone must access through TOS

So is a ~~violation~~ violation of TOS automatically a violation of Computer Fraud + Abuse

Delaware had history of corp law

Maryland wanted to be internet law kings

↳ since ADA was there

Lawyers trying to say spam is illegal

↳ TOS: access unauthorized

But if violation of TOS are illegal what that means

Can be changed overnight?

Battle over who controls net

This is about private rights of actions

(13)

Highway - normally state controls

Know private entity

Endless ability to file these actions

lots of data to sue on

What did you look at

People doing private work on work computer

- when fired: can ya delete what ya think is personal data?

one side Have law as ~~think~~ conservative

Other groups want to expand for their own purposes

Reading this 3x a week in appeals cases

---

Battle of who controls information

- Traditionally considered to be experience

But now because ya see it via a computer  
is it protected?

(14)

People surrender quickly

- don't want to fight company

Lots of things to define - if you continue case

i could go up to supreme court

Judges don't understand underlying facts

---

It shouldn't matter if instructions handwritten to  
you or if you receive it via ~~email~~ email

---

Lawyers will try any novel interpretation of case

---

Is receiving info be deemed as unauthorized  
will be seen through WikiLeaks-style case

## Michael E Plasmeier

---

**From:** Thomas C Schilling <tom\_sa@MIT.EDU>  
**Sent:** Tuesday, November 08, 2011 8:57 AM  
**To:** Thomas Charles Schilling  
**Subject:** [STS.011] instructions for third paper

**Follow Up Flag:** FollowUp  
**Flag Status:** Flagged

Dear all,

For the third writing assignment, we want you to begin producing text which your group will be able to use on the final project website. This means that each person will be performing a different task and working towards a slightly different goal for this third paper. In order to make sure the responsibilities are divided up appropriately and that each paper will be useful both to your group's website and as a writing exercise in itself, we would like each group to send us by **this Thursday** a document containing one very short paragraph for each group member (not one paragraph per group) explaining what each person will write about. This means that over the next three days, you all need to communicate amongst yourselves to decide how best to divvy up these writing tasks: we don't want to read multiple versions of the same large-scale arguments. These central, narrative-structuring arguments simply won't (or shouldn't) emerge until you have all of the pieces in front of you later this month, but supplementing the analyses you turned in last week and developing detailed, cohesive subarguments is a critical part of this process.

We know from talking with many of you that most groups already have a fairly clear idea of what they'd like to develop next; many students asked if it would be okay to use the second assignment to develop an original argument based on your documents, and we asked them to wait for the third assignment. *\*Now\** is your chance: decide which elements of your argument warrant extended attention, and use this assignment to analyze parts of what should by now be a considerable database of texts towards a specific argument. We still expect **explicit, detailed** use of text, internet, visual, and web-based sources, but as long as you build on these sources appropriately, you may now expand on the kinds of comprehensive, synthetic arguments we cautioned you to avoid this last time.

Bear in mind that these essays will not be the *last* pieces of text you assemble for the websites, and that after you turn them in you will all need to get together to begin assembling your different pieces (including visuals, scientometric analyses, webcrawler data, and/or other pieces of evidence, if you've decided to employ one or more of these in your analysis of your controversy) into a coherent, navigable, and visually interesting whole. We will be happy to answer questions over email or in class tomorrow if any of you are unclear about our expectations, or if your group would like help in assigning writing tasks; Try to begin discussing things on your own as soon as you can.

see you tomorrow,

Tom and Professor Lepinay

# Putting Images into Context

*What **arguments** does the image make, both explicitly and implicitly?*

How is the image encountered?

- Setting, genre, format, publication, intended audience

How is the image framed?

- Text, labels, captions, empty space, other graphics
- How “self-evident” is the image supposed to be?
- How “comprehensive” is it (e.g. map, timeline, list)?

How is the image assembled?

- What does it simplify or leave out? What aspects does it focus on?
- Does it draw equivalences of type or scale?
- What ideas, beliefs, or technical training are required to understand the image as the author(s) originally intended?

How is the main content represented?

- Comparisons to natural images, schematic cartoons
- Coloring? Dramatic shadows, effects?

## Michael E Plasmeier

---

**From:** alex.willisson@gmail.com on behalf of Alex Willisson <atw@MIT.EDU>  
**Sent:** Saturday, November 19, 2011 5:00 PM  
**To:** Vincent Antonin Lepinay  
**Cc:** Thuan D Doan; Michael E Plasmeier; Roshan A Ardhasseril  
**Subject:** Re: [STS.011] Question about paper 3

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Vincent,

No problem, I figured you wouldn't be able to respond quickly since you'd mentioned you'd be away this weekend. Thanks for getting back to me, it helps a lot

Alex

On Sat, Nov 19, 2011 at 4:56 PM, vincent antonin lepinay <[lepinay@mit.edu](mailto:lepinay@mit.edu)> wrote:

> Alex  
> Sorry I am in St Petersburg and only today have I been put in an hotel  
> with wireless.  
> I think you are completely legitimate introducing an idea to the  
> reader. The point is not for you to express your idea about that idea  
> but document how people position themselves in relation to it.  
> Let me know if you need more help.

> vincent

> On Nov 18, 2011, at 4:22 PM, Alex Willisson wrote:

>

> Hi,

>

> I'm working on my paper and I have a question about the format. Does  
> the paper need a specific point to talk about, or can it introduce an  
> idea to the reader (and not necessarily asserting things about it).  
> I'd like to introduce the basic concepts of the internet and protocols  
> that could be used in relation to network neutrality (either to  
> enforce it or abolish it) but the current route I'm thinking of would  
> be aimed at helping the reader understand the difficulties and the  
> possible solutions. I feel like it might be too open ended and feel  
> like a very pointless article since it isn't advocating an idea. Do  
> you have any feedback? Should I look for something to be the "point"  
> of my paper, or can I simply put a lot of effort into helping the  
> reader understand the current situation and possible ways to proceed?

>

> Thanks,

> Alex

>

> Vincent Antonin Lepinay

> Program in Science, Technology, and Society MIT "Codes of Finance" is

> now available from Princeton University Press

>

>



## Writing Third Paper

11/12

- part of website
- Lepinay wants us to analyze ~~as~~ actors
- Not write directly about it
  - ↳ which is what I thought he wanted
- So last paper was a document analysis
  - ↳ this isn't that

We wanted to do sections on website  
↳ each section - multiple topics

I wanted to have each divergence be our box

My section: economics / ~~the~~ anti-NN arguments  
5-10 pages on controversy

So start w/ NN - what is it

---

So start w/ what is Net Neutrality

Then felco + ISP positions

feel its bad - but must do so defensibly

11/20

2

arguments they make

different sections/buzzwords

↳ somewhat connected

do I have their arguments ready?

↳ Linda did w/ last paper

Printed a whole stack at

Melanie edit

11/20

Paper 3

Melanie thinks it looks just as boring as the other ones

Spelled something wrong

rubric undefined

wants to relate to lay people

Thinks I should put in a quote

Why is it important? why should read it?

↳ Controversy

What society would be like if no aces?

What the stakes are?

↳ but would be biased

Must sum up quotants

↳ Why important and people should care

Big ideas on CDNs — sum up

Told her about Winson on using words over

## Michael E Plasmeier

---

**From:** Vincent Antonin Lepinay <lepinay@MIT.EDU>  
**Sent:** Saturday, November 19, 2011 5:23 PM  
**To:** Vincent Antonin Lepinay  
**Subject:** [STS.011] On tuesday

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Dear all

On Tuesday we will be discussing the recent stem cell controversy with a focus on the mobilization of a very american theme - the family - under different guises.

You have to read an article I wrote in relation to this question.

Do not forget to bring your 3rd essay.

See you then

vincent

Paper 3 due today

---

New (third + final topic) experimentation

Stem Cells

- biologists ✓ biologists
- "family groups"
- similar in size to global warming
- all about promise
- science TBA
- principles + ethics
- ethicists becoming biologists
- biologists becoming ethicists
- question of suffering from families for more \$
- scientistist ~~pushing~~ pushing Congress
- race for leadership
- what is a family? religion has lot to say
- how to react to suffering

②

Rare (orphan) diseases not really covered by NIH

Alexis de Tocqueville - Democracy in America

↳ family is unit of decision in US

- concrete cells that make up CO

- not abstract ideas

---

(Video)

Stem Cell biologist @ Northwestern

Daughter in ski accident

Became a personal obsession to find stem cells  
for spinal cord

("You have to take more math" - laugh line from MIT")

More in public eye now

Not considered fetus unless implanted in uterus

Bioethics class in Prof's home

Testing on mice w/ spinal cord injury

③

Doing experiments long + difficult

Has patient DNA's cell

Technical problems to cloning

People confuse stem cells to cloning

~~~~~~~~~

Suffering of others - what must we do?

Priest: changed for the better through suffering

Monthly lab meeting

Technical problems w/ ~~spinal~~ ~~cord~~ staining

Tracing spinal cord axons

It worked on swine

Now do pigs

~~With~~ The 2 grad students annoyed at more work

9

(Break)

## Private Stem Cell Banks

- cater to fear of parents
- that medical system we know is coming to an end
- welfare state ending
  - more individualistic
- lots of public banks
  - blood
  - etc
- some for research + transposition
  - some competition b/w
- new networks come from this - but privatized
- for different ones - different formulas
  - recipient
  - donor know about recipient



5

- black market for body parts
  - esp Asia + East Europe
  - don't know whole network
- public good?
- Moore vs U California
  - need to expect to retain possession
  - had cancer
  - doctors removed things from his body
    - ↳ monitoring what is doing
  - he does not what is going on
  - doctor establishes cell line
  - patented by UCLA
  - Set up company to commercialize
  - ~~man~~ Moore wants \$
- ~~the~~ good patient - doctor relationship?
  - no - not properly informed

6  
What Private Stem Cell Banking trying to do?

See Umbilical cord blood + cells as asset

Possibly cure to disease in future

(ad video for stem cell banking)  
↳ Alpha Cord

Selling hope of cure-all

comparing to life insurance

↳ where ya want to find people who are  
de correlated

Saving for your family only

difference than shared life insurance

Cells might not be adequate later on  
- science is not proven

7

Collect and put into public bank  
from everyone

Kidney banks are public

Are blood/stem cells - organs different?  
↳ Store for potential use for you in future - hope of personalized medicine  
↳ need to be used ~~in~~ soon

Medical tourism - ~~used~~ to do procedures not accepted in US

Parents having baby to make stem cells to save existing kids

- Use pregnancy in strategic way
- Pick embryos which is closest match
- Eugenics before birth