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WHEN BIG TECH TARGETS HEALTHCARE



A 52' & 90' documentary by David Carr-BROWN
Produced by ARTLINE FILMS & ARTE France

SUMMARY

The digital giants have found a new El Dorado: health. From medical diagnosis to insurance, they seem to have a hand in every activity. With the help of technology and the exploitation of our personal and medical data, the GAFAM companies (Google, Apple, Facebook, Amazon and Microsoft) believe they can treat all our ailments, predict our biological future and above all conquer a colossal market. They are conquering the world of medicine by approaching it as a market (almost) like any other. Most of their users do not even know what role each of these behemoths play in the health galaxy yet. And while national and public health systems are stretched to the limit, patients are desperately looking for solutions to their ailments. This situation allows these digital multinationals to deploy the wonders of Big Data. By filling the gap, these companies are once again positioning themselves as omniscient intermediaries.

But for the medical community, the way in which the GAFAM companies establish their legitimacy rests on their fierce desire to appropriate the monopoly of our trust. For the organizations we ultimately trust will have our health in their hands. Thus, while presenting the latest Apple Watch, the CEO of Apple declared that “Apple’s greatest contribution to humanity will be health”. “We are democratizing it. We are taking back from institutions the power to make individuals masters of their health.”

This investigation will show how the GAFAM companies sell us the hope of making healthcare accessible to all – at the cost of increasingly sophisticated artificial intelligence programs that will monitor our behaviors to better prevent the risks of disease or hope to cure them. But perhaps also to “correct” our habits and our lifestyle...

Director's Note

I'm telling a global story, whose main players are the big multinationals – Google, Amazon, Facebook, Apple, and Microsoft – which dominate the internet and the use we make of it.

To immerse the viewer in their universe, I will first represent GAFAM through the imagery they produce to sell us their new technological solutions. That said, my ambition is not to make an inventory of their myriad health applications and connected objects. This investigation is not so much about the gadgets that Silicon Valley has invented, but about the upheavals involved in this coordinated transformation of our healthcare systems. As such, I will mainly use the discourse of those driving this groundswell and that of their spokespersons.

To not give them the last word, I will also be calling on a string of contributors (doctors, commentators, scientists, etc.) who will bring a critical look at their grand designs. They will highlight the potential disparities between these large-scale projects, with their uncertain or even hazardous consequences, and the day-to-day concerns of patients.

In the United States, the main focus of my investigation will be Silicon Valley, California. This is where most of the GAFAM headquarters are located. I will also visit Stanford University, which is home to most of the professors and start-ups in the field of medtech. And to infiltrate the political and financial decision-making centers of this health revolution, I will also make inquiries in New York and Washington.

But these changes looming over the health sector are not just the business of web giants and their shareholders. This documentary aims to remind us that we are all, as individuals, affected by these changes. To tell this story, I will start with the medical problems, from the most benign to the most serious, that any ordinary patient might face, whether they are being cared for in a high-tech hospital, an under-staffed French rural area, or an overcrowded emergency room in North London.

At each stage of this journey, I will keep in mind what was once the essence of medicine: The of patient-doctor relationship, crystallized around the moment of care. It will be a highly realistic microscopic study of the human condition in the face of disease. Each interaction with the various types of care system will open the next stage of our investigation. Thus, my probe will move from health institutions, doctors, national administrations, and innovative start-ups, to finally arrive at the giants of Silicon Valley.

The idea that these technological industries put patients in a situation of life-long dependency will be subliminally reinforced by sequences that go from the birth of a child, through the different ages, until the twilight years. I want to capture these moments in situ, so that they don't look staged, since these snatches of ordinary lives will allow viewers to identify with the subject, to understand spontaneously that this revolution is not limited to America but already concerns us here in Europe.

These real-life situations will give rhythm to the film. They will be brief, but will help us understand how these public health issues, which might seem abstract and remote, relate to everyday problems, and to our future.

David Carr-Brown

WEB GIANTS: THE NEW HIPPOCRATES

PROLOG: Welcome to “Gafama”

San Francisco, California. LESLIE, 36, is about to give birth. Her eyes are glued to her phone, she follows the route to the maternity ward on **Uber Health**. It's a special service she ordered to help with delivery. “At least the driver won't be afraid that I'll give birth in his car,” she assures us. In the car, she confirms to the driver that she is going to the **Zuckerberg Hospital**, renamed following a generous donation from the founder of Facebook. On the way, she notes the rhythm of her contractions on **Ovia pregnancy**, the leading pregnancy monitoring app in the United States. Arriving at the maternity ward at Zuckerberg Hospital, she shares her medical record hosted on **Apple Health Record** with the nurse, who greets her with iPad in hand.

Google, Apple, Facebook, Amazon, and Microsoft, the giants of new technologies and the Internet, grouped under the acronym GAFAM, are conquering the world of medicine by approaching it (almost) like any other market. Most of their users, accustomed to letting their data be aggregated on the cloud via their apps, have not yet identified the role of each of these heavyweights in the health universe. But for stakeholders in the medical field, **the way the GAFAM members are establishing their legitimacy is based on their fierce efforts to gain a monopoly on our trust.**

Because we put our health in the hands of those we trust. They give us hope of healthy lives accessible to all, but at the cost of increasingly sophisticated artificial intelligence programs **that will monitor our behaviors to better prevent or cure disease.** But perhaps also to “correct” our habits and our lifestyles.

CHAPTER 1 – THE MIRACLE OF TELEHEALTH

The small French town of Le Favril, 350 inhabitants, is in the heart of a “medical desert” 75 miles west of Paris. As in many French rural and suburban areas, this catchment area is not covered by a sufficient number of doctors. It took a lot of tenacity on the part of JOHN BILLARD, the mayor of Le Favril, to get the Regional Health Agency to adopt a telehealth solution. But then, how do you convince skeptical patients to venture into a cabin that looks like a high-tech confessional?

We look back over several years of campaigning alongside Dr FRANCK BAUDINO, the ambitious designer of this “medical photo-booth”. Known as a Consultation Station, it is designed to replicate the traditional office of a general practitioner. All the accessories, from stethoscope to electrocardiogram, can be found there. The patient interacts with a doctor in another location via a monitor.

A SCHOOLBOY who has been injured playing soccer comes into the cabin under the supervision of his parents. The mother inserts her health card in the reader provided. A doctor guides them through the process. The father is worried about how they will get reimbursed and is pleased to learn that the consultation is covered by social security, just like a traditional visit to the doctor. The family leaves with a prescription printed on site, and will perhaps contribute to the positive word-of-mouth needed to keep this expensive facility going. This experimental model was provided for €55,000, but the full market price is €130,000. As an indication, the total annual budget of the village of Le Favril was €87,000 in 2014.



In the Paris office of his company H4D (Health for Development), Dr BAUDINO reveals that, due to a lack of strong political will on a local level, the roll-out of his cabins in areas with inadequate medical cover is still at an embryonic stage. However, he has had several corporate orders thanks to a partnership with **the insurance company Axa**. At the headquarters of Airbus and state rail company SNCF, employees covered by the mutual insurance company were among the first guinea pigs. Indeed, Axa is actively combating the trend of people giving up on care, since once a disease is confirmed and has developed, it becomes more difficult – and costly – to treat.

JEAN-CHARLES SAMUELIAN, founder of the **first French digital insurer, Alan**, seems to share the same concerns as Axa. But he has opted for a platform more in line with his generation and his growth objectives: The smartphone. **This method claims to allow a quick diagnosis thanks to a video app.**

We find out that Dr BAUDINO is a harsh critic of so-called teleconsultation, which he fears may be confused with his telehealth solution: “It’s all about efficiency. To win over patients, they emphasize ease of access, time savings, and the absence of constraints. But behind these promises, you have to be wary of the dangers of a cut-price medical follow-up.” According to him, **teleconsultation alone does not make it possible to objectively analyze the patient’s condition**. It is the medical equipment and services present in his cabins that enable a proper diagnosis to be made. He also believes that a proposal based solely on a digital exchange “breaks the special relationship of trust”. **Trust is posited as a fundamental principle in ethical guidelines and professional codes**. That is what allows the patient to comply with the doctor’s recommendations on taking medication, deciding to have surgery, or continuing a course of care, despite the uncertainty about the final outcome.

CHAPTER 2 – GAINING PATIENT TRUST

Is this historical relationship doomed to become a thing of the past? That is one of the concerns of [Dr. Irene Lafont](#)'s NEW RECRUITS. Faced with the relentless pace of visits and the digitization of part of their practices, these young doctors hope to succeed in preserving a personalized relationship with patients based on trust, despite these new pressures.

[Back in Silicon Valley](#), [Jeff Bezos' biographer BRAD STONE](#) tells us about a completely different style of intermediation and trust relationship. He reveals how Amazon's "customer-first" ideology has paid off, since the company is the one consumers trust most. And it has built on this trust to become a secure medical data hosting provider via Amazon Web Services (AWS) cloud. **AWS** has received a string of international and national certifications, and **personal health data hosting has been officially operational on its cloud in France since spring 2019**. In France, **AWS** has nonetheless partnered with **Cloud Santé**, which acts as an intermediary to win over recalcitrant medical professionals.



In reality, it is mainly a question of bypassing the **Shared Medical Record (SMR)**, a French public initiative that brings traditional paper health records up to date. Each health professional enters data over the course of care, recording treatments, test results, patient allergies, and so on. The logic behind this shared medical record is fully in line with the digital revolution called for under France's Health 2022 plan, but its birth was particularly slow and laborious.

[ISABELLE HILALI](#), administrator of the Healthcare Data Institute and member of the Paris Hospital Authority's Digital Council, talks to us about the SMR: "The project was launched by the law of 13 August 2004 relating to health insurance and became officially available to everyone from 6 November 2018. The paradox is that in the meantime, people with rare and chronic diseases had started to describe their symptoms on Facebook and create groups sharing private information. The need to offer a secure French platform that offers interoperability became all the more urgent."

By encouraging the creation of private discussion groups, **Facebook** found itself with a mountain of health data – a vein that the company quickly exploited for advertising and experimental purposes. A

telling example of how **the Big Five are using the same methods they used to establish their dominant position to gain a foothold in a booming healthcare market.**

For [MARTIN TISNÉ](#), an expert on data governance and board member of the Open Data Institute, Facebook is flirting with breach of trust by extracting user profiles from first-hand medical data: Age, moods, family situation, sport activities, diets, etc. Unbeknown to its users, Facebook can then resell them in the form of targeted advertising campaigns via its subsidiary Facebook Health and develop new products for the medical sector.

Facebook has requested anonymized data about its patients, including details of illnesses and treatment **from major hospitals across the country**. Regina Duncan, who used to work at Facebook, says: “Yes, there is a cross-referencing technique that can be used to compare patients’ medical records with their Facebook profiles. The former says that so-and-so is 50 years old, has heart disease, is taking such and such a drug, and has made three hospital visits. The latter indicates their family situation, their level of English, their interests, and so on.” However, she justifies the use of this technique: “By combining the two data sources, this research aimed to show whether it was possible to optimize medical monitoring. This hospital data was only used for research purposes and for the benefit of health services.”

For [MARTIN TISNÉ](#), such use by Facebook of its users’ data goes well beyond invasion of privacy. He is now calling for a data bill of rights to protect citizens against “unreasonable surveillance” and any attempt to discriminate on the basis of their data.

CHAPTER 3 – ARTIFICIAL INTELLIGENCE TAKING HOSPITALS BY STORM

At the London headquarters of the **National Health Service (NHS)** in Westminster, Facebook's approach does not raise any eyebrows. As early as 2015, **Google's** Artificial Intelligence division, with its **DeepMind** program, obtained the medical data of 1.6 million patients from the NHS to feed its research on liver diseases.

ISABELLE HILLALI, from the **Health Data Institute**, points out **the race for medical data in which the Silicon Valley giants are competing**: "In addition to the prestige that GAFAM derive from these associations with hospitals, they are mining data by going to the source. Hospitals have the most comprehensive medical data."

Hospitals also have an interest in this, and may even turn a blind eye to the selling-on of medical records. In addition to the significant financial gains in a time when cash is tight, hospital trusts are seeking to overcome **congestion** in public medical services through these partnerships. **However, in 2017, the UK's personal data regulator declared that the NHS-Google agreement was illegal**, since patients did consent to the transfer of their medical records.

In **Birmingham, the NHS has recently been testing a new triage system which relies on Google's DeepMind artificial intelligence**. "Thanks to the app provided to users, there is no longer any need to travel to the emergency room," says **PAUL BATE**, former health advisor to Tony Blair and David Cameron, now "Mr. NHS" for the **Babylon medical diagnosis application**. "The medical diagnosis service is provided by chatbots and a two-minute symptom checker. If necessary, video consultations with doctors and nurses can help refine the diagnosis." And once this has been made, in most cases the patient is directed to a general practitioner or pharmacist.

For Paul Bate, there is no doubt that the Babylon app is the shock treatment that British hospitals need: "Doctors are expensive. Artificial intelligence that mimics their deductive mechanisms can make health more accessible and affordable."

Faced with saturated emergency services, staff on the verge of burn-out, and rising hospital expenditure, it is understandable that the British administration is looking for radical solutions. But how can we trust medicine 2.0 when we don't know the rules that govern it? How can we ensure that the priority given to some patients over others – via a purely digital tool – is legitimate? On what criteria will this artificial intelligence decide the fate of patients?

CHAPTER 4 – THE LEARNING MACHINE: A WALK IN THE PARK

From Google's headquarters in Mountain View, Dr. DAVID FEINBERG, Vice President of Google Health, explains that sorting hospital patients by algorithm is just the first step.

Patient triage is one way among others to access fresh medical data, essential to **feed the artificial intelligence of DeepMind, which works by machine learning**. Once the AI is sufficiently "trained" to detect pathologies, it can compete with the best practitioners. DAVID FEINBERG explains: "Take the latest lung cancer detection experiment performed by our AI. In 94% of the cases studied, the accuracy of machine learning allowed our algorithm to reach the same conclusions as a panel of radiologists." Which leaves 6% disagreement between the doctor and the machine, a figure that is far from negligible.

For CONSTANCE DE MARGERIE-MELLON, radiologist at the Saint-Louis hospital, while the performance of Google's AI is amazing, she nonetheless remains cautious about the method. AI researchers and radiologists still need to work together to ensure the reliability of results. While the increasing accuracy of detection is certainly promising and could allow radiologists to concentrate on more fundamental tasks, **the robotization of care raises fears about medical errors having a wider impact**.

An error in diagnosis made by a radiologist can potentially be caught. But when an algorithm that works according to the principles of machine learning goes wrong, it affects a multitude of cases. "Patients' lives are not just a line of code," CONSTANCE DE MARGERIE-MELLON reminds us.

If doctors and hospitals are to work with algorithms, we need a better understanding of how they operate. Otherwise **their opacity, which is jealously guarded by their developers**, could cut practitioners out of the chain of responsibility. However, neither patients nor medical staff, in the vast majority of cases, are aware of the criteria driving these algorithms.

For Isabelle HILALI: "It is imperative that doctors be able to act as a balance. While doctors have to learn that the machine sometimes knows better, dialogue with the engineers remains indispensable. The role of doctors is to make engineers responsible for the quality of what they are programming."

The medical profession must also be vigilant with regard to patient education. Influenced by the triumphant discourse of the Big Five, they could be led to mistakenly consider AI as an excellent diagnostician, and decide to do without the essential dialogue with a specialist.

CHAPTER 5 – LOBBYING AND ALLIANCES TO BREAK INTO FORTRESS HEALTH

After some initial setbacks in the health sector, the GAFAM companies saw the need to moderate their propensity for disruption that is so dear to the Silicon Valley model of entrepreneurship (“move fast and break things”), and instead sought official allies.

Both Google and Facebook embarked on a charm offensive with institutional players in the health sector to convince them of their good intentions. In practice, their lobbying strategy is based on double-talk.

To **politicians**, they advocate deregulation of medical data to preserve their leading position as the American champions of digital technology. In the race for Big Data, health is a strategic area to **keep pace with Chinese technological advances** – all-the-more so since Xi Jinping’s government is not encumbered with concerns about doctor-patient confidentiality. At the beginning of February 2019, a group of Chinese researchers published a study in the journal *Nature Medicine* on a system of automatic diagnosis for the most common childhood diseases, with unprecedented success rates. Researchers were able to consult some 600,000 children’s medical records over an 18-month period – numbers that would make their American counterparts green with envy.

Chinese technological giants such as **Alibaba** and **Tencent** meet no resistance from the public authorities in their dealings with healthcare professionals. Standards on privacy are low, and the government wants to make Chinese companies world leaders in artificial intelligence by 2030. Facial recognition pioneers such as **Yitu** are now working on cancer recognition. Alibaba has started construction of an entirely digital and online “hospital of the future” for outpatients. Even American investors are circling, with funds such as California-based **Sequoia Capital** and **Matrix Partners** investing nearly \$3 billion in Chinese healthcare start-ups.

In the medical world, the Big Five are seen as essential allies, forging alliances with renowned institutions that lend them prestige.

As a high-profile public initiative, **the World Health Organization (WHO)** has partnered with **Google Fit** to underscore the need for physical activity to maintain good health. Described in the download interface as a “health and activity tracking” app, Google Fit explicitly tells its users that it has worked with the WHO to develop “two types of objective based on their recommendations for activities that have a proven impact on health.”



Google Fit

Gamification with heart-shaped dots encourages the user to improve performance. Google Fit “rewards” players by automatically tracking their every move and says, “for the most accurate results, make sure your phone is in your pocket” – a clever way of collecting as much data as possible. The [British health journalist CHRISTOPHER SNOWDEN](#) has identified a shift in the WHO’s objectives towards diseases that primarily affect Westerners. In short, the organization is now putting as much effort into fighting the ills that afflict us (obesity, diabetes, cardiovascular disease, etc.) as it does against cholera in developing countries.

[In Paris, at the Institut Sapiens, its co-founder OLIVIER BABEAU, author of numerous books on the role of the state and market mechanisms](#), observes the major tech companies’ interference in the medical sector with circumspection: “It would be great if Big Tech made it possible to make discoveries that benefit society as a whole through technological trickle-down. But to what extent is GAFAM technology and money likely to govern public health?” He believes it is essential to wake up to what is going on. “If we just watch the GAFAM companies forge alliances with health leaders without reacting, are we not going to end up with a gradual dismantling of public health?”

It was this threat that triggered exceptional demonstrations on the sidelines of Donald Trump’s visit to London in early June. Indeed, the President of the United States had announced that the NHS could be part of negotiations on the future trade agreement between London and Washington in the event of Brexit. Faced with the wrath of the British people, he backpedaled. Had he understood that health was not a market like any other, or at least that public health was not up for sale?

CHAPTER 6 – E-HEALTH: IT'S ALL ABOUT THE SHARE PRICE

The Big Five do not ask look at things in these terms. Eager to find new areas for innovation and stem the erosion of their margins, they are racing headlong into a market that offers them fresh growth opportunities.

To give an idea of the extent of the phenomenon, Deloitte reports that the global healthcare market will represent more than **\$8 trillion in 2020** (compared to \$7 trillion in 2015). And the joint efforts of Google, Apple, Facebook, and Amazon, plus a number of start-ups, are already bearing fruit: According to Global Market Insights forecasts, the global **e-health** market is **expected to exceed \$504.4 billion by 2025**. After the famous web bubble, are we now looking at **unprecedented speculation around health, in a new golden age of charlatans?**

Especially as the need to collect ever more data is leading to a race for innovation that poses certain risks for safety. Most of the advances made by start-ups are neither verified nor approved by research before being launched on the market, unlike new drugs and medical equipment.

How far can this mix of gullibility and the ambition to do business lead? In particular if **the promised benefits have not been validated by any reliable scientific research** beforehand, or worse, have not even been the subject of publications by any major researchers since their launch. This was denounced at the beginning of 2019 in a report by a team of Stanford researchers published in the European Journal of Clinical Investigation. And when one learns that this study was partly conducted by [JOHN P.A. IOANNIDIS](#), one of the whistleblowers on the **Theranos** scandal, there is cause for concern. The Theranos case is enlightening in this respect. This start-up, valued at \$9 billion at the peak of its glory, was in reality only smoke-and-mirrors. How could such a project have endured?

CHAPTER 7 – THE RACE FOR SCALE

What is at stake for these high-tech multinationals is above all their financial health. Apple ended 2018 with its share price down 8%, thanks to muted iPhone sales and trade wrangling between the United States and China. Facebook is betting just as much on the medical market to make people forget an annus horribilis marked by the Cambridge Analytica scandal. Last summer, one day's trading was enough to wipe \$120 billion from the value of the social network. Between July and November 2018, the market capitalization of GAFAM as a whole lost nearly \$1 trillion.

Even **Alphabet**, the conglomerate that groups Google's multiple subsidiaries, has lost a fifth of its value since its business practices were challenged in Europe. Unsurprisingly, Google and Verily made the most announcements of health initiatives and buyouts in 2018. Sundar Pichai, Google's CEO, has a particular interest in the huge Chinese health market.

To better understand the **concentration strategies of the Big Five**, we will call on [Morgan Stanley analyst KATY HUBERTY](#), based in New York. She notably follows Apple, whose share price has rebounded sharply since the release of the latest Apple Watch series 4: "The fans who had turned away from the company for lack of new technological prowess were once again convinced. The possibility of performing a certified electrocardiogram and being notified of a potential cardiac arrhythmia transformed the image of the watch."



Google Home highlights Google's interest in the domestic sphere. The company also acquired **Nest**, which has become a leader in connected safety objects. But where is the health connection in all this? [MARK ROSE](#), an engineer at Nest in Palo Alto, tells us: "The connected home affects family members at

every age, right up to the oldest.” And it’s precisely this last category, the elderly, that Nest seems to be interested in now. The company is said to be working closely with old people’s homes in the United States. “We offer them solutions to prevent the elderly from becoming dehydrated, to turn on the light in their rooms in the middle of the night, or to identify falls in real time.”

For an informed observer such as [Morgan Stanley’s KATY HUBERTY](#), this rapacious capitalism around health is not surprising: “GAFAM are the first to anticipate trends and absorb or even swallow up any attractive company in their new favorite fields.” But as we've seen recently with the controversy over the potential dismantling of Facebook (which also owns WhatsApp and Instagram), **the creation of monopolies in the healthcare field would have dramatic consequences in terms of depriving patients of choice, resulting in potential dependency on a handful of companies.**

France is not immune to concentration. **Doctolib**, our only health “unicorn”, valued at \$1 billion, acquired **Mondocteur** in July 2018. By absorbing its main competitor, previously owned by Lagardère, the specialist in online medical appointment scheduling can pursue its efforts to convince all French practitioners to subscribe to its service. “Currently, out of the 500,000 French healthcare professionals, 75,000 already subscribe to the platform for around 100 euros per month. And growth continues with an average of 3,000 new doctors joining Doctolib every month,” the group says.



But another threat is emerging: Price controls. The model for Doctolib is a US company founded five years earlier, **ZocDoc**, which today has some six million monthly users and covers more than 2,000 American cities. ZocDoc is in a strong position with general practitioners, allowing it to announce a price increase effective from 1 April 2019. This came as a bitter pill for subscribing doctors.

None of the Big Five have yet positioned themselves to buy ZocDoc, but its main shareholders include Jeff Bezos, the CEO of Amazon. Since the retail magnate has already acquired **PillPack**, a company that delivers drugs to patients' homes, a merger with the US leader in online medical appointments would make sense. The wide-reaching aspiration behind such a move becomes all-the-more obvious when one discovers that Amazon has also decided to invest in health insurance. **Amazon has teamed up with investor Berkshire Hathaway and JPMorgan Bank to develop a health insurance system called Haven.** So far, this is only available to the 1.2 million employees of the three companies. However, it can be assumed that it could be extended at a later stage to other companies that would like their employees to benefit from it. But at what cost, and for what type of individual?



CHAPTER 8 – PREVENTION IS BETTER THAN CURE

One of Amazon's major assets in the insurance field is the quality of its patient data. Thanks to its AWS cloud mentioned at the beginning of the documentary, and the information it has on customer purchases on its website, the company is now **one of the best informed in the world about people's behavior**. This includes their nutritional habits, if we include the information gleaned from the deliveries of its food distribution subsidiary Whole Foods.

The ever-renewed challenge for the insurance industry is to have the most accurate picture of its policyholders in order to assess risks and ultimately reduce, or at least control costs. The more information an insurance company can collect about its policyholders, the more it will be able to fine-tune its product.

In view of current digital developments, **the shift towards surveillance and empowerment of patients is becoming more widespread**. As such, the **Attain** program, created as an app jointly developed by Apple and the insurance company **Aetna**, is a prime example. The app offers a free Apple Watch to policyholders who achieve a series of "wellness" goals, plus other incentives for the number of steps taken or doing activities such as yoga. And guess where policyholders can use their credit? On Amazon or at CVS Pharmacy, part of the same group as Aetna.

But these new insurance schemes based on Silicon Valley practices and based on cost rationalization may tend to discriminate against patients, whether correlated on the basis of their medical history and/or their daily behavior. In this context, one may well fear a rise in barriers to entry and an increase in the cost of rates and packages now based, among other things, on browsing history and consolidation with data from increasingly connected patient apps. **In the long term, a section of the population could be excluded from the health care system.**

But let's not be not naïve. A significant part of the American population was already excluded from the insurance system before the arrival of GAFAM. In 2017, according to the census bureau, nearly **28.5 million individuals were not covered, or almost 9% of the population**. Conversely, 67.2% of the population was covered by private insurance. Furthermore, it is already widely accepted that medical outcomes depend on environment, diet, income, and patients' education.

[FRANÇOIS EWALD](#), philosopher and director of the [Ecole Nationale d'Assurances](#) has said that the original aim of insurance was to spread risks among all those insured. Yet if solidarity between the insured and state intervention are gradually rendered obsolete by the Big Five's optimization methods, how will our society continue to make healthcare accessible to the greatest number of people?

In Hausach, on the edge of the Black Forest, surgeon MARTIN WETZEL shows us one example – that of preventive medicine that takes into account all the symptoms and habits of a cohort of some 70,000 patients. Over time, he has managed to transform their lifestyle and reduce rates of illness. The results were so drastic that a virtuous circle was formed. With the savings achieved, the **insurance company Optimedis** co-finances improvements and parallel activities for patients (cooking classes, sports, etc.) run by the **Gesundes Kinzigtal** care and health center.

“Gesundes Kinzigtal achieved a record patient satisfaction rating of 94%,” MARTIN WETZEL says proudly. To confirm this, we will interview HANS SCHMIDT, a patient who has benefited from the system for years, to find out how he gradually adopted it. The key may well lie in local and community involvement: The health problems of a fairly homogeneous population, willing to participate in this experiment and keen to follow the recommendations, are inherently easier to grasp than those of a more diverse and larger population.

CHAPTER 9 – LONGEVITY VERSUS PRIVACY: PREDICTIVE MEDICINE

If preventive medicine backed by insurers is still in its infancy, **the real turning point could be embodied by predictive medicine**. This is based on an explosive cocktail of genomic research, combining artificial intelligence and DNA sequencing. Whether it's the **23andMe** service – which is owned by Google and promises to reconstruct client's genetic makeup for \$99 – or **Ancestry.com**, which, as its name suggests, allows you to trace your family tree, low-cost DNA research has become an everyday service. Except that, once again, this free simulation has a hidden cost for the user: That of passing on their DNA to a corporation without knowing what future use will be made of it.

Driven by this trend, companies such as **Q** (a veiled allusion to the whimsical inventor of James Bond gadgets?), financed by the ubiquitous Andreessen Horowitz, and **Arivale** have positioned themselves on high-end DNA sequencing. They offer batteries of tests and in-depth genomic readings that allow an elite group of scientists to monitor clients' health and to anticipate the slightest illness. Starting at \$4,995, Q offers a comprehensive 75-minute examination with basic annual follow-up. Faced with this new phenomenon that invites us to **privilege longevity over privacy**, are we dealing with companies made up of scientists, or charlatans?

Shouldn't this notion of “market immaturity” apply instead to our institutions, which are not equipped to regulate yet another technological disruption? Especially when it comes to a deeply human and unpredictable sector such as health. The welfare state and its promises have come to the end of the line. They are being replaced by the mirage of artificial intelligence. The power of GAFAM leads citizens to opt for widespread adoption of their digital solutions to anticipate or remedy their slightest ailments. Even if this comes at a high price, that of handing over large chunks of their private lives.

The perverse effect of this combination of technology, capitalism, and extreme financialisation is

above all the loss of social ties. Hyper-individualization of behaviors and priorities has replaced any sense of community. By trivializing the express delivery of medicine such as medical consultations on smartphones under the guise of efficiency, society has been reduced to the private sphere and the power of the screen. As genetic detection and Silicon Valley's version of insurance reveal, hyper-control and risk aversion now dominate minds.

At present, despite the drive to offer new models that imply ever more growth and innovation, **no start-up has yet dared to promise immortality**. Nonetheless, there is an emerging movement already announcing the dawn of "the Singularity". Their apostle is RAY KURZWEIL, futurist and director of engineering at Google. He envisages the effective fusion of man and artificial intelligence. This would give rise to a new form of humanity that would benefit from the analytical capabilities of a supercomputer, but **would be freed from the disadvantages of the biological body** – a solution that would solve many of the problems still facing human beings.

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