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HOW CAN PUBLIC POLICY KEEP UP WITH TECHNOLOGICAL CHANGE? A BOOK DISCUSSION WITH TOM WHEELER

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PARTICIPANTS:

E.J. DIONNE, JR., Moderator
W. Averell Harriman Chair and Senior Fellow, Governance Studies
The Brookings Institution

THE HONORABLE MIKE DOYLE (D-PA)
Chairman, Subcommittee on Communications and
Technology, Committee on Energy and Commerce
U.S. House of Representatives

CECILIA KING
Technology Reporter
The New York Times

TOM WHEELER
Visiting Fellow, Center for Technology Innovation
The Brookings Institution

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P R O C E E D I N G S

MR. DIONNE: Welcome. Welcome everyone. I'm E.J. Dionne, I'm a senior fellow here at Brookings. I'm very honored to be moderating this event about celebrating and discussing Tom Wheeler's great book "From Gutenberg to Google." It's a great cover. How much did you have to pay for the logo down there? And it's a great book.

We are going to divide this into two parts because Congressman Mike Doyle from the 13th District of Pennsylvania, which includes Pittsburgh as well as a lot of communities in western, southwestern Pennsylvania, is -- you may have noticed there is a little bit of stuff going on up the street. And so Congressman Doyle was kind enough to work with his schedule to be with us today. And so I'm going to introduce Congressman Doyle. He is going to say, presumably, some kind words about Tom Wheeler, although he might take radical issue with the book. We'll see what he has to say. And then we'll bring up our panel and I'll introduce everybody else, including Tom.

Congressman Doyle has focused a lot on revitalizing communities in the 18th District, and anyone who has seen what's happened to Pittsburghin the years that he's been in Congress, it's really an extraordinary story there. He has worked on green jobs, on climate change. He is a graduate of Penn State, which I think serves you well in your district -- although University of Pittsburgh people may have trouble with that. He received his BS in community development. Before he served in Congress he was a small business owner, he was chief of staff for State Senator Frank Pecora. He and his wife, Susan, reside in Forest Hills, and they have four kids. And they're on the buyout so I want to shout them out, Michael, David, Kevin, and Alexandra. It's great to have Congressman Doyle with us again. Thanks for, on a difficult day, for joining us today. It's a tribute to Tom.

CONGRESSMAN DOYLE: Thank you.

MR. DIONNE: I just wanted to say one other thing about Congressman Doyle. I have had the good fortune, he's one of those people, you know, I write a column for the Washington Post, he's one of those people I often call just when I want to know what the

heck is going on. And I have often -- I have always found in two things, one is thoughtful, but the other is straight, and that's a real gift these days. So, Congressman Doyle.

CONGRESSMAN DOYLE: Thanks, E.J. Well it's a pleasure to be here today and to kick off this discussion with Tom Wheeler and Cecilia Kang and E.J. Dionne. And I want you to know I have the highest respect for each of them, and that's why I want to start off by apologizing for the fact that I can't stay and I do have to run. As fate would have it, I'll be chairing a hearing in a little while on legislation to restore net neutrality. The issue that I suspect more than any other will be Chairman Wheeler's legacy.

I worked closely with Tom when he was chairman of the FCC on net neutrality and a number of other important communication issues, and I value his insights about the changes in technology in the field of telecommunications. And I don't want to say the telecommunications industry, because the impact of the changes we've seen and will continue to see in telecommunications affects every industry, not to mention nearly every aspect of our lives.

Tom's written a book addressing the changes from 30,000 feet rather than from the trenches of the FCC where he fought daily to make progress on Federal telecommunications policy. I actually wish more of our thought leaders would take the time to look at how bills and regulations and how they fit into the bigger picture. And Tom's done that.

The field of telecommunications has experienced revolutionary changes in recent decades. And technological change is happening at an extremely rapid pace these days. Chairman Wheeler's new book makes the point that while the changes happening today are new, exciting, and incredibly important, this is by no means the first-time humanity has experienced revolutionary changes in communications technology. It explains that there have been several real game changers over the last 600 years. But it also lays out his views about where the current revolution is heading.

As he writes in "Gutenberg to Google" the networks that connect us have

always defined us. Given his widely acknowledged expertise in this field, I think policy makers would benefit from listening closely to what he has to say. I believe it has applications to most public policy questions, not those just dealing specifically with telecommunications. And that's why I'm pleased to be part of this event today.

Of course so much change means that the Federal government needs to keep up. I was a freshman member of Congress when the Telecommunications Act of 1996 was enacted. I wasn't on the committee yet, but I voted in favor of it when it came to the House floor. That landmark legislation has driven two decades of innovation and competition in one of the most dynamic parts of our economy. And as you all know, the overriding goal of the Telecommunications Act of '96 was to promote innovation, competition, and growth in the communications and technology marketplace. And we've certainly seen tremendous innovation and growth in the telecom industry over the last 20 years. The way we live has been dramatically transformed, that's for sure.

When Congress drafted the Telecom Act, its overriding goal was to promote competition by breaking down the statutory and regulatory walls that existed between voice and data and video programming. And I'm pleased to say that we've certainly seen an explosion of competition in the telecommunications industry over the last 20 years, with many positive results. However, two million Americans are still subscribed to AOL dial-up service, more than 80 percent of the country has access to 25 megabits per second broadband. Now that's progress, to be sure, but most Americans still lack choice. At 25 megs a second, half of US homes have access to only one provider. At 50 megs a second four out of five homes still only have once choice. Stagnant markets do not compete, innovate, or result in the kind of high speed broadband services at reasonable rates that Americans want and need. We need more competitive markets and more options for consumers.

Most people in Pittsburgh, where I live, have the option of choosing between Comcast or Verizon FIOS. And that's more choice than most Americans have. But even

with two providers, you don't see robust competition. In cities and other municipalities, both rural and urban, some local governments see this lack of competition and are taking action by building their own networks. We need to ensure that these municipalities have maximum flexibility and can leverage all of their resources to meet the broadband needs of their citizens.

Fast, cheap broadband isn't just the pathway for entertainment, it's a facilitator of economy growth and prosperity. And as Tom talks about in his book, it's these kinds of high speed fiber networks that will be needed for the next generation of growth and innovation. We see the same competitive dynamics play out across the entire telecommunications marketplace, whether it's mobile, wireline, business to business data lines, over the top video, cable TV, or any other number of places. Consumers benefit when barriers to entry are lower, when incumbents can't use their market position to lock out competitors, and when providers are vigorously competing for every consumer.

I think Tom and I share the belief that the FCC should be promoting policies that produce that kind of market. That's why I feel so strongly about net neutrality. Americans across the country overwhelmingly support strong net neutrality rules on a bipartisan basis. People understand that their ISPs have far too much control over their connection to the Internet and the services they care about. Whether it's slowing Netflix down, blocking access to innovative mobile services, or adopting anti-competitive zero-rating policies, the track record for ISPs on this issue is clear. And consumers and businesses want the protections and the certainty that net neutrality rules provide.

So last Friday I introduced legislation to restore the net neutrality and Open Internet Order approved in 2015 by Chairman Wheeler and the FCC. The Communications and Technology Sub-Committee will kick off its hearing on my Save the Internet Act H.R. 1644 in about an hour. It's important that the American people know that Congress is working to address this issue. That's what our constituents sent us to Washington to do, and that's what we should be doing.

But there's more to do as well. My goal is that everyone in our country will benefit from these incredible technologies. Because I believe that our Nation is richer when opportunity is inclusive. And our country is better and stronger when we embrace innovation and chase the future. I for one am excited to see what comes next.

Today, this panel is going to explore the insights in Chairman Wheeler's new book about what does come next and how policymakers should deal with disruption and help our economy and our society adapt to the many changes the Internet is bringing about.

In "From Gutenberg to Google," Chairman Wheeler writes about how new technology has repeatedly destabilized and dislocated society, but it made it more interesting and productive as a result. Unlike the previous technology networks he discusses, like railroads and the telegraph, he sees the Internet doing the opposite, disaggregating and disbursing activity. As he puts it, it's nothing less than the transfer of the nexus of power from the network to the user. Chairman Wheeler notes that since the late '90s productivity growth associated with the digital technologies have been modest, but he thinks that could change with the current and latest iteration of the Web, Web 3.0, which Sir Tim Berners-Lee calls the semantic web.

Rather than discover, transport, and display existing information, as in Web 2.0, the coming version of the Web will, he says, orchestrate a flood of intelligence from connected systems to create something new. He cites as an example the differences between an internet-connected car and an autonomous vehicle. Whereas an internet-connected car today may use and generate tens or hundreds of megabits of data, connection autonomous vehicles could generate 25 gigabits an hour.

He predicts that the advertising will stop being the dominate business model on the Internet. As the bulk of data flow on the Internet shifts from the attention economy that derives value from entertaining and advertising to people, to broader machine to machine data flows that can be leveraged for productive creation and automation.

Chairman Wheeler also sees potential for related paradigm changes such

as how block chain could restore individual's control over their personal information. And he also highlights the increased vulnerability that this increased connectedness creates.

Finally, Chairman Wheeler addresses policies that are not usually associate with communications. He wrote, for example, "It was the pressure of earlier network revolutions that forced revolutionary education and labor policies that are today the accepted status quo. And that experience is important to remember. In other words, we've been in similar situations before and we should try to learn from them." Those are wise words from a wise man, and I'm confident that everybody will learn something from today's discussion.

Thank you for allowing me to be a small part of it today. Enjoy.

MR. DIONNE: Thank you, Congressman Doyle. It's good to be on top of the news at a Brookings event.

I'm going to introduce our two panelists today. You've heard a lot about Tom already. He is a visiting fellow here in Governance Studies at Brookings, he's a businessman, he's an author. And as you know, he was chair of the FCC from 2013 to 2017. He's been involved with telecommunication networks and services for four decades. As you heard, at the FCC he led efforts that resulted in the adoption of net neutrality, privacy protections for consumers, increased cyber security, and many other policies. His chairmanship has been described as the most productive commission in the history of the agency. During the Obama/Biden transition of 2008, 2009 he led activities overseeing the agencies and the government dealing with science, technology, space, and the arts.

And Cecilia King, bless you for joining us today. Thank you so much. She is the national technology correspondent for the New York Times. She writes about regulatory issues such as privacy, cyber security, anti-trust, and the digital divide. And so unlike me, she is utterly qualified to be on this panel today. She spent, I'm proud to say, one decade at the Washington Post as senior technology correspondent. We miss you. And she began her career in South Korea working for Dow Jones.

Tom will begin with a presentation on this great book. He's going to give us

600 years of history in 10 minutes or something like that. And then Cecilia and I will pepper him with questions. And I'm hoping also, I want to invite Cecilia to comment as well on Tom's book and his presentation. We're going to talk for a while and then we're going to bring you into this conversation.

Again, come on up, and it's a great honor to be introducing Tom Wheeler. And congratulations on this book.

MR. WHEELER: Thank you, E.J., for making this possible. Thank you to everybody at Brookings. And Mike Doyle has just showed us what a responsible leader does to deal with the challenges of new technology. As you know, he led the charge on the Congressional Review Act in the House of Representatives to try and repeal the decision that Trump/FCC made to eliminate net neutrality. And he's now back at it with the wind of the majority in his sails.

But it is that kind of leadership that I talk about throughout "From Gutenberg to Google." Because as E.J. said, these are not new stories, but what is significant is that we are at a unique historical moment similar to the kinds of stories that I talk about in the book.

We're at a point where there has been two previously separate technological capabilities. One is communications, and the other is computing. And over the years they've tickled each other, but now they've had sex. Now that line is in the book. I got a call from a friend of mine in New York who was reading the book, who said "How in the world did your editors allow you to keep that in?" But that's what happened. We have a combination now, we have a union of these two.

And we can watch this process through history. Communications, starting with the printing press, then moving on to the railroad, the first high-speed network, the telegraph, the telephone, wireless, and ubiquitous connectivity.

On the other side, computing actually you can trace it back to the steam revolution and the locomotive. Up through the mainframe, through ships, and to now a

situation where everything has intelligence in it because Moore's law has taken over. And computing is inexpensive and ubiquitous.

I'm glad to see that Congressman Doyle picked up on that line, how we connect defines who we are. Because I really think that that's the essence. You know, one of the interesting things about the FCC is the FCC has regulatory responsibility over one-sixth of the American economy. But what it does affects the other five-sixths. And so there's an amazing relationship.

So this union of these two forces has opened the door to the third great network revolution. As I said, the first was printing, the original information revolution. When Johannes Gutenberg in 1450, after over a decade of work, finally discovered how to make this complex interrelated idea of moveable type work.

And think about it for a second. Peel back TCPIP, the language of the Internet, and what is it? It's breaking information into its smallest units so that it can be sent, disassembled, and reassembled at the other end. It is the Gutenberg concept of breaking information down into its smallest usable unit.

The second great revolution was the one-two punch of the railroad and the telegraph in the middle of the 19th century. The railroad, the first high speed network, the telegraph, the first electronic network. And they came upon the world in proximity to each other and transformed realities that had existed since the beginning of time. Think about it.

Distance and geography had defined the scope of mankind's activities. How far can you travel, either on your power or an animal's power? And information had always been something that was controlled by time. How do I get information faster than the next guy? Suddenly you have railroads at high speed ripping across the landscape, and you have the telegraph making information that is available in one point available in multiple points simultaneously.

I think there are three take aways from this history that we can relate to today. One is that the new technology of today is derivative, that it is a Darwin-like evolution

that has gone through these processes, starting with printing, starting with steam, and coming forward.

And the second is that, and accompanying that, is that these technological changes have always been unsettling. You know, you think we got challenges today with how technology is reshaping our lives? Think about what followed Gutenberg. The reformation made possible by the fact that Martin Luther had access to the printing press that made him the first mass media evangelist. And led to decades of war.

The Renaissance would have stayed a longer period of time in Northern Italy had it not been for the printing press' ability to spread the ideas. We think today of the Renaissance as "Oh, that's a golden period." It must have been hell to live through because everything that you had always been taught to believe in was ripped apart, and new ideas took off.

The second take away is that new technology demands new engagement. That's why it's so wonderful that Congressman Doyle is going back to take on the net neutrality issue today. You cannot flee the development, the results of new technology. Everybody talks about the halcyon days, you know, we can go back to something that was great. The good old days weren't. You know, they were old but they weren't necessarily that good. They were tough times, they were challenging times, and what made America great was not fleeing the challenges, but stepping up to the challenges that were presented by the new technologies. And that's what our leaders need to be doing today, challenging themselves and challenging ourselves to step up to those changes.

And the third take away is that this isn't an academic discussion. That whether and how we engage this change can affect the future of liberal democracy and capitalism. And that's why the engagement of Congressman Doyle and others on the Hill is important.

How we answer this question, given the fact that we are now in our moment of history. How we answer the question will determine what democracy and what capitalism

looks like going forward. Think about it for a second.

Change is coming at us much faster than it did in the previous network driven revolutions. It took 125 years for the telephone to reach a billion people. Android got there in less than six years. Change is coming at us at a rate that has condensed the buffer that used to give us the ability to assimilate those kinds of changes. And democracy requires that kind of a buffer. Democracy is designed to be deliberative, to make sure that everybody gets heard.

But amidst all of the change that we are living through now, there is great anxiety and there is a demand for answers. "What am I going to do?" And the kinds of people who are stepping up with the answers are authoritarians. "Hey, I got an answer, you know, just trust me, democracy is still out there." Authoritarians step up. And that's why we see authoritarianism growing around the world. It's why we see slogans instead of solutions. Brexit, The Wall, they're solutions, they're somebody's doing something.

And the last time that we had this kind of challenge to democratic capitalism, the late 19th Century, early 20th Century, there were fulsome debates and demonstrations in support of Communism, Socialism, Fascism. And so we need to think, how are we going to engage in that. Democracy requires us all to walk away from or to subsume our tribal instinct. Oh, you know, the human being is a tribal being. And we need to set aside your tribal instinct requires a greater force, a force that if you come together we will all profit and we'll all be better together.

And it's something that we've been able to see throughout the Industrial Revolution after steps were taken to put in guardrails on various activities. And it's a challenge that we have now that, we exist in a reality where we need to reinforce the belief that there is such a thing as collective betterment through the democratic process, because people step up to lead. And we need to recognize and reflect and deal with the fact that the technology that is creating all this uncertainty and creating all this change and all of this anxiety is a technology that is designed to emphasize our tribes. And to say we'll send

information to them and we'll send information to them and not deal with the concept of E Pluribus Unum.

So I'm back to where we started, and I will shut up and turn to E.J. and Cecilia.

But we need new rules for this new era. *Gutenberg to Google*. Which by the way, the sub-title is: The History of our Future. Because I think it tells us, it gives us indications where we're going. *Gutenberg to Google* talks about how in the Industrial Age, driven by the railroad and the telegraph, the rules of agrarian mercantilism were no longer sufficient for industrial capitalism. And there was a need to come up with new rules. And they're the rules that we take for granted today, anti-trust, consumer protection, worker protection. We are at a similar point today. Where the rules that have worked for industrial capitalism are no longer sufficient for internet capitalism. And just as we did in the 19th and 20th Century, we need to establish guardrails that will allow this new capitalism to flourish but also at the same point in time take the edges off the built-in incentive to excess. That's the broad challenge that guys like Mike Doyle have to go deal with on a policy basis. That's the broader challenge that all of us need to think about as we're thinking about who will we send to be our representatives.

E.J., thank you.

MR. DIONNE: Thank you. I'd like to first bring in Cecilia who is writing, just signed a contract, correct, to write a book on Facebook. Am I correct? And now you know Tom has written the raciest book that you will ever read, so you have to compete with that.

I'd love you to both respond and to sort of begin the questioning. I have a million questions that I want to ask. But I'd really like you to kick it off. And welcome, and it's really great to have you here.

MS. KANG: Well thank you. Thanks so much for having me. Thanks so much, Tom, for inviting me too. In reading your book it was, actually it made me a little bit more reassured that things are not going to hell in a hand basket. You know, the idea that --

MR. DIONNE: It must be wrong.

MS. KANG: History is in some way reassuring sometimes to read. And in fact a lot of the problems we see now with disinformation, hate speech propaganda, are not new, as you're saying, if you look back in history. I was just also reading Jill Lepore's *These Truths*.

MR. WHEELER: Great book.

MS. KANG: History Professor at Harvard. And she talks about this, how actually Russians were using radio to spread propaganda in the US as well, so there's this history.

So it kind of strikes me as obvious and disconcerting, actually, that you have these super smart people in Silicon Valley who maybe have missed this, the historical patterns. How have they missed some of these bigger sort of, I mean maybe it's easy to say in hindsight, oh, yeah, why did you miss propaganda and hate speech and privacy. But what's going on? Is there a disconnect there? Is there not a prioritization of history humanities?

MR. WHEELER: It's a really interesting questions, Cecilia. I was fortunate enough to deliver the commencement address at the Rochester Institute of Technology this year, and that was my message. Okay? It's not just about computer code and reading about computer science, what are the human aspects of what you're doing.

Years ago I ran a software company. And I used to have hanging in my office a handwritten sign that was a phrase taken out of *Hitchhiker's Guide to the Galaxy*, that basic fount of all truth. And it said "Sometimes the fact that you can get it to work overwhelms the utter uselessness of what you've developed." And I think that is appropriate in the reality that is existing in the digital development world today. Because it's "Hey, let's see if we can," and they go build it, and never stop to consider what are the ramifications of what I'm doing. And that doesn't mean that they're bad people. It just means that the focus is so much on delivering that code and the cool things that it can do, that you never stop to

think.

So one of the things that we need to be working on is how do we make sure that people understand that there are consequences to their actions, and try and anticipate and mitigate them.

MR. DIONNE: We could probably just go back and forth. I wasn't going to ask this question first, but it pops right off your question. There was a sentence that it will not be surprising that I found arresting in the book. You write "While the Washington Post still performs an editorial function with the information it collects for social media, the unedited voice of the people that dominates the Internet affects what is news without ever interacting with the editor." And you go on to write later, "For the first time in history network capabilities available to one are available to all."

When I read that sentence, the following occurred to me. Is it the unedited voice of the people or the unedited voice of the bots and manipulators? Is it the unedited voice of liars and demigods? Or on the other side, is it the unedited voice of prophets and dissidents and people who provide new ideas? You know, editing is an interesting function, and indeed one of the questions facing some of these technology outlets is when they spread untruths, do they have any responsibilities that are editors' responsibilities, to say, just as the printer of this thing has, you know, assumes responsibility for whether what is printed is true or not. Do the folks who spread both real information and prophetic ideas and lies and divisiveness and all the rest. How are we to think about this?

MR. WHEELER: How long do you have? The key point from *Gutenberg to Google* is that we have moved from centralized networks that created centralized supervisory activities such as the curation of news, to decentralize distributed networks where everybody has the same kind of capabilities and an absence of curation and editorial oversight.

And as a result of that there has come up a virtual, a new virtual centralization, which is Facebook and Google and these sort of things. When Mark

Zuckerberg says that he is a technology, he is not an editorial function. That's wrong. The question is, how do you have, how do you introduce editorial responsibility into the process? And it strikes me that when I pick up your column I got a fairly good idea where you're coming from. You know, I got a fairly good idea where that information came from and where you want me to go. When I get something from my Facebook news feed, I have no idea what the editorial thinking that went into that in the algorithm was.

So one of the things that I propose in the book is that we don't need to tinker with the algorithms in the black box, but we do need to know what goes in and what goes out. Because that's what we get at the Washington Post. We know what goes in, we know what goes out, and we can make judgments. And the technology will allow us to get there.

So I've called for a set of what I call "Public Interest Open APIs, Application Programing Interfaces," which is how two pieces of software interface with each other. And this feed that comes into this algorithm ought to have an open API so I know what's going in. And it ought to have an open API so I know what's going out. Because right now I don't know what's going out, it's going to this niche and this niche and this niche. And I can run that under my own algorithm and say "Ah, ha. Here are the kinds of decisions that are being made. Do those deserve the credibility that they're getting?" So I think that technology can be made to attack the challenges created by technology.

MR. DIONNE: I want to ask you both this question, so I'd like to go to Cecilia. One simple way to ask it, I've always wanted to ask you this question anyway, but I'll ask Cecelia. Shouldn't we think of a technology like Facebook as a common carrier or as a publisher? In other words, I can pick up my phone and I can say any damn fool thing I want and no one is going to interfere with my right to call Tom or Cecilia and say any damn fool thing I want.

This technology reaches out in very complicated ways and it's not exactly like a telephone, but it's not exactly like a publisher. How are we to think about these things, these technologies?

MS. KANG: Yes. I think it depends on where you are. In some countries Facebook is actually a common carrier. It's like a utility, it is the Internet. If you go to Myanmar, India, places like WhatsApp is such a huge, huge presence there, in India for example. So that is the Internet for those countries. And so the significance actually is perhaps greater in those countries, how those companies are defined and how they're treated regulatory wise.

Here, you definitely have powerful, maybe a handful, maybe less than a handful at this point, three or four, big companies that are responsible for a lot of our Internet communications. And it's interesting. When I first started covering regulatory issues, telecommunications companies were the only gatekeepers that people talked about. Now you hear gatekeepers in the context of what's known as Washington's Edge providers, the Internet companies that are actually creating the apps like Facebook and Google. And there are a lot of questions about what their responsibility is.

And Tom has a very interesting perspective that they can't, a Facebook cannot sustainably say that they're only a technology company, especially since they're hiring tens of thousands of human editorial curators who are actually their constant moderators for making decisions.

And so this grey area that they hope to live in is a very difficult one as a company grows and matures. And it's a very difficult one for them to justify living in and having the liability protection that they enjoy. So a big idea that, a big statute that these Edge Companies, these Internet companies rely on is called the Communications Decency Act, Section 230. And it gives them, it shields them from the crazy comments or, you know, it shields the Facebook from, you know, a Burmese military official actually spreading hate speech.

Facebook is not responsible, it's within the country, whatever your own laws are against a person who is creating the content. That is one law that I think is a law that's being debated currently as to whether it needs updates. This is to Tom's book and his point,

what we think about is policy keeping with what's happening in the market.

So CD 230, which is a shield for Internet companies, is one example of how you see all of us thinking differently about these neutral platforms and whether they are neutral, what responsibility they should have.

And you're already seeing that carved out. You saw the first piece of legislation that reformed that law, which was called Fight Online Sex Trafficking Law, Fosta. And that essentially took away that liability for Internet companies when it came to hosting sex trafficking advertising on their site. So you'll see potentially more, like more carve outs as we go along.

MR. DIONNE: Tom, the same question to you, and to respond to that, sort of common carrier or publisher or what?

MR. WHEELER: Well this is why we read Cecilia's column, she does such a great job of explaining complex things. So I'm going to just pick on one term that you use, common carrier, okay, and why are they not common carriers.

Common carriers deliver content on a first-come, first-serve non-discriminatory basis. And that's not what they're doing, they're making editorial judgment. Okay? That then gets you into the First Amendment kinds of issues.

I'm totally with Cecilia, we need to be rethinking. The point of the matter is that in the 1990s when we began to develop a policy for this new thing called the Internet, we were dealing with what it was then. And we need to be dealing with what it is now. And that means 230 has to be re-visited and all other kinds of activities along the way.

MR. DIONNE: Let me go back to the beginning of your book. One of the great things about it is taking it from Gutenberg forward. You have this lovely line at the beginning "By unlocking the free flow of information Gutenberg's breakthrough was the Open Sesame to discovery innovation and the expansion of knowledge that enabled every scientific and technological advance that follows." You add "For centuries, the priestly and the powerful had a Genghis-like impact on the flow of information preserved by monks and

friars, and largely confined to libraries, abbeys and castles." You're looking at this whole flow of change.

And we were talking before we came in, I think about this question a lot personally. My dad was born in 1911, my mom was born in 1913. And I think of the course of change in their lifetimes. And when you think of electricity and the car and modern sanitation and the radio and television. And it strikes me that this, what is now available to me that wasn't available to me even 20 years ago, is extraordinary. All the information I carry around in my pocket. And yet it strikes me that in terms of changing life, the period they lived through was even more profound than the period we lived through.

I'd love each of you to sort of think about, is the pace of change as fast as we think it is? Is its transformation as big as we think it is? And maybe that's also the wrong question to ask that I'm posing. But I'd just like you to reflect on that. You do in the book.

MR. WHEELER: So as I said, change is coming at us faster, at a faster speed than before. But the point that I try to make in the book is how do -- Gutenberg started us down a process with the scientific method, for instance, that said let's bring more information, let's bring more information, let's bring more information. That gave us the railroad and the telegraph because the people who developed those read about those ideas. Right? And then said "Well, let me go tinker and do this."

The thesis of the book is that we are not yet, with the emphasis on "yet," at the same kind of transformational technology driven moment that was the result of the two earlier revolutions. But that we're on the cusp. And it is this coming together that has created the new reality, and that we probably can today sit here and say "Yeah, E.J., there are all kinds of new and exciting things but you ain't seen nothin' yet." And it is that "nothin' yet" that is going to be transformational.

I make the point in the book that it is never the primary network technology that is transformation, but the secondary impacts. And we're just beginning, because we have just reached this point, we are just beginning to understand and to see the full

secondary impacts that come from that.

MR. DIONNE: Do you have a thought on this? Also feel free to throw questions as well.

MS. KANG: Sure. I have a small thought on it. I think that it's a great opportunity that Tom's pointing out, that because if we are at the cusp, because there are things to do now to prepare for this next wave. Right now we're seeing a very consumer experience with the Internet and how the Internet has affected us as consumers. The next wave is going to be so profound on the business side and there will be a lot of questions as to what machines, machine learning, what artificial intelligence, what the next network of broadband 5G will advance in terms of quantum computing and all these different things going forward.

So I feel like it's sort of just starting right now and the big question, you hear a lot about job anxiety, you hear a lot about privacy anxiety, all these things. Those questions are, they're starting out as good because the changes will probably be more profound in many ways going forward. So the real question is once -- like Uber was a huge transformation for the taxi industry. Uber will be a huge transformation for all logistics going forward. So we're just seeing the consumer experience right now. But further on it will be a much more economically impacting experience. Is that right grammatically? Yes.

So I think that that's -- so it's an opportunity now to talk about it. But so the pace, you know, I can't really comment. Tom's the historian in terms of like whether it's faster or more impactful, this transformation of networks. But I do think that we're only starting to see it but we do have the benefit of history to look, like with this book, and just to think with our own knowledge about well what should be the questions looking forward? What sort of regulations and laws should be in place? Does the Federal Communications Commission right now, in its regulation of spectrum and, you know, land line and broadcast networks, is that really the focus it should be? Should it be broader? These are the kinds of questions that perhaps should be answered.

I mean the next question is can this Congress actually pass anything that will change anything. That's a whole other question.

MR. DIONNE: Probably not. Each House can, but. You have another line in here which speaks to the almost self- subverting quality of a lot of technologies. You just note "As the telegraph connected supply and demand to build regional and national markets, it also paved the way for the creation of anti-market monopoly forces." And I am thinking of Elizabeth Warren's proposals to break up the big tech companies. And you, Tom, wrote for Brookings, I guess last week, last Friday, a piece where you said "A democratic agenda for regulating tech followed the Republication Roosevelt." And you had some fairly incendiary rhetoric, which might well be spreading around these very technologies that you wrote about. I'll quote you. You said "Neither the people nor any other free people will permanently tolerate the use of the vast power conferred by vast wealth, and especially by wealth in its corporate form, without lodging somewhere in the government the still higher power of seeing this power." I think those are Teddy Roosevelt words.

MR. WHEELER: I wish I had said that. That's Teddy Roosevelt saying that.

MR. DIONNE: Teddy Roosevelt words. "In addition to being used in the interest of the individual or individuals possessing it is also used for and not against the interests of the people as a whole."

A, I just can't resist, I'm an old news guy. What do you think of the Elizabeth Warren idea, and talk a bit about -- and that's to both of you -- and talk a bit about how we should go forward on this in terms of concentration of power?

MR. WHEELER: Well, you know, as I said in my remarks, things we take for granted today, such as anti-trust laws, were revolutions in response to the excesses that were occurring as a result of industrialization in the mid-19th and early 20th Century. And TR was one of the leaders, if not the leader in making sure that there was policies actually did get developed.

And the challenge that we have today is that the concepts that were

enshrined in the Sherman Act and the Clayton Act have been transmogrified by the Chicago school of jurists who now dominate the Supreme Court and throughout the judiciary, to say that the impact of the anti-trust laws should not be so much on competition and the effect on markets, but should be on the effect on consumers, the so-called consumer welfare test. And that you measure consumer welfare by price. How do you do that in a world where Facebook is free?

So, one, yes, there are clear cut anti-trust concepts that are immutable. Secondly, the current structure in which our jurisprudence interprets those to today's reality may make it kind of difficult. But you need to take those concepts through regulatory structures, whether the FCC or the FTC or whatever, and put them into work through regulatory structures, while I also think you need to tackle head on how we get back to the concept of laws that protect competition and competitors, and a competitive market.

MS. KANG: Yeah. It's fortunate that we're agreeing so much, Tom, because there's not a lot of back and forth. But I would say, don't ignore or underestimate Elizabeth Warren. And I say that not because I'm a supporter, because I'm not, I'm neutral on these things. But because what she's done by talking about, by making one of her presidential platforms anti-trust and a focus on big tech is she's moved an outlier conversation closer to the center. And now every candidate has to somehow address this. They have to address this idea of big tech and the threat of big tech and what that means.

So politically it was very smart. And she also is somebody who has a lot of experience taking on big corporate interests and her previous experience with other things. So she's not a newcomer to understanding the power of dominate corporations.

So that's why I say don't underestimate Elizabeth Warren when she says something like this because immediately when she announced her platform you had this sort of Chicago schoolers who are sort of inside the weeds on anti-trust, and then you had a lot of other sort of business minded groups like the Chamber coming out and saying "This is ridiculous, you can't even do what you're talking about." But a lot of has to do with just the

discussion. And for, I would say for a few years now there's been this sort of shadow conversation in Washington about updating anti-trust, but people didn't really take it seriously because of what Tom's describing, there's sort of this overwhelming kind of sentiment that's very Chicago school anchored that you have to think of consumer welfare.

And so now these sort of outliers who have been talking about this are moving closer to the mainstream so you'll see much more conversation about this. Actually implementing this idea, breaking up these tech companies, it's like it's really hard. And it would take legislation, which she is proposing, there's all kinds of things. But shining the light on big tech and their dominance and thinking about "Okay, well did it make sense to allow Facebook to acquire Instagram?" Yes, Instagram was small and didn't have an advertising business, but once you incorporate it into Facebook it becomes an advertising juggernaut. Thinking about network effects and all the things that are specific to the Internet. There are now conversations of people that they're not esoteric anymore, that people can understand and they use these products.

So I think you'll see much more conversation about big tech and their dominance going forward and it will be interesting to see the tweaks on these ideas, like the consumer welfare standard. I think that's where it's going to go, it's going to be sly tweaks going forward.

MR. DIONNE: Let me see if I can pick a fight between you.

MS. KANG: Okay.

MR. DIONNE: Because it's on the question of whether you do need legislation or not because Warren, as I understand her position, really thinks there is quite a lot of power vested in the FCC and the FTC to do some of this without new legislation. But the follow up to that question, I want to ask that, but also this. When you mention TR, I actually thought of something a little different, which is one of the great campaigns in our history, I got to cover it. No I didn't, it's 1912.

MR. WHEELER: But your mother was born in 1913, we just heard you say

so.

MR. DIONNE: Right. And in that campaign, the fight between Teddy Roosevelt and Woodrow Wilson was really a fight between whether bigness was the enemy. And Wilson ran under the New Freedom where he focused on the need to bust up these big companies. Which is in a way Warren's position. TR ran on what was called the New Nationalism where he argued no, there are advantages to bigness to the society but we need to heavily regulate the big corporations in the public interest. Wilson prevailed in that election, but it's not clear that the New Freedom, in the long run, actually overcame the New Nationalism. Our history is a kind of blend of those two. The New Deal is a blend.

So to take that on, how much power do the Agencies have to implement something like Warren is talking about, A, independent of new legislation and, B, New Freedom versus New Nationalism, which is the appropriate model for thinking about this? Because I've been listening to the debate over Warren's stuff, and I hear some of those echoes in the conversation.

MR. WHEELER: So, you know, the story is told, I hope I get this right. I think it was JP Morgan that came to the White House when Roosevelt was talking about new powers for the ICC. And he said, you know, "Tell me what your problems are and we can solve them." And Roosevelt said "No, that's not what we're here to talk about. We're putting rules in place, not cutting backroom deals." So, you know, obviously I'm a born-again regulator, right? I mean, and what did we try to do with the Open Internet Rules? We tried to create competition by making sure that networks remained open and so that you could apply anti-trust concepts in a regulatory structure. And is it sufficient in and of itself? Well you then have to take anti-trust and break it into a couple of parts.

There is, as Cecilia mentioned, the review of mergers. Okay? Which can probably be a little more aggressive than what we have seen. Okay? And then there is the old break 'em up question. And it just seems to me that one of the challenges that we need to be more insightful and forceful on the going in, that we need to, in the interim, have

regulation that will practice competitive concepts, and we need to understand that break 'em up may not be a bad course to take, but what happens in reality is that it takes years and years and years and years before that ever works its way through the process. And that by the time you get to the end of it, the issues that you started with here have changed. And so how do you create regulatory agility that takes the anti-trust concept and allows it to adjust to changed circumstances?

MR. DIONNE: Cecilia?

MS. KANG: Yeah. So this is related to anti-trust but it's -- can we talk about privacy for just a second, and consumer protection, because it relates to dominance in some ways.

At the FTC there is no privacy law right now in the US except for a Child Privacy Law, as well as discrete laws related to health and finances, your privacy on the Internet. So at the FTC they are trying to protect consumers as it relates to their data on the Internet. But they don't actually have a law. They have sort of a jury-rigged system where they go through the statute of consumer protection.

I mention this because I think that Agencies feel like they have to kind of thread the needle whenever they do enforcement actions. And this goes to my point about the bigger companies. They're also out resourced. The big companies have armies of lawyers that they can hire, and they do when it comes to an investigation. So if they were being challenged in some way, the second part of anti-trust that we're talking about, break them up, this idea. Can you imagine what it would take for an Agency to think about what they would need to go up against a company to try to break them up? It's a very daunting idea. They're going up against a company that is able to hire the most expensive attorneys, litigators, and the Agency itself is very afraid also of losing. Not only because that's bad for their track record and they don't want to lose, but also they're afraid that Congress will get really mad and take away some of their authority or take away their resources. So that's sort of the dynamic they're working from. So I think there's a resource problem that's going

on.

And there's also a situation where they're not dealing with laws that are specific to what they're trying to do. So there does need to be some sort of updates. I mention consumer protection and privacy only because that's like very much on the plate right now. You have a Republican Chairman of the FTC whose, you know, in this era of dismantling administrative state into regulation. He's saying "I need more, actually I need more." So there's a definitely a cry on. And the Republican FCC Chairman is saying "Actually we should be looking at it, there should be parity between telecom companies and Internet companies."

So there's a lot of rethinking across party lines on what the update should be. And I think you'll hear that the regulatory agency leaders themselves will say "We're under resourced and the laws need some updating."

MR. WHEELER: Can I pick up on just one thing? This parody concept.

MS. KANG: Yeah.

MR. WHEELER: Absolutely. It's hard to argue with. It also becomes the shield behind which people who don't want to do something hide. "Oh, I can't do this because it's only dealing with the networks, not also dealing with the Edge providers." "Oh, I can't do this because it's only dealing with this one particular Edge provider." And so totally, we need uniformity and we need to cover both the networks and those who ride upon the networks. But the fact that the statutes are written so that the FCC only has network authority, and the FTC has others, should not be a shield to keep from doing something in one Agency or the other.

MS. KANG: And the other thing is I would say the regulators on competition, if you're very clear you send a signal to the market. When Tom was the FCC Chairman, he said "I believe there should always be four wireless national network providers." Now you have an environment where it's like "Maybe, maybe not," you know, talk about history repeating itself, Sprint and T Mobile is trying to merge.

MR. WHEELER: Again.

MS. KANG: Again. And so, you know, as far as regulatory certainty can be set, even to some degree, with the resources at hand.

MR. DIONNE: I want to -- you all may not know this, but Tom is a Lincoln obsessive. And I think that one of the definitions of happiness is to bring your loves and obsessions together. So we are not talking about this book today, but Tom actually wrote a book called *Mr. Lincoln's T-mails, how Abraham Lincoln used the telegraph to win the Civil War*.

I want to bring up -- you can talk about that book if you wish. And you talk about Lincoln as the first national leader in history to use electronic communications in day-to-day governance and management.

But I'd also like to ask about Lincoln as a sort of a farsighted leader. My friend Mike Tomasky has a new book out called *If We Can Keep It*, and he points out, I think I'm remembering this right. On the same day Lincoln signed the Pacific Railroad Act, which linked the two coasts, a huge deal technologically, and he also signed the Moral Act which helped create the land grant colleges.

And so I guess I want to ask you a simple question, what would Lincoln do? And it's a serious question which is sort of when you think of him philosophically, how can you imagine his dealing with the very questions you're grappling with, you did at the FCC and you are here?

MR. WHEELER: So one quick point. The Pacific Telegraph Act of 1862 included a net neutrality provision. I mean I'm not kidding. That it said that in 1862 they realized that an essential network had to be an open network. And I think it's Section Three of the Act it specifically says that it has to carry all traffic without discrimination.

MR. DIONNE: By the way, whoever is on Twitter right now, tweet out Abraham Lincoln endorses net neutrality.

MR. WHEELER: So if Abraham Lincoln were around today we would call

him an early adopter. Okay? He's the only President to hold a patent. Okay? He invented a device to float boats over obstructions in rivers. You can go down and actually see it at the Patent Office.

And he was a railroad lawyer, and one of his most famous railroad cases was the Rock Island Bridge Case. And here was what was going on. The railroads were building east to west, the main waterways flowed north to south, the watermen controlled the economy, and the railroad wanted to build a bridge across the Mississippi River at Rock Island. Because it could go to the middle of the river where there were these rock islands, and then you could go on into Iowa. And they did. Big expense, multi-year process. And the watermen said "Whoa, whoa, wait a minute. This is not good for us because we want to haul stuff back and forth across." And so on the first day of the opening of the Rock Island Bridge, an amazing thing happened. A riverboat crashed into it, setting the bridge on fire, setting the boat on fire. Now it was an accident, but the fact that banners were suddenly unfurled praising this action and talking about a hazard to navigation, shows that there was early on spin misters at work. Lincoln defended the Bridge in court, and he had a great line, "The traffic east and west has as much right as the traffic north and south."

And the best he could do, because this was in Rock Island, which is, again, a water controlled community. The best he could do was a hung jury. But the fact that it was a hung jury didn't allow the ship owner to be able to be successfully suing the Bridge. And the goal was to make bridge building so expensive because of your liabilities that you'd never build them. So he won in this case, which was, you know, precedential for so many things.

MR. DIONNE: See, I'm such a political excessive I'm thinking, and the watermen voted for Douglas.

MR. WHEELER: Right.

MR. DIONNE: Go ahead, just toss any thought.

MS. KANG: I have so little to say about Lincoln. What do you see as the

biggest gaps right now in Washington as far as updating policy for this future that you see? Like where do you see sort of a must bridge divide, privacy, anti-trust, whatever.

MR. WHEELER: So, no, I think it begins with, it begins with our leaders, our representative of us, and that we have just begun as a society to understand the real impact of what was going on. Both we and our leaders have been sold a line that "This is all magic."

MS. KANG: Yeah.

MR. WHEELER: "And if you touch it, you may break the magic." Right? And that has been a very positive thing for the companies who have been able to make their own rules. I think we're getting to an era -- so history says that the pioneers always make the rules. Okay. Until those practices confront the public interest and the rights of individuals. I think we're at that time.

And so first we need a recognition that we have reached that point. Second, we need a technological understanding, okay? And I think the members of Congress are coming up to speed on that. You know, it takes a period of time but they're coming up to speed on that. And I think that the third thing that's going on is that the companies themselves have realized that they just may have been too successful, you know? Oscar Wilde has a great quote in *Lady Windermere's Fan* where he says something, one of his characters say something to the effect that there are two great tragedies in life, not getting what you want, and getting it.

And the digital companies have gotten everything they want in the name of deregulation, and then some. So for instance, when the Trump/FCC repeals the Open Internet Rule, they don't just stop there, they go on and say "And we have no jurisdiction over the activities on the Internet. None, washing our hands." Thereby creating a void into which states can move.

MS. KANG: Right.

MR. WHEELER: And "Oh my God, you know, we've got what we wanted.

It may be a little too much." Because I think everybody understands there needs to be a set of rules. And so we're now entering the great debate on what those rules are going to look like.

MR. DIONNE: I would love to -- how did you all know to put your hands up? Somebody must have communicated with you. We are here for the Q and A. Why don't we start in the front and I'll work backward, if you don't mind. And maybe if I could, just to get as many questions in, I'll take a couple at a time, which will allow our guests to evade the one that's hardest.

MALE SPEAKER: Unlike railroads, there are no national boundaries for the Internet. Are there other countries that are doing the right thing, as far as you're concerned, with these issues?

MR. DIONNE: So what he's really saying is your whole theory is wrong, forget the railroad comparison. That's a great -- thank you for that question. The gentlemen, oh, let's do three since they're all together.

MR. CHECCO: Larry Checcoo, Senior Advisor to Serve USA. Covered a lot of ground, really interesting conversation. I got a million questions but I'm going to hone it to one. You talked about that this is not an academic thing, that there's really implications for liberal democracy and capitalism. And we know that this technology is starting to rewire our brains, everything is happening all at once. I found this conversation more philosophical than technical. What is this doing to the ethos of our nation and the world, really? I mean if in fact this technology is as powerful as you say, how do we integrate our principles and our integrity, and our ethos into all of this technology to make it work for all of us?

MR. DIONNE: I love Larry coming to our events because he always asks a question I wish I had thought of. Thank you. Sir, one more question.

MR. WINTERS: Steve Winters, Independent Consultant. I guess this is for Tom. You mentioned somewhere along the line, how can anybody compete with Facebook when it's free. And of course there's a line of argument. You often see Facebook isn't free

in the sense that you're paying with your personal information, which they collect. You personally, not in general, but you personally, then package it and resell it on to other people. And actually I think Apple has been the only large company to sort of say "Wait a minute, that's going too far. And then the other companies wrote this big letter to Apple and said "Look, this surveillance capital is a model, is how the Internet works. If you fiddle with that the whole thing's going to fall apart." But you haven't really touched on that. And certainly any attempt to seriously deal with the tech companies or reform the way the Internet works is going to have to deal with the surveillance capital as a model, and of course a lot of suggestions. But what's your suggestion?

MR. DIONNE: These are great questions, thank you. Go ahead, for both of you.

MR. WHEELER: Well let's do it in reverse. Okay? So, one, we're dealing with a two-sided market, okay? I used "free" in the context of the consumer welfare test. Okay? We're dealing with a two-sided market. On this side of the market Facebook and others Hoover up your information, keep it for themselves, don't have interconnection so others have access to it, and then turn around to the other side of the market where they say "Hey, you want this information, okay. I'm going to extort monopoly rent from you on that." And that's how they make these big dollars.

The interesting thing that's happened is the German Cartel office has just said "There's a relationship between these two." And the fact that any percent of Germans are on Facebook means that there really is no choice. And so we see privacy issues as a monopoly effect issue. I could on but I won't need to go.

Next question, I don't know. But we need to be emphasizing the concept of E Pluribus Unum rather than giving away to our tribal instincts. I mean I'm really stuck on this thing that in order for democracy to work we have to say -- there's a reason for us to give up our tribalism and come together. That picture has not been painted for us. Technology drives us apart, the wealth gap drives us apart, yada, da yada, da yada, down

the list. Let's start talking about the "us." Okay.

And insofar as railroads are concerned, and I forget what your angle was, although it was railroads.

MALE SPEAKER: International.

MR. WHEELER: Oh, yeah. So here's the interesting thing. So again it goes back to the fact that the Trump Administration in particular has washed their hands of any role in any of this. We have lost our American leadership, thought leadership, in how these issues should be dealt with regulatorily, and given it over to other countries to figure out for themselves.

It used to be that we were the leaders. When we passed the Open Internet Rule, two weeks later I was in London meeting with every one of the 28-country equivalence to the Chairman of the FCC, helping them write their Open Internet Rule so that we would be together and there would be this international coordination in a connected world.

The fact that we have run away from responsibility in this country means that we have also abrogated our responsibility to be leaders in the world.

MR. DIONNE: Let's see, let me start on the other side of the room. This gentleman and that gentleman, and, yeah, you over there. Please. Thank you.

MR. COOPER: Mark Cooper. Both of the speakers avoided the breakup question by emphasizing how hard it would be to break them up. I want to talk about what I think is the really hard part. What happens if you discovery that economies of scale and scope are extremely powerful and that once you break them up you're constantly fighting the economics and you have to constantly break them up? How does that work?

MR. WHEELER: So, Mark, let me just real fast. I'm reminded of the classic story of the three economists on a desert island. And they needed to eat, and they had a can. And the question was, how do you open this can of food? And one guy had one idea and one guy had another, and then the economist says "Assume a can opener." Okay?

We can discuss this forever, but it's based on an assumption that you have

made, could be a factual one, but may not be appropriate at this point in time.

MR. DIONNE: So everybody's still ducking the breakup question, just in deference to the – sir.

MR. NELSON: Mike Nelson. I worked in Internet policy in the Clinton Administration at the FCC.

MR. WHEELER: Somebody we've known for years. A thought leader.

MR. NELSON: Something I learned there that was very important was to always have a good bumper sticker. And our bumper sticker was "First do no harm, so only regulate if that's the last and only solution." The other thing I learned was never get on the wrong side of a powerful bumper sticker.

And those of us who were cyber libertarian techno optimist Democrats are on the wrong side of a very powerful bumper sticker, which is "The Internet is a mature technology and it is thus inevitable that it be regulated."

MR. DIONNE: Pretty long for a bumper sticker.

MS. KANG: Yeah.

MR. WHEELER: He drives a big car.

MR. NELSON: It's also wrong. But I'd be interested to know if the two of you, the three of you agree that the Internet is a mature technology and that mature technologies are inevitably regulated?

MR. DIONNE: Thank you. Could we get, there was one hand on this side, yeah. And that's a great question, thank you. Both are.

MALE SPEAKER: This question's for the panel. I heard a reference close to it called Ethos. I'm very privileged, I have 26 grandkids, they teach me every day about this process. My concern is who's helping them not fall into the pitfalls of all the nonsense of this process?

MR. DIONNE: Which in a way goes to your point about what's happening to our brains. Please take -- why don't I start with you?

MS. KANG: Sure. I'll start with the second one first. So I think we're winging it, you know. Like we're just sort of thinking okay, the Internet's going to be fine for our kids, it's so cute to post baby pictures. And now slowly we're, you know, I have a young teenager and she's, you know, sees pictures I posted of her on Facebook 10 years ago, she said "Why did you do that?" You know, like this is my identity, why? And we're starting to -- we're just sort of hoping that it all will work out, and we're only now having some regrets over it. You're having teenagers who are Googling themselves and saying "Crap, I have a whole digital history of me and I didn't even get a chance to set it myself." So as far as the children go, and bless you, 26 grandchildren. I think that that's an area actually where you're going to find a lot of agreement, maybe in Washington.

Like today there was an update to the Children's Online Privacy Protection Act that was just introduced by Ed Markey and Josh Holly, so it's bipartisan. Josh Holly's interesting because he's a Republican and he has young kids, and he's a Freshman so he sees it himself and he's concerned about the Internet for the kids. And so this sort of, to go to what Mike was saying, this sort of techno utopianism is no longer quite as utopian as it used to be.

So we're sort of winging it, and I think that there is, to parlay to your question, a recognition that it's not okay to just wing it anymore. And there are certain things the Internet is not mature. And that's what I was saying earlier. You're just starting to see the iterations that are to come. Like we see a very consumer focused Internet right now, the business aspects, and the sort of how the Internet is going to seep into our Infrastructure and all these different things. It's just we're just starting to see it and we're just imagining it now.

But there are certain things that I think are pretty basic questions that are definitely ripe to ask and to answer. Who owns your data, what kind of control should you have over it, should there be law enforcement, the ability of law enforcement to access certain data? These are some basic things that it doesn't really matter what the technology

will look like in the future, whether it be AR or AI or Quantum. These are some very basic questions that I think are reasonable to ask today.

MR. DIONNE: I just can't resist that. I thought your question was an excellent partial response to your question. Because it's always struck me that liberalism breaks down completely when you get to the issue of how does X affect children. Because everything John Stewart Bell wrote about liberty was all about adults. And so it's no accident, for example, that some of the first labor legislation was child labor in factories. And so whether it's a mature technology or a still developing technology, the question you asked is going to be on a lot of minds, and I suspect it be a -- to use somebody who'd hate my use of it in support of regulation -- it'll be a fountainhead of arguments for regulation, children will be. But go ahead.

MR. WHEELER: I'm not going to -- how do you follow those two excellent responses? But I do have a bumper sticker for you, Mike.

MR. NELSON: Okay.

MR. WHEELER: To err is human, to forgive is deregulation.

MR. DIONNE: Do you want to --

MR. WHEELER: That's it.

MR. DIONNE: We have one last round. Oh, boy. I'm sorry, I can't get everybody in, and that's my fault. Let's go way to the back because I don't want to discriminate against the back of the room, this is net neutrality here. Go ahead.

MR. AUCKLAND: Thank you. My name is Greg Auckland, I'm with the University of Central Florida. And, Tom, your original comments were leading me to ask about how do we infuse a conscience into Internet enabled technologies, because that's where I thought you were going. The question I have is about education because as you look at *Gutenberg to Google*, it's all about information dissemination. Well here we are in higher education and you have this enormous explosion in information dissemination. Where does higher education go in this new realm?

MR. DIONNE: And then this gentleman who had a hand -- right there, sir. Go ahead. And then the gentleman who had to stand up for the whole event deserves a mic, so why don't you get one over to him.

MR. BROWN: Adam Foyer Brown with the Cohen Group. As far as AI goes, do you see a future of licensing requirements, and what would those look like? And what sort of actions would be restricted pertaining to news media and social media with the new implementation of AI and machine learning?

MR. DIONNE: And then the gentleman way in the back. And by the way, for those I couldn't call on, Tom will be signing books, correct? So when you purchase his book, ask him a question. Go ahead.

MR. SHAZER: Nichols Shazer. I'm trying to build a company in this sort of area actually. And I'm really curious as to what this regulation will do to businesses like mine because I was inspired by this great period of growth, and it's not my, you know, fault that I'm much younger maybe, I only start my company now. So what will this mean all this regulation, all this red tape for companies like mine if they want to join the big league at some point? Will it make it easier for us to, you know, follow the footsteps of Google and Facebook, or should we expect to employ 10,000 people before we, you know, even reach the ceiling?

MR. DIONNE: Why don't you start?

MS. KANG: I don't think there's been a better time to start a company. The barrier to entry is like non-existent. It's just, you know, if you have Internet access it's fantastic and you can find resources that would have been personnel in the past online for almost free. So I think there's definitely an argument that certain regulations do not affect the biggest companies as much as they do the smallest. But I hear that a lot, I don't really see it. I haven't seen proof of that. I hear that a lot though about GDPR, the European Privacy Law for example. There's some obvious ways where it affects a smaller company perhaps more profoundly, in that you don't have the legal expertise on hand. But as far as

penalties and stuff like that, I don't see that. I hear that a lot and I kind of feel like it's a lobbying point by the biggest companies, or Internet companies. So I don't think that -- I think it's a great time.

And when you say "this space," you're talking about the Internet, right? Sorry.

MR. SHAZER: Actually I'm trying to build an online public thinking architecture, connecting different solutions.

MS. KANG: Yeah, that sounds like it's super free for you and for the users.

MR. WHEELER: So let me pick -- so, E.J., you're going to get your wish. Cecilia and I can disagree, okay?

It has been -- you're right, it has never been easier to start something. But the ability to grow something is challenged by traditional scope and scale economies. But even more so, by network effects. And, you know, think about, so Facebook beat My Space despite the fact it was owned by Rupert Murdock and they had some heft, right? Beat My Space in a good old fashioned "We got a better product." If this gentleman or anybody else had a new Facebook competitor today, there is no way in hell that they could successfully challenge Facebook and there two and a quarter billion subscribers and the data that that gives them. Because the new company goes to the market and says "Hey, I want you to give me money and I'll help you target." And they say "Well, do you have all this granularity?" "No, I don't." So one of the things that we need to think about is how do we -- what made the Internet is interconnection of disparate networks. How do we make sure that we have interconnection of the data that is held by those that use the networks so they don't use it to squash out new ideas like this?

MS. KANG: Yeah.

MR. DIONNE: I'm going to close with two thoughts. One is, Cecilia, finish your book fast because I have to reconvene this discussion as soon as possible. You are awesome, and I thank you.

And I want to close with a reading from Scripture -- I mean from the book. It mentions Scripture. So at the end of Tom's book he talks about a salon at Alvin Toffler's house, remember Alvin Toffler? And it's all these techies, and this is what Tom writes. He said "Isn't it interesting," I commented "that a room full of change creators is searching for truths to bring perspective to their change. There were only two places we could turn to for this shelter I suggested, faith and history. Faith has always provided the perspective that there's something bigger than me, and history is the collected experiences of people like us as they dealt with their own surprisingly similar challenges. Our faith, in fact, is inseparable from our history. We studied the ancient Scriptures for meaning in our modern lives because they tell stories that provide insight into the universal human condition." Tom has told us stories that provide insight into the universal human condition but also into the problems we face right now, and for that I'm grateful. Thank you so much.

MR. WHEELER: Thank you, E.J.

MR. DIONNE: Thank you all very much.

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