



# Total Data

bergsicht



CHAPTER 1

## “Big data” in little Bethlehem

With Western Christendom’s attention understandably focused on the shepherds abiding in the fields and the events unfolding in the stable at Bethlehem, the precise historical context of the Advent story often falls by the wayside. And yet, what the second chapter of Luke’s Gospel has to tell us about the Roman Empire is oddly relevant today. Why on earth would a young couple like Mary and Joseph have needed to make their way up from Nazareth to Bethlehem? Until recently, Biblical scholars believed they were there to take part in a kind of census, an “enrolment”, however newer translations are more precise: “... that all the world should be taxed”. To accomplish this, as the Gospel records, people had to betake themselves to their places of birth, which for Joseph was the royal city of Bethlehem.

That all the world should be taxed – in the age of the Foreign Account Tax Compliance Act (FATCA) and automatic exchange of information (AEOI) between states, the message of the New Testament is surely a source of some solace; there really is nothing new under the sun. Rome had just undergone a decisive phase of expansion, stationing cohorts of

expensive legionaries and even more expensive governors all round the Mediterranean and far into central Europe while affording itself a feudal lifestyle at the Empire’s centre, with less and less productivity of its own. In addition, it had to ensure that collaborationist elites in conquered client states were pacified with a panoply of privileges. Augustus was presumably just as broke then as various industrialised nations in the West are now. The circle was squared through direct recourse to the tax base and/or those who were destined to become taxpayers further down the line. You can’t run an empire on sunshine.

There is however one difference, in that the tax lists of the time are likely to have been distinctly local affairs recorded on heavy stone tablets, while today’s cutting-edge information technology ensures that it is possible to raise and enforce taxes globally – provided there are no gaps in the data collected. Moreover, these days, the relevant information can be compiled without people ever having to leave their houses, as data capture is now as ubiquitous as it is ineluctable – even beyond the actual physical borders of an empire. This is not least thanks to the collaborationist elites – which even today are still very much a given – whose principal occupation, just as at the time of Christ’s birth, consists of sacrificing their own compatriots on the altar of “higher” interests.

However, this edition of *bergsicht* addresses the specific issue of tax collection tangentially at most; rather, it explores the consequences of the technological systems that have superseded those stone tablets for relationships between individuals – and for those individuals’ relationships with a superordinate collective. While our discussion about big data and power touches on some of the darker

aspects of IT innovation, it is important to see the undeniable socio-political risks in the context of the equally apparent (and substantial) opportunities. In short, we attempt to impose a conceptual framework on a cluster of incredibly dynamic forces.

## CHAPTER 2

### What's new about big data

Stone tablets had one overriding characteristic as a medium for recording information: they were heavy, not to mention limited in their storage capacity, and data entry using a hammer and chisel was a painstaking business. Such processing of the raw information, prefatory to any utilisation for the purposes of raising taxes, had to be carried out at decentralised locations and must have entailed immense administrative effort – the governor Quirinius and his minions must have had their hands full back then in Syria. While a few changes have been made over the course of history (thanks to the introduction of paper, printing, card index systems, the photocopier, the fax machine and the first and subsequent generations of computers), there were no really *fundamental* leaps forward; until very recently indeed, the capture, processing and storage of data involved high costs – and soon ran up against practical constraints.

However, thanks to modern information technology, these high costs and constraints have largely fallen away. The data-gathering process is set in motion wherever information is generated, i.e. whenever one state of knowledge is transformed into another – when you pass through the departure gates of an airport, for example. Your name, likeness (perhaps even a full-body scan), the data on your mobile (including all the contacts and texts), the contents of your laptop, how full your toothpaste tube is, what brand of deodorant you use – all this can be logged. When you write an email, keywords – indeed, your entire message – can be captured. If you are active on social media, a portion of your personality is soon profiled and will thus become visible. Access to bank accounts (either illegally via illicitly acquired data CDs or – soon enough – legally, via the automatic exchange of information) permits a similar process with financial profiles. All our physical and indeed online activities leave a *footprint* that can be recorded at virtually no cost. Traces, hints, snippets, vestiges; these fragments are rarely of much value – individually.

But that's not the end of the story. Dirt-cheap data capture has recently been augmented with pretty much unlimited *processing* options – likewise at nominal cost. People who come into possession of

data, whether by fair means or foul, can do what they please with it. They can generate personalised profiles, segment the information, aggregate the findings – mention the keywords “holidays”, “sandy beach” and “palm trees” a few times in a few emails, for example, and before you know it, the banner ads for destinations such as Mauritius, the Maldives or Miami will be coming thick and fast. We shall reserve judgement for now on whether this is a good thing in the wider scheme of things – we merely wish to establish that this, and much, much more, is possible and is already taking place. Whether we use a search engine, an email provider or an online newspaper, the data we generate is constantly being logged, processed and “refined” for sundry purposes.

But there's more to it than even that. It is now possible to *store* data that has been captured and processed in this way at exceedingly low cost, too. Modern storage media, whether physical backups at home on your own PC or virtual archives in the “cloud” (that ubiquitous yet invisible cumulonimbus of gigabytes), can effortlessly swallow and regurgitate entire libraries, and information retrieval algorithms are becoming ever more sophisticated and user-friendly. These are veritable time machines, capable of recovering and representing a complete data set for any period of time. Having dispensed with the dilemmas of distance and data volume, modern information technology has now kicked many temporal constraints to the kerb as well. Essentially, nothing will ever again be forgotten, and anything and everything can be retrieved at any time. Individual and collective *memory* has become *infinite*.

Somewhere on the web there lie a multitude of more or less complete mosaics that depict and describe us, delivering pointers about our behaviour, our mindsets and our preferences – and yet the extent to which legitimate, borderline legitimate and downright disreputable entities can access this data remains unknown. Unlike genuine mosaics, however (one thinks of Ravenna or the Hagia Sophia in Istanbul, for instance), these are not static snapshots, but movies – dynamic and developing narratives. These mosaics are assigned either to the IP address of our electronic devices or (thanks to credit card payments and electronic banking, and in many cases, by virtue of the photos and contact lists copied from our mobile phones) even matched up with our names and private postal addresses. Not only do these mosaics track our evolution over time but they are also used to map our network of relationships; these maps are then linked together to create mega-mosaics of relationship clusters. In other words, today's computers have the capacity to create extremely realistic models of large swathes or small slices of society at the flick of a switch.

Modern information technology has only acquired truly secular potency thanks to the confluence of algorithmic *recombination*, bargain-basement data capture, cheap processing, and ultra-low-cost retrieval. This is big data – and the social, economic and cultural ramifications of this IT

revolution are immense. It would be too partial, and a little simplistic, to confine ourselves to the dystopian, “Big Brother” dimensions of this trend (George Orwell’s “1984”, Aldous Huxley’s “Brave New World”), however; there are two sides to every technological advance. We believe that, over the long term, big data will extend life expectancy by a further ten to twenty years. Moreover, we anticipate that it will enable significant improvements in the management of public goods. Notwithstanding these positives, let’s begin by investigating some of the problematic aspects of big data, which are indeed apocalyptic in nature.

### CHAPTER 3

## Exponential power

In Germany in particular, a debate about the issue of data collection by state agencies is currently in full swing. Thanks to the secrets leaked to the media by IT professional Edward Snowden, the public has gained some insight into what just one of the conjectured 16 American secret services (with an annual budget of USD 50 billion, according to Spiegel Online) is collating around the globe. Typically, outrage has focused not on the mass of data collected about John and Jane Doe, but on the bugging of Federal Chancellor Angela Merkel’s mobile phone – a blow to Germany’s national pride (a sentiment that is, as ever, clearly stronger than any sensibility for liberty or the rights of the individual).

However, the mobile telephone used by the commander-in-chief of a major country is the worst possible illustration of the challenges posed by big data; only a fool would believe that the communication channels of key decision-makers – whether mobile, email or indeed physical correspondence – are safe from the prying eyes of secret services the world over. ’Twas ever thus, even between nations with friendly diplomatic ties. It is equally naive to proceed on the assumption of trusting “special relationships”. The fact is that most nations maintain well-funded intelligence bureaux that need to be kept busy, and detecting strategic shifts in the policies of other countries unquestionably falls within the remit of such organisations. We imagine that the German premier, who grew up in an East Germany riddled with intelligence-gathering services, was aware of the hazards to which her mobile was exposed and took appropriate precautions.

Incidentally, Germany’s Federal Intelligence Service (*Bundesnachrichtendienst*, *BND*) will have moved into its new offices on Chausseestrasse in Berlin by the end of 2015. According to *Die Welt*, it now has more than 100,000m<sup>2</sup> of office space (not

counting any off-the-radar subterranean floors) – so an area about the size of 15 football pitches for a total of 4,000 staff. Construction costs, including moving expenses from their previous headquarters in Pullach, have been estimated at EUR 1.4 billion – a sum that would have brought a hot salt tear to the eye of the late Erich Mielke, former head of East Germany’s Ministry for State Security (the *Stasi*)! Given that the BND is hardly likely to be conducting Sunday school classes on the premises, Germany’s griping about the USA is a touch sanctimonious.

The creation of a profile of Ms Merkel by intelligence services is standard; however, the profiling of *every single citizen* is something quite different. The blending of new recombination, capture, processing and storage techniques with the specific capabilities and competencies of a collective that has agglomerated as a state throws up some fundamental dilemmas. Power meets power.

States can acquire practically unlimited amounts of information, states can dispossess, states can physically attack people – and in certain circumstances also annihilate them. Which is not to say that acquisition of information, expropriation of property or indeed physical assault do not exist in private – particularly, criminal – contexts; but such activities are routine (and usually legal) undertakings for a state, part of its essence and mandate. Very few would consider the appropriation of funds under a moderate and equitable tax regime to be illegal, and the preparatory work required for such activities (i.e. data collection and processing via tax declarations) are accepted as a matter of course. The police’s monopoly on violence and the investigative methods required for its prosecution (yet more data collection) are similarly undisputed. Citizens are also quite prepared to allow the collective an even longer leash when push comes to shove, indeed to concede to the state – in specific and limited circumstances – a licence to operate on the outermost margins of legality (clandestine activities). In functioning states with more or less independent judiciaries, mistrustful media, and the constant danger of the opposition sweeping to power, a balance has so far been struck that has afforded upstanding citizens far and wide sufficient liberty and a life worth living.

Placing big data in the hands of the state changes all this in important ways. Although we are yet to be fitted with the miniature radio frequency identification devices (RFIDs) that would be required to *categorically establish* people’s location, movements and actions – to, as it were, produce cradle-to-grave “mosaic movies” about the citizenry – there is certainly no shortage of cameras in the world around us and we can only guess at other, less obtrusive surveillance instruments to come. It is a question of time before the RFID chip establishes itself – a system that, in a large-scale animal experiment, has proved invaluable for pets, will eventually prove irresistible for use in people as well; personalised tagging simply offers too many advantages. We shall return to these “benefits” when

## Much ado about nothing?

we examine the management of public goods but for now, let us merely note, by way of example, that chips could be used to eliminate most of the many checkpoints through which we pass. After the biometric passport, which already contains a RFID chip, it is not hard to imagine a world in which an implanted chip will be a *sine qua non* for immigration to certain countries and continents. There was a brief howl of protest at one point from opponents of Obamacare, who believed they had spotted a reference to RFID chipping as a prerequisite for enrolling in the insurance scheme in the 906-page draft bill. Despite a hastily issued government rebuttal, there is clearly considerable sympathy in technocratic circles for the notion of human chipping and the idea is thus set to become the subject of legislation before too long.

When it comes to establishing *ownership of assets*, many of the remaining data gaps have now been closed. Since the financial crisis of 2008/9, the banks – which now effectively belong to an extended circle of quasi-state institutions – have become the spineless lackeys of their principal stakeholder, and the physical and legal obstacles that previously prevented governments from helping themselves to their citizens' financial property have fallen away. Cyprus is a textbook example of how easy it has become to push through wholesale expropriation of (custody) account-holders in a country's banking system. In the October 2013 edition of its Fiscal Monitor series entitled "Taxing Times", the International Monetary Fund (IMF) suggests that a similar approach – a one-off tax (or "capital levy") on private wealth designed to restore debt sustainability – might be applied to the entire eurozone. The relative immunity of cash to government interference is likewise rapidly disappearing: in Italy, cash transactions are now capped at EUR 1,000, and in France, at EUR 3,000. And gold? The yellow metal has long been a favoured medium for storing value below the radar of the authorities, and yet let's not forget that, in America, both the possession and trading of gold were banned between 1933 and 1974, and bank safes were sealed up...

Taxation, expropriation, physical monitoring and, in some cases, destruction, are the "core business" of the state; however, *global enforcement* is new and would not be possible without big data – all we are missing are drones, with which any rogue elements that might conceivably threaten the state-organised collective can be eliminated with no direct human contact. If such targeted killings are carried out in Yemen or Pakistan, we greet the news with a shrug – they are just terrorists after all. A month ago, your author heard from police and security sources that Switzerland urgently needed to introduce police drones – purely for surveillance purposes, you understand.

The principal argument against "scaremongering" over the splicing of big data and state power is that none of it matters as long as you have nothing to hide. (The explanation for curtainless homes in strict Calvinist areas of the Netherlands runs along similar lines – those with clear consciences have nothing to fear from social surveillance.) As far as democratically legitimated state power is concerned, we should remember that it is ultimately in the hands of the citizenry (or, at least, the majority of a country's voters) to determine the rules governing its application. This may be true, but is it sufficient to allay anxieties about the potential risks of marrying big data with state might?

Certainly not. For one thing, even democratically mandated majorities are not immune from making mistakes with fateful consequences – Hitler came to power in 1933 through a majority vote in the Reichstag. For another, the order of magnitude by which direct access to data and/or to the physical existence of a citizen compounds state power is so obvious that you would have to be fervently statist or extremely naive to assume that such additional power would not be abused. Thirdly, there are enough signs that things are already headed in this direction. As we indicated at some length in edition 3 of *bergsicht*, we in Switzerland have recently witnessed a retroactive criminalisation of established cross-border asset management practices, with confiscatory consequences for bank customers and custodians alike. There is an inheritance tax white paper in the pipeline of Swiss people's initiatives whose retroactive reach would extend as far back as 2012; its thresholds are formulated such that the democratic majority would benefit from it. Moreover, the wealth tax debate has been revived in Germany of late, and we have already mentioned the expropriatory ideas under discussion at the IMF.

Those with ears to hear will detect tendencies pointing beyond these ideas (which affect only material considerations) towards a new *rigorism*. This trend is being reinforced by notions of morality such as those propounded by feminist Alice Schwarzer (*Prostitution – A German Scandal*, Cologne, 2013), which seek to *criminalise* behaviour that, while previously criticised, was nonetheless tolerated. Similarly restrictive notions of civic behaviour are at work in respect of freedom of speech, where intolerance of the intolerant (by which we mean Islamic extremism) has been raising dust of late. Well on the way to being stigmatised as a "far-right extremist", the Social Democrat Thilo Sarrazin has been made a pariah, for example, and a similar fate threatens second-generation Danish Muslim immigrant Yahya Hassan, a young poet openly critical of the attitudes of his parents' generation, who according to the *Neue Zürcher Zeitung* (p. 49, 21 November 2013) can only show himself in public in a

bullet-proof vest. The Danish elite will doubtless seek to appease intolerant factions at home and abroad rather than support those who would call a spade a spade. There is certainly a world of difference between stigmatisation and a legal ban on writing or speaking, but the presentiment that, thanks to big data, all the evidence required for any future criminalisation would be available at the click of a mouse, is a chilling one. The road to serfdom is lined with data cemeteries.

This trend towards criminalisation has wormed its way into commercial law to a far greater degree. Barely a day goes by without newspaper reports of “fines in the billions” for some firm or another; a bank here, a technology or pharmaceutical conglomerate there – ever greater sums are routinely being handed over to state watchdogs. An unparalleled juridification of the “business of business” has set in at exactly the point where shareholders ought to be the ones using their voting rights to seek out and monitor the management that is most likely to guarantee the long-term success of companies; instead, lawyers, auditors and public prosecutors rule the roost. There is no longer any question of a free market economy or capitalism in the strict sense of the word.

Whether it’s prostitution, provocative statements about social phenomena, or machinations and attempts at undue enrichment by the bosses upstairs, the pattern is always the same: scurrilous one-off scandals elicit a groundswell of outrage and, before you know it, the threshold for criminalising social activities has dropped another notch. Neither direct nor indirect democracy can halt the erosion of civil liberties that is being carried here. When combined with big data, a constellation is created that can turn even the most upstanding citizen into a potential lawbreaker, especially when individuals or organisations are criminalised retrospectively so there is no space to adjust to the New Normal. Old emails and Facebook posts are enough to send you to the “gallows”.

One last observation on the topic of big data and the state: It is self-evident that, as far as big data in particular is concerned, physical borders and territories *per se* are of little relevance in a globalised world; so it should come as no surprise that territorial restrictions on the imposition and application of law are becoming ever more blurred. Anyone using US microchips (and who wouldn’t?) is directly or indirectly the object of American jurisdiction – and thus of America’s claim to power – just like anyone who spends US dollars or gets around in their car using GPS. This is not a value judgement, merely an observation. Ever since it became public knowledge that American government agencies had tapped into databases maintained by Google, Yahoo, Apple, etc., it has been clear that there is also a hegemonic component to big data. It is still hard to judge how this might be reconciled with equally hegemonic stirrings in China, but we see conflict brewing on the horizon. Until now, the phrase “cyber war” has been

an oddly nebulous notion; but those mists may yet become storm clouds.

## CHAPTER 5

### Comparable preferences

Wherever force is held in abeyance and voluntary consensus prevails – across broad swathes of our shared social and economic lives, in other words – we take the presence and power of big data in our stride; we are not unduly fazed by ads tailored to our preferences, and we have become accustomed to various systems’ ability to build personal profiles using keywords lifted from emails and Google, Facebook or Twitter posts. We are also learning to interact with this new reality, with many of us leaving different digital traces in different places and thereby (wittingly or unwittingly) defining a series of “territories”. For instance, most of us avoid mixing business and private communications on a given platform; and multiple email addresses, not to mention multiple profiles on social media, are par for the course.

There are of course some annoyances – reaching a certain age and being targeted for erectile dysfunction treatments, for example, or suddenly being showered with advertisements for dating services (presumably likewise triggered by demographic cohort and projected divorce rates). By the same token, we know full well that coming top of Google’s search results is less a function of actual relevance and more a function of payments to the search engine’s operators. And yes, there are wilfully tendentious entries to be found in the mega-reference work, Wikipedia; it’s no secret that these open platforms are also an open goal for historical revisionists.

However, without the combination of big data with power (whether legally and – in some cases – even legitimately, via a state-organised collective, or illegally and illegitimately, via private criminality), this brave new world of modern information technology is *a lot less threatening*. Indeed, it presents many opportunities.

Before looking at these opportunities, however, let’s consider one more constraint concerning the *decision-making processes* of economic agents. Since Adam Smith, the law of supply and demand (microeconomics) has famously assumed that each individual is able to determine his or her own preferences, and to describe this mental process, the theory posits the auxiliary variable of “utility”. The principle here is that *homo oeconomicus* strives for higher utility, an aspiration perennially misconstrued by non-economists as “selfishness”; this is incorrect

to the extent that “utility” is neutral and does not preclude preferences for charitable giving or cultural goods, for example.

The market as a platform for the exchange of differently valued goods and services is based on the assumption that there can be no absolute yardstick for “utility” or, put another way, preferences cannot – again, as a matter of principle – be compared with one another. In an absolute sense, there are no items of “greater” or “lesser” value; it is simply a question of what value an individual – interested in an exchange and seeking to maximise his or her “utility” – is willing to ascribe to them. Theoretical hair-splitting? No, because this kind of market-based price-setting contrasts starkly with alternative approaches – the idea of “fair” prices, for instance, as entertained by ecclesiastical commentators or exemplified in foreign aid – and is also at odds with notions of price controls, minimum wages and the like.

Despite our undeniable sympathy for the incomparability of preferences, we can’t help wondering how big data – the knowledge that someone is tracking our every move and, worse still, the awareness that our preference formation is being constantly recorded and can be reproduced at a later juncture – will affect our ability to “maximise” our utility. We fear it may have an adverse impact on individual utility maximisation.

Big data could thus begin to replace Man’s good or bad *conscience* in thought and deed; but, unlike with matters of conscience, we can expect neither a god (omniscient, yes, but fairly distant), nor a Last Judgement before which we will one day be required to give an account of ourselves. Instead there is a time machine that, at the press of a button, can reveal every false move and deviation from the norms of the *zeitgeist*. Decision-making conditioned in this fashion is no longer free. It seems to us that preferences are being coaxed into alignment – and there is barely a cigarette paper between harmonisation and manipulation.

If this were the case, the economic consequences would be self-evident. Aggregate *demand* would be far more heavily determined by the *zeitgeist* than currently, as very few would dare to fly in the face of the preferences of the mainstream. Brands and names, not to mention political hobbyhorses, would have even more of the upper hand and, as the *zeitgeist* can turn on a sixpence, aggregate demand would be highly volatile. Companies’ first priority would be to examine how the *zeitgeist* is created and how it might be influenced. Marketing would thus become increasingly important and take on new dimensions.

This substitution of big-data-guided morality for a less-than-reliable conscience will soon be intruding into our lives more than we might like. There are already cars that won’t move until everyone has put on their seatbelts; vehicles that refuse transit to motorists who have been drinking would be the next logical step. We are increasingly surrounded by “smart things”, like interactive fridges, wine racks,

beds, home exercise machines and toothbrushes that in turn make sure we drink enough fluids, enjoy alcohol responsibly, sleep peacefully, get a modicum of daily exercise and maintain oral hygiene that would satisfy nine out of ten dentists. And somewhere, someone – perhaps even our health insurer – will be logging and mapping our lifestyle. Life expectancy is also set to increase again substantially in the foreseeable future, thanks to both the immense range of *preventative options* now available and, in particular, the highly personalised treatment methods, naturally also buttressed by big data, about to come on stream.

Will we (want to) forgo the blessings brought about by such technology? Presumably not, as the incentives – lower health insurance premiums, for example – will be nudging us in the opposite direction.

## CHAPTER 6

### From public to private goods

Let’s now move on to some unambiguously positive aspects of big data. In our introduction, we mentioned the incredibly low costs ushered in by modern information technology, many of which we now take for granted. A few years ago, the electronic transmission of megabyte-size photos was still a technical challenge, requiring time and high-performance connections; nowadays, we post snaps from our mobiles instantaneously with hardly a second thought – and still less reflection on the ultimate consequences.

Ultra-low costs have recently been making their mark on payment-processing as well – not so much in the banking sector, where larger amounts are generally involved and complex due diligence may be required, but in the micro domain of credit card payments on the internet. Commissions are minimal, even – and especially – for transactions involving tiny amounts. Here, the complexity of various procedures (passwords, etc.) has been significantly reduced and is certainly no longer a stumbling block. In short, this is a tide that is still coming in.

Micro-payments are fundamentally interesting from an economic perspective: an awful lot of constellations in our society and economy are shaped by the fact that goods are treated as public (as a result of excessively high information and transaction costs) although they have the potential to be perfectly normal private goods. The difference between public and private goods resides in the latter’s exclusion, through their use, of any simultaneous use by third parties, while such an exclusionary effect does not arise in the case of public goods; a loaf of bread can be eaten only once, but a lot of people can stroll in a municipal park or on a common at the same time, for

instance. The manufacture and financing of private goods are thus not precarious and are usually handled via the market. While the production of public goods by private individuals is entirely conceivable, only in exceptional cases will it be possible to finance such output without some mechanism of compulsion by a collective. (How many cross-country skiers whizz past the contributions box at the end of a ski trail without even noticing it, for instance...?)

What are private goods, what are public? In essence, this is a question of how simply property rights can be defined. In the case of a loaf of bread, the distinction is apparent, and the same is true of a house, although here, the relatively expensive apparatus of a land registry is required to ensure boundaries and fencelines are securely delineated; the game is worth the candle as properties are generally big-ticket items. There are parks of both kinds: where lots of supposedly valuable things are on offer, i.e. rollercoasters, dolphinariums and the like, they are typically fenced off and privately run, whether in Florida, Paris, Rust or Lipperswil. Municipal parks, on the other hand, are generally open to the public; the park-keepers are paid out of the public purse and fight the good fight against littering and vandalism. The “tragedy of the commons” is ubiquitous for public goods, as the inadequate definition of property rights fundamentally changes the calculation of utility.

Big data will allow considerably more property rights to be defined and the costs of assigning right of use (including for very brief periods of time) will be so low that such exercises will be viable. The assignation of rights of use to an individual is ultimately synonymous with the exclusion principle that makes goods private. “Road pricing” has so far foundered on the rocks of ideological resistance in particular, in conjunction with the social and economic costs of charging for, and assigning usage rights for, thoroughfares. The advantages of periodically privatising public goods are self-evident, as doing so allows market mechanisms to guide allocation more efficiently. Such measures could reduce traffic jams to bearable levels in London and Scandinavian cities, for example (congestion and overuse are besetting sins with public goods). More efficient allocation (e.g. the introduction of a genuine “polluter pays” principle) can lower costs and mitigate or obviate environmental damage. Take road construction, for example: instead of tarmacking over every square inch of remaining land with infrastructure projects, available capacity would be used more intelligently.

Big data is likely to take hold wherever allocation problems are endemic. Congestion or limitations of use via rationing, or the overuse of services that are artificially (too cheaply!) priced, will become lucrative areas for big data. Other industries include the health sector, public transport, private transport on public roads, the media and so on.

Here too, there will certainly be justified reservations – there will have to be; not every

footpath on every picturesque mountainside should be fitted with RFID barriers, and not every sneaky cigarette smoked should attract another black mark, ratcheting up a policyholder’s insurance premium. Nor yet should every use of a bench in a municipal park be charged to your credit card. But, hand on heart: haven’t the toilets on German motorways got infinitely cleaner since they stopped being public goods, universally available to every last mucky pup? Structurally, most environmental problems, whether local or global, are not radically different from these public toilets. In our opinion, there are plenty of instances of abuse in our society that are just waiting to be fixed; in such cases, big data throws open the doors to a concern that is consummately liberal, extremely economical and highly ecological.

## CHAPTER 7

### Total data – total satisfaction?

We began with an excerpt from the Advent story and, given the season, we would also like to end on a reflective note. In this exploration of big data, we have endeavoured to highlight some of the sinister ramifications of combining exponential computing power with private, but especially state, power; we have also sketched some of the potential benefits of big data – notably, the plummeting cost of defining property rights and the promising implications of this trend for solving social problems. We could throw further positive examples onto the scales: for example, the fact that the thorny “endowment problem” (the life chances of a person born in New York are radically different from someone born in Sicily or Mumbai) has been alleviated decisively thanks to the near-uniform availability of information enabled by the internet (and especially big data). When it comes to equal opportunities, the gap has narrowed significantly – as a consequence not of modern technology. However, there’s nothing worse than neatly balanced, anodyne conclusions, so let’s spin these ideas out a little further. We are left with nagging doubts about whether such developments are genuinely glad tidings on an *existential level*. One of our reservations concerns transparency; the other, memory.

Big data, as has become clear in the course of this analysis, is much concerned with the public sphere and with transparency; it now seems impossible for anything to remain hidden. At first glance, this trend seems entirely cognate with our disposition as primates to want to – and to be able to – keep abreast of the jabbering in the primeval jungle: “I’m over here, are you there, I’m so beautiful, you’re

so big, blah blah blah.” This is exactly how Twitter, Facebook and Whatsapp work, and it would be entirely unobjectionable if it really corresponded to human nature; this is not the case, however. Human beings are ultimately non-transparent beings – women conceal their menstrual cycle, men their sundry reproductive activities. Humans attained their essential evolutionary advantage not through transparency, but through stealth and *secrecy*.

And the economic, cultural and social progress we have made? Was that ever engendered by public pursuits? Can creativity and transparency be reconciled? We have grave doubts. While big data might well facilitate a colossal leap forward in human progress, we suspect it could be the last of its kind. And as for memory: as we have outlined, virtually infinite storage and unlimited retrievability of content and conditions lie at the very heart of big data. These capabilities can be either extremely useful or highly dangerous, especially in circumstances where the law is changed retrospectively. The notion of boundless memory, too, is diametrically opposed to human nature and/or the workings of the brain which, while it can indeed store an enormous amount extremely efficiently, can also do so much more: it can *forget!*

The ability to forget may be one of evolution’s greatest achievements. It is only through forgetting that our lives become at all bearable. Imagine if we could recall everything – literally everything, from the first nappies through to our first stumbling endeavours at arithmetic, from each attempted intimacy right through to every single diverting (as well as stultifying) meeting and discussion! What an appalling thought! But this is the direction in which our world is heading. Every hiccup is registered and made available to the future with the same assiduity as the most heartfelt feelings and nimblest mental exploits. As the overwhelming majority of our thoughts, utterances and actions are supremely irrelevant, however, the world will soon be drowning in a sea of banalities. Humans have yet to invent a computer that can forget and we doubt they ever will. Being able to forget is one of humanity’s most outstanding faculties and truly a gift of nature. The cultural corollary of forgetting is the concept of forgiving, which entered the Western tradition some 2,000 years ago. Given the relentless march of eternal memory and the new rigorism in our midst, the idea of forgiveness seems more topical and consequential than ever.

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Translated by: Richard Hall ([motif.ch](http://motif.ch))

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M1 AG  
Postfach 344, Museumstr.1  
9004 St.Gallen – Schweiz  
Telefon +41 (0) 71 242 16 16  
Telefax +41 (0) 71 242 16 17  
[info@m1ag.ch](mailto:info@m1ag.ch)

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Subscribe: [www.bergsicht.ch](http://www.bergsicht.ch)