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THE BOOK REVIEW

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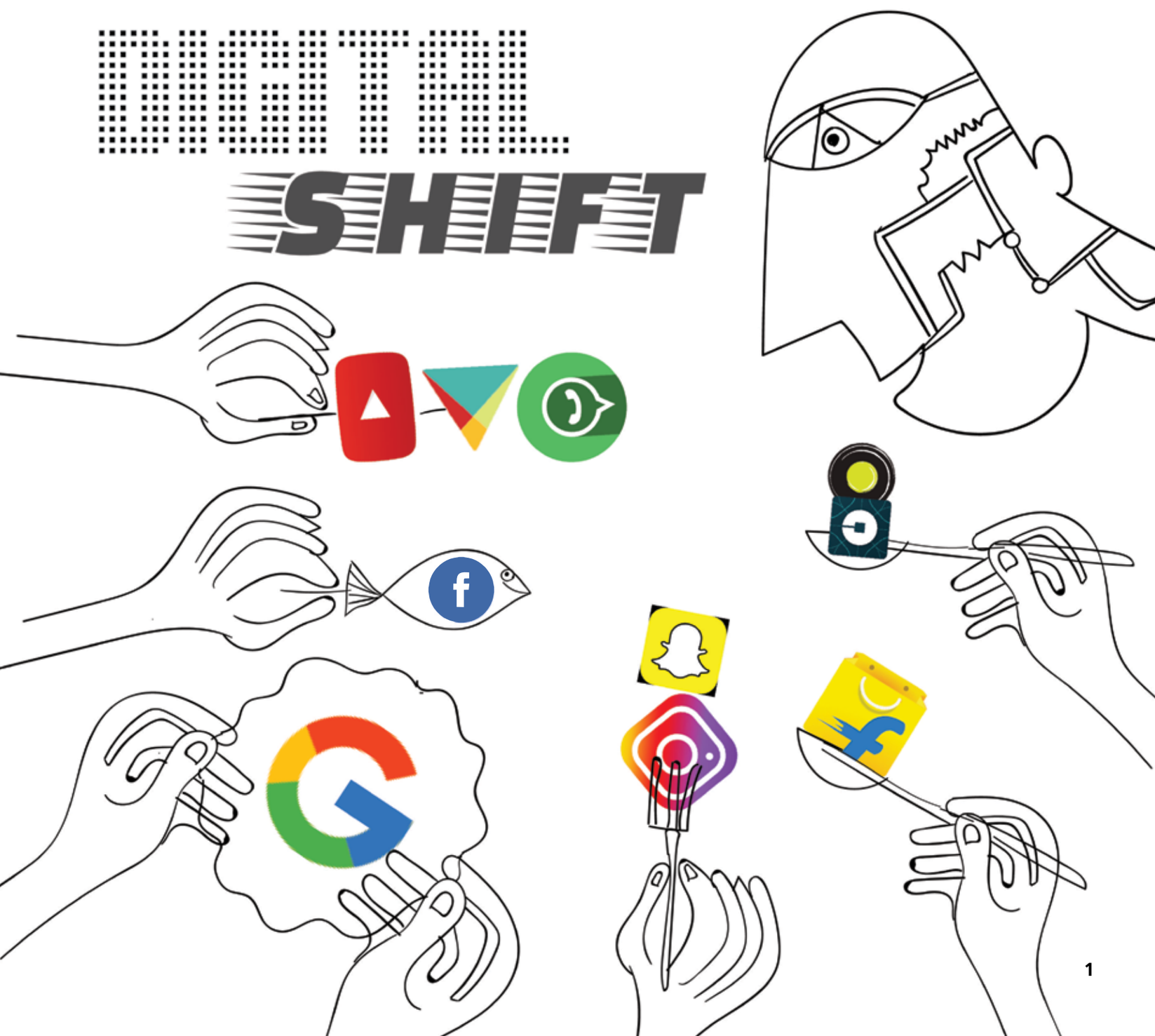
DIGITAL SHIFT



THE BOOK REVIEW

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Story of Digital Shift from Village India

Osama Manzar is the founder and director of Digital Empowerment Foundation (DEF)

Shakti Singh is a young man in his later half of mid-twenties who lives in a small village of Chohtan block in the district of Barmer in Rajasthan State of India. Barmer, which is arid, a desert, is also one of the largest districts of India besides being highly under developed. People in this district eke out their lives with enormous amount of difficulties.

Six years ago, Shakti joined Digital Empowerment Foundation (DEF) as his first job. He had no idea what he wanted to do and had no clue what his job responsibilities will be. Sometime in early 2014, we were trying to establish hundreds of centres across the country in remote areas and at village level, where almost nothing existed, certainly not any kind of digital infrastructure.

Our objective was to establish public spaces with digital infrastructure and Internet connectivity where people from the villages could walk in to access information, get digital literacy and skills, talk to someone who could help in accessing online forms and get them filled to get entitlements under government welfare schemes for thousands of people who had no clue how to get them.

It became clear that millions of people who may not be part of the connected world and may not have any means to be connected to this digital world started depending on the digital ecosystem. This was so, because, even to get hold of their ration for the month, a poor person had to go through a biometric machine based identification check which very much depends on connectivity and would allow permission to the entitlement only when the digital database would confirm their identity. Unfortunately, many a times the database would not match, connectivity may not work, machine may malfunction or the agent behind the machine may also play foul—all of them or any of them could result in the poor man returning without his ration and his family may starve to death.

Shakti's job was to be trained to master the know-how of digital tools, how he could use them, how he could mobilize the villagers and help them understand that he is the man who could be instrumental in enabling people with access to the world of information, entitlements, opportunities, knowledge and rights through the digital doorways.

Shakti learnt fast and developed empathy and in the last six years has earned such a reputation in and around his village council that people started pressurizing him to contest for village council election because 'it is he who has genuinely served the people, so much so, that not a single household left in the village council that is unserved.' One classic example that Shakti Singh narrates is that there was this old lady in her 90s who had not received her old age pension for a couple of decades. She approached Shakti Singh and narrated her story. After a lot of enquiries and following the trails of the old lady's application, he found that her pension was disbursed by the local government all these years and was also received—but someone at the local post office who was supposed to deliver her cheques continued to avail himself by forging papers and signing for the old lady. Once the investigation was completed and was proven, the guilty begged for forgiveness and returned all the money to the old lady which was almost in six digits.

While the situation in the villages of Barmer has not changed much and people are still largely poor, the situation of connectivity and mobile penetration has increased. Most of the young population have started owning smartphones. While the purpose of owning a smartphone may not be compulsive enough to buy, it is seen and observed that the ownership of mobile is a social phenomenon and not having one would be seen oddly. Aspiring to buy a smartphone now has become a priority. However, the ownership of a smartphone or mobile is also showing trends of the patriarchal system prevalent in India; where the men are usually the first owners of mobile phones, women have to wait or they get hold of it only as second user or leftover user or a user under necessity.

Shakti Singh has now new worries: he himself is an ardent user of a smartphone and uses the mobile very effectively to not only serve his local villagers through critical information access but also reports to DEF on all projects using audio, video, camera, WhatsApp, emails, and so on. He, however, does not like it that the local youth is hooked on smartphones without any productivity.

Shakti Singh earlier this year came to New Delhi to undergo rigorous training in what is misinformation, fakenews, who spreads it and how to combat them. He complained that in his village, people have no work, without knowing how to effectively use connectivity

and mobile phones, they are caught in the web of spreading of information without knowing if it was right or wrong. They believe everything they see on their smartphones and spread it further without realizing it could be misinformation. What in effect Shakti wanted to articulate was that 'people do not have critical thinking even if they are using the most modern tool to access and consume information.' Shakti also highlights that most of the new users of mobiles do not know how to read and write but now they are finding easy access to audio, visual and pictorial forms of content, to which they are hooked without literacy as a barrier. Shakti Singh is worried that new users of connectivity through mobile is becoming a tool for the miscreants, politicians, and exploiters to reach out to people with narratives that people at large may not have the capacity to fathom and as a result may indulge in violence.

Shakti Singh went through a long rigorous training to understand the world of connectivity, pervasiveness of mobiles, importance of critical thinking, what is misinformation and fakenews, what disinformation means, how to identify misinformation and fakenews, how to differentiate between authentic video and tampered ones, what's deep fake, and so on. Shakti Singh, after empowering people through access to information for over five years, now has a task to work with another set of people in the same villages on how to treat information that they get and what is required to be a responsible user of a connected device.

Recently, Shakti Singh has started understanding the deeper nuances of the connected world. He called me the other day and said, 'Sir, I am now an avid user of smartphone and I use almost all functionalities of my phone. I realize that everything that I am doing on phone is being tracked and recorded and it is also analysing my activity and behaviour and accordingly making suggestions as if this small little digital device is a part of me and sitting inside my body and mind.' I said that it is correct, but does that bother you, I asked him as if I didn't know the implications. Shakti Singh became poignant, and then uttered at length, 'What I understand is that while my digital device is acquiring all my information and apparently giving me all helpful details, I am worried that by reading and recording too much of intricate information, it is actually, gradually, guiding and influencing my further behaviour, rather than I being in control of how I would like to use the device for my own usage without being controlled and motivated.'

He started highlighting everything from digital incisiveness, to privacy and security, to how algorithms and artificial intelligence are taking control over human behaviour and intelligence.

'But Sir, I am not worried much that we have entered into the digital age of total datafication, but my worry is that every component that is collecting information of the masses is controlled by some private entity. Having so much centralized control and ownership of data, it would leave us with no option but slavery, death of democracy, and boti-fixation of the human being.'

Shakti Singh concluded that 'we are moving towards death of human rights, death of democracy, and proliferation of slavery and autocracy.'

Is that what the 'Digital Shift' we are talking about? Let's explore.

TECHNOLOGY AGE

Illustration: Designed by Sharada Kerkar, Digital Empowerment Foundation

Sam Pitroda

In Conversation with Osama Manzar

'For the very first time in human history, a Great Grand Event happened—the grand event of 'Being interconnected' with each other. Due to this event today, we are all connected, the way we were never connected before. For all of us it is the biggest event in the history of the human being—and we are all interconnected with each other because of this transformation in the world which is—DIGITAL SHIFT.'

It all didn't happen in one go, it happened slowly and it took years and years.

The story of connectivity in the era of Telecom initially revolved around telephones and it took almost 115 years for us to reach a billion phones.

Earlier, we were connected by old telephones but at a very high cost and then came the era of mobile telephony that reduced the cost. This resulted in a rapid increase in the number of phones in millions of users proving, 'Affordability, scalability, and sustainability go hand in hand. As, if it is not affordable, it is not scalable; if it is not scalable, it is not sustainable.'

Then came the era of the Internet which not only connected people but connected people with content. It connected people with data, video, text, graphics, animations, movies and songs, etc., and all this could be shared with the world in one go.

The era of smartphones that followed should actually have been an asset, but it really has complicated the world whereas it should really have been a story of the development of the community, but it became a story of personalization. This happened because of the business model, which is actually based on 'clicks'.

So this business model in social media is creating a huge amount of turmoil in the way we use information, share information, educate people, and interact with people.

Osama Manzar: Is it a disruption of the story that was originally being written through connectivity content?
Sam Pitroda: Yes, of course it is, as it is controlled by a bunch of intellectual people or so called entrepreneurs, who have their own targets of money making, like Facebook, Twitter, Instagram, WhatsApp, Google etc. But soon people are going to realize the difference between things that are important and unimportant for them. The importance must be given to the community, the people who belong to the community, the district, the issues and the localization of these things in terms of context. You don't live in the world that really doesn't exist, but that's actually what the young generation is affected by.

OM: What about people who are still not connected?
SP: That's true that a lot of people from poor communities are still not connected, but don't look at them as half not connected. Even if few people in a village are connected, then it is a good start, each and everyone is not connected but the community is connected. An old man may not be connected, but a young man is connected. He knows exactly what to do, how to operate, and he carries that message. He shows them little songs and little pictures, and seven people sit around him and say look, this is what is happening.

OM: Is the human being also like a data, which is being used for monetization?
SP: Yes, we have reached to a point from connectivity to content to value of data. So, human beings are also treated like data.

OM: What should actually be derived from data?
SP: It is important to know that from this data, how you derive knowledge; from that knowledge, how do you derive wisdom; from that wisdom, how do you derive action. We have created a world, which looks from top to bottom, not from bottom to top. You will see a lot of news about top people, top businesses. These are the people that control most of the wealth in the world, but the world is not all about them, it is actually formed by the communities. So the connectivity, content and context really give you the opportunity to have a look at the world from bottom to top.

OM: Is connectivity controlled by a few people?
SP: We always thought it is going to be a democratic connectivity, controlled by the masses that are connected. However, it turned out to be connectivity which is actually controlled by a few people but that will change for sure.

OM: Does the world need to be redesigned?
SP: May be, it's a weird idea, but yes, it does need to be redesigned. The world was redesigned last after World War II by the US. At that time the design was based on 5 things:
* Democracy
* Human Rights
* Capitalism
* Consumption
* Military

It was made by the US who wanted their idea to go global. But now, the digital shift needs to make a change in the way we have been governing and doing things.

OM: Any idea for a new design of the world?
SP: The new design may include a voting system on the mobile phone.
* Highly secured
* I can vote at any point of time
* Based on issues, I can vote.
You can be vocal about your issues. For sure, it will take democracy further in the future. So, everything is going to be decentralized, education is being decentralized, health services are going to be decentralized, politics is going to be decentralized, voting is going to be decentralized because communication empowers you as an individual to decentralize every part of your activity.

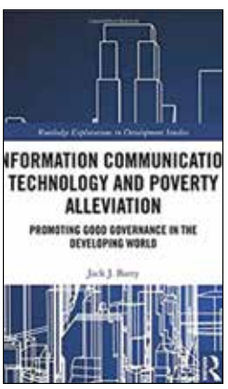
OM: Are we passing through a phase of aberration?
SP: We are passing through a phase of aberration, which will improvise at a later stage. We have to be self-learners. You don't need a degree to learn. Whatever you want to learn, you can learn on the Internet. It will be outcome oriented. The world is facing great digital transformation, which is having an impact on everything whether it is transport, education, health or living. Some are good and may be some are bad, but some day we will be able to figure out what to use, and what not to use.

OM: Where is the world is going in the next ten years?
SP: The world needs to adopt the Gandhian way of life, which will be based on four things:
* Truth
* Trust
* Love
* Courage
As the information will all be open, no one can hide the facts.

OM: Survive and make humanity survive?
SP: We live in an era of abundance and not scarcity but we are producing things for people who can afford not for the people who need. Basic necessities like food, transport, education can be easily made available to all of us in future and that will be possible with the technology and the technological revolution like big data, data analysis and the digital transformation. We will have enough resources, but we will need to know the right way to use it and make other people know by using this 'Digital Shift' in the right way.

Sam Pitroda is the inventor of 'Electronic Diary', in 1975, which was one of the first hand-held computing devices in the world; he is holder of several patents, entrepreneur, development thinker, and policy maker who has spent 50 years in information and communications technology (ICT) and related global and national developments.

Book News Book News Book News Book News



Information Communication Technology and Poverty Alleviation: Promoting Good Governance in the Developing World (Routledge Explorations in Development Studies) by Jack J. Barry puts forward policy recommendations that aim to mitigate the complex digital divide by employing governance as the primary actor. The book argues that access to the internet can help alleviate poverty, improve development outcomes, and is now vital for realizing many human rights.

Routledge, 2018, pp. 246, £ 115.00

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The Book Review Literary Trust thanks Digital Empowerment Foundation (DEF) for the sponsorship of this issue.

Towards A Better Future

Kazim Rizvi

MAKE, THINK, IMAGINE: ENGINEERING THE FUTURE OF CIVILIZATION
By John Browne
Pegasus Books, 2019, pp. 416, $23.16

Browne urges the reader to believe in a better future at the beginning of his work. His lens of looking at engineering and technology allows one to have hope that technology will solve more problems rather than create bigger challenges, and the only determinant is pragmatism. He reiterates that we do not need to fall into binaries of pessimism and optimism, but believe that we can set up institutions which promote accountability and account for consequences.

It highlights how inventions which were created painstakingly years ago and marketed as luxuries are now everyday household items for us. It is refreshing to see a book which doesn't put down technology as apocalyptic, and readers do not have to be constantly marked with worry about how technology giants are trying to misuse their data. Inventions and engineering have been around since neolithic times, and our ideas are only as good as the use cases that we devise for them. One of the biggest concerns raised with the advancement of technology is the loss of jobs, and the disruption brought about in the marketspace. However, the book reassures the reader of the fact that one must think of such processes as akin to a transition and not a death sentence for the economy. The process of making and creating keeps our creativity alive and lets us apply our learning, be it open-source software which is equally accessible to all or 3D printing which is based on the principles of innovation developed by society over thousands of years.

> "Society does not need a wave of technology that can be used to commit mass genocide; it needs automation which will help in bridging gaps in healthcare which can ultimately save and improve lives. The book ends on the note, which pushes the reader to develop patience and reflect, to design strong, well-thought-out regulation and reduce damage as much as possible."

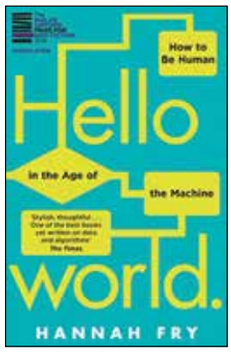
Delving into the complexity of thought, Browne discusses how computers facilitate solutions to complex thought experiments—initially when personal computers permeated homes, people were worried that they would replace jobs. However, law is one profession where practitioners have actually enhanced their vocation with the creation of more opportunities. With the advent of Artificial Intelligence (AI), the scope of problem-solving became even more vast—with machine learning being applied to the most granular areas of life. These advancements are likely to become bigger and better as the years roll by, entering into every sphere of life—medicine, education, military—there is no limit to the application of AI. However, the book remains true to empower the reader to face issues of 'black boxes'—where algorithms remain opaque and users do not understand their functioning.

It is important to address these issues, especially when AI is embedded in the functioning of policies—worrisome 'terminators' are not the problem at hand, lack of diversity and bias in technology is. This point brought out by the book is highly relevant to developing technology, because technology is a tool in the hands of people—how society chooses to wield them, and who uses them, makes the ultimate difference.

Another theme which has been given gravity in the book is trust and privacy, which are topics no book on technology would be complete without addressing. There is a fine line we balance everyday in terms of trading our privacy and personal data for the services offered to us by businesses and the state. The onus should be on companies, and not on users, to uphold the tenets of user safety and privacy. With the paranoia about robots replacing human intimacy, the book reminds us about how robots will not replace human relationships—but supplement and enhance them. The research undertaken in the book is thorough, and academics from different walks of life have been interviewed to opine on issues which touch human lives. References to movies such as *2001: A Space Odyssey* help to bridge the gap between science-fiction and how much of it we can expect to play a role in our future. However, with great power comes responsibility—and that is where the role of regulation comes in. For instance, society does not need a wave of technology that can be used to commit mass genocide; it needs automation which will help in bridging gaps in healthcare which can ultimately save and improve lives. The book ends on the note which pushes the reader to develop patience and reflect, to design strong, well-thought-out regulation and reduce damage as much as possible. In order to drive the point of belief and hope further, Browne ends with how our focus should be on the gift of imagination we have, and how we should constantly strive to dream of a better world.

Kazim Rizvi is a public policy entrepreneur and founder of an emerging policy think-think, The Dialogue.

Book News ***Book News***



Hello World: How to be Human in the Age of the Machine by Hannah Fry takes us on a tour of the good, the bad and the downright ugly of the algorithms that surround us. She lifts the lid on their inner workings, demonstrates their power, exposes their limitations, and examines whether they really are an improvement on the humans they are replacing.

Transworld Digital, 2018, pp. 320, ₹699.00

ROBOTICS AND AI

Illustration: Designed by Sharada Kerkar, Digital Empowerment Foundation

Technology's Emerging Power

Arun Maira

WHERE WILL MAN TAKE US? : THE BOLD STORY OF THE MAN TECHNOLOGY IS CREATING
By Atul Jalan
Amazon Asia-Pacific, 2019, pp. 300, ₹320.00

Atul Jalan's book, with the intriguing title *Where Will Man Take Us?* is a thought-provoking exploration of where technology could take us. It raises the perennial question of, 'Who' are 'We'? And, what makes humans 'human', and distinct from machines. It shows how man can degenerate into technology if advances in AI are not regulated.

I found Jalan's account of the state-of-the-art of 'technology' very useful. He expands the scope of technology beyond digital communication technologies and AI to include nano-technology and genetics. Combinations of these new technologies, not AI alone, are creating possibilities of transforming industries and human life. Jalan also explains the present stage of development of AI, which is at the stage of ANI (Artificial Narrow Intelligence), with machines exceeding human intelligence in narrow tasks, and with the ability to beat humans in complex games of chess and Go. He says AI may now be entering the realm of AGI (Artificial General Intelligence) where computers will become generally as smart as humans. And he foresees possibilities of AI developing further into ASI (Artificial Super Intelligence), when computers will be smarter than humans.

The tantalizing question is, in what sort of intelligence will AI exceed human capabilities? And is this the only form of intelligence human beings have? AI may exceed human capabilities in rational intelligence. But what about emotional intelligence, and spiritual intelligence? Rational intelligence is founded on the ability to examine data and to compute rationally logical decisions. Ability to compute digital data far exceeds human capabilities, and with quantum computing in the offing, they may increase exponentially. Thus, state-of-the-art AI is getting better at making 'predictions' in advance, which enables it to make smarter decisions than humans can in a variety of fields and games. However, AI is not good at making 'judgments' as Ajay Agrawal, Joshua Gans, and Avi Goldfarb explain in their book *Prediction Machines.*

'Judgement' is a composite of two abilities: making decisions when all the information required to make a 'rational' decision is not known; also, the ability to choose what is the 'good' thing to do rather than only what would be the 'smart' thing to do. Thus, judgement has an ethical component to it too. AGI and ASI may make computers smarter than humans. But can computers learn how to take ethical

decisions? Agrawal and his co-authors explain how state of the art AI computers learn to learn by observing how humans take decisions in complex situations. Thus computers merely emulate the value judgements and ethical biases of the humans they learn from, and they can never be ethically better than the humans whose actions they observe.

Jalan's account of technology's emerging power raises big questions about what we want to make of ourselves as humans and what sort of society we want to live in. The first one he poses is, who will be in charge in the future—man or machine? However, the more urgent question is, *which* humans will be in charge of the technologies being developed? New technologies can transform human existence. The discovery of the means of creating fire, thousands of years ago, was transformational. It enabled humans to eat greater varieties of food, and to keep themselves warm in cold climates. However, fire also had the ability to destroy. Therefore, humans had to develop the wisdom about how to use fire, and to design regulations to prevent fire hazards. The development of technology to release the energy within tiny atoms promised clean and unlimited energy. It also provided humans enormous energy to obliterate cities. We are still struggling to prevent the misuse of nuclear energy. Technologies merely provide new means. The ethical question is to what use should they be put? When technologies are very new, we cannot foresee their consequences, and we must learn how to regulate their use.

Those who discover a powerful new technology want to own the new technology's power, to use it for their own purposes, and to prevent others from using it. Nuclear nonproliferation treaties are a means for countries that have nuclear technology preventing others from having it too. IPR (Intellectual Property Rights) is a way for businesses to monopolize the use of new technologies to make more profits. It is inevitable that as Industry 4.0 (AI, robotics, social media, etc.) advances, humanity will have to struggle with civilizational questions of who will be allowed to own these new technologies and for what purposes they will be used. The technology of governance must advance much faster now than the technology of AI.

I was attracted to Jalan's book by its title and by its contents. It goes beyond the impacts of technology on businesses, economies, and jobs which many other books that want to alarm and excite readers about AI's potential are restricted to. Jalan's book is more interesting because it also has chapters on the impact of AI on democracy,

> "Atul Jalan expands the scope of technology beyond digital communication technologies and AI to include nano-technology and genetics. Combinations of these new technologies, not AI alone, are creating possibilities of transforming industries and human life."

religion, happiness, love, and sex!

While Jalan raises good questions, I think he finally falls short of the promise of his intriguing title. To answer the question of where man will take us, rather than where machines are taking us if man does not intercede, we must inquire into what the essence of man is. Technology is reaching the point where it can provide individuals a composite picture of themselves from all the data about their actions that ubiquitous devices can now gather.

Jalan is enamoured by the possibility of big data analysis providing me a model of 'Me' to explain who I am. He says, 'Our digital future begins with this realization—that more than me, my data defines me.' In other words, I am an object, which can be observed from the outside to tell me who I am. On the other hand, Rene Descartes said, 'I think, therefore I am'. In other words, it is the ability to observe, and to ask questions about what we observe, that makes us human. Therefore, I must discover myself inside out by listening to myself, not outside only from what others can observe.

Jalan has a narrow, albeit popular, view of religion. Religions have dogmatic, ritualistic traditions, in which god is some superior being to whom man is beholden. But, as Aldous Huxley explained beautifully in *The Perennial Philosophy*, all religions have mystical and spiritual traditions too, which enjoin humans to reflect on their place in the universe, and to look inside themselves for virtue, love, and happiness. This is the wisdom that Buddhism, Sufism, the Vedas, and Taoism point towards. They say that you cannot outsource your discovery of yourself to others. You must experience it yourself to know who you are.

Humans have a long tradition of worshipping great power. They have worshipped fire and the sun for centuries. Many have now begun to worship technology. Technology worshippers dismiss others who want to harness technology as backward. Whereas, these deeply thinking others don't want to become dogmatic and ritualistic about any god, not even technology. They will not let go of the perennial quest to discover what it means to be human.

In conclusion, I would recommend Jalan's book. While his answers may not satisfy everyone, his book does raise profound questions and it made me think.

Arun Maira is a management consultant and a former member of the Planning Commission of India.

Path to Optimistic AI Future

Karishma Mehrotra

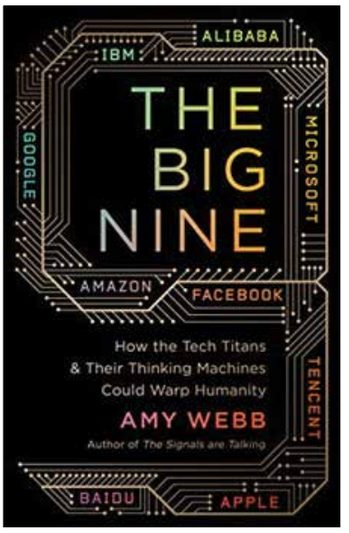
THE BIG NINE: HOW THE TECH TITANS & THEIR THINKING MACHINES COULD WARP HUMANITY
By Amy Webb
Public Affairs, 2019, pp. 337, ₹1375.00

In an eye-opening and timely analysis of the world's two divergent technological paths, the renowned futurist Amy Webb in *The Big Nine: How the Tech Titans & Their Thinking Machines Could Warp Humanity* charts out the potential scenarios for an Artificial Intelligence future, pitting the United States and China in direct opposition to each other. Her balanced critique of nine major technology companies of the world—Google, Facebook, Apple, Amazon, Microsoft, Tencent, Baidu, and Alibaba—presents a cautionary tale to champion an ethical blueprint for AI development.

Early on, the book's most gripping analogy circles around AI's mastery over professional Go player, Fan Hui. After three rounds of playing the centuries-old Chinese game Go with a computer, '[r]eeling from frustration, Hui had to excuse himself for a walk outside so that he could regain his composure and finish the match. Yet again, stress had gotten the better of a great human thinker—while AI was unencumbered to ruthlessly pursue its goal. That brings us to a perplexing new philosophical question for our modern era of AI. In order for AI systems to win—to accomplish the goals we've created for them—do humans have to lose in ways that are both trivial and profound?'

Webb's three-pronged layout of an optimistic, a pragmatic, and a catastrophic potential future gives us three probable paths to answer this question of human-limiting AI. In doing so, she successfully problematizes the small group of people who have amassed disproportionate decision-making power in the process (the AI's tribe of the Big Nine technology companies) and shows their two global faces—American and Chinese.

By exposing the biases and inordinate concentration of power of the AI's tribe, she cushions the critique in an ancient philosophical conundrum: 'Can machines think?' While Webb's answer is affirmative, she extends the premise, arguing that machines don't think like all of us: 'Thinking machines ... need a purpose and a goal. Eventually they develop a sense of judgement ... Each soul is a manifestation of God's vision and intent; it was made and bestowed by a singular creator. Thinking machines have creators too—they are the new gods of AI, and they are mostly male, predominantly live in America, Western Europe, and China, and are tied in some way to the Big Nine.'



Webb's fresh take on the computer-human dilemma is honest but not belittling, with the perfect vocabulary to describe the new-age phenomenon of a few rulers.

The 'made by the few, and thus emulates the few' foundation allows Webb to detangle the misaligned and homogenous values of these few. In the US, they are driven by the market, not by democratic ideals. Technologists, completely lacking diversity, whose motivation to build fast and ask for forgiveness later is seen in far too many recent examples, notwithstanding the now-infamous Cambridge Analytica scandal.

While the in-depth depictions of those in the West paint Americans as well-intentioned, Webb's exploration of Chinese values often comes off as shallow

> "Amy Webb's balanced critique of nine major technology companies of the world—google, Facebook, Apple, Amazon, microsoft, Tencent, Baidu, and Alibaba—presents a cautionary tale to champion an ethical blueprint for AI development."

and stereotypical, and while she may say she doesn't consider the Chinese model as 'evil', the book falls into easy vilification rather than a genuine dive into the country's government-driven AI strategy. In essence, Webb's map of the world draws a US image of government and companies not working together well enough towards democratic goals and another Chinese image of government and companies working together too much towards undemocratic goals.

On top of the surface level understanding of China, one has to wonder if Webb dilutes the close relationship America's deep state has with US Big Tech. If leaked top-secret programmes are not enough evidence, America's government-led trade negotiations with other countries, including India, are clear extensions of American corporate concerns. In addition, although outside the scope of the book, Webb nonchalantly categorizes India as leaning towards the Chinese model—a disputable claim given the complexity of ongoing political-technological development in India. With this in mind, Webb's portrayal ultimately does accurately describe the US as a country with far more moving parts in varying directions than the well-charted Chinese development path.

And, Webb is undoubtedly correct that US Big Tech—what she calls G-MAFIA—makes decisions and therefore, makes AI that is optimized for the market, instead of humanitarian values. With little government funding and no forethought in planning, G-MAFIA has to succumb to the pressure of the latest earnings call and the hype of the next conference showcase, instead of viewing AI as a public good. Even more, a lack of ethics in education and hiring further perpetuate the problem.

To negotiate what optimizing for humanitarian values looks like, Webb has two bullet point lists on pages which a reader will inevitably keep flipping back to as AI continues to make headlines. One, midway through the book are the questions AI's tribes should be asking themselves, and another, is there a '*The Human Values Atlas*' or code of ethics that AI development should follow. This well thought out list includes questioning AI's motivations for humanity, the overlooked biases of the developers, citizen's ability to interrogate AI's path, how to view AI in comparison to human intelligence, and AI's interaction with human emotion. *The Human Values Atlas* urges the Big Nine to prioritize safety over speed, to be transparent, to own their responsibility, to protect themselves from authoritarian regimes, and to be decentralized.

In its essence, Webb envisions a world where AI is optimized for empathy, not the market.

Webb plots a timeline of roughly seventy years in which we will achieve not just Artificial General Intelligence (AGI, as opposed to Artificial Narrow Intelligence, or ANI) but also an explosion of unpredictable Artificial Super Intelligence (ASI). Development of evolutionary algorithms and recursive self-improvement allow AI to keep generating new combinations to solve problems in expounding ways, without human input or understanding.

In an optimistic scenario, the US government funds AI so it can be developed for societal goals, not profit. Individuals own their Personal Data Record (PDR), enjoy the conveniences of predictive decision-making, trust those in power to surveil them, and don't mind limited human interaction. AI is not judged in comparison to human intelligence, but in its own vertical, and its development is constrained for safety.

Pragmatically, what could happen is that US ignores China's development, continuing to focus on sexy AI. Without clean data, Wall Street pressures companies to release products before they are ready and customers still expect perfection. Individuals have difficulty porting their PDR between companies, trapping them in a two OS systems of Google and Applezon (Apple and Amazon merged). Rich people pay for their privacy, and a 'digital caste system' emerges. AI's nudging tactics for our better health devolves into nagging. Companies are financially forced to cooperate with China, Facebook's failed business is sold bit by bit to China, along with our data, and China repurposes Baidu's brain-machine interface for the military to occupy the US, turning it into the 'Digitally Occupied States of America'. All the while, China is caricatured as inherently evil, and the US is deemed sloppy, with backfiring laws and little coordination.

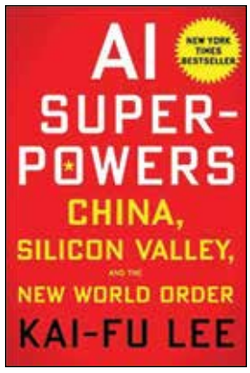
And that was not the worst scenario. In the truly catastrophic path, US retreats in worldwide influence, while China has made its way to Latin America. Again, Americans are not malicious but just unaware, brainwashed by the political cycle and Sunday morning talk shows. A transactional relationship between G-MAFIA and the government is not in the national interest, while China is able to hack into G-MAFIA devices, sowing distrust between the American populace and their companies. Blue workers unexpectedly keep their jobs, but knowledge workers are out of work. Humans crave human connection, nanobots enter our body reeking havoc like automatic abortions, and the world is nothing like we could have imagined.

The dystopian portrayal would leave us depressed without Webb's most fruitful, last chapter, where she outlines concrete steps to achieve the optimistic scenario. Her most concrete takeaways include an international body Global Alliance on Intelligence Augmentation (GAIA) based in Montreal that develops a Human Values Atlas and an Advanced Cyber Security Center (like the World Health Organization) that develops sentinel AIs to test the implications of AI. These steps are aimed to maintain interoperability and citizen ownership of data, to slow down the progress of AI by design, to get governments to genuinely understand AI and the Chinese threat to world order, and to integrate questions about ethics into hiring and teaching.

While Webb's book presents an all-encompassing ethical guide sheet, there is not so much as one needs to be convinced that we can get there. Webb says regulations are usually too specific and become outdated, but how will the ethical standards be enforced? 'The Big Nine aren't the villains in this story, in fact they are our best hope for the future.', she states. It leaves one to wonder: even with increased government funding and less Wall Street pressures, *is the goodwill of the G-MAFIA enough of a force to achieve an optimistic AI future?*

Karishma Mehrotra is an Indian-American journalist who moved to India to explore the tech beat from a social/political angle. Currently she is a technology reporter for *The Indian Express*.

Book News ***Book News***



AI Superpowers: China, Silicon Valley, and the New World Order by Kai-Fu Lee reveals that China has suddenly caught up to the US at an astonishingly rapid and unexpected pace. In *AI Superpowers*, Kai-fu Lee argues powerfully that because of these unprecedented developments in AI, dramatic changes will be happening much sooner than many of us expected.

Houghton Mifflin Harcourt, 2019, pp. 272, ₹3499.00

Forward Without Fear: Towards Humanity's 'Symbiotic Human-Machine Hybrid' Future

By Marc Prensky

No One Knows Exactly What's Coming—yet we can spot in advance a lot of the directions we are headed. And we can also see why those directions are potentially hugely positive for humanity—to be welcomed, rather than feared. It is important, therefore, to address the rising fear from many adults that our technology-filled future will somehow be bad—or worse than today or the past. That is a perspective with which I strongly disagree.

Certainly, today, there is much writing and movie-making about dystopian futures. As one of those creators puts it, 'That's what makes for adventure plots.' And there are some things—both short-term and long term—that actually are, and will be, bad for us. We can't know all of them in in advance, but like tobacco, we will eventually find them and fix them—and we are getting better at doing this faster. I believe even planetary degradation or destruction will eventually be addressed as the situation becomes dire enough for those with the means to do it actually to begin to care.

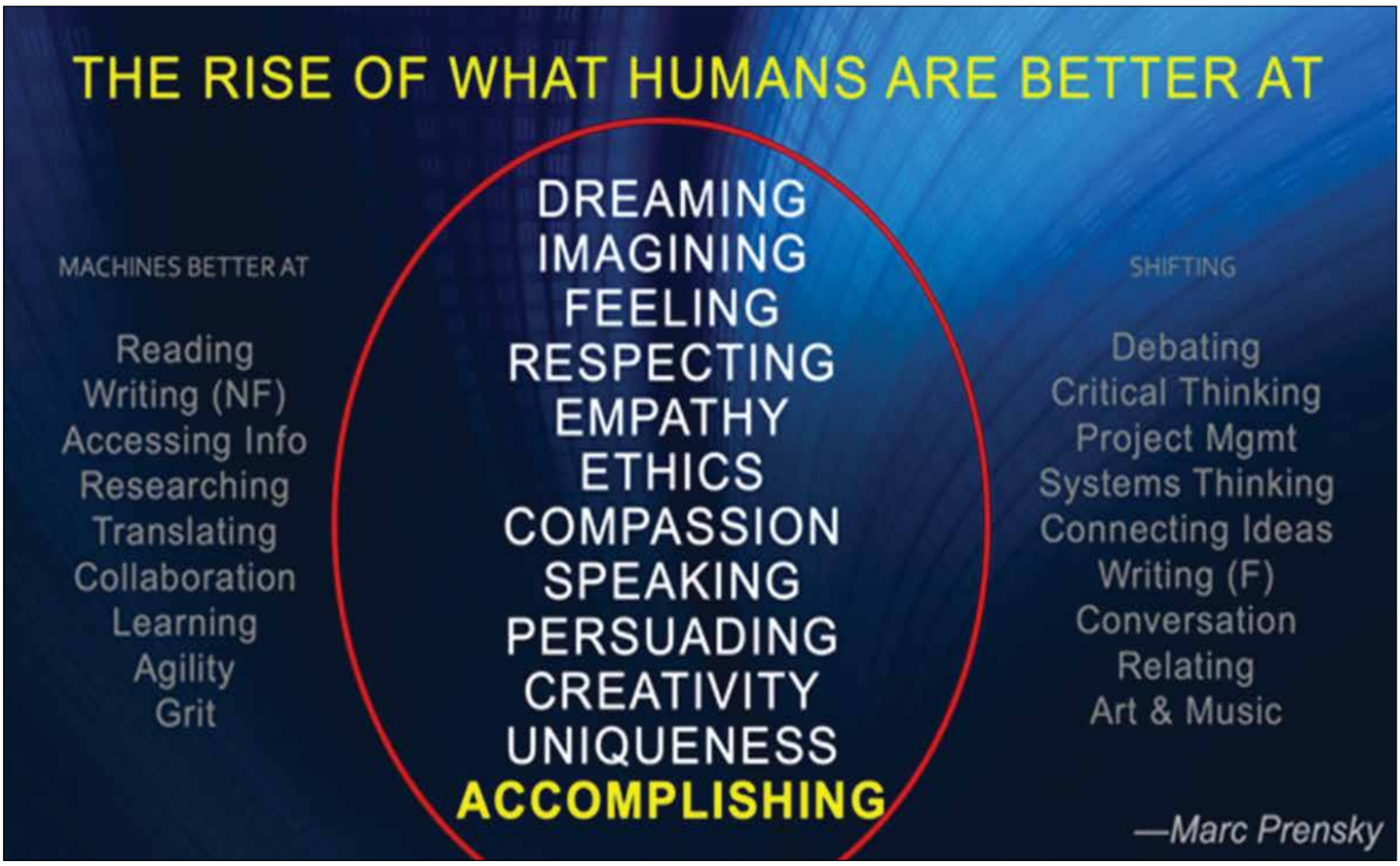
What concerns me more is people who worry that, somehow, at a far more basic level, our 'humanity' will soon disappear as the digital world increasingly takes on a larger role in our future. Some worry about our 'loss of control'. Some worry about our 'loss of privacy'. Some worry about the loss of 'basic skills' or behaviours like 'looking people in the eye.'

We hear the words 'human' and 'people' a lot in this discourse, usually in contrast to 'machines'. We hear about 'human intelligence vs. 'artificial' intelligence, 'human skills vs. machine skills', 'human judgment vs. machine judgment', 'a "people-centered" economy vs. a "technology-centered" economy', and 'The [Human] Race Against the Machine'. Most of this is really, I believe, just a negative reaction to change. And while the fears are understandable, I think they are not only unwarranted, but actually harmful to us and to our future generations.

Change is something that humans typically resist and find hard to deal with. This resistance to change is one of humans' least positive characteristics, although, to our credit, we almost always eventually do find a way. We might call ourselves a 'painfully adaptive' species.

Today we are witnessing a similar reaction to that which occurred after every big change in human history—the grasping at the past by those who were privileged in the previous times. While some today couch their anti-technology opinions in the language of 'preserving our humanity' or 'freedom', it mostly comes down to the age-old fight between the haves and the have nots—because 'helping humanity' argues only in technology's favour. Who can bemoan 'less disease', 'universal free power', 'good shelter and food for all,' 'universal connectedness', or even space travel? All that—and more—is what technology is bringing us.

Some might ask 'At what cost?' but the unstoppable reality is that we are all becoming 'Symbiotic Human-Machine Hybrids'—to almost everyone's benefit. Some Silicon Valley executives are sending their own kids to non-technology 'Steiner' schools—as widely reported—because they believe, I think, that this will enable their



already hyper-technology-infused kids to be better hybrids. Most kids, however, know that to become successful hybrids in their future world they will need a lot more of the new technology than the old skills—although some of those 'old skills' are certainly part of the new hybrid mix.

Humans have been evolving and changing forever, and the memories we pass down of previous times are all heavily edited, redacted and interpreted—typically way over—positively. In the short time we each individually get to live, each of us sees, at best, only the forward tip of human evolution—which may lead some to the conclusion that the best *of* all times is the best *for* all times. Yet we are all better off welcoming, rather than fearing, more evolution, and investing deeply in the new Symbiotic Human-Machine Hybrid that is coming—even if getting there may at times be painful or difficult.

Humans are only a speck on a speck in the vastness of the universe we are even aware of. Anything we can do to affect nature is far less than nature's power to affect us. Yet one way humans *are* special is that we do have a great deal more power than other creatures to affect things on our planet. Humans have reached many 'peaks' of progress (to use the term of historian Will Durant), including speech, taming of fire, conquest of animals, agriculture, social organization, morality, tools, science, education and writing and print. For the totality of humans on this earth, life has steadily improved over time. But it is important to remember that our current developmental stage is only that—a stage—and that our current evolution is only better for some.

All of these previous 'peaks of progress' caused massive upheavals and redefinitions of our humanity. And now we are entering a new era, based on computing power. Our machines have already become so powerful—and will become so much more powerful even in our children's lives—that another big upheaval, and re-definition of humanity is already in progress. We are already seeing massive 'generational attitude change not only toward technology, but toward privacy, property, personal relationships, security, sexuality, power, kids, violence, god, justice, money, love, government, and even time and space.

Already, machines are better at a great many things formerly considered only the province of humans. These include reading, accessing information, researching, translating, much non-fiction writing, collaborating, learning, agility and grit.

In other spheres we are already in transition towards machines being better than people. These include many kinds of critical thinking, systems thinking, project management, connecting ideas, and some forms of relating, fiction writing, art and music—and even formal debating. (For an eye-opener, see IBM's Project Debater at https://www.youtube.com/watch?v=3_yy0dnIc58.) Although there is still human creation and genius, much of the music we hear today as background loops is already written by machines.

So what will our 'humanity' become? I believe we will see the rise in importance of the traits that machines are least good at—at least currently. These include dreaming, imagining, feeling, respecting, empathy, ethics, compassion, speaking, persuading, creativity, uniqueness, and particularly accomplishing. These are skills our youth should be working hard at developing. The kids are already hard at work at technology integration—bonding with their devices, embedding chips into their bodies, and testing technologies that monitor and share their thoughts. While this may be discomfiting to some, I believe there is no cause for general alarm. It is, potentially, a 'new renaissance'—a flourishing of formerly under-appreciated, but essentially human traits in all of us.

Education professor Yong Zhao titled one of his books *Never Send a Human to Do a Machine's Job*. If all we want is more of what we have, we can get it by building machines. If we want things to be *better* than before, we should work on creating great Symbiotic Human-Machine Hybrids. There is no reason to fear this—it's precisely what's needed to make progress.

Marc Prensky is an award-winning, internationally-acclaimed speaker in over forty countries and author of seven books in the field of education. Coiner of the term 'Digital Native', he has taught at all levels, from elementary to college. Marc is the founder of The Global Future Education Foundation and ARISE-NET. WORLD, the Accomplishment-based Real-World-Impact Student Empowerment network, devoted to developing and spreading young people's empowerment to better their world, and uniting all those who are working to help.

Coming Soon: Future of Work v/s. Future Workers

Deepak Maheshwari

THE GLOBOTICS UPHEAVAL: GLOBALIZATION, ROBOTICS AND THE FUTURE OF WORK
By Richard Baldwin
Oxford University Press, 2019, pp. 304, $29.95

While the term Industry 4.0 did arguably emerge by way of a High-Tech strategy report developed under the aegis of the German Government in 2013, it came into the general parlance only when Professor Klaus Schwab, founder of the World Economic Forum, published his seminal book *The Fourth Industrial Revolution* in 2016. The popular belief is that the first one started with the steam engine around 1700, the second one with electricity, railroads and telecom in the nineteenth century and the third one with computing around 1960-70 while the fourth one began in the early 2010s.

Ever since, and aided by new developments such as autonomous vehicles, chatbots, facial recognition, deep fakes and high fidelity of real-time machine translation on the go, policymakers and business leaders around the world are worried about the future of mankind, more so in terms of what it means for the future of work.

What type of skills in the future would be needed and rewarded? And, pray, what would become redundant?

But haven't we been here earlier at the time of the first, second and third industrial revolutions? —and if it is really different this time, how and why? How are the digital technologies impacting society? Last but not the least, how should humanity prepare itself for the evolving future that is both 'inhumanly fast' and 'unbelievably unfair'?

Richard Baldwin, a well-known researcher and Professor of International Economics at the Graduate Institute of International and Developmental Economics in Geneva, delves into these profound questions in this fascinating book that analyses the issues, challenges and opportunities at the interface of technological development, role of human skills and workers within the respective political economy of the day and place.

To begin with, Baldwin calls the current revolution as the third and not the fourth one by lumping together the developments from steam engine through electricity, railroads, automobiles, chemicals, etc., into a rather longitudinal one, followed by the second one by way of computing in 1973. And yes, he dates the onset of the third revolution to 2016-17 timeframe.

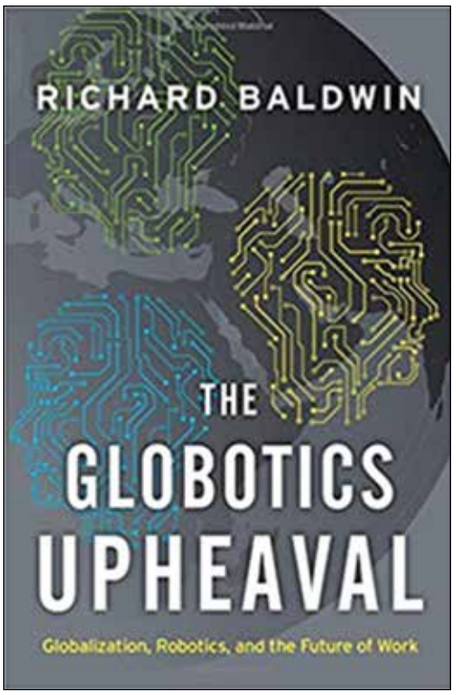
According to Baldwin, we are currently witnessing two distinct yet mutually reinforcing trends. Firstly, we're seeing the emergence of telerobots, the author's term for a new type of globalization in which white collar service jobs in developed countries are being replaced by humans in developing countries—mostly in Asia, with relatively lower wages. He calls this the emergence of 'Remote Intelligence' (RI). Secondly, we're seeing the rapid development, deployment and fusion of technologies like Artificial Intelligence (AI) and robotics at an accelerated pace.

Neither globalization nor automation is new *per se*. However, the fusion of these two simultaneous trends, viz., globalization in the form of RI and robotics in the form of AI is leading to the phenomenon of 'globotics'. As a result, a majority of workers in developed countries are losing jobs or seeing stagnant wages; and, their frustration and fury manifested in outcomes like Brexit and the emergence of a new political narrative in the US, both in the year 2016.

The twin trends of globotics are feeding off each other but also gaining from the rapid advances in the underlying Information and Communication Technology (ICT) best explained through four laws named after Moore (computing aka data processing power doubles every eighteen months), Gilder (network bandwidth aka data transmission capacity doubles every six months), Metcalfe (value of a network grows with more people or nodes joining the network, even as the cost of joining falls) and Vairan (digital components are free while digital products are highly valuable).

Baldwin avers that every industrial revolution goes through four phases: Transformation, Upheaval, Backlash and finally, Resolution. And, just like the earlier three industrial revolutions, the ensuing globotics revolution is no exception to this phenomenon.

While we are currently going through the upheaval and backlash around globotics and await the eventual resolution, Baldwin urges humankind to take cognizance of the implications and be proactive in preparing itself to soften the blow.



While predicting that the future is fraught with risks especially when it comes to determine what jobs technology would replace, he distils certain skills that are highly unlikely for the machines to master. These include social cognition, ability to solve 'black box problems' (taking responsibility for the decisions taken), caring, sharing, understanding, creating, empathizing, innovating and managing interpersonal relationships.

Baldwin urges policymakers not to succumb to futile attempts at saving the majority of the existing jobs. Instead, he calls for a societal response by being ready to master these skills that would continue to be in demand (at times, even more so than today) in the foreseeable future. In the ultimate analysis, there is a clarion call to be proactive to be future-ready rather than just keep waiting for the future to arrive. And, he does this with finesse through a series of scenarios and synthesis of multiple studies on the subject.

The book is well structured and flows well and the roller coaster ride invites the reader to numerous useful, and appreciably simplified, charts and tables to cull out some fascinating trends. In addition, the prose at times mimics poetry, well almost. Sample these:

> 'At the end of the 1970s, the docks were shuttered. The area was left to weeds, wildlife and winos.'

> 'Thin edge of wedge'.

Chapter and section headings are also inviting in nature, as can be seen in 'Helping Brains, Replacing Brawns' and 'New Backlash, New Shelterism'.

> “Baldwin avers that every industrial revolution goes through four phases: Transformation, Upheaval, Backlash and finally, Resolution. And, just like the earlier three industrial revolutions, the ensuing globotics revolution is no exception to this phenomenon.”

Whether ‘globotics’ would become as popular as ‘Future Shock’, ‘The Tipping Point’, and ‘The Black Swan’ or for that matter ‘Bottom of the Pyramid’, the book is admittedly replete with some interesting, and often intriguing, quotes such as:

‘The radical mismatch between the speed of job displacement and the speed of job replacement is the real problem.’
‘[R]evolutions are never just one thing.’
‘[P]rogress is a process, not an event.’
‘Technology eliminated many jobs but few occupations.’
‘[G]lobalization is always a push-pull pair.’
‘Infinity is, after all, a concept not a number.’
‘[C]communism only survived by becoming more like capitalism while capitalism survived only by become [sic] more like communism.’
“Globots will do what they can do. We’ll do the work that globots can’t do.’
‘Growth mean(s) change and change mean(s) pain.’
‘Change is difficult, when it comes fast and seems unfair.’

There have been no claims made that the manuscript was successfully reviewed by an AI editor. Apart from other proof errors, a competent AI system also would have hinted that Narendra Modi was yet to become the Prime Minister of India when his holographic images were used in the 2014 election campaign.

The academic brilliance of Baldwin shines through the book and he does draw upon his Ivy League education as well as distinguished research career that included a brief yet important role in the US Administration. However, three aspects in particular are rather disappointing in this otherwise fascinating book. Firstly, whether it is due to either a bias in the author’s worldview or a rather limited exposure to ground realities in much of the developing world, the result is the same in as much that the book presents both the challenges and opportunities essentially from the viewpoints of developed countries. While it goes to great lengths in identifying challenges for the aging and rich economies in the West as well as in Japan, there’s not much analysis of the potential demographic dividend for countries like India. Or for that matter, what are the pitfalls they should avoid even as they have their own ambitions and aspersions in the imminent future? Africa is mentioned just once, that too just in passing.

Secondly, futurologist Alvin Toffler (author of the trilogy *Future Shock, The Third Wave* and *Powershift*) as well as Nobel Laureate Paul Krugman, Baldwin’s doctoral guide and co-author of several books, are conspicuous by their absence amidst scores of numerous citations from political leaders, scientists, technologists, futurologists, consultants and of course, economists.

Thirdly, the role of ethical considerations in the realm of AI has been barely mentioned except while analysing the ‘black box problem’ even as this issue has been gaining a lot of attention as can be seen by organizations like OECD and IEEE as well as countries like Singapore, Denmark, Sweden and India.

Overall, this book depicts the spectrum of issues emerging from the complex and rapid interactions of technological innovations, political economy and the innate human nature in a highly fragile crucible of humanity. The last paragraph of the book sums it all up quite well (and, it’s no spoiler alert!): ‘[I]t is critical to realize that the pace of progress is not set by some abstract law of nature. We can control the speed of disruption; we have the tools. It’s our choice.’ Baldwin sees the resolution of the ensuing challenges in a brighter future as more humane, more urbane and more local where humans leverage their interpersonal and creative skills along with the technological innovations that are driven by data, algorithms and Artificial Intelligence. In fact, he dubs AI ‘Almost Intelligent’.

Even as it is not clearly laid out how we’d land up in this bright future, the vision is indeed captivating, enticing and full of potential. The million, trillion-dollar question is: Are we willing to embrace and realize it?

Deepak Maheshwari heads Government Affairs in India, Symantec.

What the Brave New World Will Mean

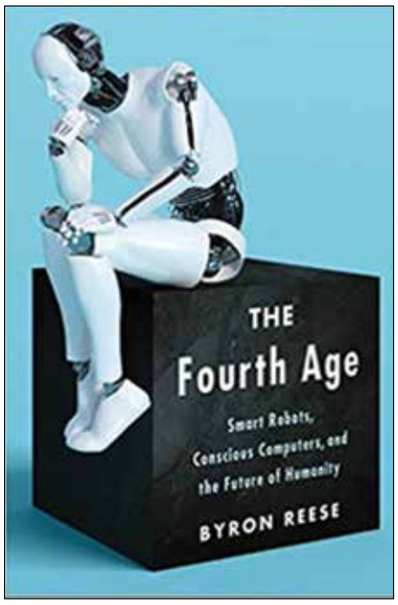
Mala Bhargava

THE FOURTH AGE: SMART ROBOTS, CONSCIOUS COMPUTERS, AND THE FUTURE OF HUMANITY
By Byron Reese
Emily Bestler Books, 2018, pp. 336, ₹599.00

More than at any time before in history, we are questioning the impact of technology on our lives, society, and even human existence itself. Technology is changing life as we know it at such a breakneck speed that it leaves us reeling from the disruption and need to understand what each new advancement will mean for our future: there is a surfeit of predictions but of course no one knows for certain. In *The Fourth Age: Smart Robots, Conscious Computers, and the Future of Humanity*, Byron Reese takes us back in time to put technology in perspective as we know it today.

Don’t let the double-barrel title of this book deceive you into thinking that this is another technical deep-dive into today’s emerging technologies. It is first of all extremely entertaining, and second of all meant for everyone, not necessarily in that order. What the author does is to travel back and forth in time to deconstruct the core beliefs that undergird the various views on robots, jobs, AI, and consciousness. The book is a guide to the thorny issues that undergird the opinions and precautions that experts so passionately and confidently avow will ‘make the world a better place’. With stories and examples from history, research and just everyday life, this book makes you laugh out loud at the wit it is generously sprinkled with throughout. You will find yourself wanting to mark passages and sentences for discussion with others. The goal of this book is to help the reader understand his own beliefs and from then on understand the claims of technologists. It is a brisk walk through 100,000 years of human history, discussing big questions along the way, and exploring the future to come.

The questions the book grapples with aren’t about transistors, neurons and algorithms. They are about the nature of reality, humanity, and the mind. According to Reese, confusion happens when we



begin with 'What jobs will robots take from humans?' instead of 'What are humans?' He believes that until we answer that second question, we cannot meaningfully address the first.

This is a five-part book, exploring five ages, the fifth being the one to come. Reese writes in short pithy chapters focusing on boiling various topics down to basic questions and several possible answers to have the reader re-examining long-held beliefs. In the first part, Reese systematically and quickly goes through human history, to find important developments—such as the discovery of fire—and shows us how we have always demonized technology from the start and right through to the present times in which we have prominent people in the field of technology all believing different things.

Reese devotes a good chunk of this book to exploring AI, which he believes is a difficult term to truly define, having two big problems—the word artificial and the word intelligence. What we know of as AI today is actually 'Narrow AI' designed to address a specific task. For example, the spam filter in your Inbox, which looks for specific terms and sets aside the mail in a different category, is a simple use case of Narrow AI. A neural network that sifts through thousands of images to compare with one image and then tells us how close the picture is to a particular medical diagnosis too is a use of Narrow AI. Even the more sophisticated AI uses we see today actually fall into this category. General Artificial Intelligence, where a computer system is versatile and adaptable, mimicking humans, doesn't exist. 'They (computers) simply do what they have been programmed to do. The words they output mean nothing to them. They have no idea if they are talking about coffee beans or cholera. They know nothing, they think nothing, they are as dead as fried chicken,' writes Reese.

> "General Artificial Intelligence, where a computer system is versatile and adaptable, mimicking humans, doesn't exist. 'They (computers) simply do what they have been programmed to do. The words they output mean nothing to them..."

The possibility of coming up with this sort of AI however, is what frightens human beings, as it can eventually outsmart them and even find them irrelevant. At this point, there is no knowing whether humans will actually be able to create General AI. Contrary to what people think, Narrow AI cannot just grow to become General AI. Narrow AI has limitless applications but because the understanding of its difference from General AI is so poor, it fear-paralyses people into not wanting to use it and suggesting we switch off everything. Reese also explores robotics and automation and questions on whether it is true that 47% of all human jobs are going to disappear very soon.

Although the author claims he does not really write this book to tell us what he believes or what his opinion is, in the end, Byron Reese is an unapologetic optimist. He believes that the earth is a pretty good place to be, ignoring the horrific impact of climate change in his predictions. He believes that technology will actually help humanity rid itself of poverty, hunger, ignorance and war rather than be the catalyst for the doom that many envisage for the planet. Unlike other futurists, Reese thinks technology will actually bring about a golden age of sorts. Already technology has increased our life expectancy, enhanced standard of living, and it multiplies what people can do, so it is baffling that we look at technology through a negative narrative that shows a bleak future. Quoting Steve Wozniak the author writes, 'All of a sudden, we've lost a lot of control. We can't turn off our Internet; we can't turn off our smartphones; we can't turn off our computers. You used to ask a smart person a question. Now whom do you ask? It starts with g-o, and it's not God.'

Mala Bhargava is a veteran technology journalist writing on gadgets and digital living since 1995.

The Inherent Unpredictability of Algorithms

Manoj Kumar Jena

A HUMAN'S GUIDE TO MACHINE INTELLIGENCE: HOW ALGORITHMS ARE SHAPING OUR LIVES AND HOW WE CAN STAY IN CONTROL
By Kartik Hosanagar
Viking, 2019, pp. 272, $27.00/ ₹1919.00

Kartik Hosanagar's book *A Human Guide to Machine Intelligence* explores an important dimension of technology in recent times. Hosanagar is a Professor of Technology and Digital Business Studies who critically engages to fathom the rise of Artificial Intelligence (AI) based on algorithms.

The book is shaped in the background of two chatbots Xaiolce and Tay. Xiaolce is a chat bot created in the avatar of an eighteen-year-old girl by Microsoft Company to entertain people with stories, jokes and casual conversation that was launched in China in 2014. She was a cute personality and attracted 40 million friends on WeChat and Weibo. After the success of Xaiolce, Microsoft launched Tay in USA in 2016, and suddenly within twenty-four hours it had close to 100,000 interactions with other users. Its tweet, announcing 'Hello World' soon turned into extremely racist, fascist and sexist tweets. The algorithm that controlled the bot did something that no one in its programming team expected it to do—it took on a life of its own. Microsoft suddenly shut down the project website. Now, the question is, how could two similar algorithms designed by the same company behave so differently—inspiring love and affection in the case of Xaiolce, and hostile prejudice in the case of Tay?

In this context, Hosanagar's concern is to comprehend how Artificial Intelligence represented a certain kind of opportunity for human progress and also unpredictability and threat. And hence, 'What steps should be taken by the end users?' Therefore, this book addresses three questions. Firstly, what causes algorithms to behave so unpredictably, in biased and potentially harmful ways? Secondly, if algorithms can be irrational and unpredictable, how do we decide when to use them? Thirdly, how do

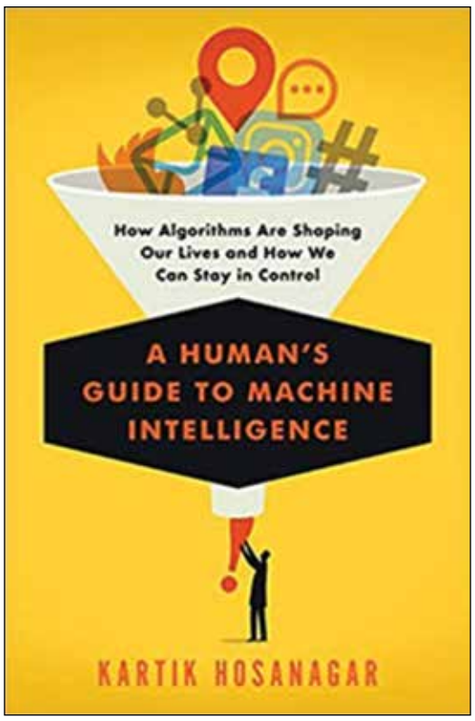
> "Hosanagar's concern is to comprehend how Artificial Intelligence represented a certain kind of opportunity for human progress and also unpredictability and threat."

we as individuals, who use algorithms in our personal or professional lives as a society, shape the narrative of how algorithms impact us?

As Hosanagar admits, he is a firm believer in the immense potential of algorithmic decision-making and also trying to see how algorithms can at times be surprisingly unpredictable, especially AI that enables autonomous decision-making.

The book is divided into three parts with ten chapters. Part one, 'The Rogue Code', which has two chapters, 'Free Will in an Algorithmic World' and 'The Law of Unanticipated Consequences'. This part explores how much of our lives are shaped by the decisions we make online, whether through searches on Google, connecting with friends on Facebook, or shopping on Amazon. Algorithms exert a significant influence on precisely what and how much we consume, whether it is consumer product in Amazon, movies on Netflix or posts and articles on Facebook. The algorithms are not just selecting the media we see on social networks, but are also silently determining the network itself to keep track of who we allow into our personal and professional lives. It also addresses the issue of unanticipated consequences, such as Google's Autocomplete Keyword tool, to stress on the point that most of us take the 'Autocomplete' algorithm for granted and that we are hardly conscious of the feature when we use Google.

Part two on 'Algorithmic Thinking' has four chapters. It covers 'Omelet Recipes for Computer: How Algorithms are Programmed'; 'Algorithms Become Intelligent: A Brief History of Artificial Intelligence'; 'Machine Learning and the Predictability-Resilience Paradox'; 'The Psychology of Algorithms'. It focuses on the inner workings of algorithms and how they come up with those often quirky and sometimes brilliant recommendations, and how simple design choices can have unintended results. It also highlights that one way to create *digital* neighbourhoods is by organizing webpages by category. It also initiates discussion on historiography of Artificial Intelligence. The advent of the



Internet meant relatively easy access to large datasets that could be used to train machine learning algorithms. It also highlights that as machines become more intelligent and dynamic, they also become more unpredictable. This suggests a fundamental conundrum in algorithm design. You can either create intelligent algorithm in highly curated environments or expose them to messy real-world data to create resilient, but also unpredictable algorithms. Kartik calls this predictability-resilience paradox.

'The Psychology of Algorithms', interestingly captures the analysis of nature and nurture dialogue. Hosanagar argues that the twin forces of nature and nurture also help to explain the behaviour of algorithms. He further states that the social media echo chamber (all unintended consequences of algorithmic decisions) is a result of a complex cocktail of nature and nurture of algorithms, and the manner in which people interact with them, while data, algorithm and people play a significant role in determining the outcomes of the algorithmic systems.

Part Three, 'Taming the Code', has four chapters: 'In Algorithms We Trust'; 'Which is to be Master: Algorithm or User'; 'Inside Block Box'; and 'An Algorithmic Bill of Rights'. Part three focuses on the idea of trust and destruct. Kartik argues how the newsfeed experience in Facebook itself was emotionally inconsistent; it did not reflect genuine social interaction with a friend. Instead, the experience was more like watching a movie in which lots of dreams had been packed into the available time. Facebook newsfeed algorithm already uses rules to determine which posts to show to the users and in which order. He states, let people look inside the black box of algorithm, understand the thinking that is in play, which may pacify their mistrust, hostility and fear. He also questions whether transparency is the major factor in fostering mistrust upon algorithms and suggests 'An Algorithmic Bill of Rights' to limit algorithm's powers and define the ways in which it can be held accountable.

The author argues that the rise of AI involves computers to do all the things that typically require human intelligence, which includes reasoning, understanding language, navigating the visual world and manipulating objects. As modern algorithms have incorporated more AI and machine learning, their capabilities and their footprints have expanded. They now touch our lives everyday, from how we choose products to purchase and movies to watch (Netflix's recommendations) to whom we date or marry.

Algorithms undoubtedly make our lives easier. At the same time they are also adversely affecting us in ways that are beyond our control. They are constantly changing through the data used to train them, which is invariably having an impact on our individual choices, daily lives and on the society. Kartik sums up that despite all the concerns, modern AI- based algorithm is here to stay.

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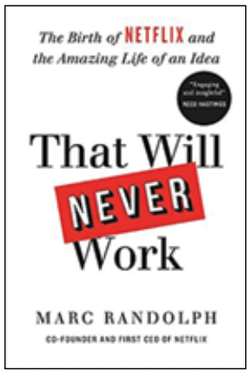
Book News ***Book News***



That Will Never Work: The Birth of Netflix and the Amazing Life of an Idea by Marc Randolph, Co-Founder and First CEO of Netflix, is the inside story of an iconic company. Full of counter-intuitive concepts and written in binge-worthy prose, it answers some of our most fundamental questions about taking that leap of faith in business or in life: How do you begin? How do you weather disappointment and failure? How do you deal with success? What even is success?

Endeavour, South Asia edition Hachette, 2019, pp. 219, ₹699.00

PRIVACY & SURVEILLANCE

Illustration: Designed by Sharada Kerkar, Digital Empowerment Foundation

Effects of Digital India

Pankaj Pachauri

THE POLITICS OF DIGITAL INDIA: BETWEEN LOCAL COMPULSIONS AND TRANSNATIONAL PRESSURES
By Pradip Ninan Thomas
Oxford University Press, 2019, pp. 248, ₹883.00

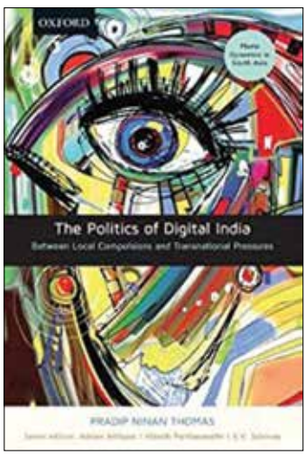
Any sincere academic work on India's digital eco-system faces two major risks: first, the digital landscape changes faster than you can deploy your research tools, and secondly, your observations and conclusions are outdated by the time your hard work hits the book stores.

As an economic slowdown adversely impacts India's rural economy, tele-density in the villages is already showing signs of receding. This is the big 'bottom of the pyramid', which spawned many business dreams, and plans of multinationals and Indian companies alike.

In addition, stung by international reaction to its authoritarian clamp down on communications in the State of Jammu and Kashmir, the Central Government has told the Supreme Court that the social media is a 'possible threat to democratic polity', warning the American tech behemoths who are the largest players in the Indian digital and social media based economy.

So both the 'Digital' and 'Politics' have changed since Pradip Ninan Thomas undertook the research work and wrote *The Politics of Digital India: Between Local Compulsions and Transnational Pressures.* But the author adroitly avoids the two risks mentioned above due to his wide canvas and precision of his thought process. The book is like a ride where you get a good view of the milestones and where the road is headed.

India is the largest digital market by volume in the world as the Chinese digital market was developed, and lives, in a walled garden. As the global digital market is dominated by the US based companies, India's government and private digital properties are using American technological infrastructure and are vulnerable to misuse of the data stored in US servers. Most of these companies have now deployed Indian engineers at the top of their decision-making processes both in the US and in India as an



operational necessity. Some of them have achieved a superstar status among Indian youth and are patronized by the top Indian leadership publicly. Thomas forcefully highlights the threats of Indian reliance on US companies while developing nation-wide governance architecture for a population, which is complex, vast and varied. He illustrates how the Indian political leadership—brazenly supported by government agencies like the NITI Aayog in the garb of advancing economic reforms—is pushing the digital agenda down the throat of a country where 60% people are still dependent on agricultural economy and more than 40% are disconnected. Worse, 60% rural women still do not have access to any connectivity.

In theory, it may sound like a scholarly exercise in studying digital macroeconomics, but in practice, it has already begun to show disastrous consequences. Aaadhaar for example has now been linked to many government subsidies—from fertilizer distribution to bank accounts—as a result only those can benefit who are connected.

In the urban scenario, the government has begun to extend facilities on an 'Application Based Infrastructure', so if you are not connected you may not be able to use the government launched apps—from police helplines to student scholarships. This is a classic example of punishing the dispossessed.

The chapter on 'The Expansion of Politics of Control' is a warning on how sectarian politics can dictate and destabilize democratic institutions in the world's largest democracy. The author cautions that the Hindu Right-Wing groups like the Bajrang dal and Vishwa Hindu Parishad are pushing their religious agenda on governance tools like the bureaucracy and the judiciary. Since these organizations now have sympathizers among the political leadership, they can use the data collected by the government from the citizens for partisan ends. The clampdown on communications in Jammu and Kashmir—the only Muslim majority area—is a case in point. Another socially combustive issue simmering is the National Registry of Citizens (NRC) being prepared in the North Eastern States of the country, which has led to sectarian tensions, and controversial detentions of citizens.
The author raises a red flag here about India's weak privacy laws, which help the governments and organizations close to the political leadership in power to misuse mass data.

Another major issue raised by the book is about the future of India's agriculture. With big data and artificial intelligence available, agricultural landscape and crop patterns can now be digitized and global grain, fruit and vegetable production anticipated turning India's agrarian economy into a giant lab. The book provides a rare peep into the seedy business of seed farming and the global push towards genetically modified crops by multinationals. This can destabilize Indian agriculture practices, which sustain nearly two-thirds of the population. Agriculture in India is more than a means of livelihood; it is a way of life and a complex mosaic of caste-based system still thriving on political patronage. Any sudden disruption here can lead to a violent social backlash and migration of large sections of communities, which can be disastrous. But in the name of modernization and agricultural reforms, the government is ignoring early smoke signals of looming distress in the hinterland.

The book provides what we need most in India today—A2K. Access to knowledge about the geopolitics of digitization; its connections to financial technology firms; their relations to international internet governance; the shift in global order and its impact on geographies and societies—are all subjects being discussed at global fora. The popular media is only skimming the surface of these subjects within its limited remit of commercial viability. Its focus is mainly financial successes rather than the long-term ramifications of the effects of Digital India.

In the book, Pradip Ninan Thomas ignites several theories, which can be starting points to further research and reportage. *The Politics of Digital India* needs a follow up in several directions to disseminate more and better understanding on these critical areas. The debates and discussions on the political economy of the future of Indian state described as 'polymorphous' within the book can determine the future of the second largest population on the planet.

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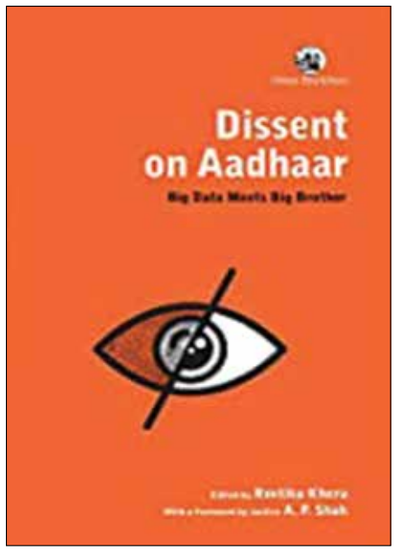
A Necessary Voice in the Face of a Juggernaut

Ajit Phadnis

DISSENT ON AADHAAR: BIG DATA MEETS BIG BROTHER
Edited by Reetika Khera
Orient BlackSwan, 2018, pp. 288, ₹475.00

These are politically charged times and even in polarized scenarios such as this, there are few issues that have stimulated more polarized conversations than the Unique Identity (UID) project, better known by the epithet of Aadhaar. On the one side is a seasoned army of technocrats led by Nandan Nilekani, a doyen of the IT industry, and on the other side, is an equally revered constellation of social scientists, legal experts and policy thinkers. At some levels, the battle of Aadhaar represents a major site where inter-disciplinary intellectual differences between technology and the social sciences are being continually negotiated—albeit with a new sense of urgency amidst the explosion in power and pervasiveness of technology. This intellectual exchange is, of course, mired by claims that self-interested individuals or organizations are engaged in driving or stalling the project, which offers another layer of arguments and counterarguments. The multi-layered nature of argumentation reveals the immense complexity of the discourse around Aadhaar.

The book under review is a collection of essays by many intellectual luminaries on the subject. It is, as the title suggests, an unrestrained critique of the concept and execution of Aadhaar, and the overarching voice reflected in the essays is that of dissent. Of course the dissent itself has different shades; some authors recognize that the project has given some benefit but raise alarm over its real and hypothetical threats. Others are more fervent in dissent as they perceive that Aadhaar will bring us closer to an Orwellian world of surveillance (notice the inclusion of 'Big Brother' in the title). However, amidst the varied gesticulations, what is striking about the book, which I feel makes it an invaluable contribution, is the range of interdisciplinary perspectives (from law to policy to engineering) that coalesce



into a collective expression of dissent.

I must confess that I am not an expert on the subject of 'identification' projects. As a result, I will restrict my review to analysing the arguments in the book primarily from the standpoints of logical coherence and demonstrated evidence. I first present the areas of agreement and then go on to highlight my differences with the authors.

First, I agree with the concern raised in the book that an aggressive push towards mandating Aadhaar for all social schemes has led to some exclusion. No technology is error free and the process of realizing identification through biometric methods may, by chance or at times even by design, exclude some people, who would have otherwise been eligible for benefits. The moot question, then, is what is the alternate recourse available for people that are excluded? As Jean Dreze and Anumeha Yadav highlight, the government has been largely silent on this issue.

Second, I agree that Aadhaar could open up possibilities for state actors to harvest private information from citizens. The arguments presented in the book suggest that the regulatory safeguards against this prospect are not adequate. While the Supreme Court's 2017 judgement gives some legal anchorage for a plausible rebuttal of such possibilities, as Gautam Bhatia points out, this guarantee may be more fragile than is usually regarded. One suggestion for addressing this is to take a leaf from the privacy protections embedded in the US Social Security programmes as detailed in Srujana Beg's essay. Another idea is to implement a graded authentication mechanism, as proposed by Gus Hosein and Edgar Whitley, which limits the use of biometric authentication to functions that have higher risks. More routine transactions such as marking attendance in schools could

use lower order authentication protocols, which would also limit the potential for recording of day-to-day transactions.

Third, I agree that the expanding scope of the programme needs to be carefully considered. MS Sriram's essay traces the successive instances of scope creep that has percolated into the project. What started as a simple identity verification database has now turned into an anchor for linking of disparate databases. Which way it is likely to go next is anybody's guess, but further attempts to integrate more databases need to be made with careful consideration.

However, there are other arguments that do not quite convince me. First, the repeated assertions in some of the essays that Aadhaar has led to virtually no efficiency increments is not, in my view, backed by substantive evidence. Of course it is likely that the real benefits of Aadhaar are lower than the claims made by government data and politicians, but I believe that to discredit all claims of benefit based on the argument that these claims seem exaggerated is to take the critique a little too far.

The second point of divergence relates to the argument that if Aadhaar turns into a data harvesting project, it will necessarily lead to curtailing of political dissent. Yes, as more private information gets integrated within the government repository, it will give governing politicians an upper hand over critics and opponents. However, for this information advantage to translate into an active instrument of repression would need other pieces to fall in place, such as a subservient judiciary, complete absence of data usage regulation and a public acceptance for authoritarian methods. An information harvesting Aadhaar may prove to be one concrete step but is not necessarily a natural route to an authoritarian incursion. That said, I generally agree with the authors that ex-ante safeguards, like those I mentioned earlier, are likely to be more effective than ex-post ones.

In summary, the book presents a rigorous multidisciplinary critique of the Aadhaar project. Some of the cautions raised in the chapters are warranted and need to be carefully examined. However, it is also necessary that the expression of caution does not slide into indiscriminate criticism of the project, even in areas where it may be giving benefit. The government needs to be more careful about where it wants to take Aadhaar, and intellectuals need to be ever so watchful.

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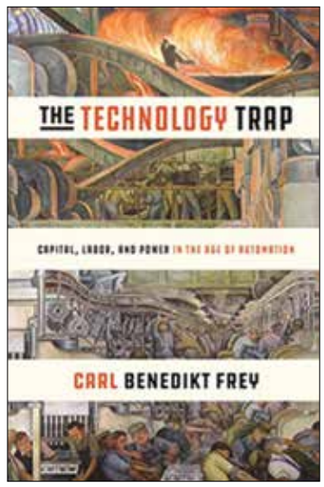
Tragic Rerun of the Industrial Revolution

Ravi Venkatesan

THE TECHNOLOGY TRAP: CAPITAL, LABOR AND POWER IN THE AGE OF AUTOMATION
By Carl Benedikt Frey
Princeton University Press, 2019, pp. 480, $29.95

We are now well into the 'Fourth Industrial Revolution' which is bringing astonishing advances in many fields—information technology, life-sciences, materials, intelligent machines and a fusion of machines, information and biological systems. With gene editing, we now even have the ability to modify or even engineer new life forms. Whether all these possibilities will lead to empowerment and emancipation of many more people or to more exploitation and inequality is one of the central questions that face humanity. To answer this, Carl Frey, who directs the Future of Work Programme at the Oxford Martin School, turns to history, specifically to the preceding industrial revolutions.

The book serves as an important reminder that while technological change may benefit many over the long run, 'short run' adjustment costs can represent a lifetime for the majority of workers. The first Industrial Revolution transformed the world by the mechanization of manufacturing and agriculture. This resulted in an extraordinary surge of wealth and living standards in Britain, Western Europe and America. However, very few of those who lived through this massive economic upheaval were beneficiaries. The machine-owning industrialists grew, 'rich on the misery of the mass of wage earners'. The introduction of water frames, carding machines and spinning Jennies eradicated many jobs, sucked child-labour into the workforce and suppressed wages. Handloom weavers, once known as labour's aristocrats, became the tragic losers. 'Three generations of working Englishmen were made worse off as technological creativity was allowed to thrive. The full benefits of the Industrial Revolution took more than a century to be realised.' (Frey fails to account for the millions of weavers and artisans thrown out of work in



countries like India as Britain brutally colonized them. If these are factored in, the arithmetic is even more skewed.)

Early factories were horrible, dangerous, places to work in. Life expectancy in Manchester in 1850 was 32 years, well below the national average of 41 years. Men were on average shorter in 1850 than they were in 1760. This resulted in a backlash, 'the Luddite movement', as workers mutinied and smashed machines between 1811 and1816. One reason that Britain pulled ahead of the rest of Europe is that it was more brutal in suppressing dissent. In 1769 legislation was passed making the destruction of machinery punishable by death. In 1812 and 1813 more than 30 Luddites were hung. Many other countries were slower in embracing labour-replacing machines because of their disruptive force. In these countries including France and Germany, medieval guilds successfully resisted technologies that they perceived as threatening their skills and wages. This is why Britain became so economically dominant.

The central concern that runs through *The Technology Trap* is that, unless we are very careful, our latest technological revolution may well turn out to be a tragic rerun of the Industrial Revolution. AI in particular is likely to result in a productivity surge, just as we saw in the Industrial Revolution. But the risk that the gains will be unequally distributed and will take a long time to benefit all is very high. The short run can be a lifetime for some, with potentially dire social and political consequences.

Frey argues that the reason we downplay the human cost of the First Industrial Revolution is because of a very different and much happier experience of automation experienced in 20th-century America (the second and third industrial revolutions.) The most significant difference between the two eras was that technology was primarily

'labour-enabling' during the American century, whereas it had been mostly 'labour-replacing' in earlier centuries. It is true that some jobs, such as lamplighters and elevator operators, were eliminated altogether. But electricity and the internal combustion engine, the two main technologies of the 20th century, helped improve material wellbeing for the majority of the working people. The first three-quarters of the 20th century are seen as the 'greatest levelling of all time'. Agricultural productivity was transformed by machinery freeing millions of workers from the land. The mechanization of the household liberated millions of women from time-consuming domestic chores and enabled them to enter the formal workforce and increase household incomes. The introduction of running water, electricity, refrigerators and washing machines cut the workweek of the housewife by a massive 42 hours between 1900 and 1966. Technology had the added benefit of making work less hazardous and physically demanding. It also led to better paying jobs. Between 1870 and 1980 hourly pay kept track with labour productivity. Higher unionization resulted in distribution of wealth and low inequality. The expansion of secondary education enabled workers to perform higher value added jobs. One of the great achievements of the 20th century was the creation of a prosperous middle class.

Alarmingly, in recent decades, this virtuous upwards circle has been thrown into reverse, and the middle class is shrinking. Rather than globalization or immigration as the primary culprit, Frey points to the computer revolution. 'The computer revolution more closely resembles the experience of the Industrial Revolution,' he writes. Of Americans born in 1980 only half are better off than their parents. The comparable figure for 1940 is 90 per cent. The number of robots in the US increased by 50 per cent between 2008 and 2016, each of them replacing about 3.3 jobs. He highlights a correlation between those States with the highest robot density and those States that unexpectedly swung behind Donald Trump. 'The trajectories of per capita output and people's wages look exceedingly similar. In America, labour productivity has grown eight times faster than hourly compensation since 1979. Even as the American economy has become much more productive, real wages have been stagnant, and more people are out of work; consequently the labour share of income has fallen. Corporate profits have swept up an ever-greater share of national income while the share going to workers has rarely been smaller.' 'The great reversal' has seen the percentage of men aged between 25 and 54 who go to work in the morning plummet since the new millennium while opportunities for high school graduates (those without a university degree) have diminished.

However, the book doesn't adequately explore the reasons for the reversal. Why are we now looking at a tendency towards labour-replacing technologies when we had a proliferation of labour-enabling ones for nearly a century? The author's premise is simplistic—whether workers lose their job to robots ultimately depends on 'the societal distribution of political power'. What would have made it more robust is an explanation of the political economy of inequality since the 1980s—there is very little mention of Margaret Thatcher and Ronald Reagan and strict anti-union legislation, corporate governance and declining rates of income and corporate taxation. Also, the perverse idea that firms are built to single-mindedly generate returns for shareholders which results in a vast imbalance of power between capital and labour. These factors point to why workers are not benefiting from an age of automation.

The second weakness is that *The Technology Trap* focuses on an Anglo-American world. It doesn't cover the perspective from China or India or Japan where robots are seen as increasing productivity of an ageing population. Frey shies away from exploring a new form of colonialism this time by dominant technology companies rather than countries. What is in store for Africa, which is just beginning a slow rise out of colonialism and poverty? Does autocratic China have a significant advantage when it comes to harnessing AI or gene editing compared to democracies and what could this mean?

Gripping as this book is, it leaves you disappointed when it comes to potential solutions. Frey is sceptical about ideas like Universal Basic Income and prefers life-long learning accounts, wage insurance and tax credits. His point on strengthening education and human capital is compelling.

Frey's most important conclusion is that technology is not destiny. Neo-Luddite citizens and voters may yet stymie the rise of the robots. 'In a world where technology creates few jobs and enormous wealth, the challenge is a distributional one,' *The Technology Trap* is a reminder that the future of work depends on policy choices. It is well worth reading.

Ravi Venkatesan is the former Chairman of Microsoft India and Bank of Baroda.

Citizen and Subject

Aasim Khan

PERMANENT RECORD
By Edward Snowden
Macmillan, 2019, pp. 352, ₹1476.00

In the contemporary world, information technology can be argued to be the major source of power and privilege. The weaponization of information in the 21st century is a remarkable achievement given the short span within which the change has occurred, and with it state power seems to be growing in leaps and bounds. Unlike the industrial age, however, no equivalent change is visible in the structure of society and words like 'disruption' do not begin to capture the extent to which this change is contributing to the capacity of the state in enhancing control over the societies it governs. Recent attempts such as Shoshana Zuboff's work on surveillance capitalism, have tried to grapple with it but these still seem inadequate to offer a countervailing narrative.

For long the idea of surveillance society has been used to describe the experience of advanced capitalism in the West, while bourgeoisie capitalism is seen to hold sway on most other people. However, this binary is not useful, and a unified theory of digital power and marginality can help us avoid these binaries, and evaluate the forces in play. As Edward Snowden's heartfelt autobiography in exile, shows, even within the West there is no clear demarcation between the state's capacity to unleash terror on the people and its welfare priorities. The compact of welfare state that emerged in the post-War era, of which Snowden's parents, as he reminds us again and again in the book, were the quintessential spokes in the Weberian ideal state of post-War America. Written by someone who self-identifies as a Beltway insider, *Permanent Record* provides us with enough clues to figure that power in the 21st century is no longer based on Weberian rationalism or Marxist materialism, but includes, as Timothy Mitchell has argued, forms of power that make the modern state salient as well as elusive.

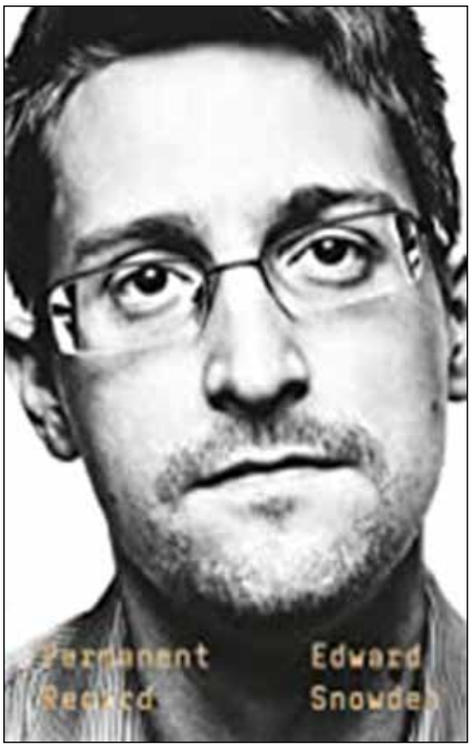
At its heart, *Permanent Record* is a contemplation of these contradictions and transformation in American polity. Even for

> “*Permanent Record* is a contemplation of these contradictions and transformation in American polity. Even for a non-American reader, it is possible to relate to the sentiment that state-led development in the 21st century has been a case of stillbirth.... ”

a non-American reader, it is possible to relate to the sentiment that state-led development in the 21st century has been a case of stillbirth, an idea that promised worldwide revival of freedom and equality but has instead become mired in distrust and disgust with growing inequality and strife. Policy analysts trying to piece together the impact of information technologies tend to overlook this basic problem in their optimism about digital ‘disruptions’; their portrayal of IT as some kind of alien power that will eventually pave the way for a better future ignores the extent to which technology has become embedded in the failures and limits of the state’s claim to legitimate public authority. The problem in the analytical core of disruption discourse is that it tends to externalize the impact of technology, when in reality technology and its unreliability to bring about impersonal rationalization in political decision-making has been intrinsic to the current crisis.

As this occasionally witty book demonstrates, even the most powerful states have become mired in failure to regulate power and limit corruption. In the American variety of surveillance capitalism, corporate power and state’s authority have become so deeply interconnected that one can call it the ruling ideology. We gain this insight from *Permanent Record*, as it shows the extent to which contracting and sub-contracting at the top of the American security apparatus has become detached from the promises in its Constitution. At its heart, it is a record of the making and unmaking of homocontractus, a phrase that Snowden uses to discuss the banality of being within the American state security apparatus.

Like all biographers, this book gives us an intimate account of what WH Auden once called the two sides of any individual, the ego which reflects the public persona and the self, which is more intimate and inward oriented. First, we meet Edward or Ed, who is a quintessential American millennial; ‘the boy’ as he calls him, with a knack for computers and impeccable family relations dating back to those who founded the Republic. How this boy ultimately becomes Snowden, the face of world’s largest surveillance expose, is a story he recounts in later chapters and underscores his life as a member of the American Intelligence Community (or IC as it is called by the insiders). Snowden’s rites of passage in the IC are recounted with a sophisticated level of self-reflection, and eventually show us that the homocontractus is as much a citizen as a subject, the contradiction between his two selves providing the drama and plot for the



story.

As in any biography worth its value, this conflict is resolved by showing us how ‘the boy’ who became an ideal citizen won, and the subject rebelled even when the cost meant leaving his country and life behind, the subject is free only in exile. Besides the moral case Snowden builds through this book, we can also place his personal trajectory within a broader context of technology and the issue of growing subjecthood in the digital era. The fundamental question to think about vis-a-vis digital technologies is not disruption, but of the variety of ways in which societies are being colonized, and the way in which big data and very much like oil, a state addicted to data, is creating its own effects on individuals and societies.

As Snowden shows us, in the US, the collusion between the rich and the powerful is today a direct threat to its democracy. But are big data economies liable to functioning like this by default, is it even possible to think the case could be otherwise? The way powerful companies vie for government contracts and in turn are used by the state functionaries to exploit data seems intrinsic to the way big technology functions, unless of course we regulate it. No amount of consumer action can shake off the structural powers that accrue to the IT elites. Libertarians, amongst whom one can count Edward Snowden, don’t seem to care much about collective action or party politics, in fact politics hardly gets a mention in the book; if anything, Democratic President Obama and his government come across as big a villain as any other in history. One also wonders about the politics of Snowden’s immediate family and friends such as the journalist Glen Greenwald who supported him in exposing the surveillance system.

In the real world, this becomes a problem because not everyone gets a chance to be a genius coder like our author or has access to brilliant international human rights lawyers. There is and will always be need for collective action and organized politics to bring about meaningful change. This should not only mean voting or joining parties, but if there are alternatives we don’t hear much about them in the book. *Permanent Record* is no manifesto for social or political action, it is just that, a recorded proof that not all is well for democracy today.

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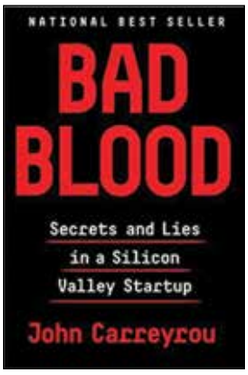


Bad Blood: Secrets and Lies in a Silicon Valley Startup by John Carreyrou is the full inside story of the breathtaking rise and shocking collapse of Theranos, the one-time multibillion-dollar biotech startup founded by Elizabeth Holmes—now the subject of the HBO documentary *The Inventor*—by the prize-winning journalist who first broke the story and pursued it to the end.

Knopf, 2018, pp. 352, ₹1929.00

The Idea of Privacy

Amir Ullah Khan and Atif Ahmed

PRIVACY 3.0: UNLOCKING OUR DATA-DRIVEN FUTURE

By Rahul Matthan

HarperCollins, 2018, pp. 240, ₹599.00

This seminal book begins by pointing out that ancient societies did not formally acknowledge the concept of privacy. The idea of privacy evolved as human civilization progressed and individual rights became important. Gradually as time passed and cultures grew in complexity, privacy became an integral part of our moral system and legal systems evolved to protect such privacy. This book provides a fascinating history of privacy law and the intrusive role of technology in conflict with individual privacy. Matthan at once wears the hat of a historian, an anthropologist and a philosopher and postulates that privacy is an idea both created and endangered by the advent of technology.

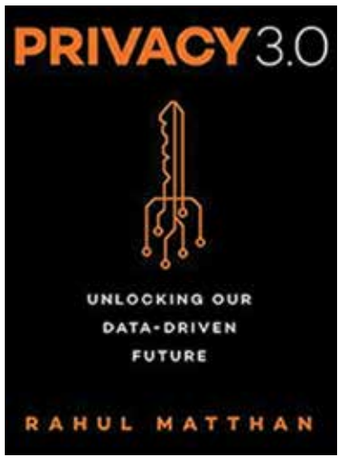
On the Indian Constitution, Rahul Matthan informs the reader that some of the authors of the Constitution like BR Ambedkar clearly favoured a guaranteed right to privacy. However, this was voted down by various vocal sceptics who thought that privacy as a right would unnecessarily shackle law enforcement agencies in a newly formed state. BN Rau, an important architect of the Indian Constitution viewed the right as a challenge to the administration of justice, placing undue burden on prosecuting officers. Starting with these arguments, the exclusion of the right to individual freedom has played a major role in the interpretation of right to privacy in Indian jurisprudence.

The book is divided into three clear sections, Privacy 1.0, 2.0, and 3.0. They reflect the phases in the evolution of the idea and the laws on privacy. 1.0 deals with the importance of the rise of private spaces and individual thought, navigating through the anthropological roots of the concept of privacy, whereas 2.0 discusses how the advent of technology in the form of the printing press and the camera invaded private spaces and thoughts. This was the initial trigger that paved the way for the creation of a legal framework on privacy and consent. The author explains the impact of jurisprudence of privacy in England and the United States of America to law making in India.

The third section 3.0 talks about the need for a new approach to privacy laws now with digitization rendering the concept of privacy based on consent redundant. The author underlines the fact that consent has today become a mere formality and is meaningless in a digital age when most people downloading various Apps don't even bother to read the laborious terms, conditions and permissions they are asked for. The solution therefore is not in repeatedly harping on the buyer beware premise, but in regulating and auditing data collectors. Given the asymmetry of information and awareness between digital providers and consumers, regulation must focus on the data aggregator who has a disproportionately larger control in the ways data can be sliced, aggregated, used and abused.

The most insightful pages in the book are those where we get to read the author's view of government frameworks. Here is an insider who has on one hand worked with the firms that deal with harsh data protection regulations in the European Union and on the other has helped in the drafting of a privacy bill in the second term of the UPA government. This section gives the readers a comprehensive overview of diverse perspectives on privacy, both at the national and the international level. The book describes how complex and nuanced discussions on privacy have been, as they navigate several shareholder interests and witness territorial battles among all actors involved. The author talks of how Nandan Nilekani, Chairman of UIDAI, underscored the need for protection of privacy and set in motion the wheels to create one of the first set of laws in this regard.

The book goes on to argue that there is a need to strike a healthy balance between privacy and disclosure, secrecy and transparency and individual versus societal imperatives that are critical now for the growth of the Indian economy. An added feature of the book is the author's account of what happened during the drafting of the privacy bill. It sheds light on how policymaking gets stalled and indeed paralysed. The author also writes about how often irrelevant turf wars shape the national agenda. The privacy bill that was drafted amidst all these bottlenecks sadly never made it to the Parliament. However, some of its



salient points were included in the report submitted by the Sri Krishna Committee and its inputs for the draft data protection bill. Law making in India has always been a complex and difficult exercise to understand and in relating the history of drafting of the privacy bill, the author gives the reader an illuminating case study of the same.

This book is a must read for anyone looking for an insight on a huge ongoing discussion in the country where privacy is the focal point of several key legal debates. It will also guide substantial commercial decisions, notably among data processing firms, the consulting sector, and pharmaceutical majors and for all who provide financial services. Both the private companies and government agencies must now address the issue of having to balance the right to privacy with efficiency and transparency. The book gives equal space to stringent advocates of privacy and those who on the other extreme argue for complete disclosure. The reader would have wanted some more discussion on how the author sees the future roll out. The questions that remain unanswered are whether dominant firms such as Google, Apple and Facebook could continue to fight against regulation and government oversight on data. The book could have also discussed the impact of privacy laws on the government and its secrecy issues. Some discussion on the Right to Information Act and its overlap with privacy also would have been a great contribution to the debate that is going to go on for quite some time as we in India grapple with questions about the basic structure of our Constitution, the manner in which we will treat the subject of individual rights, the growing size of an intrusive government and the ensuing debate on the primacy of the nation over the individual.

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The Direction of Digital Equality

By Sonia Jorge

In today's digital world, access is power. Internet access opens up a new world of information and opportunities, and has become such an integral part of our lives that it has been said that to be offline today is to be silenced. Today, close to half the world remains offline, unable to access the information and opportunities that come with an Internet connection. Their voices are silenced in the digital world and as a result, their voices are also missing from social, political and economic discourse offline.

Connectivity has become so indispensable to modern life that in 2015, the United Nations set a new global goal as part of the new Sustainable Development Goals: universal, affordable Internet access for all by the year 2020. This ambitious goal, together with the goal to enhance the use of ICT for women's economic empowerment, underscores the importance of Internet access to global development and empowerment, but the reality is that we still have a long way to go in order to achieve this goal.

As the digital revolution marches forward, with increasing hype around all the possibilities and potentials, billions are being left behind. This digital divide falls along gender and income lines—women and the poor comprise the majority of those offline today. These populations are often already marginalized offline and, as a result, arguably stand the most to benefit from the opportunities associated with online access; instead, they are now seeing these offline inequalities replicated online.

The World Economic Forum has warned that growing global inequality is one of the major threats facing our world today. While Internet access has the power to upend this balance of power, today's digital exclusion is instead reinforcing existing patterns of privilege and discrimination.

Our failure to address barriers to access and enable connectivity for these groups risks not only exacerbating existing inequalities, but also stunting global economic growth and undermining progress toward development goals. Women, in particular, feel the impact of this digital divide. As I mentioned earlier, over half of today's offline population are women—this means that more than 2 billion women globally are not connected, unable to access health, educational, and other resources and information available online. Web Foundation research has found that women in poor, urban areas are up to 50% less likely to be online than men in the same communities and what's worse is that recent research from the ITU and GSMA shows that the digital gender gap is actually growing wider.

The barriers to access faced by women and other marginalized populations are many and varied. Affordability remains one of the major obstacles to access, particularly for women, who, on an average, earn lower salaries than men. In the developing world, just IGB of mobile data can easily cost upwards of 20%of average income. For women and others earning lower salaries, the actual cost is much higher. Driving prices down to a level at which access becomes affordable even for these populations will be critical to expand access, bolster the digital economy, and advance global development.

Improving access to and availability of digital skills training for today's offline populations and—women and girls in particular—is also critical. Our research shows that lack of digital skills and know-how was a top barrier to access for women. Incorporating digital skills training into primary and secondary school curricula and offering more opportunities for women and girls and other under-served populations to learn these skills can both go a long way towards tackling this issue and empowering more to come online.

Without efforts to enable opportunities for access and use that focus specifically on women and other offline populations, we risk entrenching these inequalities and contributing to a more unbalanced and unequal world. Making a quality Internet connection more affordable for all must be a top priority. At A4AI, we are working to influence the policy needed to drive Internet costs down to a '1 for 2' target, where 1GB of prepaid mobile data is available for 2% or less of average monthly income, and to secure meaningful connectivity, where everyone has a quality connection enabling meaningful use.

As we take these efforts forward, it is also important to consider—and address, where possible—the range of cultural and social issues that are preventing people from accessing and using the Internet. In addition to the challenges of affordability and digital skills, women face out-dated gender norms that keep them from using the Internet or an ICT device. Worryingly, we are also seeing a growing trend of people being digitally excluded for social and political reasons. Increasing numbers of Internet shutdowns across the globe have contributed to this exclusion. These moves to silence critical discussion don't just have a chilling effect on rights to free speech and expression, they also have serious economic consequences: the Brooking Institute has estimated that the Internet shutdown between 2015-16 cost $2.4 billion in economic losses.

For these reasons and many more, it is critical that our work to expand access and use of the Internet is grounded in a digital rights perspective, and considers all the dimensions of both digital and offline rights.

The fight for digital rights must continue—and perhaps becomes even more critical—once people are online. As more and more of our daily lives move online, we each leave a massive data trail in our wake. Most of us do not know what digital traces we are creating, who have collected them or what they will be used for. Companies rely on this data to personalize services and target ads that will be most relevant to users, but this collection of data can also lead to unintended consequences when we are profiled in ways that are detrimental to

"The World Economic Forum has warned that growing global inequality is one of the major threats facing our world today. While Internet access has the power to upend this balance of power, today's digital exclusion is instead reinforcing existing patterns of privilege and discrimination."

our interests, or when governments around the world take advantage of our digital trails to extend the state surveillance apparatus to unprecedented levels.

We have a right to know what is collected about us and what it will be used for. And we have a right to transparent explanations of how our personal data is processed, sold, and used to make decisions for and about us. All of us—government and public sector policymakers, tech companies and service providers, activists and civil society—must come together to develop policy and regulatory frameworks that protect us online, and which put a fair level of control back into the hands of the people.

It is up to us to ensure that the digital revolution becomes a movement that empowers all. Failure to act means leaving billions behind; it means eroding consumer trust—a core foundation upon which the digital economy is built. In turn, this inaction threatens to stunt progress and undermine achievement of the global Sustainable Development Goals.

At the Web Foundation and Alliance for Affordable Internet, we are working to tackle this challenge head on. We're fighting for digital equality: a world where everyone—no matter your gender, no matter your income or your location—can benefit equally from the Internet, and use it to improve their lives. For us, this means working not only to expand affordable and meaningful access to everyone, everywhere, but also to ensure that the Internet remains truly open so that once people come online, they have the opportunity to access and use the information and tools needed to participate fully in civic life.

To achieve these goals, we need to turn our knowledge into action. We know the issues, and we have a pretty good idea of what we must do to overcome these barriers to access, to enable power, accountability and opportunity for all. But we must do more. We must go beyond what we've done to date, to continue pushing the needle in the direction of digital equality, and to ensure that we continue to invest in long-term efforts that solve these issues and ensure that the impact of the digital revolution is as great and positive as it can be.

Sonia Jorge is an Executive Director with the Alliance for Affordable Internet (A4AI), and Head of Digital Inclusion Programmes at the Web Foundation.

DIGITAL COMMUNICATION

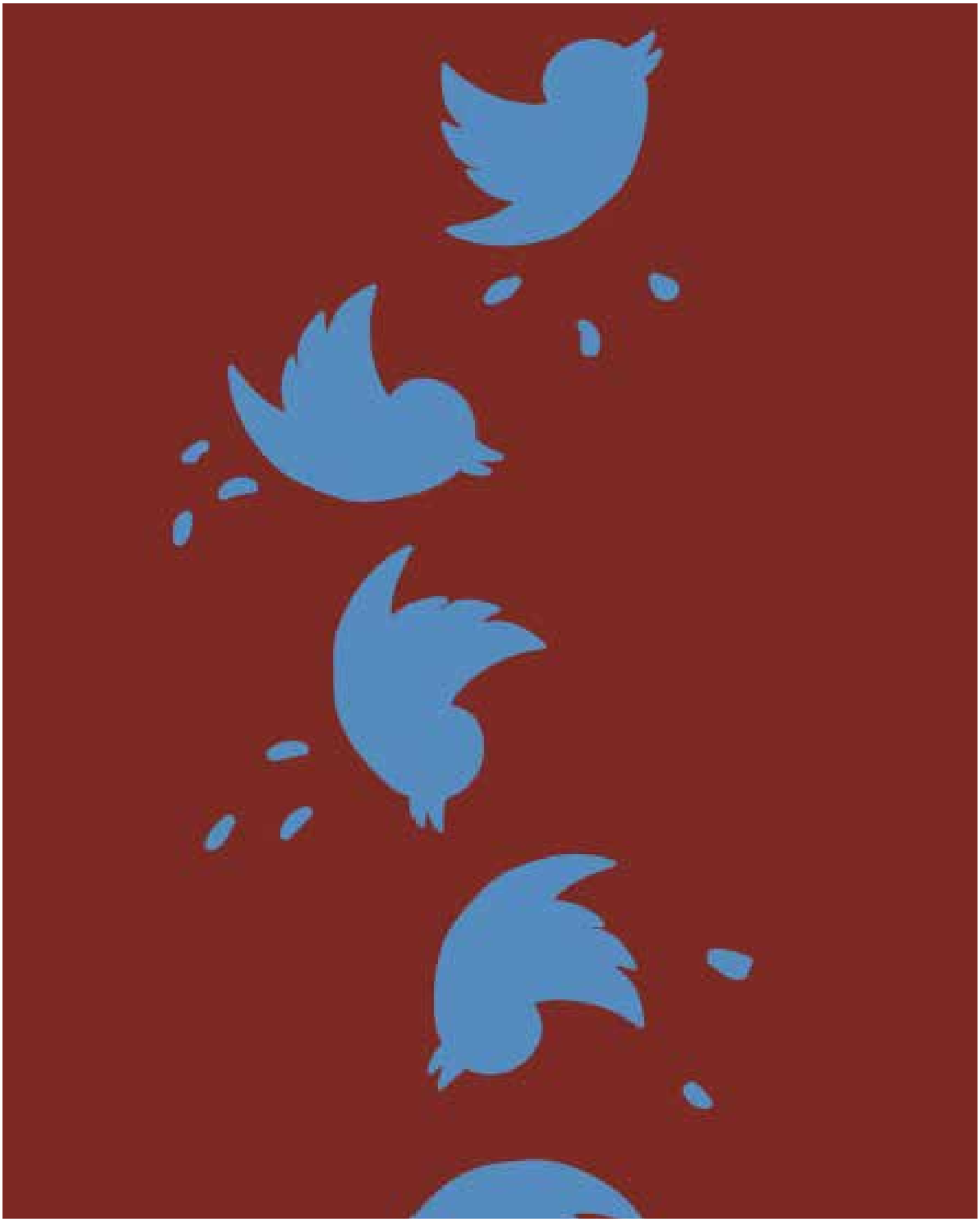


Illustration: Designed by Sharada Kerkar, Digital Empowerment Foundation

Talk Revolution

Seema Chishti

A WORLD WITHOUT "WHOM": THE ESSENTIAL GUIDE TO LANGUAGE IN THE BUZZFEED AGE
By Emmy J. Favilla
Bloomsbury, USA, 2017, pp. 400, $26.00

The great 'Talk revolution' which gripped India and the world with the mobile phone in the nineties threatened to destroy reading and writing. It was assumed that if writing had defined how our heads were wired when it was invented, the mobile phone would unspool that. But technology is always tough to anticipate, so with text messages and then the smartphone, suddenly written text was right back into our lives.

The world now accesses news, views, entertainment and intimacy on the phone and it has made the writing stage return with a bang. What is critical is that it is not the same world as when pen met paper, the medium does define the message.

So when the BuzzFeed Copy Chief, Emmy J Favilla, writes a book speculating on what the world would look like without 'whom', who will not be interested? The point of the book is to speak of the journey of language in a world she chooses to call the BuzzFeed Age.

There are many books that look engagingly at the comma, the semicolon, the death of the full stop and also language etiquette. But this is not exactly *Eats, Shoots and Leaves* or about updating the Wren and Martin. Forget different languages, even if one were to consider just English, the Internet and its immediacy ensures that we live in times when there is much more to be said and understood instantly and across cultures. One could be instantly speaking to Istanbul and Sao Paolo and New Delhi.

News websites per force have several pressures on them, which print newspapers do not. Online pieces are meant to be not only understood instantly or across populations but also make an impact and grip you from the very start. A print piece can afford to indulge the writer far beyond what any online writer can be allowed. There is such limited room for the online writer to err, put the reader off, or god forbid, throw in the wrong punctuation mark.

The section on 'Getting Things as Right as You Can' has some delightful takes on the aeons old debate between the N dash and the M dash, and why they are different. Staying with the when comma and when parentheses debate is a very rewarding experience. One did not expect the book to be anything other than unputdownable, and the author has done a good job at holding the reader's attention.

The rise of social media and the accompanying feature of conveying anger, excitability and mood put added pressure on text. Text or language responded by often allowing for stronger words, profanities now being acceptable. And then came the hotly debated emoji. First considered a bit puerile or non-serious, it was now a new challenge for how we communicated via writing, and a throwback to times gone by, the revival of the line-drawing. It spoke to the human species' oldest instincts and artwork—in cave drawings—and for Indians who are familiar with western India, the magnificent storytelling of Warli art, for instance.

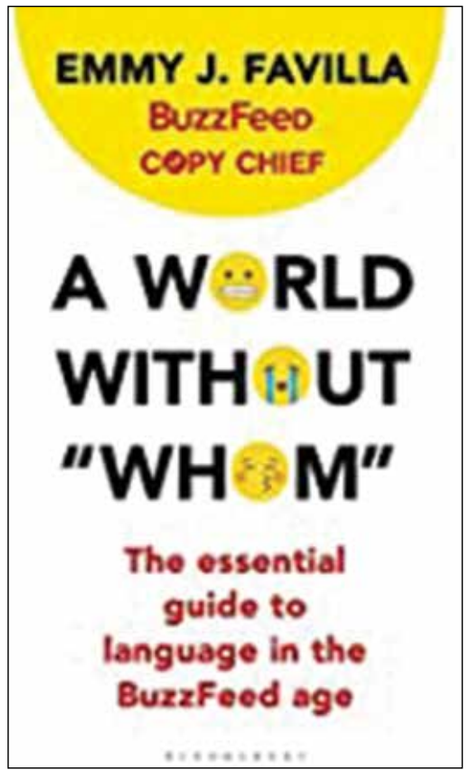
So the challenge for a graphic, clear, simple kind of communication about very complicated matters, all changing rapidly and needing to be communicated at a fast pace made it imperative for language and the convention around usage to evolve quickly.

After the Morse-code style of telegraphic and abbreviated conversation, the world is moving slowly to a rulebook that accommodates more than just teens communicating on Snapchat. What the book under review offers, for instance, is a very clear guide on when to use abbreviations and when not to. Deoxyribose Nucleic Acid would be a bad idea, but ICMYI in broad conversations may totally miss the point.

There are many people in the world of communications that today still rue the new times and the strain of adapting to new rules and methods. But a short look at the history of literacy or technology will make it amply clear that technology has almost always led the way. From the invention of the Radio to Telegraph to Television, each phase had its own times and generations adapted to whatever worked. Stone tablets did not have it good when printing became accessible and newspapers or magazines were the new thing in town.

The Essential Guide to Language in the BuzzFeed Age is of course the coolest update to the Dictionary and a style guide. But as you go through this hugely engaging book, the message it carries fundamentally is on the importance of being able to say it sharply and smartly and make oneself heard.

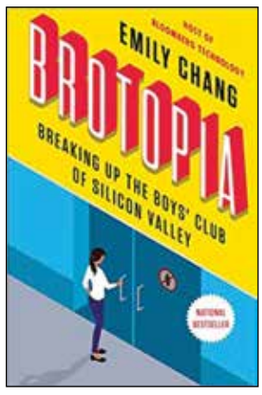
To quote the *TIME* Editor at Large, Anand Giridharadas; 'We are living in a new communications age in which people who



understand how to command attention win. There are good people who get that and evil people who get that. You can't whine about your age. You have to master it.'
Who(m) dare disagree with that?

Seema Chishti is Deputy Editor, *The Indian Express*.

Book News ***Book News***



Brotopia: Breaking Up the Boys' Club of Silicon Valley is a powerful exposé by Bloomberg TV journalist Emily Chang of how Silicon Valley got so sexist despite its utopian ideals and how women are finally starting to speak out and fight back. For women in tech, Silicon Valley is not a fantasyland where millions of dollars grow on trees. It's a 'Brotopia', where men hold all the cards and make all the rules. Interviews with Facebook COO Sheryl Sandberg, YouTube CEO Susan Wojcicki, and former Yahoo! CEO Marissa Mayer--who got their start at Google, where just one in five engineers is a woman--reveal just how hard it is to crack the Silicon Ceiling. Emily Chang shows us how to fix this toxic culture to bring down Brotopia, once and for all.

Portfolio, 2018, pp. 320, ₹699.00

Transforming Data into Wisdom

Sania Farooqui

THE MODEL THINKER: WHAT YOU NEED TO KNOW TO MAKE DATA WORK FOR YOU
By Scott. E. Page
Basic Books, 2018, pp. 398, $32.00

The Model Thinker is a book about models. Models are not words, but formal mathematical representations that are put together to help us understand the world. This book looks at how people can apply a many-model thinking approach to understand these complex systems to find solutions. We live in an era of big data; from our phones, to online shopping, to our social media pages, data is everywhere. It is collected, with or without our consent. Our social data, as Scott Page elaborates in his book, is about our economic, social and political phenomena, which documents only moments or intervals in time. It rarely tells the universal truth. Our economic, social and political worlds are rarely stationary. As impressive as the data may be, it is no panacea; hence, we need models to make sense.

Do models make us smarter? Models vary in their assumptions and their structures. What they do is create multiple artificial worlds for our minds to explore. Models however, share three common characteristics: they simplify and strip away unnecessary details; abstracting from reality; or creating anew from whole cloth. They formalize making precise definitions. By doing the former two, what models help in achieving is creating tractable spaces within which we can work through logic, generate hypothesis, design solutions and fit data. The logic behind the many-model approach is built on the idea that we achieve wisdom through a multiplicity of lenses, and how we can also build these lattices of models to be able to confront the complexity of challenges.

Page feels that to rely on a single model is hubris; it invites disaster. He argues: we need many models to make sense of complex systems like politics, economy, international relations; or the brain exhibits ever-changing emergent structures and patterns that lie between the ordered and the random. By definition, complex phenomena are difficult to explain, evolve, or predict. This is where we are confronted with the disconnect, as a single model is highly unlikely to be able to predict patterns in international trade policy, trends in consumer products industry or adaptive responses within the brain.

Where is the wisdom we have lost in knowledge?

– TS Eliot

The entire argument in this book is based on how models can transform data into wisdom. What we call data is raw, uncoded events, experiences and phenomena. Births, deaths, market transactions, votes, music downloads, rainfall, soccer matches and speciation events. Data can be long strings of zeros and ones, time stamps and linkages between pages. Data lack meaning, organization or structure, writes Page.

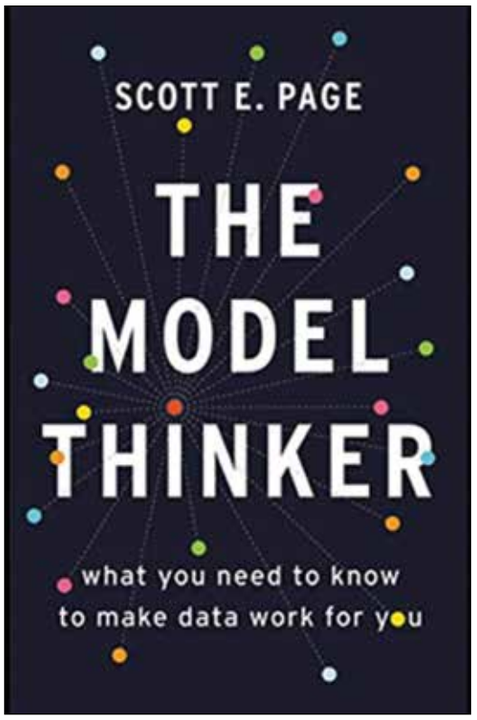
Information is how we categorize the collected data. Page explains this by giving an example of how rain falling on your head is data. Total rainfall for the month of July in Burlington, Vermont and Lake Ontario is information. Thus, making it pretty much clear that if data is the so-called new oil, we are living in a state of abundant information.

Knowledge is what organizes information, by often taking the form of a model. Economic models of market competition, sociological models of networks, geological models of earthquakes, ecological models of niche information and psychological models of learning are all embedded knowledge. These models are able to explain and predict.

The challenge is to reach a state where one is able to identify and apply the relevant knowledge for a complex situation and the ability to do so is called wisdom. Wisdom requires the many-model thinking approach. Sometimes it consists of selecting the best model, sometimes by averaging models, or by creating dialogue across models, exploring their overlaps and differences, and then selecting the one that could work. Wisdom is what helps us select the correct knowledge or model.

The Model Thinker explores the different types of models, from the embodiment approach that stresses realism to the analogy approach that tries to capture the essence of a process, system or phenomenon to the alternative reality approach. It purposely does not represent or capture reality. These models function as analytic and computational playgrounds in which we are able to explore possibilities.

An interesting example given in the book is the $182 billion financial assistance as part of the 'Troubled Asset Relief Program (TARP)' in 2008, by the Federal Reserve



to bail out the multinational insurance company, American International Group (AIG). The Government chose to stabilize AIG because its failure during the financial crisis would have had a devastating impact on their financial system and economy. If we go back to 2008, this bailout did make the then Fed Chairman Ben Bernanke angry, and the purpose of the bailout was not to save AIG but to prop up the entire financial system. What Scott is pointing out to is that the choices made by the TARP were based on models.

Scott explains how AIG occupied a central position in the network, because it sold insurance to other firms. AIG promised to pay other firms if their assets lost value. If prices fell, then AIG owed those firms money. By implication, if AIG failed, so too would other firms connected to AIG. What the Government went ahead and did was to stabilize AIG's position, and by doing that it was able to prop up the market value of other firms in the network also. This should also explain why the Government let Lehman Brothers fail, as it did not occupy a central position in the network.

Scott avers, 'We do know that the financial industry did not collapse as a result of Lehman's failure. We also know that the government earned a $23 billion profit on its loan to AIG. So we can infer that the policy choices—based on many-model thinking were not a failure.'

Nothing is less real than realism. Details are confusing. It is only by selection, by elimination, by emphasis that we get to the real meaning of things.

—Georgia O'Keeffe

> *The Model Thinker* explores the different types of models, from the embodiment approach that stresses realism to the analogy approach that tries to capture the essence of a process, system or phenomenon to the alternative reality approach.

While one may wonder how we go about choosing which model works for us, this book breaks it down into examples of case studies and formulas that were used for that specific many-model thinking approach. It may seem we have to study many models to understand and master these complex systems, but the book puts it in simple, non-granular language, and reminds the readers that if a particular model approach is not working, then we must put it aside. The skills required to excel, as Page writes in Chapter three ('The Science of Many Models'), 'one-to-many differ from mathematical and analytic talents, many people think of as necessary for being a good modeller. The process of one-to-many involves creativity. It is to ask—how many uses can I think of for a random walk?'

The book explains the different ways in which a many-model approach can be understood, through a scientific approach using the Condorcet jury theorem and the diversity prediction theorem, which makes quantifiable cases for the value of many models in helping us act, predict and explain. The modelling of human actors, where people are modelled is based on either rule-based actors or rational actors. How we choose to model people depends on the context and our goals. Are we predicting or explaining? The challenges that come with the many-model approach to humans are realistic. Human behaviour occurs within the extremes of zero intelligence and full rationality. Page argues, 'it is therefore more important to include multiple diverse models.'

Page covers broader topics like long tails, bell curve, linear models, concavity and convexity, models of value and power, and network models amongst many others. For those who are looking to understand, strategize and explore the world, to find ways to be alert and to avoid failures, if not completely but marginally, this book is a good read.

Sania Farooqui is a New Delhi-based journalist and filmmaker.

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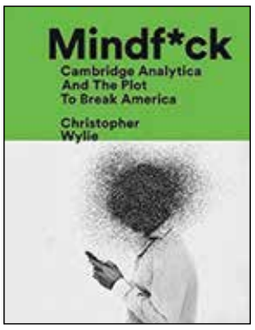

*Mindf*ck: Cambridge Analytica and the Plot to Break America* by Christopher Wylie tells the inside story of the data mining and psychological manipulation behind the election of Donald Trump and the Brexit referendum, connecting Facebook, WikiLeaks, Russian intelligence, and international hackers. Wylie's decision to become a whistleblower prompted the largest data-crime investigation in history. His story is both exposé and dire warning about a sudden problem born of very new and powerful capabilities.

Random House, 2019, South Asia edition Hachette, pp. 288, $ 28.00/₹599.00

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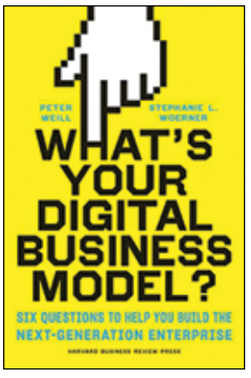


What's Your Digital Business Model?: Six Questions to Help You Build the Next-Generation Enterprise by Peter Weill and Stephanie Woerner provide a powerful yet straightforward framework that has been field-tested globally with dozens of senior management teams. Based on years of study at the MIT Center for Information Systems Research (CISR), the authors find that digitization is moving companies' business models on two dimensions: from value chains to digital ecosystems, and from a fuzzy understanding of the needs of end customers to a sharper one. Filled with straightforward self-assessments, motivating examples, and sharp financial analyses of where profits are made, this smart book will help you tackle the threats, leverage the opportunities, and create winning digital strategies.

Harvard Business Review Press, 2018, pp. 256, ₹3999.00

The Rise of Computational Journalism

Sevanti Ninan

AUTOMATING THE NEWS: HOW ALGORITHMS ARE REWRITING THE MEDIA

By Nicholas Diakopoulos

Harvard University Press, 2019, pp. 322, ₹1667.00

Social media occupies enormous mind space but it is only one relatively shallow manifestation of human-computer interaction. Using Artificial Intelligence in the news industry as well as for multiple data collection applications in society is going to be the way forward.

How many dimensions are there to using automation for journalism? Several unfold in the course of this book. No wonder there is an emerging discipline called Computational Journalism, which journalism schools in India will soon have to begin to grapple with. The author is a computer scientist turned journalism teacher.

News agencies are already using automation in the realm of finance and sports. Algorithms are used to churn out under-200-words corporate earning articles for the Associated Press, even as corporate results come in. In the process they free up the humans in the newsroom to do longer follow up stories on corporate performance, with added value. Sometimes reporters use alternative data to add context and interpretation to the automated story that has been produced.

One of the points this book makes is that automation in the newsroom is actually used to complement human effort rather than substitute it. Having them around changes news production practices. Automation adds scale to coverage. It helps you cover more local soccer matches, more congressional races, and more company results on the stock market. And it makes the news process more error free. Robots do not make typos and they do not make math errors.

The book discusses hybrid journalism and a hybrid workflow, which creates an optimal partnership between computers and journalists.

What the author calls Computational Journalism is algorithmic information production, which incorporates journalistic values. Computers have to learn journalistic values if they are to have a greater role in the newsroom, and journalists have to augment their skill sets to also be able to programme computers effectively for journalistic purposes.

How does a data-mining algorithm detect a story lead in a large dataset? It has to be embedded with a clearly articulated and mathematically precise notion of newsworthiness. And hacks will have to be able to write computer code to collect, analyse and present data. A data journalist, who wants to scrape data from online records of citizens, has to be able to write automated scripts that can crawl multiple websites. The book discusses six core data mining capabilities that news organizations can use.

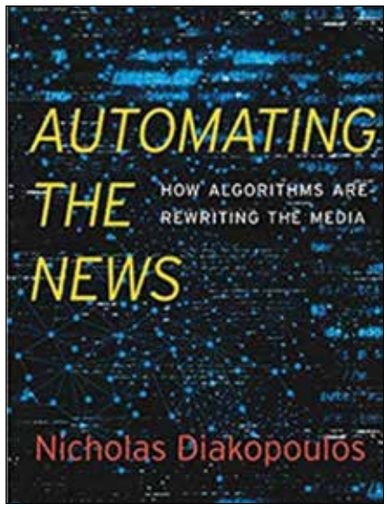
The Panama Papers investigation was computer-aided in a different way. The Papers comprised 11.6 million leaked documents concerning offshore companies and the individuals behind them. The automation involved here was the use of optical character recognition (OCR) algorithms to convert the documents into digital text indexed in databases, which made them searchable. Then journalists stepped in to convert this data into information by finding connections between companies, the transfer of money, and the people behind these operations.

Complex communication and expert thinking are still realms where humans have an edge over computers—such as interviewing, negotiating, interpreting. Where is the bot that can cajole a source into parting with information?

Using automation is also about the decomposability of journalistic work—separating the elements of what they do and figuring out which ones lend themselves to animation. The author uses the term 'information subsidies' to describe the cost saving that computers make possible. Such as data mining masses of documents, which would be a costly exercise if reporters were to be deployed instead.

How much real news work can artificial intelligence perform? The chapter on automated content production describes how automated text writing works, as also data visualization. What is a challenge for computers in processing, curating or summarizing videos? What algorithms can do though is synthesize entirely new images, videos and texts. That is how fake news is produced.

Then of course there is the whole business of using bots in social media,



creatures that can lend themselves to uses both benign and malign. The author describes how he created a bot for *The New York Times*, which extracted comments on articles and fed them into social media promotion.

Algorithmic predictions of how an article will perform are used by editors to decide how to promote them across platforms or on different social networks. There is a lot on using metrics here, including the choices digital editors make and the multiple headlines newsrooms are expected to roll out for the same story for optimization through audience testing. Bots are used for 'engagement' and 'attention capture', which means they are used for driving traffic which should bring revenues.

Apart from new organizations many sectors use algorithms to generate data for them—data that they then go on to base operational decisions on. What the author calls algorithmic decision making is now widely used in the public and private sectors for a range of applications from credit and insurance risk scoring to welfare management systems and educational and teacher rankings. They make consequential ranking, classification, association and filtering decisions that affect large numbers of people. 'Algorithms and the reams of data driving them, are the new power brokers in society,' Diakopoulos says.

What follows then is that to the extent that these machine-made decisions are contestable they need to be subjected to scrutiny. So you now have, hold your breath, algorithmic accountability reporting—journalists who specialize in auditing and investigating algorithms in order to hold their decisions to account. It is an offshoot of computational journalism and a new beat. One, which deploys reverse engineering, auditing, sock puppets, crowd sourcing and code inspection.

But to the extent that the algorithm is

inert and performs only when programmed by humans, it is the journalists and other designers of algorithmic media who embed values in their functioning, who will eventually be held responsible for contestable outcomes of what they do.

The next stage of evolution the author envisions is when AI is enabled to gather information by asking questions. Yes, doing reporting! Not easily done, and for now all you have is a system Google launched in May 2018 to perform secretarial rather than journalistic functions: ask questions, and process the answers. It is called Duplex and it helps in making reservations for restaurants and hair salons, etc.

Whatever machines evolve to do in the future, the enabler will remain better and better hybridization, the pairing of an intrepid journalist with the computational power of AI. For more on that, read the book.

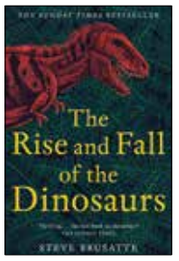
Sevanti Ninan is a media commentator and author, and was the founder-editor of the media watch website, TheHoot.org. The Hoot is now an archive.

Book News ***Book News***

Architects Of Intelligence: The Truth About AI From The People Building It is a series of in-depth, one-to-one interviews where *The New York Times* bestselling author, Martin Ford, uncovers the truth behind these questions from some of the brightest minds in the Artificial Intelligence community.

Packt Publishing, 2018, pp. 554, $34.99

Book News ***Book News***



The Rise and Fall of the Dinosaurs: A New History of a Lost World by Steve Brusatte tells the real story of how dinosaurs rose to dominate the planet. Using the fossil clues that have been gathered using state-of-the-art technology, Brusatte follows these magnificent creatures from their beginnings in the Early Triassic period, through the Jurassic period to their final days in the Cretaceous and the legacy that they left behind. It is a timely reminder of what humans can learn from the magnificent creatures who ruled the earth before us.

Picador, 2018, pp. 417, ₹699.00

Informing the Misinformed

Ravi Guria

INDIA MISINFORMED: THE TRUE STORY

By Pratik Sinha, Dr Sumaiya Shaikh and Arjun Sidharth

HarperCollins India, 2019, pp. 304, ₹335.00

Last year, a promotional video produced in Pakistan for the purpose of spreading awareness to the general public against rampant kidnapping of children from the street, which shows dramatization of a child getting picked up from a street by kidnappers on a motorcycle, was doctored in such a way that it looked like a CCTV footage of an actual kidnapping taking place. The street appears to be like any normal street in India with normal Indian children playing on the streets. The doctored video was shared on WhatsApp, and horrified parents, concerned for the safety of their children in India, forwarded the video in large numbers without verification. The viral video led to the first incident of mob lynching in Assam, where people lynched a couple of young men outside Guwahati who had driven out of the city for some nature exploration, because one of them had long hair and looked like a child kidnapper to the eyes which were not exposed to perceiving cultural diversity. Unfortunately, this was just the beginning of what has turned out to be one of the most excruciating social predicaments. Many States witnessed mob-lynching incidents after this, such as Rajasthan, Bihar, Jharkhand, Maharashtra, Karnataka, Telangana and Tamil Nadu. In fact, mob-lynching incidents are still taking place in Uttar Pradesh, especially in semi-urban and rural areas. People are in a state of panic and attacking anyone who looks suspicious, and in this scenario, more often mentally disturbed individuals, elderly persons and women are becoming targets.

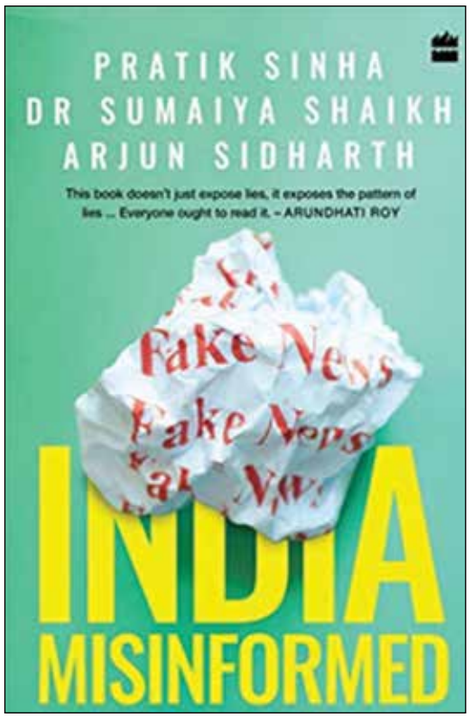
Fake news and misinformation are challenging the democratic and secular fabric of Indian society. WhatsApp with over 400 million users in India alone has been held responsible for the efficiency attributed to fake news going viral in India. One can only imagine apprehensively, what would happen once maximum numbers of people out of the 1.3 billion Indian population become digitally enabled.

We are not new to fake news and misinformation in India. We have grown up with it in one form or another. But the scale and frequency it has acquired today is unprecedented. Technology has amplified fake news and misinformation beyond measure. So technology has been blamed vociferously for this menace; but do we blame the car if it meets with an accident, or the driver? Technology companies should take adequate measures to curb the spread of fake news and misinformation. However, people using that technology also need to take equal responsibility; those who share fake news and misinformation are sometimes driven by ulterior motives, and mostly because of lack of awareness and understanding.

Pratik Sinha founded *Alt News* as a non-profit initiative dedicated to fact-checking fake news and misinformation originating in India. They have formed a skilled team that has turned the process of debunking fake news into a robust methodology, and they are doing so relentlessly. Over the last couple of years, they have dealt with a slew of disinformation, misinformation and mal-information, across various categories. Their incredible effort has resulted in priceless insights and observations, which should be documented to holistically enhance the knowledge and understanding of the society at large. *India Misinformed* is one such remarkable attempt to share a wealth of experience with the general public. It reveals the world of fake news, and how it is impacting us sociologically, psychologically and physiologically.

Pratik Sinha puts fake news in perspective. He writes, 'Certain clear patterns of misinformation have emerged. A prominent portion of Right-Wing propaganda seems to be anchored around misinformation targeting minorities. Distortion of history has also been a prominent theme. Misinformation is also being weaponized to target individuals such as journalists, activists, liberals and anyone who was critical of the Right-Wing ecosystem. Misinformation peaks during certain times, such as elections and major incidents. The most disturbing trend in the rise of fake news is the patronage it receives from the political parties and mainstream media.'

Misinformation about science, medicine and health is directly threatening people's intellectual capability and poses serious risks to their lives. Hence, *Alt News* has started a science fact-checking section, which looks into misinfodemics, which are epidemics



arising from health misinformation. 'Alt News Science' is using technical skills based on years of scientific training, research and communication to debunk health and science misinformation.

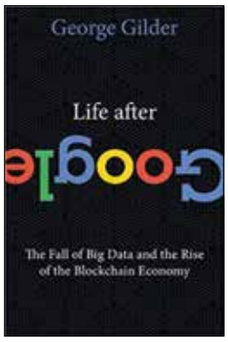
Primarily, the book is a collection of prominent cases of misinformation that have been circulated in the past two years. They are divided into thirteen chapters: Spreading Communal Discord; Building Brand Modi; Portraying Opposition Parties as Anti-Hindu; Rahul Gandhi: The Favourite for Targeted Propaganda; PM Modi and the BJP Targeted; Other Targeted Politicians; False Historical Claims; Maligning Jawaharlal Nehru; Mainstream Media; Targeting Individuals; Fake Polls, Fake Lists, Fake Accounts; Others; Science. The chapters give an excellent idea of the pivots around which sensational production of fake news factories revolved. We have come across many cases on social media platforms, WhatsApp and mainstream media, and some may appear new. Every case has been contextualized along with the process of debunking them adopted by Alt News. It unravels the cycle of fake news and misinformation as one goes from one case to another.

I personally went into reading the book hoping it would be more than the cases of misinformation, put together. I was expecting a deeper and nuanced study; analysis of fake news and misinformation in India, and how it has impacted the ecosystem and altered the behaviour of people. Having said that, it is an important book because it is the first book in India by experts who understand the issue better than anyone else at the moment, which addresses the problem in any capacity, and has comprehensively categorized and curated the examples of misinformation that have lately sent panic waves amongst people, such as the Child Kidnapping video; Amritsar Train Accident Blamed on 'Train Jihad' by a Muslin Driver; Rohingya Refugees are Eating Flesh of Hindus; Shehla Rashid Pocketed the Funds Collected for Kathua Rape Victim; and more.

The foreword of the book is written by Ravish Kumar, the Ramon Magsaysay Award winning journalist, who has held simple truth above sensationalism and lies in journalism throughout his long career, when his peers were and are succumbing to them for better TRPs. He says, 'Future of any democracy depends on the alertness of its citizens. Please read this book, so that you realize what has been done to you, and what may happen further.'

Ravi Guria is a filmmaker, scriptwriter, and Head of Media & Communication in Digital Empowerment Foundation.

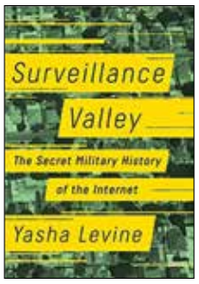
Book News ***Book News***



Life After Google: The Fall of Big Data and the Rise of the Blockchain Economy by George Gilder explains why Silicon Valley is suffering a nervous breakdown and what to expect as the post-Google age dawns. Silicon Valley, long dominated by a few giants, faces a 'great unbundling', which will disperse computer power and commerce and transform the economy and the Internet.

Gateway Editions, 2018, pp. 256, ₹2059.00

Book News ***Book News***



Surveillance Valley: The Secret Military History of the Internet by Yasha Levine traces the secret origins of the Internet back to a Pentagon counterinsurgency surveillance project. As Levine shows, surveillance wasn't something that suddenly appeared on the Internet; it was woven into the fabric of the technology.

Public Affairs , 2018, pp. 384, ₹1429.00

Think Before You Like

Dushyant Arora

ZUCKED: WAKING UP TO THE FACEBOOK CATASTROPHE
By Roger McNamee
HarperCollins, 2019, pp. 352, ₹894.70

'Move Fast & Break Things' used to be Facebook's motto till April 2014; and break plenty it certainly did. In 2019, so much appears to be broken or breaking—social harmony, democracy, various freedoms and more. There is sufficient evidence to believe that Facebook along with other Big Tech companies has played a significant role in getting us here.

'Facebook admits it was used to incite violence in Myanmar' screams *The New York Times* headline from November 2018. Another report in the same publication documents how false rumours on Facebook led to widespread violence against Muslims. An excerpt is worth reproducing: 'A reconstruction of Sri Lanka's descent into violence, based on interviews with officials, victims and ordinary users caught up in online anger, found that Facebook's newsfeed played a central role in nearly every step from rumor to killing. Facebook officials, they say, ignored repeated warnings of the potential for violence, resisting pressure to hire moderators or establish emergency points of contact.' Facebook has however repeatedly claimed that it is just a platform and is neither ethically nor legally responsible for what people do on that platform.

Is that the truth?

Enter *Zucked: Waking Up to the Facebook Catastrophe,* a book written by Roger McNamee, who was one of the initial investors in Facebook and was at least according to him, a 'mentor' to Mark Zuckerberg. The book isn't the only one on Facebook's or Big Tech's role in the crisis of polarization and the threat to democracy that the world has just about begun processing. It is however, a crucial one and not just because it comes from someone who was relatively closer to the organization than many others.

McNamee gives us a peek into the

> “Our minds, our communities, our democracies seem to be a lab for experiment, and we are the guinea pigs.”

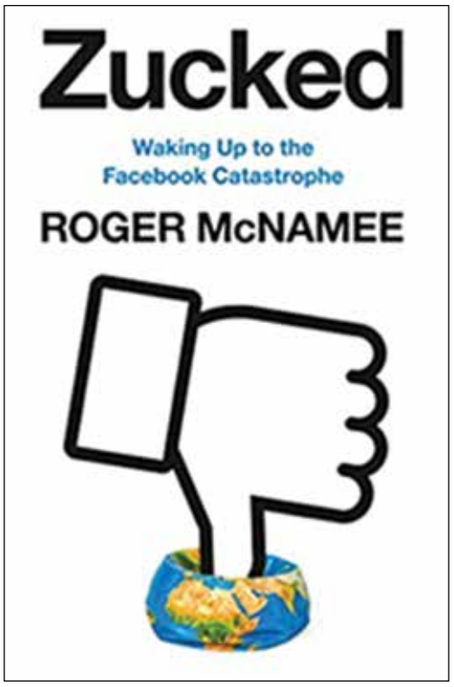
minds of Zuckerberg and Sheryl Sandberg—Facebook's top two, their historical attitudes to the ideas of privacy and the notion of owning responsibility, their responses when confronted with the knowledge that Facebook may have been used to influence the elections in America. He also seamlessly and quite readably ties together the story of how the world and Facebook got us where we are.

I have read several books based on similar themes—a trend now known as 'tech-lash' but no other brings home the horror of what the Big Tech is doing to us as well as this one does. In a book which is replete with phrases like 'behavioural modification', 'persuasive tech' you will realize that the worst that Facebook is doing isn't trying to sell you stuff you are talking or writing or googling. Put simply—it is controlling us. It now has the technology and the power to control our emotions, whether we are happy or sad, what we will believe or not believe, what kind of opinions will we shut out of our world and which kind will we bring in, whether or not we will hate an entire community, whether or not we will go out rioting, who we will elect and who we won't.

If this feels like fear mongering, consider this chilling excerpt from the book:

'In 2014, Facebook published a study called 'Experimental Evidence Of Massive-Scale Emotional Contagion Through Social Networks', where they manipulated the balance of positive and negative messages in the News Feeds of nearly seven hundred thousand users to measure the influence of social networks on mood. In its internal report, Facebook claimed the experiment provided evidence that emotions can spread over its platform. Without getting prior informed consent or providing any warning, Facebook made people sad just to see if it could be done.'

Confronted with a Tsunami of criticism, Sheryl Sandberg said this—'This was part of ongoing research companies do to test different products, and that was what it was; it was poorly communicated. And for that communication we apologise. We never meant to upset you.'



She did not apologize for running a giant psychological experiment on users. Our minds, our communities, our democracies seem to be a lab for experiment, and we are the guinea pigs.

There is, as usual, a flicker of hope. Hope in the form of whistleblowers, much like McNamee, and in the form of activists and organizations all over the world, which are trying to ensure that tech giants are held accountable and put an end to this catastrophe.

In the movie, *Terminator 2-Judgement Day*, an advanced robot travels back in time to pull the plug on a company whose actions are going to destroy the world. In real life, there are no second chances. So think before you like, and don't miss this book.

Dushyant Arora is an advocate at the Supreme Court of India, the founder of Law Tree, and a columnist.

Book News ***Book News***

Smart: The Digital Century by Frederic Martel drawing on hundreds of interviews in about fifty countries, examines the different 'Internets' on five continents. In so doing, he reveals that we are moving not only into a connected, globalized world, but also a territorialized one.

HarperCollins, 2018, pp. 432, ₹599.00

The Majoritarian Social Platform

Mahtab Alam

THE REAL FACE OF FACEBOOK IN INDIA: HOW SOCIAL MEDIA HAVE BECOME A PROPAGANDA WEAPON AND DISSEMINATOR OF MISINFORMATION AND FALSEHOOD

By Cyril Sam and Paranjoy Guha Thakurta
Authors Upfront, 2019, pp. 164, ₹345.00

Given the importance that social media platforms (especially Facebook and WhatsApp) have acquired in our lives, the book under review has every reason to grab our attention, and rightly so. The subject acquires further importance because in recent years, social media platforms have become a vehicle for spreading hate and misinformation across India.

In the introduction, the authors promise to provide us a critical examination of 'how Facebook and its companion platforms—notably WhatsApp—have been complicit in promoting the interests of India's ruling regime and its Right-Wing majoritarian social and political agenda.' The book further claims to have examined 'how critics of the Modi regime have felt marginalized by the social media platform and its associates.' Referring to an investigation about Facebook (*Delay, Deny and Deflect: How Facebook's Leaders Fought Through Crisis*) published by *The New York Times* in November 2018, the authors argue that, '(W)hile contextualizing Facebook's international activities, our book focuses on what has happened—and is happening—in India as we complete this manuscript.'

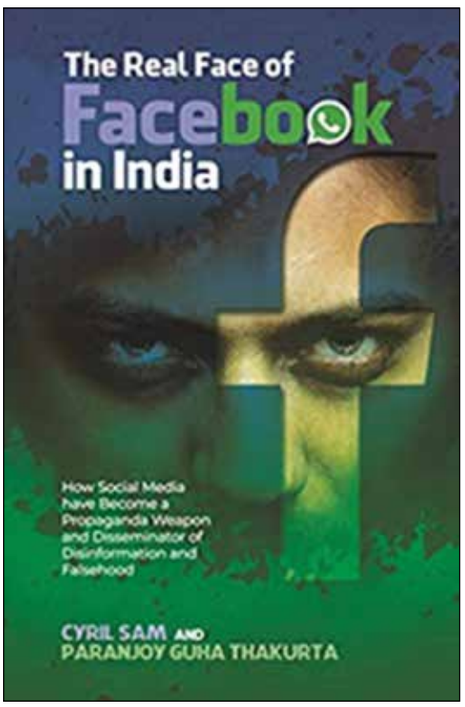
However, after reading through the book, one gets a sense that the authors have largely deviated from what the book set out to explore. Instead of clearly outlining the exact role played by social media platforms and the company and subsidiaries directly related to them, and providing some concrete evidence of the same, the book ends up merely documenting the cases of how Right Wing forces and political parties, especially the BJP, have used these platforms for their ulterior motives and agenda. While the use of social media by political parties, especially

> "The authors promise to provide us a critical examination of 'how Facebook and its companion platforms—notably WhatsApp—have been complicit in promoting the interests of India's ruling regime and its Right-Wing majoritarian social and political agenda."

Right Wing organizations, is an important subject, the book fails to fulfill its promise of explaining how social media platforms have helped them to do so. It refers to some of the connections (for example, the role of Rajesh Jain and Shivnath Thukral) to show that Facebook and WhatsApp in India have indeed helped the BJP and its associates, but it fails to provide convincing details of the same. That is not to say that Facebook and WhatsApp have not or might not have helped the Right Wing forces, but for a full length book to just relay on these connections is not enough.

For example, consider the chapter 'Facebook Helps Modi'. The authors claim that 'Facebook helped Narendra Modi develop his online presence to ensure that he has more "followers" on the social media platform than any other political leader on the planet.' But they fail to answer basic questions such as, was any special treatment given to Modi, and if yes, then how, and up to what extent. It quotes from a book *How to Win an Indian Election: What Political Parties Don't Want You to Know*, written by a former BJP associate, Shivam Shankar Singh, but again it hardly adds to the claim that Facebook indeed helped Modi. His points are more about how Modi and BJP strategically utilized social media for their purposes.

Chapter six, which is titled 'An Early Entrant', is about how Modi had realized the importance of Internet and social media well before he became the Prime Minster in 2014. However, it adds nothing to the claim of how the social giant helped Modi. In fact, this chapter seems to be nothing more than a reproduction of content from Nilanjan Mukhopadhyay's book *Narendra Modi: The Man,* that *The Times*, published in 2013. Like this chapter of the book, chapter sixteen



titled 'Manipulating Algorithms?' is heavily drawn from a detailed reportage published by *The Caravan* magazine in January 2019.

In chapters thirteen and fourteen of the book, questions sent to Facebook and the replies given by them are produced verbatim. In the next chapter, 'Good Corporate Citizen of India', one expects there to be an analysis of the reply, but there is none. Instead, the next chapter is focused on political advertisement through social media, the role of the Election Commission of India, the Model Code of Conduct and the role of social media companies. The subsequent chapters are also not able to fulfill the promises made in the introduction.

In the concluding chapter, discussing the way forward to fight hate and misinformation, the authors rightly suggest that, 'One important task is to raise awareness. What is also important is that social media users start questioning more, become skeptical and not become excessively dependent on reciting information from one, or a few, sources so that they can get well-rounded perspectives of issues. However, many ordinary users of social media unfortunately don't have the time or the competence to delve deeper into detecting disinformation and falsehood.' I would add that it is not just the case of many ordinary users, but most of the users of social media and the purveyors of hate and fake news know this quite well. Hence, they are so successful.

Mahtab Alam is a Delhi based multi-lingual journalist and writer. Currently, he is the Executive Editor of *The Wire,* Urdu. He writes on issues related to politics, law, media, human rights and literature.

Digital Lifeworld

Nitish Verghese

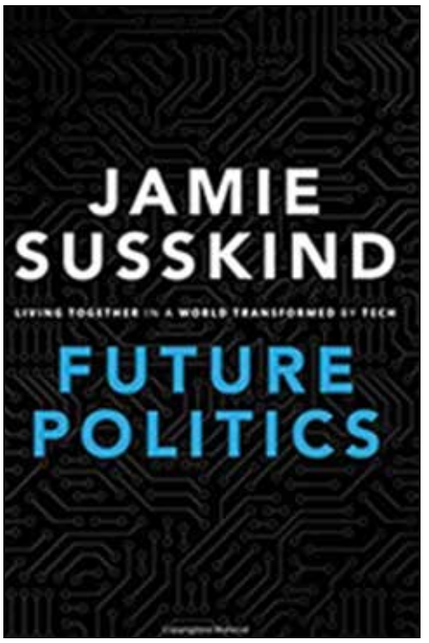
FUTURE POLITICS: LIVING TOGETHER IN A WORLD TRANSFORMED BY TECH
By Jamie Susskind
Oxford University Press, 2018, pp. 544, ₹595.00

Alibaba co-founder Jack Ma and Tesla CEO Elon Musk shared the World AI Conference stage in Shanghai earlier this year. It was one of the most interesting dialogues on the future of humans and the power of digital technologies like AI. At one point in the discussion Elon Musk says, 'If you think of technology and technology awareness, if there was a topological map of technology awareness, it's mostly flat with a few short buildings, and then some very tall spires. And unless you're on that very tall spire, it's not obvious what the topology is.' And to that Jack Ma responds by saying, 'Yeah, I never worry about the things that I cannot solve. I left other people to solve it. If nobody can solve it, just let it be. That's my life.'

Should we let 'other people' completely determine how digital technologies should evolve? Should we unthinkingly allow the unleashing of a future we do not completely understand? Especially when these technologies could have a significant impact on our idea of what it means to be free or equal, have power or property, or even what it means for a political system to be democratic.

Jamie Susskind thinks not. Through *Future Politics* he attempts to democratize the understanding of what a future with powerful digital technologies could mean for humanity, in turn, hoping to empower us as citizens to participate in the political debates that could shape the evolution of these technologies.

Future Politics is not a book on philosophy, nor a book on technology, nor a book on economics. It is an attempt to blend an understanding of all three—philosophy, technology and economics—to provide insights on how the political landscape of the future could evolve. Susskind manages to do two things at once—go back in time to provide a context of how we got to where we are today, and also take a leap forward in time and shine a light on where we are most likely headed.



He recognizes the need to help the reader imagine a world where there will be such a preponderance of digital technologies that the distinction between life and digital life gets blurred. To do that he coins the phrase *digital lifeworld* to describe a world with machines that are equal or superior to humans in a range of tasks and activities; technology that surrounds us all the time, embedded in the physical and built environment; and more and more human activity being captured and recorded as data and then sorted, stored and processed by digital systems.

In its essence the book explores the way in which four basic principles of politics could be impacted through the rise of digital technologies—Power (how the strong dominate the weak), Liberty (what is allowed and what is prohibited), Democracy (how people can rule) and Social Justice (what duties we owe each other).

In democratic systems the exercise of force is usually associated with the state—the ability to create laws and enforce them– and the exercise of perception control and scrutiny is associated with the media. Susskind explains how these notions are about to change. Big tech firms will have the power to simultaneously exert force (a self-driving car that refuses to park on a yellow line), scrutiny (digital gathering and storing of information regarding us and using this to predict our behaviour even before it happens) and perception control (digitally influencing the news and information we can gain access to and the manner in which it is presented to us).

It becomes obvious then that those who control these technologies—big tech firms and political authorities—will wield power over the rest of us.

Susskind makes the important point that digital technologies can in very subtle ways impact social justice. And that digital technology firms are in effect social engineers. He gives the example of the voice recognition systems that don't recognize women's voices because they had only heard the voices of men; or the auto-tagging systems that tagged black people as 'apes'. The implications of this are very serious. AI systems depend on data for their training and the manner in which they are trained will determine whether digital technologies accentuate the existing social biases, stigmas and divides or ameliorate them.

Susskind comes from a family of futurists. His father Richard Susskind is considered an authority on the future of work. Susskind like his father believes that as AI systems become more powerful, most humans will be out of work. The resulting inequalities generated could be mind-boggling. In this context he explores ideas relating to the need for a Universal Basic Income and the manner in which the paradigm of private property could be re-defined. He takes an exploratory approach—weighing the pros and cons of each idea—rather than being prescriptive.

It is not easy to provide solutions for the kind of future we are about to encounter. But before attempting to provide concrete solutions it is important to explore broad principles which could help us navigate through unchartered waters. Susskind does this by advocating a need for a new separation of powers, i.e., making sure that no entity is able to secure control over more than one of the means of power—force, scrutiny and perception control—or achieve a monopoly over them. He stresses on the need for transparency, i.e., making sure that those who have the power to affect our core freedoms, or to affect the democratic process, or to settle matters of social justice never operate in darkness. He also believes that we can increase citizen participation in shaping the legal and political system by leveraging digital technologies to explore ideas like Direct Democracy, Deliberative Democracy, Wiki Democracy, Data Democracy and AI Democracy.

But Susskind isn't an idealist. He somewhere believes that all this may not be enough. If AI achieves technological singularity he believes that there will be no place for homo sapiens. Alternatively, if a class of human beings are able to technologically enhance themselves—with higher longevity and higher cognitive capabilities—will they qualify to be categorized as humans? In both scenarios it will mean the end of politics as we know it.

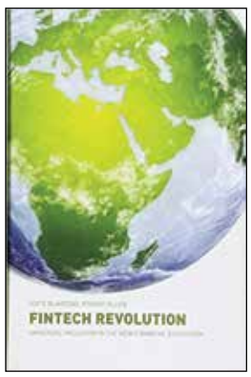
> "Through *Future Politics* Jamie susskind attempts to democratize the understanding of what a future with powerful digital technologies could mean for humanity."

Overall the book is likely to throw up more questions than answers. But that most likely is Susskind's objective. He wants the future to stalk us so that we are not complacent about it. His chief contribution is to have provided a useful framework of thought to analyse the future of politics in a world that is being transformed by digital technologies.

While the content of *Future Politics* deals with serious issues Susskind is able to weave in a sophisticated sense of humour in his writing. The book is well researched, well-argued and well-articulated. It is a piece of work that should not be ignored if you care about things like freedom and power.

Nitish Verghese is a brand and marketing strategy advisor who helps organizations develop their narratives to better compete in the market place.

Book News ***Book News***



FinTech Revolution: Universal Inclusion in the New Financial Ecosystem by Sofie Blakstad and Robert Allen is a practical guide to the evolving landscape of finance, highlighting how it's changing our relationship with money and how financial technology, together with macroeconomic and societal change, is rewriting the story of how business is done in developing economies. Businesses and, in particular, financial services organizations need to participate in a global service ecosystem. This book will be of interest to financial professionals who work in banking, financial technology, and development finance.

Palgrave Macmillan, 2018, pp. 406, ₹2274.00

Effective Political Campaigning: Online & Offline

Udita Chaturvedi

HOW TO WIN AN INDIAN ELECTION: WHAT POLITICAL PARTIES DON'T WANT YOU TO KNOW

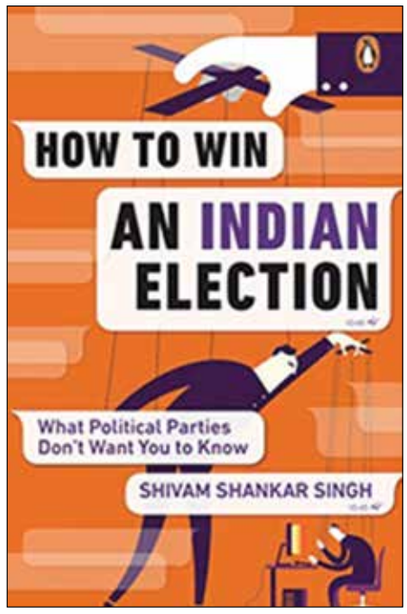
By Shivam Shankar Singh
Penguin/eBury Press, 2019, pp. 201, ₹240.00

Shivam Shankar Singh's *How to Win an Indian Election* is an insider's candid narrative of how political parties leverage voters' data and digital technologies for political campaigning. Singh headed data analytics and campaigns for the Bharatiya Janata Party (BJP) for the Manipur and Tripura Legislative Assembly elections under the guidance of the party's National General Secretary, Ram Madhav.

By sharing insights from his journey as a former BJP data and campaign analyst, Singh spotlights the scale, impact and consequences of digital campaigning for micro-targeting citizens to influence voters. It makes you understand, to some extent, the role of data and new age technology in the recently concluded 2019 General Elections, which saw the BJP grab a landslide victory.

The book starts with an optimistic look though. It starts with the vision of a young, passionate Singh who desires to do good for his country. He sees much value in returning to India from the US—for the LAMP Fellowship—to serve his country by engaging with Members of Parliament on policy matters. This fellowship phase in his life and career is marked by the 'obsessive desire to learn about the Indian political landscape and the people who populate it.' After the fellowship ended, Singh joined the Indian Political Action Committee (IPAC), a company run by political strategist Prashant Kishor who had managed Narendra Modi's Prime Ministerial campaign in 2014. Kishor backed campaigns that had a leading face. He believed this approach connected with the public well and thus more marketable, especially in a country where citizens want to follow a supreme leader. At a time when India was beginning to grow tired of Congress nepotism and corruption, it only made it easier for Modi and his team to present the persona of a much needed leader for the country. Singh learned much under Kishor's leadership before moving to work directly for the BJP under the guidance of Madhav. Here, he realized that there is no one-rule-suits-all strategy to find success in politics.

Comparing politics to entrepreneurship, Singh says that the former is either a hit-and-trial victory or a loss for everyone. Technology, however, is an assistant, a means to the end of this political journey in today's time. This becomes even more crucial in the absence of data and privacy regulations in India, which allows political parties to not just access but also play around with personal user data—all without the user's knowledge, let alone permission. Through personal anecdotes, Singh shares how data analysts, supported by sophisticated technology, assist these parties to reach their audience, map their identities, monetize their emotions, and capture their votes.



Singh mentions in his book that in many large Indian States, caste and religion of over 70 per cent of the people can be determined by analysing their names, which are publicly available on the electoral roll. Based on this and other information gathered by them, Singh shares, parties use fake news and propaganda on social media to shape—or rather manipulate—voters' minds through a targeted profiling-based approach.

For those who've read Swati Chaturvedi's *I Am a Troll*, the revelations in *How to Win an Indian Election* will not come as a surprise, especially since Singh does not talk much about the organized nature of creating disinformation or misinformation or the source of it. The book does, however, reveal the functioning of BJP's data operations—or rather data grabbing—and how mapping the electorate on the basis of religion, caste, geography, needs and priorities helps predict or influence electoral behaviour. It also simplifies the process of turning a leader into a 'demigod' through effective campaigning, both online and offline.

> "Their [BJP's] nationalist overdrive encourages a lot of enthusiastic techies to serve their nation by serving the political party of their choice... Then there are lakhs of volunteers or karyakartas who are ready to help the party out with almost anything, from distributing pamphlets and carrying out surveys to conducting pulse checks and profiling families in constituencies—and for free."

A key resource for this effective campaigning is human resource. And the BJP, in particular, has no dearth of this. Their nationalist overdrive encourages a lot of enthusiastic techies to serve their nation by serving the political party of their choice—Singh being an example of this. Then there are lakhs of volunteers or *karyakartas* who are ready to help the party out with almost anything, from distributing pamphlets and carrying out surveys to conducting pulse checks and profiling families in constituencies—and for free.

Bucketing of people on the basis of religion and caste comes up repeatedly in Singh's book, as does this in the Indian political landscape. The bucketing is extremely crucial when a voting population is undecided, Singh mentions. These are the votes that have to be swung in favour of the campaigning political parties. In Singh's book, this undecided group has often been presented as credulous and, thus, target for political fake messaging.

The personal and simple writing style makes it easy for a reader to understand election war rooms and strategy building without any jargon, Lutyen's gossip or deep political analytical understanding. In his

> "Comparing politics to entrepreneurship, Singh says that the former is either a hit-and-trial victory or a loss for everyone. Technology, however, is an assistant, a means to the end of this political journey in today's time."

book, which draws on Singh's experiences as a party volunteer, LAMP fellow and political campaign consultant across multiple Indian states, he discusses—often distantly yet objectively—how voter buying, targeted advertising, fear mongering, false sense of victimization and use of violence are common electoral tactics used to woo voters.

Interestingly, it was these reasons that finally let Singh to feel disillusioned with this mammoth party and resign from the BJP in 2018. While the book does not deep dive into these problems, it encourages politically-inclined youth and first-time voters to think and analyse the information that media and their political parties are feeding them. Singh writes, 'It is extremely important for the nation that educated people who want to do something positive for the country enter politics, but it is also extremely important that they know what they are getting into.' Political evolved society requires socially evolved leaders who have greater interest of the people in mind than their petty self-interest.

Leaving the readers with a tad bit of hope in a country where political cleansing looks like a distant dream at present, Singh warns the readers that honest politicians will continue to struggle and compete with the power and finance that dishonest groups hold. Many others with the passion and skills to drive policies will stay clear of politics and choose corporate careers. However, those that will enter politics and manage to stick around will eventually help steer the political discourse in this country in the years to come. India could be a pluralistic and inclusive society, or it could be an intolerant and prone-to-conflicts society. For these new entrants to Indian politics, Singh has a tip. When deciding what party to work for, they must consciously decide on the ideologies that align with them the most and that offend them the least.

Udita Chaturvedi is leading Research & Communication in Dasra, Mumbai.

Art of New Age War

Ali Ahmad

ARMY OF NONE: AUTONOMOUS WEAPONS AND THE FUTURE OF WAR
By Paul Scharre
W. W. Norton & Company, 2018, pp. 448, ₹1549.00

The book's cover has appreciative lines by Bill Gates, who–as the cliché goes—needs no introduction, and Lawrence Freedman, who may need an introduction only for those from fields other than strategic studies, being the doyen of the field. Since Gates knows technology and Freedman focuses on war, their recommendation places the book on the frontline of technology and war.

It is no wonder that at the time of writing of this review, the headlines have it that the army's Jaipur-based South Western Command is organizing a seminar at Hisar to get to grips with Artificial Intelligence and military operations. The media reports the seminar organizers modestly acknowledging that though the military has taken note of the advances abroad, including China, it is never too late to catch up. Clearly, here is the book to help them tank up.

Even so, a headline alongside says that India is going in for another 1000 plus armoured personnel carriers. This underlines a well-known trait in most militaries—apparently more pronounced in the Indian one—that it is easier to get a new idea into its head than to get an older one out. So long as the three services are busy throwing governmental largesse—set at $130 billion over the coming ten years—on platforms such as fighters, ships and tanks, it is unlikely India will 'catch up' this decade. From what Scharre informs through his 446-page book, it would be too late.

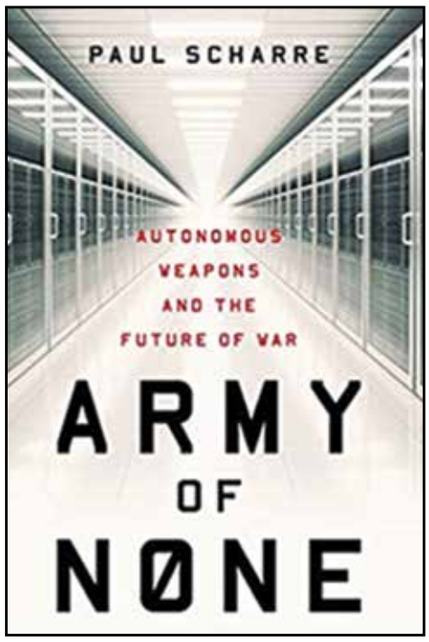
Paul Scharre is a good guide into an esoteric subject since he makes intelligible a formidable array of technologies that go into the making of autonomous weapons—weapons he describes as not having a human in the loop for their firing. The science he covers would interest sci-fi aficionados. The book itself is meant for practitioners, though it is written in a style that would attract armchair strategists too. It is meant for those into defence technology, specifically defence scientists and the fledgling defence industry.

> "*Army of None* is therefore an important one, with its significance likely to be remarked on more in retrospect some twenty years on. Scharre has wrapped up some ten years of work into its covers, beginning with methodically and readably outlining the technology: robotics, artificial intelligence, neural networks, cyberspace, bots etc."

It needs being read by those working on national security policy to challenge the military's laundry list of twentieth-century hardware. The book must be made compulsory reading at the military academies and staff colleges, perhaps figuring on the next update to the 'Golden 100'— an army headquarters compiled list of 'must read', 'should read' and 'could read' tomes. One way to focus young military minds on its contents is to make it part of promotion and competitive exam syllabi.

An additional target audience of the book is the think tank community. Though the military glossies have been a dime-a-dozen for over a decade now, there is little cutting edge content. Technology has ample coverage, since the arms industry is out for a piece of the defence budgetary cake. However, missing is deep-end thinking presented by Scharre such as on the ethics of such weaponization. One doubts there is an equivalent project at any of the plethora of Delhi's think tanks to the one Scharre tenants at Washington's independent and bipartisan Center for a New American Security: its Ethical Autonomy project.

This is a step further than merely the technology or the operational usage of the weapon. It is engagement with the ethics of and ethical use of such weapons when fielded. The current state of the art is semi-autonomous weapons, requiring human sign off on targeting. Apparently, only the Israeli Harpy drone has so far crossed the line into being autonomous. Armed drones have over a dozen states in pursuit of the technology.



That there is much for ethicists here while the technologists are still at it is evident from the recent killings by a semi-autonomous drone strike of 30 Afghan civilians out nut picking on a Hindu Kush hillside. If and since things can go wrong even with a human in the loop, what more can go awry when the human is at best with a kill-switch? On this count some 3000 robotics experts have already called for a blanket ban on autonomous weapons.

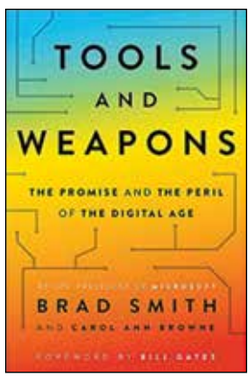
This is the key area Scharre engages with. He takes his time building up to the climax, traversing the technology and its operational use, before getting to in Part VI on whether and how strategy and ethics informs policy choices. The take away is that a weapon ban is wishful and fielding of such weapons is inevitable. Consequently, engaging with how these would relate to international humanitarian law is necessary in the here and now. The international community is taking its usual leisurely course at the Convention on Certain Conventional Weapons meetings, even as developments overtake speeches made. In early 2018, there was a drone attack by Syrian rebels on a Syrian air base that also housed Russians, with Russians shooting down the intruding drones. By late 2019, ten drones targeted Saudi Arabia's premier oil facilities temporarily putting a proportion of its oil production out of action and setting the region closer to a war between regional rivals, the Saudis and Iran.

The book is therefore an important one, with its significance likely to be remarked on more in retrospect some twenty years on. Scharre has wrapped up some ten years of work into its covers, beginning with methodically and readably outlining the technology: robotics, artificial intelligence, neural networks, cyberspace, bots etc. In the later parts, 'The Fight to Ban Autonomous Weapons' and 'Averting Armageddon', he comes to the meat. Thus the first three quarters of the book would interest the tech savvy, while the last two parts can be expected to detain policy wonks and academics. This 'something in it for everyone' aspect of the book comes from his background: an infantryman having served in both of America's wars this century: Iraq and Afghanistan; and later as the director of the technology and national security programmme at his think tank. This review cannot but in closing reiterate Scharre's sobering words:

'No piece of paper can prevent a state from building autonomous weapons if they desire it. At the same time, a pell-mell race forward in autonomy, with no clear sense of where it leads us, benefits no one. States must come together to develop an understanding of which uses of autonomy are appropriate and which go too far and surrender human judgment where it is needed in war. Weighing these human values is a debate that requires all members of society, not just academics, lawyers, and military professionals. Average citizens are needed too, because ultimately autonomous military robots will live—and fight—in our world.'

Ali Ahmed is Visiting Professor at the Nelson Mandela Center for Peace and Conflict Resolution, Jamia Millia Islamia, New Delhi.

Book News ***Book News***



Tools and Weapons: The Promise and The Peril of the Digital Age by Brad Smith, Microsoft President, and Carol Ann Browne, with a Foreword by Bill Gates, is a captivating narrative from the cockpit of one of the world's largest and most powerful tech companies as it finds itself in the middle of some of the thorniest emerging issues of our time. The book pulls back the curtain remarkably wide onto some of the company's most crucial recent decision points as it strives to protect the hopes technology offers against the very real threats it also presents.

Hodder& Stoughton, South Asia edition Hachette, 2019, pp. 346, GBP 20.00/ ₹699.00

Nothing is as It Seems

Ravi Guria

NON-FICTION FILM: THE GREAT HACK
Directors: Karim Amer and Jehane Noujaim
Streaming Platform: Netflix
Year of Release: 24 July 2019 (USA)

Privacy has emerged as the most prized possession in the 'Information Age'. Technology giants such as Google, Facebook and Amazon are being taken to task by the governments over the issue. But the design and motivation of the relationship evolving between social media platforms and users lead us to the grim conclusion that perhaps privacy is a holy grail, the quest of which will lead us to the darkest alleys of misgivings. And when scandals like 'Cambridge Analytica' come to light, it further reinforces the belief that is fast finding purchase, that privacy is arguably a myth in the Information Age that we are unable to accept. But it is a layered conversation, which needs to be looked at from many perspectives.

Privacy is perceived differently by millennials who are digital natives, and generation X, Y, Z, who are digital adopters. Digital natives who have grown organically with Internet around them, accept the trade off between their personal data for digital access more naturally; whereas, the older generation is still coming to terms with becoming a commodity in the ongoing data war between tech companies. Data is the new oil, as they say. It is important for the tech companies to make accurate behavioural assessments and predictions about their users to influence them through ads, because that is where they generate their revenue from; and governments want them to ensure national security.

However, what the Cambridge Analytica scandal has revealed is that there is a sinister game underway, which is slyly sneaking its way into our lives, eroding the concept of democracy and freedom of choice.

The Great Hack is an investigative non-fiction film released on Netflix, which gets into the depth of the Cambridge Analytica scandal and peels all the layers from it, exposing the root cause and key

players for all to see and understand; the inevitable future that is staring squarely back at us, placing the responsibility nowhere, but right at our doorstep. It raises extremely important issues plaguing the technology era, such as—privacy, security, surveillance, digital rights, contravention of human rights and integrity of democracy.

The game began much earlier, but it became apparent during the US Presidential elections 2016, which saw Donald Trump becoming the 45th President of the world's oldest democracy, the United States of America. It was a watershed moment and redefined election campaigns forever, which had found unimaginable effectiveness through technology. It also brought a very disturbing reality to light, that in a globalized connected world, a country's elections have ceased to be decided just by the verdict of its bona fide citizens. They are open and exposed to be manipulated by outside players who have ulterior agendas in the dice falling in a certain way that suit their interests.

Cambridge Analytica, a British company, recognized itself as a data driven communications company, which harvested data of more than 87 million Facebook users, building their psychological profile without permission and using it in ways they don't understand. They had 5000 data points on every American by which they could predict the personalities of the voters because personality drives behaviour, which influences how one votes. Their modus operandi was to unleash 'Psyops', which are psychological operations used by military to use as an alternative to warfare in conflict zones, which was perfected by Cambridge Analytica's parent company, Strategic Communication Laboratories (SCL), in its earlier defence company avatar. They were using communication warfare to influence the behaviour of hostile target audience, such as convincing 14-30 year old Muslim boys and men not to join the Al Qaida. And they started using this communication warfare on civilians during elections to suppress and increase turnout. They called them 'The Persuadables' who had not yet formed a fixed opinion on who to vote for. First they identified them through psychographics and then used weapons grade communication techniques, which are bombarding them intensely with blogs, videos and personalized messages till they saw the world the way Cambridge Analytica wanted them to. A small number of the persuadables were enough to swing the elections one-way or the other. This was their ticket to becoming a billion dollar company.

The film follows the journey of key players who were responsible for bringing the curtains down on the company: David Carrol who teaches and advocates digital rights in the US became concerned for his data and took an arduous legal route in a foreign land, Great Britain, to force Cambridge Analytica to turn over his data it had harvested; Christopher Wylie, a data scientist, who initially helped set-up Cambridge Analytica, but turned against the company terming it as a propaganda machine; and the most vital whistleblower, Brittany Kaiser, Cambridge Analytica's former Director of Business Development, whose revelations proved to be the nail on the coffin.

The film reveals Cambridge Analytica's sinister reach, which was far and wide. It had a major role to play in influencing the Brexit referendum as well. Interestingly, the major players in the presidential elections campaign 2016, and the major players who had interest in Great Britain exiting European Union were hand in glove.

The world has changed. Authoritarian governments are on the rise and they are all using Facebook, which has 2.41 monthly active users around the world. Facebook's revenue comes directly by monetizing its user's data. Technology that is supposed to connect us is driving us apart. 'If you have to fundamentally change the society, you have to break it,' states an important bad player.

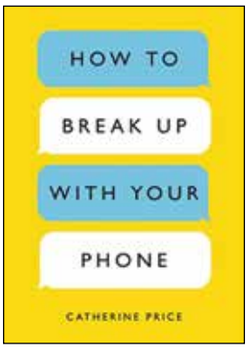
The film deals with the Cambridge Analytica scandal, but the questions it raises have significance far beyond the company. If it was not Cambridge Analytica, it would have been some other company by a different name, but the state we are in is a foregone conclusion. As a society, we are in a state of flux, where no one quite understands where we are headed, and I mean no one—be it citizens, tech companies or the government. We are all trying to perceive what seems to be a reality in a way it suits us. In an Age where we are imploding with excess information, being aware is all that we can possibly do, and hope that at the end of the day, technology will serve us right and fairly.

> "Perhaps privacy is a holy grail, the quest of which will lead us to the darkest alleys of misgivings. And when scandals like 'Cambridge Analytica' come to light, it further reinforces the belief that is fast finding purchase, that privacy is arguably a myth in the Information Age that we are unable to accept. But it is a layered conversation, which needs to be looked at from many perspectives..."

The Great Hack is a very important film because it opens our eyes to the naked truth we are pretending not to see or don't see out of ignorance. It is shocking to realize the extent to which we are being played by those who control the system. The only way to beat them is by becoming more aware and brave to not compromise on our basic morals and ethics. At the end of the day, it is not that complicated a choice: 'You shouldn't win by cheating.'

Ravi Guria is a filmmaker, scriptwriter and is currently heading Media & Communication in Digital Empowerment Foundation, New Delhi.

Book News ***Book News***



How to Break Up with Your Phone: The 30-Day Plan to Take Back Your Life by award-winning journalist Catherine Price presents a practical, hands-on plan to break up—and then make up—with your phone. The goal? A long-term relationship that actually feels good.

Ten Speed Press, 2018, pp. 192, ₹399.00

DIGITAL ENTREPRENEURSHIP

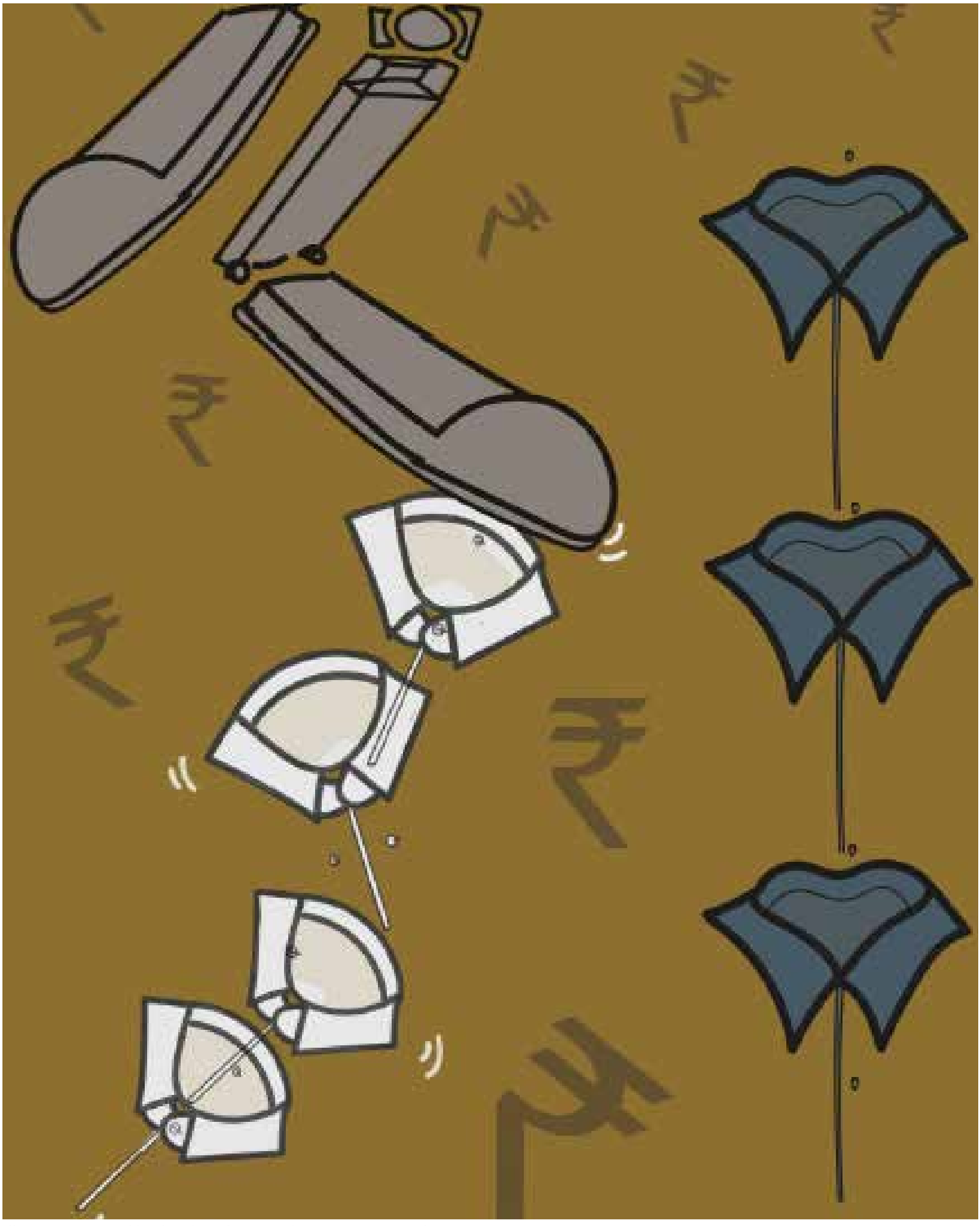


Illustration: Designed by Sharada Kerkar, Digital Empowerment Foundation

Development Dialogue: 12 Contradictions of the Entrepreneurial Movement of India

Madanmohan Rao

CHASING INNOVATION: MAKING ENTREPRENEURIAL CITIZENS IN MODERN INDIA

By Lilly Irani

Princeton University Press, 2019, pp. 286, $99.95

This compelling book discusses the 'seductions, limits and contradictions' of the entrepreneurial movement in India. Entrepreneurship is being shaped as a movement that embraces creative freedom, business value, and nation building. Examples and case studies are building up of how techies, designers, development specialists, and business professionals can create entrepreneurial ventures for socio-economic uplift.

Lilly Irani, an Iranian-American Communications Professor at the University of California, San Diego, has a background in computer science and design. She was also a Fulbright Scholar at Jawaharlal Nehru University, and spent nearly a decade as fieldworker for a Delhi design studio.

Lilly cautions that the social, economic, and political challenges in India may be too formidable to be solved merely by startup projects involving founders, venture capitalists, and global philanthropies. Innovation is being framed as desirable, but infrastructure building and maintenance, or the activities of craftspeople and labourers, are unfortunately not painted in the same light. Entrepreneurship and design should not be seen as a substitute for the hard grassroots work of progressive social change, or as a way for government and big business to pass the buck, or for middle-class professionals to turn their backs on the messy necessity of political movements.

The book is a blend of scholarly analysis, ethnographic observation, and storytelling across a range of fields: development economics, design theory, startup frameworks, and postcolonial studies. The book spans 277 pages, including 37 pages of references and a number of black-and-white photographs.

Here are my key takeaways from the book, in terms of 12 shortcomings of the entrepreneurial discourse. Other recommended books on related themes include *The Rise of the Hybrid Domain* (Yuko Aoyama, Balaji Parthasarathy), *The Platform Society* (Jose van Dijck, Thomas Poell, Martijn de Waal), *A Human's Guide to Machine Intelligence* (Kartik Hosanagar), and *The Next Billion Users* (Payal Arora).

Six core chapters trace the foundations of development and design discourse in India. Local and international organizations, intellectuals, and forums influence the narrative. These include TED talks, *Harvard Business Review* articles, Bill and Melinda Gates Foundation, Citi Foundation, Ashoka, UNDP, IDEO, Schumpeterian analysts, Silicon Valley tech giants and startup evangelists, NASSCOM, CII, Barefoot College, and influential Indian diaspora.

Indian intellectuals across the spectrum have upheld the value of innovation, including at the bottom of the pyramid, such as CK Prahalad, Sam Pitroda, Tarun Khanna, Anil Gupta, Soumitra Dutta, and Navi Radjou. A design thrust is promoted by the likes of Kiran Bir Sethi and Ashish Rajpal. A sense of urgency is being built up, with India's 'demographic dividend' as a backdrop and the rise of CSR investments in entrepreneurial initiatives. 'Whereas the Gandhian trustee treated the poor as objects of responsibility, the entrepreneurial citizen treated them as opportunities—markets in the making', Lilly explains. Entrepreneurship is seen as the way to opportunity and socio-economic triumph. Entrepreneurship is being pitched as a way of achieving inclusive growth in India as well as projecting a new global image of India as a hub of innovation. Corporate and development innovation is being seen as a way for Indian players to climb up the value chain from outposts to the planning centres of global giants.

The author traces how, in successive phases after Independence, India's national economic agendas focused on top-down development, big business, cooperatives, small industries, diaspora investors, liberalization, local State governments, inclusive growth, microfinance, and employment guarantees. Overall, the state is ceding some control of the market and of development. NITI Aayog replaced the Planning Commission, with command models shifting to coordination and partnerships. India is coming under global IP regimes as well, including process and product patents.

The poor are being framed not just as consumers but also as latent sources of creativity, value and, to some extent, partnerships in innovative initiatives. However, the playing field is not level for many communities in India to access entrepreneurial knowledge and promotional networks. The entrepreneurial and design communities in India are coming up with models of education that address some of the problems with rote learning, siloed knowledge, and tuition/exam culture. Interestingly, many proponents of such change themselves studied in the IIT, IIM, NID, SPA and CEPT institutes, and are advocating new models such as those of J Krishnamurti. They push for a change from India as 'ProcastiNation' to 'ImagiNation', with a motto of 'Feel, Imagine, Do, Share'. Every child is regarded as a potential entrepreneur, who does not need permission to change. A focus on feeling, intuition and passion are elements imbibed from models of design thinking. The advocates of new pedagogy call for nurturing independence, creativity and critical thinking.

However, many of the technology, business, developmental and design interventions of the entrepreneurial movement in India reflect a range of contradictions. I have summarized twelve of these below, followed by speculation and suggestions on future research.

Diversity is seen as key for 'creative friction' in entrepreneurship and design via inclusion of a number of perspectives and generation of a wide spectrum of ideas. However, much more is needed to address the true diversity of India in the entrepreneurial movement, and distribute the rewards more equally. The author cautions against ignoring 'unequal starting points, uneven distributions, or reparation'.

Hackathons, meet-ups and brainstorming sessions bring together diverse people, but there are limits to this diversity; most participants still seem of a like-minded nature and mindset. There is only just enough 'easy difference' to be 'interesting and even inspiring' to each other, but not deep contestation. Long-term solutions should address not just diversity but sharing of power.

The entrepreneur is portrayed as a heroic agent of change, powered by resourcefulness and empathy. This is in contrast to the slow pace, arduous nature, and sometimes danger-filled path of social movements, civic activism, and political mobilization. Without these struggles that involve consensus building and negotiation, the challenges of caste, class, religion and gender cannot be effectively tackled. However, many

entrepreneurs regard politics as plagued with corruption, patronage and communal approaches. A number of entrepreneurs also seem unaware of how deeply embedded they are in their own class position and kinship networks. The author flags the limitation of entrepreneur-led development, which chooses not to disturb existing social orders.

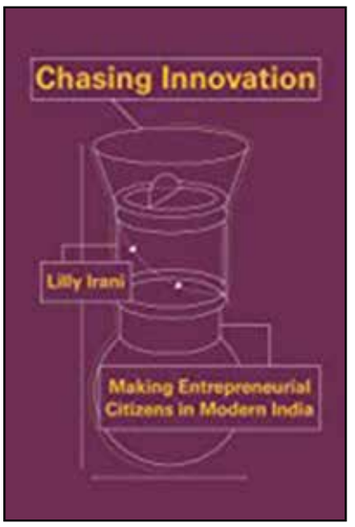
The design movement is being hailed in India as a way to promote interdisciplinary collaboration, creative freedom, and a sense of individual authenticity. Sometimes, however, it has been difficult for founders of such design studios to clearly articulate their value proposition. Premium designers are seeking to pitch themselves as consultants for form, strategy and vision via long-term relationships, and not just one-off vendors of commoditized products and services.

The author notes the challenges that can arise when some design team members are not extroverts or rapid in their responses. Furthermore, some labour forms are not valued as highly as creativity, e.g., support functions of accountants, cleaners, cooks, and drivers. Creative work is supported by menial tasks, sweatshop work, and even donkeywork. 'Free will relies on unfree labours', Lilly cautions; many of these support workers are not seen as entrepreneurial citizens in their own right. Furthermore, in the broader economic development context of India, peasants, slum-dwellers, street hawkers, and the urban poor have often been dispossessed to make way for larger projects favouring the middle class.

While the glory of grassroots innovators (mostly male) has been celebrated through initiatives like the National Innovation Foundation and Honeybee Network, they relied on the support of their wives and parents who do not get as much recognition.

The micro-worlds of hackathons, a common activity of the entrepreneurial movement, thrive on the pleasure of the possible and the immediate, but not as much on the labour of production and maintenance. Quick-fix solutions and low-hanging fruit are no substitute for the popular movements that push for social change, or for long-term investments in transformative infrastructures, or sustained lobbying for policy change.

The author documents a case where the preference for a quick tech demo in a civic or governance hackathon came in the way of solutions based on empowering poor people's movements and pressure tactics to hold technocrats accountable. Besides, not all participants in hackathons could afford the week or weekend off for the activity.



The case documented by the author also shows how questions of ethics and politics from 'hardcore ideological' people were not seen as important at this demo stage of the hackathon. The work is seen as collaborative but also fast-paced.

'In this urgency, entrepreneurial citizenship renders social movements, deliberation, and even extensive research and planning as potential barriers to development and dilution of vision,' the author cautions. Too much deliberation is seen as 'analysis paralysis' and even getting 'mindfucked' (in the words of an interviewed designer), but it is also important to weigh the judgment of domain experts and not just rely on the insights of newcomers.

Moving forward fast raises challenges in fields where solutions call for painstaking grassroots footwork to build coalitions, align frameworks, and win the trust of target audiences and influencers. Some entrepreneurs even observe that lack of bias to action is present among 'Bengalis, Malayalis, Brahmins and academics', according to interviews by the author.

There are many models of entrepreneurship driven by digital models of infrastructure and interaction, but this will be a challenge for citizens on the other side of the digital divide with respect to access, affordability and literacy. The civic hackathon analysed by the author 'rode the energy of euphoric faith in ICTs', but technical solutions are not as comprehensive as political ones. In some cases, the author has documented positions at the Bill and Melinda Gates Foundation that were filled by ex-Microsoft employees without any background in development work. India has now become a laboratory for experiments in ICT products for the poor.

Many of the globally connected entrepreneurs and designers speak English and are educated at the elite IIT, IIM and NID tier. Some have returned from

> "The book is a blend of scholarly analysis, ethnographic observation, and storytelling across a range of fields: development economics, design theory, startup frameworks, and post-colonial studies."

overseas positions or chosen not to leave the country in the first place, so as to seize the entrepreneurial opportunity. Unfortunately, this language gap can distance innovators from 'the others', the author cautions. Many hackathons reflect the conscious and unconscious preferences of the organizers, such as calls for participation circulated largely in English. The conference proceedings, discussions and displayed materials also are mostly in English, thus opening the door for more such publications in Indian languages.

Design thinking advocates products and services built on empathy with the end user; it claims to be in touch with human emotions, needs and desires, and not just focused on technology. The author shows that this approach is in contrast to earlier top-down human-computer interaction (HCI), which was intended to reduce human-generated error in systems performance. But sometimes the end user desires solutions that are beyond the scope of the design team, in which case another solution may be morphed on to secondary desires. The author documents the case study of a water-filter product design, where the end users actually wanted solutions for fluoride filtration and not water purification. The team should have shown responsibility and ethical practices, and addressed the requirements for fluoride filters, e.g., by collaborating with fluoride activists.

The author cautions that though designers claim to be empathetic, it can be hard to see and work around in-built histories and biases of class, caste and nationality. Viewpoints, tolerances, and actions in such contexts are historically and culturally mediated.

The author also traces how countries like the US have developed entrepreneurship promotion as a way to deal with shortcomings in foreign policy. For example, the then-president Barack Obama launched the Global Entrepreneurship Summit (GES) in Cairo in 2009, a practice continued

with the presence of Ivanka Trump at GES Hyderabad in 2017. Supporting global entrepreneurship was seen by the US as a kind of soft power, and to draw people away from the path of terrorism. This would help stabilize the networked global order.

One fascinating chapter addresses how Indians and global communities view the country's creativity and innovations. The term 'innovation' has connotations of novelty, uniqueness, alteration or introduction of forms or elements, use of technology, and intellectual property. Innovation can involve integration and adaptation of outside ideas as well, and goes beyond imitation and repetition, according to Jawaharlal Nehru.

The author adds that what is seen as innovative also depends on the power of who recognizes and values it. Some types of innovation in India are seen as derivative, inauthentic, or even copies, while only some others are seen as 'proper' innovation; this reflects conditioning of class, caste, gender and rural/urban markets. Hallmarks of proper innovation are intentionality, scale and authenticity; these involve practices like thorough documentation. Some of these considerations apply to other emerging economies also, in the postcolonial world.

The author traces how, through successive Five Year Plans, innovation in India was seen as constituting acceptance of technology, accounting, professional practices, R&D, organizational novelty, and intellectual property. 'The meaning of innovation thus shifted from a process of change to a source of value,' Lilly explains. She delves into three types of creativity in Indian public culture: jugaad, workarounds, and people's solutions. Jugaad is variously seen as frugal, functional and sustainable, but also transient and sub-optimal. It does not go to the root of the problem, and even is an act of helplessness (*majboori*). 'Critics of jugaad countered that it stood for shoddy quality and short-term thinking that has hobbled India's development', Lilly explains.

In this context, the role of Indian designers was framed as a way of sensing and articulating people's needs and actions, and translating design at scale into market opportunities via skills of distance, analysis and production. For example, the Honeybee Network sought to translate jugaad works into grassroots innovation that could be monetized via flexible IP regimes.

In many contexts, Indian designers have had to show 'Indianness' (brand or *pehchaan*) in their products, which reflect stereotypes held by their viewers. Therefore, for example, Indian crafts communities are sometimes expected to conform to regional pre-capitalist and pre-industrial styles, and not modern styles. Thus, not all differentiation and novelty are regarded as value in this context.

Venture capital and corporations are ready to harvest the most successful entrepreneurial experiments, the author observes. However, many of the emerging sciences, technologies and infrastructures of the world require long-term and extensive funding by government, which opportunistic entrepreneurs and VCs tend to stay away from.

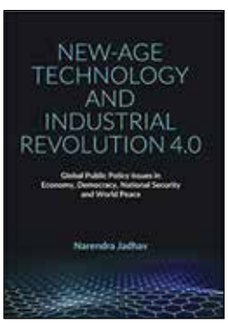
Though the author does not mention global warming and climate change as pressing issues of our time, it seems clear that entrepreneurial ventures can contribute to only a limited extent here. For example, innovations based on renewable energy require government support and policies for widespread adoption, which calls for countering lobbying activities by entrenched petro-energy corporates.

The author calls for more responsible interventions in the development discourse, beyond entrepreneurship. She cautions that there is more to solving the world's problems than casting everything as in need of entrepreneurial innovation.

'Let us instead find ways to speculate collectively in ways that dismantle oppression as we imagine and build', Lilly signs off. It would have been great to end the book with a review of some alternatives to entrepreneur-led development, and explore ways in which the various approaches could perhaps intersect and strengthen each other.

Madanmohan Rao is Research Director at YourStory Media and editor of a five book series. His interests include creativity, innovation, knowledge management, and digital media. He is also a DJ and writer on world music and jazz.

Book News ***Book News***



New-Age Technology and Industrial Revolution 4.0:Global Public Policy Issues in Economy, Democracy, National Security and World Peace by Narendra Jadhav brings together technology, economy, society and national security, would benefit individuals, businesses, corporates, civil society as well as policymakers around the world.

Konark Publishers, 2019, pp. 288, ₹695.00

Building Technologically Savvy Companies

Amitabh Singhal

DIGITAL TRANSFORMATION: BUILD YOUR ORGANIZATION'S FUTURE FOR THE INNOVATION AGE

By Lindsay Herbert

Bloomsbury Business, 2017, pp. 265, ₹499.00

Digital Transformation: Build Your Organization's Future for the Innovation Age by Lindsay Herbert is a practical guide for people, irrespective of rank, position, seniority and authority, who would like to see their respective organizations transform themselves by embracing the challenges which the ubiquitous and constant churning and presence of digitalization has brought upon the modern-day businesses. And by organizations, I mean businesses of any kind, whether single owner driven or startups and SMEs to large-scale corporations. The book provides us a step-by-step knowhow on how to bring about changes within our own realm of operations within the business entity that we run or may work for. As such, the book attempts to demystify the jargon of 'Digital Transformation' where its advice to potential change makers is to go about setting the objectives, identifying the tasks and steps to achieve the goals, without making too much of a song and dance about it. But, since that's easier said than done in real life, through this book, Lindsay prescribes her 'BUILD' model encapsulating the stages of Bridging, Uncovering, Iterating, Leveraging and finally Disseminating.

Lindsay's constant prescription throughout the various BUILD stages is very sane and begins to look pretty doable, which is encouraging for any reader. She does advise not to lose sight of the organization's mission and that every project to embrace and achieve digital transformation must at the end serve the customer and enhance his/her experience with the business and its products and/or services.

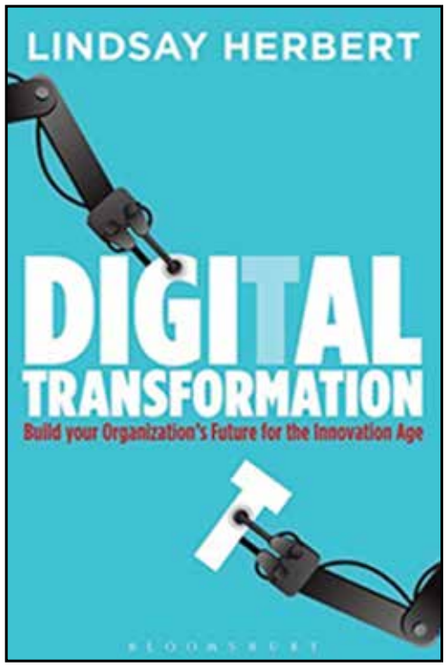
This basic principle resonates with me personally, of having worked with technology companies from the 1980s onward; while there were some successful models for going digital, both internally

(department wise) and ultimately organization wide, there have been instances of attempts by even the most technologically savvy companies to deliver new product and service experience to customers that ultimately found no takers. The launches failed spectacularly because those companies or specifically those in charge of designing the platforms, service modules and products, and even marketing aspects of it failed to pay heed to the target customers' ample feedback on their needs to survive and thrive upon the very products and services that were to be delivered to them.

The reason such transformatory projects are likely succeed or fail at each step, due to a variety of internal and external barriers and circumstances, are well enumerated in the book. Readers are called upon to unearth and be mindful of those barriers and address them appropriately while building their transformation project designs. Not doing so comes at the peril of a business's failure. For example, misalignment of any project with the business's mission dooms the process to failure. The book provides real examples, such as those of once thriving video rental marquee brands like Blockbuster, which failed to deliver their own mission of providing the best and most comfortable movie experience to their customers with advance technology. The likes of Netflix came and bridged that gap to become a bigger success. Succinct lesson from this example is: don't concentrate on 'How'; concentrate on 'Why' you are trying to transform. Put the customer first under your scope of target.

I can vouch for this and have personally been in situations where leadership and executive teams in charge of building the platforms to deliver new products and services were intent only on delivering what they themselves thought was right and not what the customer clearly wanted in terms of experience and value. Result: spectacular failure of the new transformatory project at a global scale. If one pays heed to Lindsay's BUILD framework, there is a better chance of making less visible mistakes and ensuring that the projects have a better chance of success.

All of this BUILD framework is surely not a onetime process, but a cyclical and repeatable process, an ongoing exercise adaptable by every organization—whether it's in the B2B, B2C, public, private, government, profit or non-profit space; and of any size—local or global, whether you are thinking of launching any new product(s) or services, starting a new line of business, just planning a market exploration or there is an



expansion project; BUILD applies equally well.

The book's advice is to start small and build on those small successes. It warns repeatedly, throughout, of the internal and external threats and barriers, and bridging those gaps through a process of building connections. Gaining insights into the pain points and building project elements to take away those for the customers. It focuses on customer expectations. One can clearly sense the elements of marketing research, consumer behaviour and competitive presence that have come into play. It tells us clearly that businesses have to have a benefit/loss statement chalked out clearly before embarking on a transformational journey.

No transformation process is the beginning and/or an end in itself and no stage is ever a finishing stage. It is a continuous process throughout the lifecycle of any business that has chosen to digitally transform itself. Actually, it is not even a matter of choice to transform or not. In this ever-ubiquitous connected world, there really is no choice.

I belong to a generation that grew up with manual typewriters as a form of technology, to write our communication and post it by snail mail. And then we had to embrace electric and electronic typewriters, personal computers, then the mobile phones and just a tad later the Internet. We had no choice but to transform ourselves into a living digital entity that we are today. I had not only to embrace these things that looked scary to begin with, but also sell these technologies to others, to so many businesses and organizations and government entities. I am a first-hand witness to widespread fear that the personal computer generated;

"No transformation process is the beginning and/or an end in itself and no stage is ever a finishing stage. It is a continuous process throughout the lifecycle of any business that has chosen to digitally transform itself. Actually, it is not even a matter of choice to transform or not. In this ever-ubiquitous connected world, there really is no choice..."

many bank unions in those early days went on strike against the perceived threat from technology and digital transformation that the government was trying to bring about then. That was then, and now it is difficult to even imagine for the current digital generation what that world was like. As a society we have had to transform, and undoubtedly we will keep transforming.

This book basically attempts to demystify and deconstruct the term 'Digital Transformation', and explains the transformation framework in a lucid and logical manner. Even when at times one feels that there is some repetition of certain descriptions, I think that is in the nature of the work itself. Momentarily I disconnected in one place, where there is an attempt to suggest that 3rd party outsourced technology suppliers only have selfish interests, which may eventually put the organization into a compromised state at the mercy of the 3rd parties, and goes on to suggest therefore that organizations better think of starting to build their in-house capabilities to protect their own interests.

I believe, this cannot be the case all the time, until the organizations learn to treat these suppliers as partners in progress and build a healthy trustworthy relationship together, focused on the overriding objective of serving the customer's interest first. I have been with organizations, where I relaunched old stagnant businesses with the support of better resourced, experienced 3rd party suppliers, and treated them as our knowledge partners. Eventually, they became the perfect backbones, resulting in a smashing success

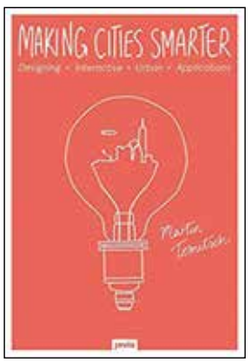
for the relaunched business for many years. But due to what I could think were cultural, social and personal issues, later generation leadership that followed me, started to treat the 3rd party provider as a mere vendor, and was intent on showing them their 'place'. Result: disruption of business and brakes on growth of a well performing entity, with a bad reputation within industry circles.

Some chapters do allude to these cultural and personnel minefields when they talk of barriers and roadblocks that can hinder transformation processes, but in my experience these issues are omnipresent and hardwired into people's mind (and takes the form of politics within organizations, which work without regard to the negativity and losses they create) and need deeper understanding and deft handling to overcome the cut and dried recipe which the book suggests.

So, in conclusion, apart from these couple of hitches as I outlined above, *Digital Transformation* by Lindsay Herbert is a practical guidebook, coming from her being an experienced practitioner herself. There are other works as well such as *Leading Digital: Turning Technology into Business Transformation* by George Westerman, Didier Bonnet and Andrew McAfee, whose synopsis too reminds me of many elements of Lindsay's BUILD model. This may be a coincidence, but reading both may be well worth the effort for those planning such a transformation in their own organizations. There is no getting away from digital, if you wish to survive in today's world.

Amitabh Singhal runs a Business Consultancy & Advisory Services company and has worked for several decades with technology companies.

Book News ***Book News***



Making Cities Smarter: Designing Interactive Urban Applications by Martin Tomitsch focuses on an often-overlooked element of the smart-city discourse, the interface between citizens and smart-city applications. This volume translates principles from the field of user experience design to explore city-specific challenges, such as integrating physical and digital experiences.

Jovis, 2018, pp. 240, $34.86

The Role of a Mentor

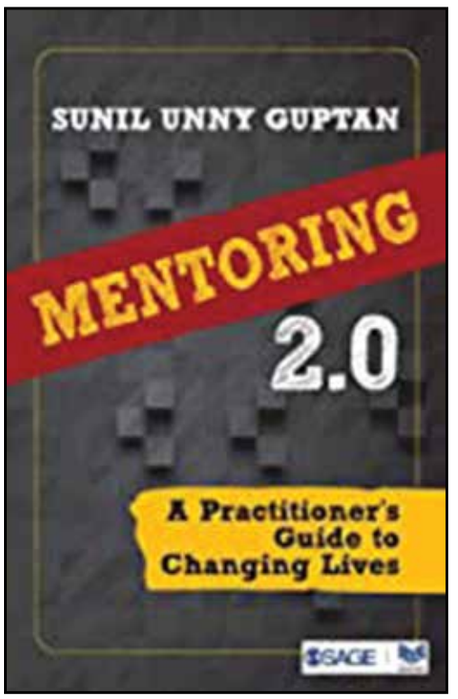
Christie Maria James

MENTORING 2.0: A PRACTITIONER'S GUIDE TO CHANGING LIVES
By Sunil Unny Guptan
Sage Publications, 2018, pp. 256, ₹450.00

Sunil Unny Guptan writes extensively about a topic that probably has not been explored much or has been written down in the form of short articles till now. The book begins with a foreword by C Parthasarathy, Chairman and MD, Karvy Group, who recalls his interactions with Dr. Sunil Guptan, his mentor, with utmost fondness. The author keeps the readers engaged by narrating the story of 'Mentor'—the son of Heracles and Asopis in Greek mythology. He beautifully captures the story of Mentor and how this word went on to gain the meaning it has now.

Delving deeper in the book *Mentoring 2.0*, one would be definitely reminded of one's mentors. This book will also make the readers question—both mentors and mentees—about their role in each other's lives and the impact they probably had on each other. Detailing out every aspect of how a good mentor is and should be, Guptan ensures that he doesn't forget the fact that mentors are also capable of making mistakes. Interestingly, under the subheading 'Toxic Mentorship', he talks about how some mentors who might have 'resigned themselves to lesser position and fostering whatever level of benefits and good that they may be able to accrue to their mentees from their positions.' This almost seems like a fair warning to mentees to identify such toxic mentors and not to keep them on a pedestal. The reader will also be met with a set of questions prodding them to re-think and assess if the mentors in their life truly match the definition of the same.

Throughout the book, the reader will realize that the author does not take the role of mentorship lightly. Listing out qualities of a mentor such as 'right orientation and attitude', 'clarity of values and direction', 'confidence in self' along with the most important quality of being able to empathize and tolerate ambiguity—the author forces the reader to introspect whether they can be a good mentor to someone. In case they are, or they think they are, then answering these set of questions shall definitely help.



The good thing about the book is that it lets the reader assume the role of a mentor and mentee, as well. However, the reader might come across the fact that there is random and sudden shifting of gender based pronouns—which almost ends up causing confusion. The book does have a problematic stance on gender based mentoring. The author seems to be still carrying the ideas of gender binary and to a certain extent gender stereotypes.

The book has beautiful examples in every chapter that definitely helps the reader get a better understanding with helpful concepts and case stories. Soon enough, Guptan moves on from focussing on individual mentorship to organizational mentorship. Emphasizing on the importance of organizations focussing on mentorship, he does give out a fair warning on how failure or absence of this mentorship might 'vitiate organizational culture and relationships'. An entire chapter titled 'Designing Mentoring Schemes for Organisations' is dedicated on exploring the nuances of individual mentorship in an organization versus a corporate sponsored scheme. There are no stands that Guptan takes while exploring these two sides, thereby, helping the reader identify their opinions and stance on this.

Even though in every chapter and in every broad theme the author ensures that challenges to mentoring are mentioned, he delves deep into this topic in his chapter 'Challenges in Mentoring'. Taking into consideration aspects like 'money', 'mentors survival and career growth' among many others, the book also has sections that takes

into account gender based mentorship. It does play along certain gender based stereotypes while dealing with this topic which might not come across as progressive for a lot of readers.

The in-depth analysis on mentorship done by Guptan is commendable. The book does not entirely rely on explaining concepts with heavily worded paragraphs. The readers will find graphs and extensive flowcharts on the mentoring process—that helps understand this concept better and also leads to clarity of the same. In fact, in the chapter 'Expectations in Mentoring', the author has provided a compilation of mentees' expectation from the mentors' and vice versa. There is also a chart that maps the difference and the common meeting points of roles such as 'mentors', 'counsellors', 'coach' and 'guardian'.

The author does not ignore the new digital age where the concept of 'being far away' has been erased. However, he does warn about the implication of e-mentoring, since there is a change in the medium of interaction. Pitfalls to this kind of mentoring are explained along with the benefits of it. And like every other chapter in the book, this chapter on e-mentoring also has interesting stories to corroborate what the author is writing.

Guptan leaves no stone unturned in exploring and giving out all relevant issues about mentoring. The book ends with an extensive and exhaustive list of questions about mentoring where the author tries to put across relevant questions like, 'what is the difference between mentoring and executive coaching?', or something as crucial as 'is it essential to have a mentor?' Every question is again answered in a crisp way—almost as a summarization of the entire book. He tries to capture the basic essence of his book in the last chapter with these questions thereby making sure that no stones are left unturned while learning and knowing more about mentorship. It is safe to say that this book should be a guide for all aspiring mentors or individuals who are already playing the role of a mentor in someone's life and also all individuals who have mentors who they look up to whenever they need guidance. Being a mentor is a huge responsibility and is an intrinsic aspect of leadership. An enterprising and constructive future depends on nurturing productive and conscientious individuals, who will further assume the role of a mentor for others.

Christie Maria James is a Senior Communication Manager with Digital Empowerment Foundation, New Delhi.

Progress Towards a Greater Networked Economy

Sakshi Abrol

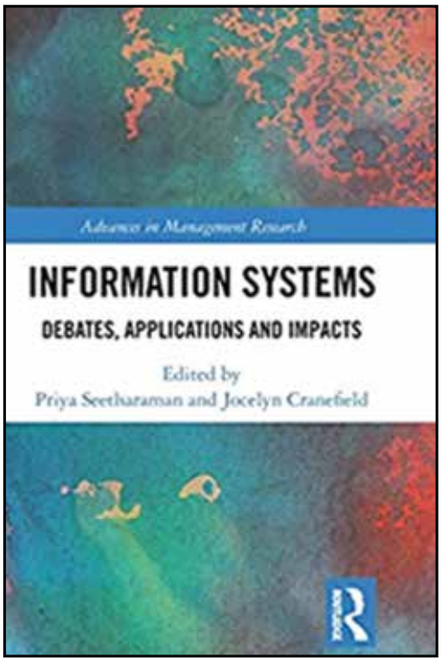
INFORMATION SYSTEMS: DEBATES, APPLICATIONS AND IMPACTS

Edited by Priya Seetharaman and Jocelyn Cranefield

Routledge, India, 2019, pp. 388, ₹10373.00

Quickly changing business landscapes driven by technological trends already in motion are predicted to transform our lives in the coming years. From greater automation of daily chores, robo-advisories, virtual reality at homes to an avalanche of e-commerce activities and the rise of an AI-based shared economy, the world around us is metamorphosing in unfathomable ways. Concomitantly, a cultural revolution altering the ways in which we conduct social interactions is underway. What does this mean for countries like India that are still trying to equitably disperse the advantages of the precursors (IT, ITeS) to these technologies? What are the challenges that organizations and societies grapple with, in a tech-enabled world, and how can these translate into opportunities? Moving beyond esoteric discussions on software tools, techniques and concepts, the anthology on *Information Systems* edited by Priya Seetharaman and Jocelyn Cranefield, delve into these questions and many more.

The book makes a lucid attempt at laying bare the nuts and bolts of Information Systems ('IS' hereafter) in India, both from an academic and an industry point of view with the former attaining precedence. The first unit charts out the vicissitudes of the IT industry in India with a view to comprehend its impact on IS as an academic discipline and plunges deep into the subject right from inception by highlighting the dual challenge of boundary-setting and ensuring inclusiveness in knowledge creation faced by the discipline. The chapter lays down a convincing argument for a multi-disciplinary approach to understanding the subject at hand. It is also interesting to see how they chose to delve into a seemingly colossal and confoundingly ubiquitous theme such as IS in the Indian context. The introductory



chapter, by way of gleaning several issues concerning IS, and painting the scars as it were, buttresses the expectation that this will serve as a first-of-its-kind compendium on IS (albeit with a greater degree of sophistication in the research chapters that comprise it, relative to a typical compendium).

The chapter on 'Automation and Computers' originally written in 1987, when India was in the throes of a microelectronic (computer) revolution assumes a didactic tone. As the water has gone under the bridge, it is safe to argue that, albeit some of the fears expressed by the authors were unfounded, others pertaining to a changing social organization and work patterns hold water as we confront Industry 4.0. Ramachandran Natarajan points to policy deficiencies, the lukewarm response from the private sector and a small domestic market vis-à-vis the diffusion of a new technology. The India market today, however, has grown manifold especially after the adoption of SAAS, as has product innovation advanced. Ergo, some arguments presented in this section may be seen germane to the original context. Nevertheless, the overarching theme to selectively and cautiously adopt any new technology does not elude the reader. Building upon this inference, P Vigneswara Ilavarasan's paper is a sombre reminder of the underlying problem with the development of ICT's in India, while arguing in the same breath that the picture is not as dismal. Two points of contention second that argument—lack of prerequisites (policy framework, infrastructure, communication networks) and complementarities (industry research, up skilled manpower, financial resources) to attain optimal results. Despite these,

> "The book makes a lucid attempt at laying bare the nuts and bolts of Information systems ('Is' thereafter) in India, both from an academic and an industry point of view with the former attaining precedence."

ICT has been a major contributor to the GDP and creation of jobs. The demand side enthusiasm has also opened avenues for the use of technology for greater social good (e.g., public service delivery under Digital India), which needs to be driven by an evidence-based policy intervention, the author contends. Partha Ray, in the same section alerts against the grandiose optimism with IT in India and a conscious effort to ensure we continue with our comparative advantage as an exporter of IT and ITES. Nikhilesh Dholakia, later in the book, expresses a similar disenchantment with the unsustainable 'outsourcing surplus' advantage being enjoyed by the developed world.

The succeeding section on the applications with the discussion on e-governance projects preceded by a theoretical understanding of the framework, by Rahul De gives greater perspective to the reader. The introduction of the concept of 'disintermediation' of supply chain spearheaded by the Internet as a virtual distribution system is an important contribution to the literature on IS. The perusal of these research findings will come in handy for anyone interested in understanding consumer expectations and preferences, and the value additive role played by intermediaries in the new market scenario identified by fiercer competition, nuanced market segments and highly specialized products. With the reduction in costs of customer service, time to audience and an increase in choice of vendors, Internet banking has the potential to transmogrify the face of financial transaction and e-commerce. Consumer perception of risks, however, poses a challenge to reckon with. The research by Professor Rajiv Kumra, RK Mittal and Laxmi Gunupudi use theories from 'Relationship studies' to examine (lack of) of 'trust' in Internet banking. Finally, the theoretical paper by Mohd. Nishat Faisal in this section serves as an intermediate conclusion apropos its reference to the buzzwords of today (big data analytics, artificial intelligence) with the need for IT functions to align with these.

The papers on 'Behavioural Issues' borrow models and theories from the discipline of 'behavioural sciences' to investigate group dynamics and examine reasons for attrition among women, specially the BPO sector. The papers would be of greater significance to employers, team leaders and professionals in managerial position as they provide the blueprint for an effective management of human resources.

The book has a slightly recondite but extremely well researched section on 'Systems theory based methodology'. It introduces the reader to the paradigm of system dynamics by elucidating upon twenty epistemological viewpoints and grouping them into six stages of problem solving. And even though certain arguments and formulations are quite technical, and may be daunting to students outside the engineering and management circles, the manner in which the authors have seamlessly traversed the philosophical underpinnings of this methodology, is an absolute scholastic delight. They present a strong case for the use of system dynamics as opposed to econometrics or hypothetico-deductive approaches which is largely number-driven and ignores observations, or other case study approaches that ignore the importance of a feedback loop in a causal relationship. The addendum to this discusses the praxis of the methodology in management and policy. These chapters introduce an interesting approach to solving problems in a world where it is fashionable to juxtapose logic with empiricism, which in turn is heavily derived from numeric data analytics. However, the reader could face a slight dissonance on moving to this section as it falls short of making an explicit case for a system dynamics methodology for IS research.

The final unit presents the readers with a cogent analysis of the electronic globalization juggernaut from an economic standpoint, as well as a socio-cultural and political vantage point. The paper begins by discussing the implications of a low-cost, reliable ICT for business processes identified by 'slicing' and 'splicing' of operations. From a discussion on a 'new technology class' to 'lifestyle arbitrage' enjoyed by IT professionals in India, the paper segues into a discussion on outsourcing by borrowing the Centre-periphery framework from the field of IR. He makes notable postulates regarding the future of IT operations in India and the policy implications that it will have for the future of various countries.

Undoubtedly, the ambitious project undertaken by the authors to encapsulate the IS juggernaut, underline its manifestations, predict the future for countries like India and introduce new methods and multi-disciplinary theoretical premises to study the same, makes for an insightful read for students of management and social sciences alike. The book is timely, because it captures the progress towards a greater networked economy and online channels of distribution to vouch for strategically planned IT functions that use the pathways of knowledge to make targeted, real-time, consumer-centric decisions. The units comprising the book are consciously chosen in an effort to capture an entire spectrum of discourse around IT and a common theme that ties the sometimes-incongruent chapters is the comprehension of technology, not as an end, but as means to a larger social goal. Certain arguments in the book may be contestable, and may defy the contemporary reader but the analytical tools and methods used in these chapters and the invigorating choice of issues, make for an erudite repository for researchers, policy enthusiasts, business professionals and technology enthusiasts.

Sakshi Abrol is a Policy Consultant at CPC Analytics and the Co-founder of the non-profit research organization, Policy Collabs, in Pune.

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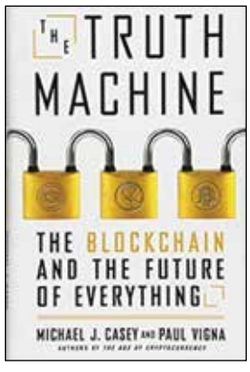

The Truth Machine: The Blockchain and Future of Everything by Michael J Casey and Paul Vigna demystify the blockchain and explain why it can restore personal control over our data, assets, and identities; grant billions of excluded people access to the global economy; and shift the balance of power to revive society's faith in itself. They reveal the disruption it promises for industries including finance, tech, legal, and shipping.

St Martin's Press, 2018, pp. 320, ₹777.00

DIGITAL EMPOWERMENT *foundation*

Digital Empowerment Foundation

The Knowledge Products

DEF digitally enables underserved communities across the country and extensively work in the areas of research, advocacy and policy building in digital empowerment. In over 18 years, DEF has published more than 100 reports. Few of them are highlighted below. For the rest you can visit *https://defindia.org/publication-2/*

What's Up, Rural India?

Technology usage and Prospects- MannDeshi Foundation

Building Participatory Institutions For Public Service Delivery Through Access To Information In Rural India

Exclusion from Digital Infrastructure and Access

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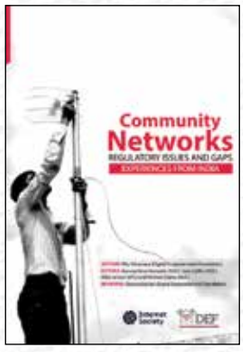
What's Up, Rural India?

National Optic Fibre Network

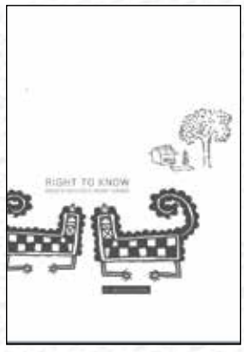
Power of the Crowd

Fighting Digital Exclusion



Community Network Regulatory Issues and Gaps Experiences from India

The award books are published yearly. Till date, over 5000 best practices across South Asia registered under various categories



Right to Know India Internet Avant Garde

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