Institute of Futurology
Knowing our future

Googling the Future: a review of *The New Digital Age*

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THE NEW
DIGITAL AGE

RESHAPING THE FUTURE
OF PEOPLE, NATIONS
AND BUSINESS
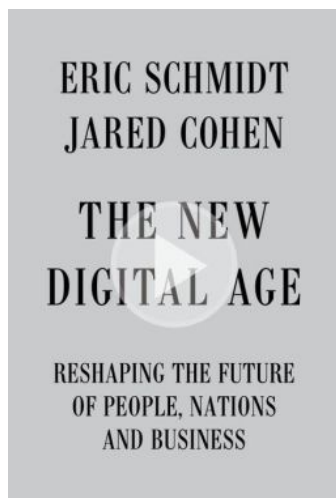
    The New Digital Age, co-written by the Executive Chairman of Google and the Director of Google Ideas, is food for the futurist because it contains several revealing predictions, some of which will be evaluated in this review. The book also provides an in-depth portrait of the digital age from the inside, written by digital entrepreneurs and leaders who've risen to a position of dominance in the electronic landscape. The digital world they understand so well will be a formidable force in the social future.

    While describing the nature of the digital revolution sweeping the planet, the book also provides insights into the thinking of the kind of leaders who are driving this communications revolution.

The authors have articulated a clear vision of what it means to live in this digital age. A key idea is that digitization is still in the exponential phase of growth before peaking. They point out that a law of photonics stipulates that the amount of data coming out of fiber-optic cables doubles roughly every nine months. Coupled with the increase in computer speed at the rate formulated in Moore's Law, these Google bosses foresee increases in the quality of the virtual online experience to a level which will rival and, perhaps even surpass, real experiences.

Particularly insightful is their depiction of the challenges and opportunities of living in two worlds at once, the digital and the physical (see Figure 1 the Dual World Loop in my previous blog). As a futurist, I'd prefer to focus on their forecasts, not wishing to add to the millions of words already written about the nature of the digital world.

I've examined a sample of the book's predictions and divided them into three domains: technology, politics and society. Four predictions from each domain are assessed for the probability of future accuracy and relevance.

Table 1: Technology Predictions

Prediction	Page reference	Probability and relevance assessment
1.1. By 2025, the majority of the world's population...[will access] all the world's information through a device that fits in the palm of the hand. If the current pace of technological innovation is maintained, most of the projected eight billion people on Earth will be online with "access to an entire world of ideas".	4-5; 6.	The idea that everyone will soon be connected to internet is overly optimistic even though virtually the whole of humanity already has access to a mobile phone. Yes, it will be the most highly interconnected world ever seen, *but* there'll never be absolute ubiquity of *intelligent* internet use. The fault in reasoning here is to assume that internet access in itself will confer digital empowerment. It's not communications technology alone that digitally empowers people: it's that technology PLUS education. Internet is a global brain and, as the authors say, a world of ideas, but you can only navigate your way through it if you've had a proper education. Only then can you understand those ideas and organize the wealth of information. So, I conclude that this prediction is superficially correct but ultimately an example of techno-optimism. I score this prediction **6/10**.
1.2. Due to increased computing power and speed, the online experience will be as real as real life and perhaps even better.	5.	I agree with the core of this forecast. My wife assures me the electronic version of solitaire is superior to the game with real cards. However, the High Touch principle of Dr Michio Kaku, which establishes that humans will continue to prefer physical, human experiences over digital equivalents, all other factors being equal, that is (e.g. preferring to attend a live sports event over watching satellite TV coverage). I score this prediction **8/10**.
1.3. Fully automated human-like robots with superb AI abilities will probably be out of most people's price range for some time, but the average American consumer will find it affordable to own a handful of different multipurpose robots fairly soon, as well as microscopic robots in your circulatory system that keep track of your blood pressure, detect nascent heart disease and identify early-stage cancer.	17; 25.	Even though more and more processes are likely to be automated in the computer age, there seems to be a deep-seated human resistance to having one's home populated by robots. Machines in our homes? Of course! Robots which can think? I don't think so. Regarding Nano-bots used for medical purposes – this is technology at its very best because it will improve quality of life for all. The beguiling perfume of techno-optimism is, once again, in the air in this prediction. I score it **6/10**.

Prediction	Page reference	Probability and relevance assessment
1.4. Fragmentation of internet into a Russian Internet, a Chinese internet (protected by the Great Firewall of China – state blocking tools), a Muslim internet, a Sunni Web, a halaal internet in Iran, Kurdish web, etc., is a strong probability.	85; 89; 93	This prediction shows far-reaching insight from the authors' areas of expertise and there's a healthy realism behind their idea of the future balkanization of internet. This is already happening – for deep-seated cultural and political reasons. So it makes a lot of sense to expand the scope of this growing trend. The logic behind the prediction is impeccable: "What started as the World wide Web will begin to look more like the world itself, full of internal divisions and divergent interests." It's clear that the digital world is largely a copy of the real physical world. In my view, this prediction has a very high probability of coming true and I score it **9/10** for probability and relevance.

Table 2: Political Predictions

Prediction	Page reference	Probability and relevance assessment
2.1. Communication technologies will continue to change our institutions from within and without.	6.	The digital revolution has changed forever the way business and politics are conducted. It's almost certain that this trend will continue as the digital platform becomes more widespread, more efficient and more lifelike. It's a rather obvious point, though. I rate this prediction **7/10**.
2.2. On the world stage, the most significant impact of the spread of communication technologies will be in the way they help reallocate the concentration of power away from states and institutions and transfer it to individuals. That is, digital empowerment will become a political force. "With so many people connected in so many places, the future will contain the most active, outspoken and globalized civil society the world has ever known."	6; 121;128.	The authors are unashamedly advocating digital activism as a good thing in their book. Yes, access to internet and its information does empower individuals vis-à-vis the state. And, yes, civil society will grow and flourish in the midst of this freedom of information exchange. However, there's still a vast digital divide in the world. The authors themselves are digital elites who are part of the intelligentsia of the computer era. There's enormous corporate power and influence controlling the content which populates the internet on the World Wide Web. Power is shifting towards individuals AND corporations, including multinationals and internet giants like Google. Despite this caveat, I agree with the core of this prediction. I score it **7/10**.
2.3. In the span of a decade, the world's autocracies will go from having a minority to a majority of their citizens online, and for dictators looking to stay in power, this will be a turbulent transition. "There can be little doubt that the near future will be full of revolutionary movements as communication technologies enable new connections and generate more room for expression."	76; 121	This forecast concerns the likelihood that digital empowerment will increase the number of revolutionary movements. The authors do admit that governments are still gatekeepers of the digital age because they control the physical infrastructure of connectivity – transmission towers, routers and switches – entry and exit points for internet data. But they argue that increased freedom of expression will lead to more political activism. But revolutions are mostly about food, prices, services, cost of living, employment and fighting oppression and inequality. If there aren't these structural factors present in a society, there won't be revolutions just for the sake of it. For that reason, I was disappointed the authors did not talk about non-violent evolution towards addressing structural problems in a rational, democratic way. Hopefully, we'll see an increase in the number of democracies and a decrease in the number of dictatorships, autocracies and one-party states in the digital age. But the drivers of revolution are structural. The Arab Spring hasn't produced much stability in the Middle East has it? I score this **6/10**.
2.4. Increased cyber-attacks: "Cyber-attacks are occurring with greater frequency and more precision with each passing year." This trend may lead to a "perpetual,	104;112; 117; 162.	Again, this prediction arises within the authors' field of expertise and is spot-on. The 20th century Cold War becomes the 21st century Cyber War. The facts and conditions are all on the side of probabilities of this prediction coming true and easily outweigh factors that may inhibit the growth of cyber

| permanent low-grade cyber war." The "current economic espionage will continue for decades, both between the United States and china and between other nations…" | | warfare. The authors mention that the Chinese government launched sophisticated cyber attacks on Google and dozens of other American companies (p.10). I rate this one **9/10**. |

Table 3: Social Predictions

Prediction	Page reference	Probability and relevance assessment
3.1. We'll be more efficient, more productive and more creative.	4.	In general, this would appear to be true of the digital revolution. Efficiency is a law of evolution so that holds water. Human productivity, however, may actually fall in an era of increasing automation. In addition, there is a growing problem of the younger generation becoming technologically more advanced but physically less developed and less healthy. I question the second part of this prediction. I also question the last element of increased creativity. I think we'll become more competitive but not more creative. On the one hand, it is true that on the World Wide Web, content is king, so the scope for creating content is enormous. On the other hand, necessity is the mother of invention and when everything is laid on at your fingertips, there's less incentive to invent. The digital world also increases the temptation of copying. Finally, everyone knows that modern mass culture has been guilty of "dumbing down" and we may be suffering from the law of diminishing returns in the world of art and culture. All in all, I score this prediction **6/10**.
3.2. Because of the digital platform-driven scale effects, things will happen much more quickly in the new digital age…This acceleration to scale, when paired with the interconnectedness that internet technology fosters, will usher in a new era of globalization – a globalization of products *and* ideas.	10.	No question, the digital platform will accelerate the pace of change and the pace of processes to produce greater efficiencies and speed. And internet does propel the globalized economy to a new level of interconnection and communication. But the point made earlier is valid here - that access to ideas does not confer the ability to interpret ideas any more than access to information confers the ability to organize that information. It's education alone that does that. Nevertheless, the core of this prediction seems absolutely right. I rate it **8/10**.
3.3. In the future our identities in everyday life will come to be defined more and more by our virtual activities and associations…Identity…will exist primarily online.	32; 36.	This is one of the most interesting forecasts in the book. The question of humans having a new online identity is of huge social and cultural importance. I think the authors show deep insight here. Whether or not it's a good thing to have a strong online identity is up to each person to decide. But that more and more of the human race will see themselves as part psycho-physical and part online when they form and manage their identities and self-image is most likely true in essence. I give this forecast **8/10**.
3.4. Your apartment is an electronic orchestra, and you are the conductor. With simple flicks of the wrist and spoken instructions, you can control temperature, humidity, ambient music and lighting. You are able to skim through the day's news on translucent screens while a freshly cleaned suit is retrieved from your automated closet because your calendar indicates an important meeting today.	29.	Techno-optimism strikes again! We want automation to serve us not to dominate us. I, for one, don't want a home that's smart enough to think for me. I, for one, don't want to be controlled in this manner by an electronic infrastructure in my home. In my home, technology is a slave, not an equal. In the same way that there's human resistance to the idea of smart robots in our homes, I believe people want their homes to be just that – homely. And whatever happened to Plan Bs for times when the system goes down? No, thank you, this picture of the ultra-convenient, digitized home of the future makes me shudder. I give this prediction **5/10**.

The consistently strong scores in Tables 1-3 seem to suggest that the authors are impressive prognostic thinkers. The major shortcoming of the forecasts, in my opinion, is a strain of techno-optimism. We need to guard against glib assumptions about the limitless potential of technology. Nor should technological predictions be divorced from other domains, especially the social. My overall review of their predictions is very positive nonetheless.

The biggest surprise for me in reading *The New Digital Age* was how political this book turned out to be. And there's a lot of value to be found in their assessment of the politics of digitization. Clearly, the Google bosses are just as interested in politics as in technology. They ask, who will be the more powerful in the future, the citizen or the state? But in some ways, that's a false dichotomy in their question, because we all know that one of the most powerful forces on the planet is corporate financial power, which was conveniently left out of the question.

Speaking of politics, it was quite ironic to me that the authors champion freedom and privacy[1] but the organization's own policy of videotaping the neighborhoods and exteriors of millions of homes without permission, in my view, crosses the line and constitutes an invasion of privacy. Instant Google Street View http://www.instantstreetview.com/ videotapes the premises of private homes without permission of the home-owners. This irony is compounded when the authors define internet as the world's largest ungoverned space. Does this fact give Google the licence to film our homes even though we don't want them to?

Google Street View is an opportunistic form of surveillance of citizens, overturning their right to decide whether or not they want shots of their private property taken and posted on internet for the world to see. I can't see how Google can escape a charge of hypocrisy by promoting digital freedom for society on the one hand, while, on the other hand, removing something of that very freedom by entering our neighbourhoods with their mounted cameras and claiming the right to film our homes whenever they wish.[2]

In terms of style and presentation, I found the book to be too "texty", with not a single figure, table, diagram or photo used for visual relief and illustration. That's not a very digital approach, is it?

Nevertheless, there's much to admire both about Google and about this book. I strongly recommend *The New Digital Age* to all technology futurists, general futurists, technologists, business strategists, social and political commentators, social scientists as well as laymen who want a professional guided tour of the rapidly evolving digital landscape.

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[1] "Fighting for privacy is going to be a long, important struggle." p.175.
[2] My own view is that the policy of Google Street View for the filming of private residences and residential areas should be terminated, and all its collected footage of private places removed from its system.

Michael Lee's book *Knowing our Future – the startling case for futurology* is available at the publisher http://www.infideas.com/pages/store/products/ec_view.asp?PID=1804 or on Amazon.com.

Acknowledgements & websites

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