

From: Office of Terje Rod-Larsen <[REDACTED]>
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Article 1.

The Daily Star

Palestine splits Arab street and state

[Rami G. Khouri](#)

May 18, 2013 -- An important but unclear aspect of the ongoing Arab uprisings has been how more democratic and legitimate Arab governments would impact on the Arab-Israeli conflict. Several incidents in Egypt indicate how government and popular street sentiment are likely to behave differently on Israel-Palestine than did the previous Mubarak regime. Now

Jordan vividly captures the complexities and nuances of the consequences of more representative Arab governance systems.

The newly elected lower house of the Jordanian parliament last week asked the government to expel Israeli Ambassador Daniel Nevo, and to recall Jordan's ambassador to Israel, Walid Obeidat. Neither of those things is going to happen, but the political dynamics of the process are intriguing, and highlight an issue that other Arabs must also address in due course: What do Arab governments do when they prefer to maintain peaceful relations with Israel and satisfy American government dictates, but their citizens are angry with Israeli policies and want to take political-diplomatic action to express their discontent?

The Jordanian parliament's vote was non-binding, and will not result in any changes because its decisions must be ratified by a majority of the upper house of parliament, which is appointed by the king. This vote was especially intriguing because the lower house that was elected last November, in a vote boycotted by the Muslim Brotherhood's party, was thought to be dominated by pro-government tribal interests, and thus would be little more than a rubber stamp body.

Well, that may be true for most issues, but I guess we are learning now the important political science principle that rubber stamps and human hearts do not always coincide – for Israel's treatment of the Palestinians, and especially the Islamic holy places in occupied East Jerusalem, clearly touches the hearts of all Jordanians, Arabs and Muslims.

Parliament expressed itself in response to several Israeli measures early last week, including Israel's preventing most Muslims from entering the holy compound (Haram el-Sharif, or Noble Sanctuary, in Arabic, and Temple Mount to Israelis) while allowing Jews to visit the area on the day they commemorate Israel's conquest of the entire city in 1967. Israeli police clashed with a small number of Palestinian demonstrators at the entrance to the Old City. Israeli police detained the mufti of Jerusalem, Sheikh Mohammad Hussein, accusing him of supporting anti-Israeli protests there, before releasing him six hours later.

The Jordanian lower house did not mince its words, saying it “strongly condemns such racist action and affirms that these daily and continuing activities by the Israeli authorities and settlers are systemized and

preplanned schemes that reflect the ugly and evil face of extremist Zionists.”

Wow, that is slightly stronger than the usual American-Canadian (now a fused pro-Zionist unit, sadly) response of “tsk, tsk, naughty, naughty” in the face of Israeli actions that are criminal, because the world sees them as illegal (such as settlements or annexing occupied Arab land). So how does an Arab government that is committed to a peace agreement with Israel reconcile this with the sentiments of its democratizing citizens on what they see as “racist, preplanned, and continuing schemes that reflect the ugly and evil face of extremist Zionists”?

The old formula of Arab governments issuing statements condemning Israeli actions, writing to the United Nations, or asking the Arab League sub-committee on agricultural exports to meet in emergency session is unlikely to suffice in emerging new conditions where Arab citizens expect their views to shape government policies. So, as expected, the Jordanian prime minister said the government had discussed what had happened in Jerusalem, the Jordanian Embassy in Tel Aviv would respond with appropriate diplomatic action, and the government was willing to take the issue to the U.N. Security Council.

I believe that the Jordanian government is sincere about its concerns and willingness to act, but such an approach by all Arab states in the past 65 years has had zero impact on Israel’s behavior. This is why newly empowered Arab citizens are demanding more effective measures, at least at the symbolic level of sending ambassadors on car rides home that expresses Arab popular outrage.

Such tensions between the Arab state and its citizens will expand in the years ahead, as the fundamental contradictions of Arab state-building, national identity, regional relations, the Arabism-Zionism confrontation, and international alliances all clash visibly. Jordan and Egypt provide the clearest examples because of their peace treaties with Israel, but they are not unique. Most other Arab states, especially those in the Levant and Gulf, suffer similar stresses by satisfying American-Israeli demands that contradict the sentiments of their own citizens.

Two and a half years after the Arab uprisings erupted, we are starting to witness the first small signs of the regional implications of the birth of Arab citizens and a public political sphere defined by populist legitimacy.

Without Water, Revolution

[Thomas L. Friedman](#)

May 18, 2013 -- Tel Abyad, Syria — I just spent a day in this northeast Syrian town. It was terrifying — much more so than I anticipated — but not because we were threatened in any way by the Free Syrian Army soldiers who took us around or by the Islamist Jabhet al-Nusra fighters who stayed hidden in the shadows. It was the local school that shook me up. As we were driving back to the Turkish border, I noticed a school and asked the driver to turn around so I could explore it. It was empty — of students. But war refugees had occupied the classrooms and little kids' shirts and pants were drying on a line strung across the playground. The basketball backboard was rusted, and a local parent volunteered to give me a tour of the bathrooms, which he described as disgusting. Classes had not been held in two years. And that is what terrified me. Men with guns I'm used to. But kids without books, teachers or classes for a long time — that's trouble. Big trouble. They grow up to be teenagers with too many guns and too much free time, and I saw a lot of them in Tel Abyad. They are the law of the land here now, but no two of them wear the same uniform, and many are just in jeans. These boys bravely joined the adults of their town to liberate it from the murderous tyranny of Bashar al-Assad, but now the war has ground to a stalemate, so here, as in so many towns across Syria, life is frozen in a no-man's land between order and chaos. There is just enough patched-up order for people to live — some families have even rigged up bootleg stills that refine crude oil into gasoline to keep cars running — but not enough order to really rebuild, to send kids to school or to start businesses. So Syria as a whole is slowly bleeding to death of self-inflicted gunshot wounds. You can't help but ask whether it will ever be a unified country again and what kind of human disaster will play out here if a whole generation grows up without school. "Syria is becoming Somalia," said Zakaria Zakaria, a 28-year-old Syrian who

graduated from college with a major in English and who acted as our guide. “Students have now lost two years of school, and there is no light at the end of the tunnel, and if this goes on for two more years it will be like Somalia, a failed country. But Somalia is off somewhere in the Indian Ocean. Syria is the heart of the Middle East. I don’t want this to happen to my country. But the more it goes on, the worse it will be.”

This is the agony of Syria today. You can’t imagine the war here continuing for another year, let alone five. But when you feel the depth of the rage against the Assad government and contemplate the sporadic but barbaric sect-on-sect violence, you can’t imagine any peace deal happening or holding — not without international peacekeepers on the ground to enforce it. Eventually, we will all have to have that conversation, because this is no ordinary war.

THIS Syrian disaster is like a superstorm. It’s what happens when an extreme weather event, the worst drought in Syria’s modern history, combines with a fast-growing population and a repressive and corrupt regime and unleashes extreme sectarian and religious passions, fueled by money from rival outside powers — Iran and Hezbollah on one side, Saudi Arabia, Turkey and Qatar on the other, each of which have an extreme interest in its Syrian allies’ defeating the other’s allies — all at a time when America, in its post-Iraq/Afghanistan phase, is extremely wary of getting involved. I came here to write my column and work on a film for the Showtime series, [“Years of Living Dangerously,”](#) about the “Jafaf,” or drought, one of the key drivers of the Syrian war. In an age of climate change, we’re likely to see many more such conflicts. “The drought did not cause Syria’s civil war,” said the Syrian economist Samir Aita, but, he added, the failure of the government to respond to the drought played a huge role in fueling the uprising. What happened, Aita explained, was that after Assad took over in 2000 he opened up the regulated agricultural sector in Syria for big farmers, many of them government cronies, to buy up land and drill as much water as they wanted, eventually severely diminishing the water table. This began driving small farmers off the land into towns, where they had to scrounge for work.

Because of the population explosion that started here in the 1980s and 1990s thanks to better health care, those leaving the countryside came with huge families and settled in towns around cities like Aleppo. Some of those

small towns swelled from 2,000 people to 400,000 in a decade or so. The government failed to provide proper schools, jobs or services for this youth bulge, which hit its teens and 20s right when the revolution erupted. Then, between 2006 and 2011, some 60 percent of Syria's land mass was ravaged by the drought and, with the water table already too low and river irrigation shrunken, it wiped out the livelihoods of 800,000 Syrian farmers and herders, the United Nations reported. "Half the population in Syria between the Tigris and Euphrates Rivers left the land" for urban areas during the last decade, said Aita. And with Assad doing nothing to help the drought refugees, a lot of very simple farmers and their kids got politicized. "State and government was invented in this part of the world, in ancient Mesopotamia, precisely to manage irrigation and crop growing," said Aita, "and Assad failed in that basic task."

Young people and farmers starved for jobs — and land starved for water — were a prescription for revolution. Just ask those who were here, starting with Faten, whom I met in her simple flat in Sanliurfa, a Turkish city near the Syrian border. Faten, 38, a Sunni, fled there with her son Mohammed, 19, a member of the Free Syrian Army, who was badly wounded in a firefight a few months ago. Raised in the northeastern Syrian farming village of Mohasen, Faten, who asked me not to use her last name, told me her story. She and her husband "used to own farmland," said Faten. "We tended annual crops. We had wheat, barley and everyday food — vegetables, cucumbers, anything we could plant instead of buying in the market. Thank God there were rains, and the harvests were very good before. And then suddenly, the drought happened." What did it look like? "To see the land made us very sad," she said. "The land became like a desert, like salt." Everything turned yellow. Did Assad's government help? "They didn't do anything," she said. "We asked for help, but they didn't care. They didn't care about this subject. Never, never. We had to solve our problems ourselves." So what did you do? "When the drought happened, we could handle it for two years, and then we said, 'It's enough.' So we decided to move to the city. I got a government job as a nurse, and my husband opened a shop. It was hard. The majority of people left the village and went to the city to find jobs, anything to make a living to eat." The drought was particularly hard on young men who wanted to study or

marry but could no longer afford either, she added. Families married off daughters at earlier ages because they couldn't support them.

Faten, her head conservatively covered in a black scarf, said the drought and the government's total lack of response radicalized her. So when the first spark of revolutionary protest was ignited in the small southern Syrian town of Dara'a, in March 2011, Faten and other drought refugees couldn't wait to sign on. "Since the first cry of 'Allahu akbar,' we all joined the revolution. Right away." Was this about the drought? "Of course," she said, "the drought and unemployment were important in pushing people toward revolution."

ZAKARIA ZAKARIA was a teenager in nearby Hasakah Province when the drought hit and he recalled the way it turned proud farmers, masters of their own little plots of land, into humiliated day laborers, working for meager wages in the towns "just to get some money to eat." What was most galling to many, said Zakaria, was that if you wanted a steady government job you had to bribe a bureaucrat or know someone in the state intelligence agency. The best jobs in Hasakah Province, Syria's oil-producing region, were with the oil companies. But drought refugees, virtually all of whom were Sunni Muslims, could only dream of getting hired there. "Most of those jobs went to Alawites from Tartous and Latakia," said Zakaria, referring to the minority sect to which President Assad belongs and which is concentrated in these coastal cities. "It made people even more angry. The best jobs on our lands in our province were not for us, but for people who come from outside." Only in the spring of 2011, after the uprisings in Tunisia and Egypt, did the Assad government start to worry about the drought refugees, said Zakaria, because on March 11 — a few days before the Syrian uprising would start in Dara'a — Assad visited Hasakah, a very rare event. "So I posted on my Facebook page, 'Let him see how people are living,' " recalled Zakaria. "My friends said I should delete it right away, because it was dangerous. I wouldn't. They didn't care how people lived." Abu Khalil, 48, is one of those who didn't just protest. A former cotton farmer who had to become a smuggler to make ends meet for his 16 children after the drought wiped out their farm, he is now the Free Syrian Army commander in the Tel Abyad area. We met at a crushed Syrian Army checkpoint. After being introduced by our Syrian go-between, Abu Khalil, who was built like a tough little boxer, introduced

me to his fighting unit. He did not introduce them by rank but by blood, pointing to each of the armed men around him and saying: “My nephew, my cousin, my brother, my cousin, my nephew, my son, my cousin ...” Free Syrian Army units are often family affairs. In a country where the government for decades wanted no one to trust anyone else, it’s no surprise. “We could accept the drought because it was from Allah,” said Abu Khalil, “but we could not accept that the government would do nothing.” Before we parted, he pulled me aside to say that all that his men needed were anti-tank and anti-aircraft weapons and they could finish Assad off. “Couldn’t Obama just let the Mafia send them to us?” he asked. “Don’t worry, we won’t use them against Israel.”

As part of our film we’ve been following a Syrian woman who is a political activist, Farah Nasif, a 27-year-old Damascus University graduate from Deir-az-Zour, whose family’s farm was also wiped out in the drought. Nasif typifies the secular, connected, newly urbanized young people who spearheaded the democracy uprisings here and in Egypt, Yemen and Tunisia. They all have two things in common: they no longer fear their governments or their parents, and they want to live like citizens, with equal rights — not as sects with equal fears. If this new generation had a motto, noted Aita, the Syrian economist, it would actually be the same one Syrians used in their 1925 war of independence from France: “Religion is for God, and the country is for everyone.”

But Nasif is torn right now. She wants Assad gone and all political prisoners released, but she knows that more war “will only destroy the rest of the country.” And her gut tells her that even once Assad is gone, there is no agreement on who or what should come next. So every option worries her — more war, a cease-fire, the present and the future. This is the agony of Syria today — and why the closer you get to it, the less certain you are how to fix it.

Article 3.

[Los Angeles Times](#)

Cause for hope -- and fear -- in Pakistan

Peter Tomsen

May 19, 2013 -- There is reason for hope in Nawaz Sharif's victory in the recent Pakistani elections. Sharif, who has twice served as Pakistan's prime minister, has said he wants to build a more robust democracy, revive the country's shattered economy and end the military's 40-year domination of its politics. He has also promised to improve relations with India and take on the radical Islamist terrorism that has tormented Pakistan. The United States should assist him in every way possible to achieve those goals. But there is also ample reason for caution. The U.S. has a long history of "betting on the come," of unwarranted optimism that the transfer of billions in unconditional aid will influence Pakistan to withdraw its support for the Afghan Taliban insurgency based in Pakistan. With a new Pakistani leader in place, it is time to begin linking Washington's huge military and economic assistance programs more directly to U.S. interests, including anti-terrorism and regional stability.

Perhaps Sharif's greatest challenge — as he knows all too well — will be ending the Pakistani military's outsized influence on foreign and defense policy, which is implemented largely through its powerful intelligence agency, Inter-Services Intelligence. In 1999, the last time Sharif served as Pakistan's prime minister, he attempted to improve Indo-Pakistani relations and replace the head of the army, Gen. Pervez Musharraf. Instead, the army ousted Sharif in a coup, and Musharraf assumed power. Since 2008, Pakistan's elected leaders have tended to cede key decisions to the military in order to survive.

Moreover, Sharif does not have an unblemished record in his willingness to confront extremists. During his second stint as prime minister in the 1990s, he played an influential role in the rise of the Taliban in Afghanistan, which was seen to be in Pakistan's interest. Recently, Taliban extremists in Pakistan spared Sharif's party in their violent pre-election attacks on political rallies and candidates. Against this backdrop, and given Sharif's stated opposition to U.S. drone strikes, it seems unlikely that the new prime minister will vigorously combat extremism in Pakistan.

This sobering environment makes it incumbent on Washington to conduct its relations with Pakistan patiently, positively, candidly and in a transactional manner, emphasizing both equality and give-and-take. America's ineffective policy through successive administrations has seemed paralyzed, tolerating Pakistan's phony insistence that it does not

support Mullah Mohammed Omar's Afghan Taliban insurgency and the notorious Haqqani network operating from Pakistani territory. With the new prime minister comes an opportunity to change that dynamic. Sharif, for his part, must understand that he will not be able to accomplish any of his goals — including economic prosperity and stability in Pakistan — unless the ISI's radical Islamist infrastructure in Pakistan is dismantled. Another part of the U.S.-Pakistan relationship that needs resetting is Washington's continuing hope, against much evidence to the contrary, that Pakistan will be useful in guiding Afghan peace talks. In fact, any Afghan political process organized by foreigners, including the U.S.-sponsored Qatar initiative that has languished since 2010, is doomed to failure. Rather than trying to act as the catalyst for talks between the Taliban and Afghan President Hamid Karzai's government, the U.S. should step back, encourage the Afghans to reach agreement on their own and insist that Pakistan also step back. It would be nothing less than foolish to continue to work with Pakistan to convert the ISI's Taliban and Haqqani network proxies into genuine peace negotiators instead of what they are: Al Qaeda-linked terrorists bent on violence to achieve their extremist version of an Afghan Islamist state.

Last year, Congress and President Obama officially designated the Haqqani network as a foreign terrorist organization. Congress should now move quickly to add Mullah Omar's Quetta Shura to the list. The group's suicide bombers are no different from those of the Haqqani network, having killed hundreds of American and coalition troops in Afghanistan, along with thousands of Afghans. Both operate with Al Qaeda and share the same ideology, and both were created and sustained by the ISI, and have been supported or unofficially tolerated by Pakistani civilian leaders.

Strategically, Washington should support Sharif's policies to strengthen the Pakistani economy, democratic institutions, civil society, human rights and gender equality. American responses to Pakistani requests, including on an upcoming International Money Fund bailout, must be conditioned on the military's cessation of support for its Afghan terrorist proxies operating from Pakistani soil.

Concurrently, the U.S. and its allies should urge Pakistan to join a multilateral consensus to revive Afghanistan's classic buffer role in Central Asia between larger powers. The Afghan government, like Austria during

the Cold War, would adhere to nonaligned neutrality. Outside powers, Pakistan included, would honor Afghanistan's territorial integrity and exercise mutual restraint from interfering in Afghanistan. The outcome — opening up Central Asia to a new era of intercontinental commerce through Afghanistan — would benefit both Pakistan and Afghanistan.

Pakistan is an important, populous Muslim nation poised to move forward under the leadership of a new prime minister. Its success or failure will depend largely on whether its leaders have the strength of will to resist military domination of the Pakistani state and confront radical Islamists. The U.S. should do everything in its power to help should Sharif choose to follow this path.

Peter Tomsen was special envoy and ambassador on Afghanistan from 1989 to 1992 and ambassador to Armenia from 1995 to 1998. He is the author of "The Wars of Afghanistan: Messianic Terrorism, Tribal Conflicts, and the Failures of Great Powers."

Article 4.

The Atlantic

Will 'Digital Ethnic Cleansing' Be Part of the Internet's Future?

Megan Garber

May 18 2013 -- It's easy to assume that a global Internet, with all its promise of scaled communication and education and democratization, will eventually help to foster democracy. But it's also not entirely accurate to assume that. In [a conversation](#) with The Atlantic's [Steve Clemons](#) yesterday evening, Eric Schmidt and Jared Cohen -- co-Googleers and co-authors of [The New Digital Age: Reshaping the Future of People, Nations, and Business](#) -- made a point of emphasizing the limitations of technological innovation. Particularly when it comes to geopolitical change.

"We're very concerned about the balkanization of the Internet," Schmidt said -- and not just because division itself in so many ways runs contrary to the ideals the Internet, and the web, were founded on. Splintering,

especially based on geopolitical divisions, could also have direct political and physical consequences. If you're an autocratic government that feels threatened by the existence of an open Internet, Schmidt noted, you're going to resist that Internet -- in the way that, say, Iran has resisted it. Last month, he pointed out, Iran [announced plans](#) for a state-run digital map that would function as an "Islamic Google Earth." ("I'm not making this up," Schmidt insisted, as the crowd laughed at the sad absurdity. "This is actually what they announced.")

Iran's willful exclusion of its citizens from the Internet much of the rest of the world knows -- its attempt to take the "worldwide" aspect out of the World Wide Web -- may well indicate weakness in the regime itself. ("If this is what passes for leadership," Schmidt put it, "these guys have a problem.") If so, though, it's a weakness belied by technological capabilities: the Iranian regime, at this point, does have the infrastructural power to filter the Internet. It can [censor its citizens with increasingly surgical precision](#). It can [create its own version of YouTube](#). It can bypass Google and Facebook and other American companies, shaping the experience of the Internet for all but the most technologically savvy of its citizens. "Islamic Google Earth" may be a joke; it may also be, however, a harbinger of what's to come.

There's another concern, too, Cohen pointed out. Internet balkanization could enable autocratic states to "band together" to create cyber-alliances that can collaboratively edit the web in order to enforce shared norms. The collectives might edit comments made about their regimes. They might cooperate to monitor user behavior. They might attempt to enforce their notion of "moral behavior" through censorship and other means.

And they might ultimately engage, Cohen continued, in a kind of "digital ethnic cleansing." Traditional legal and political checks on mass criminality have been developed within and for the physical world, he noted; in the digital, however, those checks are less developed. The web is simply too new. And you could imagine autocratic regimes or other communities taking advantage of that, creating a scenario in which one group finds a way to, for example, filter another group's content from the web. Or to shut down -- or severely slow down -- their Internet access. Or to infiltrate them with malware and/or orchestrate elaborate denial-of-

service (DDoS) attacks. One group, in other words, could essentially annihilate the digital existence of another.

And then the perpetrator could simply, Cohen said, "make the whole thing look like technical difficulties." Making punishment or retribution, per physical-world systems, extremely difficult.

What all this comes down to, Clemons suggested, is something that Schmidt and Cohen emphasize in their book: the new need for a "virtual foreign policy." While the physical world and the digital obviously coexist, Schmidt pointed out, we have much more finely established ways to regulate behavior in the physical world. When people in the virtual community begin to misbehave, committing crimes that wouldn't be legal in the physical space, we currently have very few mechanisms for correction. As that reality plays out on the geopolitical stage, he said, you could have "this bizarre situation" in which, say, the U.S. and China have a generally good relationship in the physical world: cash flow, open communications, travel between the two countries, etc. And yet behind the scenes -- in the digital world -- those countries could be, effectively, waging war on each other through their digital infrastructure.

Without a more strategic merging between the physical world and the digital, Schmidt suggested, that scenario could well become reality. For now, Cohen said, the big question looming before us is this: "At what point is a cyber attack so big that its effects spill over into the physical world?" We don't yet know. But there's a good chance we'll soon find out.

Article 5.

Spiegel

Big Data Knows What Your Future Holds

[Martin U. Müller](#), [Marcel Rosenbach](#) and Thomas Schulz

17 May, 2013 -- Forget Big Brother. Companies and countries are discovering that algorithms programmed to scour vast quantities of data can be much more powerful. They can predict your next purchase, forecast car thefts and maybe even help cure cancer. But there is a down side.

On balmy spring evenings, Hamburg's Köhlbrand Bridge offers an idyllic postcard view of the city's harbor. The Elbe River shimmers in the reddish glow of sunset, forklifts, cranes and trucks seem to move in slow motion, and occasionally a container ship glides by. But from the standpoint of Sebastian Saxe, the area is primarily an equation with many variables. For the past four-and-a-half years, the 57-year-old mathematician has been working on his trickiest computing task yet at the behest of the company that manages the Hamburg port.

The port covers an area of 7,200 hectares (about 28 square miles). Roughly 200 trains a day traverse its 300-kilometer (186-mile) network of rails and its 130 bridges to transport goods that have arrived by ship. Saxe, as chief information officer of the Hamburg Port Authority (HPA), faces the enormous task of optimizing this logistical nightmare.

The amount of land is finite, and further expansion is not possible.

Nevertheless, the Hamburg Senate has announced its goal of almost tripling container transshipment volumes in the city by 2025. This will only work if Saxe and his 60-member IT team manage to optimally exploit another resource: data. He certainly has plenty of it.

The port is already filled with sensors today. Trucks and freight trains are constantly transmitting their positions while incoming container ships report their location and speed. Sensors that constantly monitor port traffic are built into the Köhlbrand Bridge.

"Our goal is a totally interconnected, intelligent port, a Smart-port," says Saxe. He envisions a port in which, for example, a railroad drawbridge would no longer open at specific times, but rather just before a ship actually reaches it. This eliminates unnecessary delays for the railroad and at the terminal. Even the Köhlbrand Bridge would become "intelligent," in that it would report its current condition and predict future maintenance needs, all through the use of sensors. The frequency of scheduled maintenance dates was recently increased because significantly larger numbers of heavy trucks were crossing the bridge than had been planned for. This was of interest to Saxe and the HPA, but also to police and the customs agency, because some of the trucks were carrying illegal loads.

Rediscovering Data

In the end, the complex harbor logistics will create a machine that controls itself. Saxe's vision of the future is a sort of port exchange, allowing

shipping companies to predict, down to the minute, how quickly their containers will be moved from the water to the road.

Many other companies worldwide are in the same position as the HPA. They are rediscovering a raw material that they, their facilities and their customers produce in excess every day: data.

The expression "Big Brother" has become dated. Experts would seem to have reached consensus on the term "Big Data" to describe the new favorite topic of discussion in boardrooms, at conventions like Berlin's re:publica last week, and in a number of new books. Big Data promises both total control and the logical management of our future in all aspects of life. Authors like Oxford Professor Victor Mayer-Schönberger are calling it a "revolution." According to Mayer-Schönberger, Big Data, which is also the title of his current book on the subject, will change our working environment and even the way we think.

The most important factor is not the sheer volume of data, even though it is currently growing faster than ever. An estimated 2.8 zettabytes of data were created in 2012. One zettabyte is 1,000,000,000,000,000,000 kilobytes. Experts predict that the volume of new data could increase to 40 zettabytes by 2020. It would take about 250 million DVDs to store the amount of data being transmitted on the Internet in a single day. This volume doubles about once every two years.

New is the way companies, government agencies and scientists are now beginning to interpret and analyze their data resources. Because storage space costs almost nothing nowadays, computers, which are getting faster and faster, can link and correlate a wide variety of data around the clock. Algorithms are what create order from this chaos. They dig through, discovering previously unknown patterns and promptly revealing new relationships, insights and business models.

Though the term Big Data means very little to most people, the power of algorithms is already everywhere. Credit card companies can quickly recognize unusual usage patterns, and hence automatically warn cardholders when large sums are suddenly being charged to their cards in places where they have never been. Energy companies use weather data analyses to pinpoint the ideal locations for wind turbines down to the last meter. According to official figures, since the Swedish capital Stockholm began using algorithms to manage traffic, drive times through the city's

downtown area have been cut in half and emissions reduced by 10 percent. Online merchants have recently started using the analyses to optimize their selling strategies. The widespread phrase "Customers who bought this item also bought ..." is only one example of the approach.

Turning Data into Dollars

Google and Facebook are pure, unadulterated Big Data. Their business models are based on collecting, analyzing and marketing information about their users, through advertising tailored as closely as possible to the individual. This gigantic database and the notion of what can be done with more than a billion individual profiles in the age of Big Data was worth at least \$100 billion (€78 billion) to Facebook investors.

The prospect of turning their treasure troves of data into dollars is now fueling the fantasies of businesses in many industries, from supermarkets to the automobile industry, and from aviation to banks and insurance companies. According to figures published by industry association Bitkom, global sales related to Big Data applications amounted to €4.6 billion in 2012. That number is expected to increase to about €16 billion by 2016. Countless Big Data applications are also being tested in medicine and science. Even the public sector, especially police departments and security agencies, not always the most progressive when it comes to IT, have recognized the potential benefits in their fields.

What captivates so many people is the promise of gazing into the future, thanks to the lightning speed at which massive amounts of data can be analyzed. In fact, algorithms allow for astonishingly precise predictions of human behavior, be it in front of supermarket shelves, in traffic or when it comes to credit-card payment patterns.

In 2010, Google predicted a wave of flu outbreaks on the basis of user searches. American data specialist Nate Silver predicted the outcome of the last US presidential election well in advance and more precisely than all demographers.

'The End of Chance'

Some cities even predict the probability of crimes in certain neighborhoods. The method, known as "predictive policing," seems like something straight out of a Hollywood film, and in fact it is. In Steven Spielberg's "Minority Report," perpetrators were arrested for crimes they hadn't even committed yet.

Finding the presumed delinquents also doesn't seem to present a problem. Scientists have figured out that, with the help of our mobile phone geolocation and address book data, they can predict with some certainty where we will be tomorrow or at a certain time a year from now.

The increasing accuracy of such forecasts have led American tech guru Chris Anderson to proclaim that we are arriving at the "end of theory." Austrian media executive Rudi Klausnitzer, who has just written a book on the subject called "Das Ende des Zufalls" ("The End of Chance"), has reached a similar conclusion.

It is a prospect that is not altogether appealing to some. But many already rely on the prognostic ability of soulless algorithms in the most intimate spheres of life. The extensive questionnaires used by online dating agencies are fed into algorithms designed to increase the probability of finding a compatible partner.

A gold rush of sorts is taking shape in companies, research laboratories and some government agencies. In many places, the mantra of data is extolled as the new "oil" or "gold" of the 21st century. Some people are already benefiting financially: statisticians, physicists and so-called data scientists or data miners, who advise companies on Big Data applications. As with the classic American gold rush in the 19th century, most of the money is being made by those who sell equipment, tools and expertise, Big Data specialists like Blue Yonder, a company with 85 employees.

How Data Revolutionizes the Economy

The man doesn't look much like a fortune-teller, and yet he repeatedly makes the same odd remark: "Our job is to provide predictions of all kinds." Uwe Weiss is the managing director of Blue Yonder, a company founded five years ago. Weiss doesn't consult tarot cards or scrutinize the entrails of innocent farm animals, but instead analyzes the columns of figures generated by supermarket cash registers, weather services, vacation schedules and traffic reports. All of this data flows into data analysis software developed by Blue Yonder, which, according to the company's advertising, can be used to provide customers like the Otto Group, one of the largest mail-order companies in the world, and the dm drugstore chain with "precise prognoses" -- on, for example, the expected sales of a specific item.

This is extremely important to the retail business because it enables companies to avoid delivery problems and minimized storage costs. Blue Yonder software is programmed to learn more with each piece of new information it acquires, as well as to independently recognize relationships. In this manner, Weiss and his employees discovered that in a specific branch of a supermarket chain, sales of milk, chocolate bars and apples shot up on certain days -- coinciding with the arrival of new school groups at the nearby youth hostel. The software now calculates, using data that includes school vacation schedules in the surrounding states, the probability of new busloads of students arriving at a given time. Blue Yonder employees had a similar realization with sliced bread. "Children don't go to school on days preceding or following midweek holidays, and the demand for sliced bread goes down as a result," says Weiss. Inventory ordering systems are now adjusted automatically, he explains. "It's a relatively straightforward process."

Increasing Accuracy of Sales Forecasts

The constant in-stream of new data has enabled Blue Yonder to develop something of an ad hoc market research system on buying behavior, which can also be used for other purposes. The drugstore chain dm has Weiss's team calculate optimal staffing levels for its stores, and it also provides sales forecasts for each store.

The data analyses are of similar interest to insurance companies. As a "future scenario," Weiss describes a car equipped with more than 1,000 sensors, which permanently monitors driving behavior. Drivers who provide their insurance companies with the data, which can easily be used to develop a risk profile, could in the future be enticed with especially low premiums, says Weiss. "Big Data is currently revamping our entire economy, and we are only at the beginning," says the head of Blue Yonder, for whom, of course, this is a positive development.

Important Big Data customers are also reporting the first measurable successes. A study IBM has compiled on a few "success stories" among its own customers reports increases in efficiency of about 20 percent. According to Blue Yonder customer Otto, the data experts' work has improved "the quality of sales forecasts for individual items by 20 to 40 percent." The mail order company is so enthusiastic that it is now using the

method with corporate brands like German sporting goods retailer SportScheck, as well as acquiring a 50 percent stake in Blue Yonder. Netflix, an American company that began its business with DVD rentals and now provides its 36 million customers with movies primarily through streaming video feed, is yet another example of the far-reaching possibilities of Big Data. Netflix recently achieved record viewership levels with the series "House of Cards," a political thriller starring Kevin Spacey. The show's success, though, was hardly by chance: Netflix used data analysis in its decision to buy the series. Netflix has the ideal qualifications to take such an approach. The company knows, on a day-by-day basis, which genres are doing well, when viewers are losing interest or which actors are especially popular. Based on such information, "House of Cards" corresponded precisely to the predicted tastes of Netflix viewers, and proved a success.

The music-streaming portal Spotify is popular for similar reasons. It provides participating record companies with current information about music tastes and usage behavior, and it allows bands to plan upcoming tours by choosing locations where Spotify users listen to their songs most frequently.

An Electronic Brain to Defeat Cancer

But Big Data also promises to benefit society in other ways. Hope for millions of cancer patients can be found on the second floor of the Hasso Plattner Institute (HPI), in Babelsberg, a district of Potsdam outside of Berlin. It consists of a rack with 25 slots, each with blinking diodes. Each of the computers has 40 processors instead of only one. The room is kept at low temperatures to prevent the €1.5 million brain, with its 1,000 processor cores, from overheating.

Plattner, founder of the SAP software group and sponsor of the institute, was personally involved in the development of the idea, which seems relatively straightforward. The Babelsberg computing machine sucks all data directly into its main memory, which enables it to compute at 1,000 times the speed of conventional computers, and sometimes even faster. The process, which began at HPI as a project by eight undergraduate students with the working title "Sanssouci DB," is known internationally by the name "in-memory." It has won prizes for innovation and has become part of SAP's portfolio. The company's current Hana database technology

is based on the in-memory process. The head of HPI, mathematician Christoph Meinel, sees the technology as a foundation for both commercial applications and opportunities for cancer therapy. "Thanks to the in-memory process, we are on the threshold of personalized medicine," says Meinel.

It currently takes months to decode a person's genome in order to come up with a treatment tailored to an individual patient, Meinel explains. This isn't surprising, given the roughly three billion genetic building blocks in a person's DNA. But now scientists know that every tumor is different, which means that the same treatment can affect people in different ways.

Triggering the Alarm

With the help of his new "super brain," the decoding of an individual genome can be reduced to a few seconds, says Meinel. In addition, the Babelsberg computer spends its nights extracting all information from publicly accessible genome databases, searching the data for comparable cases to find treatments that resulted in high survival rates and the best possible quality of life. "Until recently, this matching process would have taken months," says Meinel.

Meanwhile, researchers at the University of Manchester are working on another Big Data project, a "magic carpet" that could help senior citizens who live alone. The device is installed on the floor like an ordinary carpet, with built-in sensors recording the person's steps. The data enables a computer to determine whether the person has gotten out of bed, for example, and can analyze activities to see how they compare with the person's normal movement pattern. Deviations could indicate a medical emergency, and an alarm is triggered.

The carpet sensors can detect the tiniest of differences in a person's step, and thus indicate that something isn't right with the patient before a possible fall. Scientists are also experimenting with other logical extensions of the concept. For instance, chips and sensors with these kinds of alarm functions can also be incorporated into artificial hips.

The Algorithm Builder

Stefan Henss, a student, had initially hoped to earn a little extra cash by betting on sporting events. Hoping to outsmart the bookies, he wrote a program that was supposed to precisely predict football scores. But it didn't work very well.

Henss was 10 when he got his first computer, and he started programming at 13. Three years ago, when he was in his early 20s and studying at the Technical University of Darmstadt, he happened upon Kaggle, a platform where companies tender data projects. The companies are interested in obtaining the most precise predictions possible, as well as solving difficult problems for which they are unable to find solutions on their own.

Henss chose a task that had been posted by a car dealership platform, which was searching for a way to predict the resale prospects of used cars. He built an algorithm, in which he inserted a large number of details about the cars "into a context that made sense," as he describes it. The information included data such as original registration dates, mileage and annual distance driven.

He submitted his solution and came in sixth among the 571 teams from around the world competing for the \$10,000 award. The challenge had awakened his ambition. "Competing with others was incredibly motivating. I knew that I was onto something," says Henss, who has since become one of the most successful algorithm builders on Kaggle. Nowadays he chooses his challenges more strategically, partly based on the amount of the award.

Computer Grading

The approach led him to his biggest triumph to date. The challenge was to write a program that could automatically and reliably evaluate student essays -- essentially a grading machine. Using various standard algorithms, Henss built a program that takes the wealth of language into account, determines the number of spelling errors per word and recognizes grammatical errors. The program can draw conclusions on the content of essays. His algorithm can even detect how levelheaded the writer was or whether emotions were at play.

He spent a month and a half working exclusively on the program, which eventually consisted of 12,000 lines of code. A week before the end of the contest, he joined forces with two other competitors to increase his chances of winning. His new partners, an Englishman and an American who only knew each other through the platform, combined their solutions. They won the contest and split the prize money of \$60,000.

"Tests have shown that our evaluations did not differ significantly from the teacher evaluations," says Henss. The trio has since sold the software to

Pacific Metrics, a US company. Henss, who is now writing his master's thesis, can look forward to a bright future.

But there are also people whose lives are made more difficult by Big Data applications.

The End of Inspector Chance

Things couldn't have gone more wrong for the car thief. As he was trying to break into a vehicle in an underground parking garage in Santa Cruz, California, a policeman happened to be sitting in an unmarked car just a few meters away, eating his lunch. The thief was arrested before he could complete his nefarious deed.

But the officer wasn't in the right place at the right time purely by chance. He was spending his lunch hour in the parking garage on that particular day, based on the recommendation of a computer program.

For the last two years, the city's roughly 100 police officers prepare for their shifts every day with instructions from both their supervisors and an algorithm. The program, which is constantly being fed all relevant data the police apparatus has to offer, calculates the probabilities of crimes, like burglary, robbery and car theft, being committed at certain times and in certain neighborhoods. Homicide has been excluded from the program so far.

The 15 most dangerous neighborhoods appear as rectangles on electronic cards. In two-thirds of cases, the predicted incidents actually occurred. "I would have been happy with only 10 percent," says Santa Cruz Deputy Police Chief Steve Clark.

Two professors, computer scientist George Mohler and anthropologist Jeffrey Brantingham, who specializes in crime scenarios, were instrumental in developing the predictive method of fighting crime. Their program is based on models for predicting the aftershocks of earthquakes.

Clark had accidentally heard about the two professors' idea in early 2011. Together the three men set up a pilot project. They fed eight years of crime statistics into the program, as well as countless other pieces of potentially relevant data, like weather statistics and proximity to parks and bus routes. In addition, the program places each crime in relation to every other crime.

High-Tech Cops

"There were many skeptics at first, including me," says Clark. "But the numbers speak for themselves: It works." According to Clark, burglaries

declined by 11 percent and car theft was down by 8 percent in Santa Cruz after the new crime prediction system had been in use for one year. In addition, the arrest rate in Santa Cruz went up considerably -- by 56 percent.

The entire police force now uses high-tech equipment. All cops carry smartphones and tablet computers to access the web-based prediction program while on patrol. They are encouraged to spend time in the marked zones whenever possible. Clark can tell many stories about how his officers have caught burglars and thieves red-handed in the predicted zones.

The two data experts, Mohler and Brantingham, have since started a company and are marketing their product, Predictive Policing, worldwide. In the United States alone, more than a dozen police departments have already introduced the software, including Los Angeles, Boston and Chicago. Clark was recently in England to help the police in Kent launch the program.

The military and intelligence communities also employ the power of data analysis. For instance, Big Data played a key role in the hunt for Osama bin Laden, as American author Mark Bowden describes in his book "The Finish." According to Bowden, database analyses were partly what ultimately led investigators to Abbottabad in Pakistan.

Improving Security

One of the suppliers to the US Defense Department is Palantir, a company founded in 2004, partly with backing from Peter Thiel, a German-American investor. Another hot commodity among intelligence agents and military officials is the California software company Splunk, which is headquartered in a former sausage factory in San Francisco. A few weeks ago, technology journalists named Splunk one of the five most innovative companies in the world. Google only made it to 11th place in the ranking. Governments, agencies and businesses in more than 90 countries use Splunk's applications. Its customers in the US include the Pentagon and the Department of Homeland Security. The nine-year-old company's software analyzes and interprets data supplied by all kinds of machines, including cell phone towers, air-conditioners, web servers and airplanes.

"The turbines of an Airbus A380 produce as much data during a single flight as a medium-sized computer center," says Guido Schröder, senior

vice president of products at Splunk.

Schröder, who is originally from Paderborn in northwestern Germany and spent many years at SAP, now supervises 160 developers and engineers, whose goal is to make the flood of data produced by machines usable. In the case of the A380, for example, Splunk's work can help airlines minimize kerosene consumption or optimize maintenance intervals.

"Security is one of the biggest growth areas for Big Data applications," says Schröder. In addition to crime and terrorism, Splunk focuses on the growing number of attacks in, and by means of, the Internet and its software can detect hacker attacks or other cyber attacks. "We are positioning ourselves for an expanding cyber war," Schröder says. But the data hunters' new war also has many civilian aspects.

The Database

The brick building in Hamburg's Winterhude neighborhood doesn't look like a bank branch, and yet loans are made there. A plastic banner identifies the company as "Kreditech," and the atmosphere inside the building is a mixture of garage startup and shared apartment. Signs are posted on the walls exhorting employees to "Take off your shoes."

Sebastian Diemer and Alexander Graubner-Müller bear no resemblance to typical German lenders, whose business model they consider to be outdated. "At least the classic branch bank model is on its way out," says the young and dynamic Diemer, dressed in the classic start-up look: jeans and a hoodie.

The self-confident founders of Kreditech lend money through the Internet: short-term mini-loans of up to €500, with the average customer receiving €109. Instead of requiring credit information from their customers, they determine the probability of default on their own, using a social scoring method that consists of high-speed data analysis. "Ideally, the money should be in customers' accounts within 15 minutes of approval. This is already working in Poland," says Diemer. In return, Kreditech wants as much data as possible from its users. The more information the company gets, the more precise are its predictions and the higher a customer's potential credit line.

The evaluation profiles of EBay accounts are already publicly accessible. Kreditech also requires access to Facebook profiles, so that it can verify whether a user's photo and location match information on other social

networking sites, like Xing and LinkedIn -- and whether his or her friends include many with similar education levels or many colleagues working in the same company.

All of this increases the likelihood that Kreditech is dealing with a real person. Even the question of whether the loan request was submitted from an expensive iPad or a cheap Aldi computer goes into the evaluation. The applicants' behavior also plays a role, such as how much time it takes them to fill out the questionnaire. Kreditech also records the frequency of errors and use of the delete key.

Loans on Faith

In this manner, the Kreditech algorithm can process up to 8,000 different pieces of information, say its creators, who founded the company in March 2012 and are expanding rapidly. Kreditech is currently online in Poland, Spain and the Czech Republic, and the Hamburg-based lender also plans to launch its business in Russia in the coming days.

The lending operation had only been available in Germany for three weeks when Kreditech terminated its service here, "for preventive reasons," as Diemer says. In fact, the Federal Financial Supervisory Authority (BaFin) had contacted the company and announced its intention to examine its business model. That's because Kreditech doesn't just charge high interest rates, but also requires its customers to pay up to €49 for a "certificate of creditworthiness."

The mandatory purchase of certificates has since been eliminated in its other markets, say Kreditech's creators. The amount of interest they charge ranges from 5 to 28 percent a month, depending on the loan amount, a customer's score and the terms of the loan.

Kreditech's founders don't just expect to generate substantial revenues with microcredit requests and interest income. Their real goal is to develop an international, self-updating creditworthiness database for other companies, such as online retailers. Current scoring methods are based on fewer parameters, which also only reflect a person's credit past, says Diemer. Even that doesn't exist in many countries. A credit bureau with market penetration similar to the German system exists only in a few markets. "For almost three-quarters of the global population, there is still no reliable information on creditworthiness," says Graubner-Müller.

Investor Interest

In addition to Kreditech, lenders like Zestfinance and Britain's Wonga are pursuing similar goals as they dabble in this precarious market, raising both legal and moral issues. Wonga was maligned in the British press when it tried to lure students away from government-backed student loans into its own, vastly more expensive loans.

The Kreditech founders, who have known each other since adolescence in the western city of Wiesbaden, insist that they are above reproach when it comes to privacy issues and the amount of interest they charge. "SCHUFA (the German credit agency) keeps data in storage, while we only use data for a specific request." Besides, they explain, almost all of the data relating to rejected applicants is deleted after 90 days. The company only retains the information it needs to recognize applicants who were previously turned down.

Despite the limitations, investors find social scoring to be extremely attractive. Kreditech secured \$4 million in capital in December, and in April a German fund invested at a similar level. Wonga, for its part, has already raised \$141 million in investor capital.

A Tyranny of Data?

Business models like Kreditech's illustrate the sensitivity of the issues that many new Big Data applications raise. Users, of course, "voluntarily" relinquish their data step by step, just as we voluntarily and sometimes revealingly post private photos on Facebook or air our political views through Twitter. Everyone is ultimately a supplier of this large, new data resource, even in the analog world, where we use loyalty cards, earn miles and rent cars.

Perhaps many people do so with so little inhibition because what happens to our data often remains ambiguous. To whom and how often is our data sold? Are these buyers of data also subject to rules for deleting the data and preserving anonymity? And what will happen, for example, with Kreditech's credit profiles if the small business is ever acquired by a larger company or goes bankrupt?

An attempt by the established credit reviewers at SCHUFA to launch a pilot project on social scoring, together with the Hasso Plattner Institute, revealed just how sensitively the public reacts to such issues.

As with Kreditech, the project sought to analyze data from Facebook, Twitter and other social networks and examine its role in determining

creditworthiness. Merely the announcement of the project triggered angry protests, and the effort was promptly abandoned.

There was an even greater storm of indignation when many drivers realized that their navigation devices don't just help them find the best route to their destinations, but can also be used against them. TomTom, a Dutch manufacturer of GPS navigation equipment, had sold its data to the Dutch government. It then passed on the data to the police, which used the information to set up speed traps in places where they were most likely to generate revenue -- that is, locations where especially large numbers of TomTom users were speeding.

Pre-programmed Conflicts

TomTom's CEO issued a public apology, saying that the company had believed that the government wanted the data to improve traffic safety and reduce road congestion. TomTom had not anticipated the use of the data for speed traps, he said.

Similar conflicts are practically pre-programmed into the technology, especially as a central conflict is inherent in its development. Big Data applications are especially valuable when they are personalized, as in the case of credit checks and individual medicine.

Personalized profiles, which bring together a wealth of information, from expressions of opinion on Facebook to movement profiles, provide companies with tempting possibilities. For instance, if someone "likes" a particular pair of jeans on Facebook, the storeowner could send a discount coupon for precisely the same brand of jeans to that person's mobile phone the next time he or she enters the store.

This may be appealing to retailers and some consumers, but data privacy advocates see many Big Data concepts as Big Brother scenarios of a completely new dimension.

So far, many companies have tried to dispel such fears by noting that the data they gather, store and analyze remains "anonymous." But that, as it turns out, is not entirely accurate, in that it sells the power of data analysis radically short. Take the analysis of anonymous movement profiles, for example. According to a current study by the online journal Scientific Reports, our mobility patterns are so different that that they can be used to "uniquely identify 95 percent of the individuals." The more data is in circulation and available for analysis, the more likely it is that anonymity

becomes "algorithmically impossible," says Princeton computer scientist Arvind Narayanan.

In his blog, Narayanan writes that only 33 bits of information are sufficient to identify a person.

Heated Controversy

From the standpoint of businesses, the slightly schizophrenic attitude of consumers is the real crux of the issue. On the one hand, we have become shockingly forthcoming -- and apparently accessible -- online. Yet we ascribe the most sinister of motives to those who would analyze that data and collect more.

A study by New York advertising agency Ogilvy One concludes that 75 percent of respondents don't want companies to store their personal data, while almost 90 percent were opposed to companies tracking their surfing behavior on the Internet.

This conflict explains the heated nature of the current controversy over the proposed new European data protection directive. If the European Commission's plans, which also include a "right to be forgotten" on the web, become a reality, many providers could see their Big Data growth fantasies in jeopardy. This is one of the reasons Brussels currently faces a barrage of lobbying from the likes of Amazon, Google and Facebook. But for a modern society, an even more pressing question is whether it wishes to accept everything that becomes possible in a data-driven economy. Do we want to live in a world in which algorithms predict how well a child will do in school, how suitable he or she is for a specific job -- or whether that person is at risk of becoming a criminal or developing cancer?

Data Tyranny

Is it truly desirable for cultural assets like TV series or music albums to be tailored to our predicted tastes by means of data-driven analyses? What happens to creativity, intuition and the element of surprise in this totally calculated world?

Internet philosopher Evgeny Morozov warns of an impending "tyranny of algorithms" and is fundamentally critical of the ideology behind many current Big Data applications. Morozov argues that because formulas are increasingly being used in finance and, as in the case of Predictive Policing, in police work, they should be regularly reviewed by

independent, qualified auditors -- if only to prevent discrimination and abuses of power.

A dominant Big Data giant once inadvertently revealed how overdue a broad social and political debate on the subject is. Google Executive Chairman Eric Schmidt says that in 2010, the company toyed with the idea of predicting stock prices by means of incoming search requests. But, he said, the idea was discarded when Google executives concluded that it was probably illegal.

He didn't, however, say that it was impossible.