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Northern Light Perspectives

How the Internet has Changed Business over the Past 20 Years – and What Comes Next

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It's amazing how wrong smart people can be. Just look back to some of the pronouncements and predictions about the technology industry that were circulating in 1996:

- *Time* magazine reported that “Apple [is] a chaotic mess without a strategic vision and certainly no future”
- Ethernet co-inventor Bob Metcalfe predicted that 1996 would be the year the internet would “catastrophically collapse”
- In a *Newsweek* op-ed, astronomer and author Clifford Stoll labeled the prospect of e-commerce “baloney.”

Faulty forecasts aside, what else was happening in 1996?

- Bill Clinton was re-elected President on the back of a strong U.S. economy propelled in part by a new thing called the Internet;
- Yahoo!'s IPO, a mere eight months after the launch of its commercial website, blew the doors off; and
- Only about 20 million Americans had Internet access, and they spent fewer than 30 minutes a month surfing the web.

Looking back 20 years on the infancy of the commercial internet from the vantage point of 2016 is the equivalent of a paleontologist investigating life during the Mesozoic Era. It feels like an eternity ago.



The birth of the web

The advent of the commercial internet – some date it to [May 1994](#), when the first International Conference on the World Wide Web opened at CERN in Geneva, Switzerland – has changed not only *how* business is conducted, but *who* is conducting business. Entire new industries have grown up in the last 20 years – search, e-commerce, social networking, and streaming music are obvious examples – as have new functions (social marketing, anyone?) and lines of business within established enterprises. For instance, internet-enabled “cloud services” is a strategic venture for Amazon and Google (internet-age companies) as well as for IBM and Microsoft, both of which pre-date the commercial internet by decades.

Beyond the advent of new technology services and “pure play” dot-com companies, however, pervasive structural changes in society, business, and technology wrought by the internet also are noteworthy.

So what are those, the most fundamental changes, the ones that change everything?

All the world’s information online

In the 1930s, Vannevar Bush outlined the idea for a future technology he called the *memex* that would store books, records, and communications and which could be consulted with speed and flexibility. Though his paper, “How We May Think,” influenced the creation of the computer mouse, hypertext, and hypermedia, his vision of online information was not practical until the internet was created.

From zero in the early ‘90s, the internet has grown to 45 billion web pages of information. That is a whopping big amount, which doesn’t even count the billions of pages of information not indexed by web search engines – market and technology research repositories, for instance, which are never-the-less online (even if they’re not in the web search indexes). Nor does it count Twitter (200 million posts a day), Facebook and LinkedIn, emails (billions a day), books, government records, stock price data, and products offered for sale – all of which are online.





It seems likely that we are approaching the moment in the not too distant future where we can say that the entire world's information resources not held by corporations as secret intellectual property are online. Twenty years ago this would have been an unthinkable goal.

Search as a reflex

There are only really three things you can do online: search, buy/sell, and navigate. Of these, search is the process that has come to dominate our lives, partly because there is so much information online now.

Many decades ago IBM famously said that there is only one computer software application: databases – by which they meant that all the other applications (in finance, manufacturing, HR, etc.) were just different combinations of output from underlying databases.

Today, that is not true anymore. Now the core application is *search*. Every task and activity starts with a search. In our personal lives, the decision around what tablet to buy, where to buy it, turn by turn directions to get there, what time the store closes – these are all search-initiated tasks.

“Search” is almost a synonym of “internet.” (Don't take my word for, Google it!) The word search appears in 30% of the webpages that have the word “internet” on them, while “buy” or “sell” are on only on 10% of the pages on the internet that have the word “internet” on them and “ecommerce” is only on 1% of the pages that have the word “internet” on them.



We no longer have to wonder about any fact. We can know. Just enter the right search terms and – Presto! Whammo! – the answer is staring you in the face. This is a really big deal. It changes everything.

Likewise, in our professional work, search is the first step in tasks and projects. What is the ticket number for that bug? How big is the market for tires in Brazil? Who is an expert on regulatory requirements in Spain? What do we know about how millennial moms decide which laundry detergent to buy? What are the partnerships announced by our competitor? These are search questions.



There are over three trillion search queries per year on web search engines alone. I don't know if anyone has estimated the additional annual search queries done on shopping sites, email clients, travel sites, and enterprise search solutions, but those numbers must be staggering, easily matching the number of web searches. So let's guess there are a total of six trillion search queries per year. Since there are around 4 billion people in the world with internet access, that means the average person with internet access does 1,500 searches a year. Name something else that the average person does 1,500 times a year.

The rise of social networking

To ascertain what rivals search in popularity as an internet activity, note how often teenagers check their Facebook page. One recent study reported that teenagers with smart phones check their Facebook pages 160 times a day – that would be nine times an hour. Fortunately, we are not all teenagers or civilization might grind to a halt due to social networking. (Sounds like a plot idea for a post-apocalyptic novel!) Facebook itself says that 1.1 billion people look at Facebook every day, which would be about 25% of the world population with internet access.

After search, there is no doubt that social networking has been a major consequence of the internet and a change in how society works. This article, for example, is going to be published on LinkedIn. (I sure hope all of you, my dear readers, recommend it to all your LinkedIn contacts!) LinkedIn, the most popular professional social network, currently claims 450 million members worldwide; about 40% of them check their account on a daily basis to stay abreast of information and their contacts.

But beyond the obvious benefits of online information, search, and social networking, some industries and business practices have been blown to bits by the internet. Let's review some of them.

The destruction of the distribution channel

The internet has eliminated distribution channels that previously were both required but also highly useful to reach consumers.

Consider the personal computer business; until the mid-'90s PC and software manufacturers had to develop and nurture relationships with electronics retail chains and specialty stores. Companies such as CompUSA, Computer City, CompuAdd, Babbages, Egghead, Software Etc. Circuit City, and the biggest of them all, ComputerLand, which had 800 stores operating at its pre-internet peak, were all virtually household names. Mass retailers like Sears, K-Mart, and Toys-R-Us jumped into



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the computer retailing fray in the 1980s as well. These retail locations were the common place consumers went to buy computers and software. (One such chain, Radio Shack, was itself a PC pioneer with the TRS-80.) The whole marketing game was about getting shelf-space in the large retailers, and if you did that, sales would flow.

Twenty years into the commercial internet era, the computer retail channel has largely disappeared. Metropolitan Boston where I live has exactly one computer retailer location left (Microcenter), the electronic chain store industry is down to a single player (Best Buy), and only a tiny percentage of computers are sold at the few remaining physical retailers. Most PC hardware and software is sold online directly by the manufactures to the consumer. And when there is “distribution” it is through mega-online distributors like Amazon that handle all products from all manufacturers pretty much equally, so that getting noticed, which you could do in the old days using retail shelf-space as the tool, is extremely hard.

Advertising overload and marketing as the dominant business function

Because there are fewer ways for manufacturers to get their products to market and because those ways all depend on the consumer *looking* for you instead of *noticing* you on the shelf, establishing a strong brand identity to drive sales is more critical than ever.

This need for branding, combined with the pervasive presence of two pieces of technology (browsers and smartphones) for delivering brand messages anytime, anywhere, has fueled an explosion in the average number of commercial messages the typical consumer is exposed to each day. Estimates are that the average online citizen receives *5,000 commercial messages per day*. Most of us have gotten really good at tuning the commercial messages out.

And how have advertisers responded to this new tuned-out advertising target? By adding more and more commercial messages, of course. Now advertisements pop up on news sites before news stories, in navigation systems while you are driving, and inside games before you can try to kill that dragon with your magic sword.

Noticing this, software giants like IBM and Oracle have emphasized marketing automation as core functional areas to focus on. IBM recently stated that the CMO now has a larger IT budget in most companies than the CIO does.



The decline of the print publishing industry

One of the first consequences of Web search engines and massive online content was that the value of having unique coverage of a topic has declined. For example, search on a news topic on an internet news search engine and you will have competent coverage presenting the essential elements returned from thousands of individual news sites. No one site can claim any significant coverage advantage over the collection of all sites assembled on the fly by the search engine. And as the German news sites that tried to negotiate royalties from Google News found out, web news search engines can instantly and seamlessly switch out the publishers contributing to any particular user query, further reducing the value of being a publisher. The web news search engine effectively eliminates the value of an individual content repository by creating a virtual repository for each query from all indexed sources.

A case in point: In 1993, the New York Times Company bought the *Boston Globe*, Boston's leading daily newspaper. (Rumors that it was a nefarious plot for the New York Yankees to control press coverage of the Boston Red Sox to demoralize Red Sox fans were never proven! And at any rate Red Sox fans got the last laugh.) The Times paid around \$1.7 billion (in 2013 dollars) for the Globe; 10 years later, in 2013, they sold it to the local owners of the Red Sox for \$70 million. That is a 95% decline in the value of a leading newspaper, measured from before the internet to after, and it serves as a model for what has happened across the board in the newspaper industry.

The internet crashed the revenues and value of newspapers by moving the page views from print to online and substituting proprietary technology for proprietary content. This process rolls ahead today. Recent articles I have read (on online news sites, of course, not in a newspaper) report that there has been yet another 30% annual decline in advertising revenues for newspapers in 2016.

A similar process is rolling ahead in other information arenas. Consider for a moment search of scientific and technical literature. As more and more content addressing any scientific question is published by multiple sources, and made findable by purpose built internet search engines, the value of any one piece of content or any one collection of content declines. Every category of information will undergo this radical shift, in which the value moves from the publisher to the automated, cross-publisher search provider.



What about the next 20 years?

So we have seen a lot of changes in 20 years: RIP newspapers and physical distribution channels; the ascendancy of online marketing as a business discipline; the dominance of search; and the rise of social networking.

So, my dear reader, you may ask, “What about the next 20 years? If you are so smart tell us what to expect.”

As the famous missed projections at the beginning of this article suggest, forecasting the future of technologies is a risky business. But here goes.

First, an observation. Many of the major innovations of the internet era are based on technology collisions. The internet collided with MP3 technology; the result was online music replacing the CD (and the availability of music of our choice every waking minute if we want it). The internet collided with smart phones; the result was the mobile computing revolution. Smart phones collided with GPS technology and created the navigation industry, which changed forever how we drive.

So what collision will come next?

After decades of failures, artificial intelligence (AI) is finally scoring some wins. Personal assistants on your phone can help you find a nearby pizza restaurant, or advise you to leave for the big game earlier than you thought you needed to, based on the navigation system checking *on its own initiative* for traffic jams along your route.

But IBM Watson’s *Jeopardy* win notwithstanding, automated assistants have not made it into search yet because search tasks are too unpredictable, unstructured, and broad ranging. In the Watson case, IBM knew the domains of the questions in advance of the competition by studying the history of *Jeopardy* questions. You just know that X% of the questions are going to be about movies and actors, Y% going to be about sports and athletes, and Z% about celebrities. IBM trained Watson to answer predictable questions from a pre-designed database of related facts.

Clever, though perhaps less intelligent than we fantasize. But this is how AI delivers. It knows in advance, most often with the help of a human expert, what is needed and arranges data in advance to address the questions we can predict it will have to answer. For some reason I have never understood, we call this “machine learning” instead of “machine-assisted human learning.”



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But even so, IBM, Google, Microsoft, and hundreds of innovative small startups are making huge strides in delivering on the promise of AI using machine learning as the underlying technique. Soon, intelligent applications will be possible and even commonplace. In every case, these new AI-driven applications will know a lot about the use case in advance, just like Watson knew about the *Jeopardy* use-case in advance.

As we have seen, collisions drive breakthroughs. The collision of the internet with AI is inevitable and it may change everything if we look out five, 10 or 20 years. The result will be *the automated internet*.

How will that work? Imagine your search engine becomes your friend and business partner. It doesn't wait for you to search for something. It prompts you with information you need by searching for it in the background based on what it knows about your job.

For example, my company Northern Light builds market research and competitive intelligence solutions. What if Siri or Cortana knew as much about business strategy as they do about the location of the nearest pizza restaurant? Imagine an intelligent business search assistant; let's call her Millie. Imagine Millie trolls the world's business news while you are in all those interminable meetings at the office and tells you when she notices that a competitor is doing something that indicates a change in business strategy.



“David, I just noticed something I think you should take a look at...”



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Okay, I am cheating a little on my forecast of the next 20 years. It is not going to take us 20 more years to get to Millie, since Northern Light is working toward this goal already. (Check back with me next year and ask me about how Millie is coming along.)

So what comes next after Millie? Well, how about this. My dream is to have an entire staff of intelligent assistants. I want one like Millie to monitor the world and tell me when something interesting is happening that relates to my professional life. I want another automated assistant, let's call her Alice, that reads my email and tells me which ones I should pay attention to. I want another one to manage my calendar, maybe Jennifer, and not only does she know when I have to be places but knows the lead times for all my tasks so I don't keep running out of time to prepare for my presentations. And it would really be great if Millie or Alice or Jennifer could write reports for me, and even articles like this one, based on me tossing her an idea. Why do I have to write the slides if Millie is smart enough to let me know what is going on out there?

Come to think of it, dear reader, how do you know this article was written by David, and not by Millie? Just asking.

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