A scientific perspective for 12 events in 2016

Politics, society, economics, law, science and health... 2016 was an eventful year, with its share of tragedies in Belgium, Europe, and across the world. We have chosen 12 “major” events and asked 12 ULB researchers to analyse them and put into scientific perspective these 12 months.

We thank them for hitting the «pause» button in the middle of a hectic year, and hope you enjoy reading their analyses!

An initiative of the Research Communication unit, External Relations Department, Université libre de Bruxelles.

com.recherche@ulb.ac.be
@ULBRecherche
In January, researchers in California announced the discovery of a ninth planet in our solar system. Sophie Van Eck, will we have to update our schoolbooks?

"First, let’s wait for the researchers to confirm their discovery. So far, they have been relying only on calculations and predictions. They had initially noticed that certain objects located in the Kuiper belt, beyond Neptune, had a similar alignment. The odds of this happening by chance are only 0.007%; researchers concluded that these objects were resonating with an as-yet-unknown planet. However, for their discovery to be substantiated, they must keep on watching the skies looking for this new planet. But since they cannot yet know exactly where they should point their telescopes, they are looking for a needle in a haystack and it may be a while before they are able to observe it.

But if they do, what a find!

"Yes indeed: the last time we found a new planet was 1930, with Pluto… which was downgraded in 2005 and is now considered a «dwarf planet». Before that, Neptune was the latest planet to be discovered, in the middle of the 19th century. Now, we are able to detect even planets orbiting stars other than the Sun (known as «exoplanets»), and many such planets have been spotted over the past 20 years. The discovery of Proxima-b in August is one of the most exciting discoveries.
What do these new planets teach us? How is this research useful?

Discovering new planets and, more generally, studying all objects in the Solar System, can tell us a great deal about the history of Earth and the Solar System. For instance, we are trying to figure out why Mars has lost its atmosphere or why Venus is experiencing a runaway greenhouse effect. By finding new planets and exploring for water on Mars, Europa or Enceladus – moons of Jupiter and Saturn, respectively –, we can gain better understanding into the formation and history of each planets and of the Solar System as a whole. Furthermore, each new exoplanet teaches us that the Solar System does not seem to be typical of planetary systems that we have found until now: as we learn more about planets, we realise how much more welcoming and hospitable planet Earth is compared to the rest of our system. Researchers are looking for the reasons of this peculiarity. Mankind must realise that we have no «planet B» and must therefore take great care of the only one we have!

There is also the issue of alien life...

That’s right. Man has always been fascinated by the unknown, and has always wanted to explore farther. Today, space is the «new frontier», the new unknown. And then, the age-old question: «are we alone in the universe?» With astrophysics, we can gradually learn partial answers and make headway into this unknown territory. The question of alien life should actually be a central one in the next developments of astrophysics: I believe we will continue looking for exoplanets, with this question always at the back of our minds. Ten to twenty years from now, we should be able to know the precise chemical make-up of several exoplanets’ atmosphere, which is an essential criteria for the appearance of life as we know it: these criteria include being located in their star’s so-called «habitable zone», being at a proper temperature, having a protective magnetic field and an adequate atmosphere, and so on. European astronomers are very advanced in this area, thanks to the European Southern Observatory (ESO, whose telescopes are located in Chile), and they have already analysed the light spectra reflected by exoplanets. I should also mention ongoing and planned space missions, such as the future Plato mission and the Gaia programme, run by the European Space Agency (ESA), or the James Webb telescope developed by NASA. These missions and instruments should help us find more exoplanets and find out whether they could – or even if they actually do – host life as we know it.

Sophie Van Eck

A researcher at the Institute of Astronomy and Astrophysics within the Faculty of Sciences, Sophie Van Eck’s areas of studies include the production of elements heavier than iron inside stars. She is very active in science teaching and outreach, and teaches astrophysics to students in the Bachelor and Master programmes in physics.
Looking back: Monday, February 1

The World Health Organisation (WHO) announces that Zika is «a worldwide public health emergency».

The announcement follows an epidemic in Latin America, mainly since the end of 2015. Concerns are especially high as the 2016 Summer Olympics in Rio are set to kick off in August.

Zika is transmitted by the mosquito «Aedes Aegypti», and is mostly asymptomatic in adults. However, it is dangerous to pregnant women: the virus can go from mother to child, causing microcephaly, i.e. an abnormally small brain.

Pierre Vanderhaeghen, when the WHO announced in February that Zika was a global public health emergency, the link between the virus and microcephaly had not yet been confirmed...

That’s true; a correlation has been observed between the presence of the Zika virus and an abnormally high number of cases of microcephaly, but correlation does not imply causation. Still, it was the best explanation we had at the time. Doubts remained, however, as another virus from the same family, very closely related to Zika, has been present in Africa for decades without causing microcephaly. Since then, independent studies have established that the Brazilian virus is indeed causing microcephaly: it was found in the brains of stillborn children, near abnormal lesions. This is a strong clinical argument.

Do we know how a Zika infection causes microcephaly in the foetus?

It has been confirmed through experiments that the Zika virus can infect neurons and neural progenitors, causing their death: the lower number of brain cells results in lower brain development and microcephaly. However, the process through which Zika kills neurons is still disputed and is currently being studied by many laboratories. What I personally wonder about is why Zika’s African cousin can also kill neurons in lab conditions, but not on the ground. This is quite unexpected, and we do not yet know why it happens. It might be a matter of conditions for infection, or of immunity: perhaps the Latin American strain is somehow more efficient at reaching the foetus? Research is therefore turning to immunology and foetus-mother interactions in order to explain how certain Zika strains might be able cross the placenta barrier while others can’t. It goes without saying that there will also be intensive research into finding a way to eradicate the virus and develop a vaccine.
Still, Zika is not the only cause of microcephaly...

“Far from it. In Europe, the cytomegalovirus (CMV) is a much greater threat, and it can cause especially severe lesions in the brain. This is also true of alcohol, ionising radiation, and any substance that causes direct lesions to the developing brain, which is especially vulnerable. Microcephaly can have many causes, which makes it a difficult problem to tackle. There are also a number of genetic causes, with some fifteen causal genes already identified. As a part of an ongoing research project with professors Marc Abramowicz and Julie Désir, from the genetics unit of Hôpital Erasme, we are attempting to understand the underlying mechanisms through which mutations in these genes cause microcephaly.

Has Zika taught researchers anything?

“Until now, it has not taught them much about the brain’s development, but previous research in neurobiology has enabled us to quickly understand how virus impacts brain development. In addition, microcephaly highlights a specificity of the human brain: it targets the cerebral cortex, which is highly developed in humans. With the development of models of study for neurons and our knowledge of the human genome, we can now study the specificities of the human brain’s development and attempt to explain why humans are often more severely affected by certain neurodevelopmental or even degenerative disorders. What makes the human brain so special is also what makes it so sensitive. This is a fascinating topic, in which we constantly make new discoveries.

Pierre Vanderhaeghen

A researcher at the IRIBHM (Faculty of Medicine) and the head of the ULB Neuroscience Institute (UNI), Pierre Vanderhaeghen studies the development of the brain and especially of the human cerebral cortex. Laureate of an European Research Council grant, this is the central topic his project «GENDEVOCORTEX». Pierre Vanderhaeghen has won the Francqui prize in 2011, and he and his laboratory regularly publish articles in major scientific journals.
Laurent Licata, the attacks in Paris, Brussels, and Nice have created great turmoil. An expression has been on all lips: «vivre ensemble», or living together. Some are even wondering how we function (or used to function) as a society.

In a «normal» situation, you, me, our neighbours, and our colleagues all have goals; in order to meet them, we call upon representations of ourselves and of the world. When we reach these goals, and especially when we exceed them or reach them faster than anticipated, our representations of ourselves and society are reinforced. With our beliefs thus reaffirmed, we confidently carry on with our actions, and this is how we build our identity. Who we are (our personality traits, etc.), what we do (our actions, our position taking), and how others respond to us (granting or denying recognition). We have an individual identity, but also collective identities, depending on the groups to which we belong. For instance, I have an identity as Laurent Licata, one as a ULB professor, one as a researcher in social psychology, one as a person who wears glasses, and so on. Depending upon the context, I can put any of these identities in the foreground. This is a theoretical, «normal» situation, outside of any crisis. When the attacks happened in March, it was a huge blow to our values, our beliefs, and our representations of the world.

…and this crystallises certain identities?

That’s right, for instance Belgian identity: people display the country’s flag, or pictures of Tintin or Manneken Pis on their Facebook profiles. This is nothing new: Manneken Pis was depicted urinating on German soldiers during World War I, on a swastika during World War II, and on jihadist terrorists in 2016. People are gathering on Place de la Bourse where they pour out their feelings, writing or drawing about their values: we are reassuring ourselves about who we are. What appears as openness can, however, actually be withdrawal into this group whose very borders are being redefined: what does it mean to be a Belgian today? It is clear that citizens who shared symbols of peace do
not have the same definition as hooligans who came to demonstrate, yet all were gathered on Place de la Bourse after the attacks. There were even Muslims, who also considered themselves to be on the side of the victims of the terrorist attacks.

**Several months have passed, yet identities still appear to be hurt and exacerbated.**

This is true, and the current crisis will likely be all the more difficult to overcome that our identities are multifaceted and their affirmation depends upon how others react. Back to our theoretical model, for instance: imagine I am a Muslim Belgian student. Depending on the time or the context, I might outwardly adopt any one of these identities. After the attacks, whenever I present myself as a Muslim, the feedback I get from society is negative and demeaning: I am seen as responsible, as an accomplice and a threat. I can then react in one of two ways: my individual strategy can be to distance myself from the shunned group, and join instead a different group where I will get positive feedback from society. This is the idea of social mobility, where my situation depends on myself and on my own efforts. However, I can also have an opposite reaction, and cling even more tightly to this disparaged identity.

**Many Belgians fail to understand this identity affirmation, or even feel threatened by it.**

But there is a sensible explanation for it: if I do not understand why my group is not well regarded, if I feel like its members are unfairly treated and like I cannot escape it, then I might affirm this shunned identity even more. The feeling of threat (whether real or symbolic) is also understandable, but it is actually two-sided: the majority feels that its identity is threatened by a minority that demands its differences be recognised, while the minority fears that their culture might dissolve into the majority's.

**So how can we learn to live together?**

Today, nearly nine months after the Brussels attacks, we are past emotional reactions in the heat of the moment; we can afford the luxury of perspective. We all have different cultural, religious, or socio-economical identities. Instead of denying them or locking them in ghettos, we must set aside places and times where we can meet and discuss our identities and our life together. This is how we can build a more inclusive definition of our identity. This process is essential, especially considering that we ultimately pursue the same goals: be reassured, be recognised, live in both actual and symbolic safety, and so on.

---

Laurent Licata

A professor in the Faculty of Psychological Science and Education, Laurent Licata is also a member of the research centre in social and intercultural psychology (CRePSI). His research focuses on collective memory, social identity, inter-group and inter-cultural relations, and collective emotions. Since 2016, he has also been the Vice-Rector for academic policy and career management at ULB, in charge of diversity and gender policies.
Looking back: Sunday, April 3

The same headline is on the front page of Le Soir (Belgium), The Guardian (UK), Aftenposten (Norway), Asahi Shimbun (Japan), La Nación (Argentina), and nearly a hundred other newspapers across the world: «Panama Papers». This is the largest information leak ever covered, with 11.5 million documents from the archives of Panamanian law firm Mossack Fonseca, one of the world’s largest providers of offshore companies. As the case unfolds, revelation after revelation is made. The hidden fortunes of hundreds of celebrities – politicians, actors, athletes, business people, etc. – are uncovered, tax authorities launch investigations, many of those implicated resign...

One year earlier, an anonymous source had contacted German daily newspaper Süddeutsche Zeitung and sent it internal documents from Mossack Fonseca: e-mails, notes, tables, faxes, etc., 2.6 terabytes in total, which were then examined, analysed, and cross-referenced by some 370 journalists gathered in the International Consortium of Investigative Journalists (ICIJ).

David Domingo, after the impressive investigation that followed the release of the Panama Papers, one question comes to mind: is investigative journalism still alive and well?

"Well, the answer is yes! In 2016, the press is able to uncover major cases like the Panama Papers case, which has led to the resignation of Iceland’s Prime Minister and a series of tax investigations. This is a striking demonstration of how the press can be helpful to democracy! More than 370 journalists had gathered into an international consortium for a full year’s worth of investigations, which was incredible given the current crisis of the press: employment is down, and newspapers are under pressure to always go after the latest scoops.

Over a hundred media outlets came together for this extraordinary investigation. Still, this is a competitive industry.

"There is competition, of course, but although readers can access daily newspapers from all over the world through the internet, we can see that the media market remains essentially contained by national and linguistic borders. The first articles about the Panama Papers featured a few world-famous names, then each country’s media added more local high-profile people. This is exactly how the journalists involved investigated: the five Belgian journalists (from Knack, De Tijd, and Le Soir) mostly analysed what data was available on Belgians, whom they were in a better position to investigate.

The WikiLeaks website provides a platform for whistleblowers. Why were the Panama Papers leaks instead leaked to more traditional news outlets?

"Professional journalists guarantee the confidentiality of their sources, which means whistleblowers are likely taking less of a risk by contacting them. More importantly, journalist can analyse enormous amounts of information,
and carry out in-depth research, cross-checking, etc. The *Panama Papers* are 11.5 million internal documents from the Mossack Fonseca law firm: had they all been published directly online, its is very likely the firm would have quickly covered its tracks. Here, on the other hand, journalists were able to spend months working in secret; when they published their articles in April, they had solid evidence and a series of scandals all hit at the same time. This clearly shows the value of paid news and professional journalists, as they have collaborated to develop technical tools that let them to confidentially exchange and analyse large amounts of data.

**So the *Panama Papers* are also good for the press’ credibility?**

That’s right, and it is all the more necessary for our democracies that journalism retains, or even regains, its credibility in a context where the power of social media seems to facilitate the rise to power of populist leaders like Donald Trump: while social networks alone are not what got him elected, they likely helped. This is because these websites use algorithms that filter the information we receive depending on our profile: as a result, we only see a piece of the picture, and one that caters to our biases. The other major issue are the fake that plague social networks. These look like actual news, with a catchy title, a well-written story in a journalistic style, etc., and they are widely shared, often in good faith, by thousands of users despite having been entirely fabricated for a specific purpose: manipulating public opinion.

**Still, the press industry is losing readers while social media are constantly growing.**

It is true that print media are going through a readership crisis: the digital generation is not very interested in print. Online news sites are the main source of information for 64% of young people (18-24), while 28% follow the news on social media. A majority of people used to think that in order to be a good citizen or simply to be able to carry a conversation with colleagues, one needed to stay on top the news. Today, social networks publish content just like any other media, and news is available anywhere and at any time: the public no longer see it as valuable. This means our society must overcome two challenges. The first is that we must give journalists the means to work rigorously, professionally, and ethically, which would put them above other media outlets. They have managed to achieve this, for instance, with the *Panama Papers*. The second challenge is that we must promote critical thinking among citizens, especially with regards to the internet and social networks. This is an essential skill when it comes to telling quality information from rumours or fake news, and being worthy of the freedom of speech that our democracies guarantee.

---

**David Domingo**

A chair in journalism in ULB’s Faculty of Letters, Translation and Communication, David Domingo works on professional identities in journalism, relationships with the public, and the various emerging social forms of news content creation. Also a professor of journalism, he co-heads the Brussels academic school of journalism (EUJB-ULB), is the director of the research centre on information and communication (ReSIC), and coordinates the laboratory of journalistic practices and identities (LaPIJ). Additionally, he has co-edited *The SAGE. Handbook of digital journalism*, published in 2016.
Looking back: Monday, May 30

After more than a month on strike, most of prison officers unions accept a proposal from Minister of Justice, Koen Geens. This breaks apart the strike, and prison officers gradually start working again in the following weeks.

Prison officers went on strike to protest a 10% staff reduction, in reaction to the public service rationalisation programme launched in 2014 by the federal government. The strike lasts throughout the month of May: prison officers are replaced by police officers, then by soldiers. Many speak up against the detention conditions in prisons, which have dramatically deteriorated due to the strike, and the issue of minimum service brought up once again.

In May of this year, prison officers were protesting staff reductions and changes in their employment status. Seven months after the strike, Philippe Mary, what solutions have been found?

"Not many of the strikers’ demands have been met. The government has promised to hire 480 additional permanent staff members, including 386 prison officers, but their assignments have not been specified. Furthermore, the government has adopted its 3rd «master plan», which will involve expanding and renovating existing prisons and building new ones; still, it does not resolve the issue of staffing.

Does this strike reveal deeper issues within the legal system?

"I believe a major problem is that political parties have been ignoring this question for several decades. Announcing they will invest in a prison policy, for instance, does not earn them any votes. As a result, certain prisons are crumbling and the number of inmates is becoming unmanageable. Another problem is resource allocation: we have already seen situations where it took several years to build new showers while a new security system was installed despite not having been requested and possibly not even being of any use to staff."
At the same time, the living conditions for prisoners are deteriorating...

"Prisoners are the one who suffer most of the prison overcrowding and failing infrastructures. In fact, Belgium is regularly singled out for its degrading living conditions, especially in pre-trial detention centres. The situation is even worse during a strike, of course: for weeks on end, prisoners could not take showers, see a doctor, go outside, and so on, yet only two incidents have been reported. Things could have gone so much worse! Obviously, this once again raises the question of minimum service. Could we imagine the staff in a retirement home or a hospital stop doing their work and only carry out the bare minimum amount of work necessary? I believe this should never happen in prisons either. The government’s mistake at the time was to talk about minimum guaranteed service when train strikes happened at the same time as the prison strikes. However, the problems involved are not comparable: in one case it’s about getting to work late, in the other it’s about basic human decency.

The government’s «master plan» includes building new prisons; is this an adequate solution?

"It can be a short-term solution to overcrowding, but not to the root causes of overcrowding. We are the last country in Europe to build prisons for 1,200 inmates like in Haren. Other countries no longer do this, choosing instead to include prisons in their urban and social environment: in Belgium, a pilot project for «detention facilities» has been submitted to the Minister of Justice, and could be tested soon. We should also think about the enforcement of sentences, and consider alternative sentences for certain categories of crime. Scandinavian countries – among others – are often touted as examples in terms of prison policies. Their approach is different in that they have a culture of expertise: when confronted with a given problem, they bring together professionals from the relevant area, policy makers, and scientific experts, who discuss possible solutions together. Here in Belgium, it feels like we’ve been doing the same thing for 20 years.

Philippe Mary

As the head of the research centre in criminology in Faculty of Law and Criminology, Philippe Mary has been studying the prison system for 35 years. He also teaches penology and criminal policy in the Faculty of Law and Criminology. He is Belgium’s representative in the European Committee for the Prevention of Torture (CPT).
Looking back: Thursday, June 23

In Britain, 51.9% of people vote in favour of Brexit – the UK will leave the European Union. This result is a direct consequence of the 2015 general election. During the days and weeks that follow the referendum, many Britons protest the result, pointing to the lies from the «leave» camp. There is especially strong pressure from Scotland, Northern Ireland and Wales, who massively voted to remain in the EU; the idea of a referendum for the independence of Scotland is once again at the forefront. Since then, Europe has been waiting for the UK and its new Prime Minister Theresa May to trigger article 50 of the Treaty of Lisbon and launch the official negotiations over the country’s exit from the EU, lasting two years.

In June of this year, the UK voted to leave the European Union. Since then, Amandine Crespy, we haven't been hearing about Brexit. Why is that?

We are currently waiting for the UK to trigger article 50 of the Treaty of Lisbon, and only then will negotiations on the exit process begin. This should happen in the spring of 2017, according to UK’s new Prime Minister Theresa May. Until that time, the UK has a lot of work to do: it must put together a committee of experts that can negotiate with the EU’s own experts, and clarify how they plan to manage once they have left the Union, especially in certain areas like financial services – the London City is a major part of the UK’s economy. It must also contend with internal tensions with Scotland and, to a lesser extent, Wales and Northern Ireland.

As for the European Commission, its position is very clear: no negotiations as long as article 50 has not been triggered. This is why Brexit isn’t mentioned much in the news at the moment: everything is happening behind the scenes in Downing street. Meanwhile, the EU all its citizens are waiting...

What about the European model? Should we expect a domino effect, with other member states holding their own referenda?

I don’t believe this will be the case. Brexit is a special situation, resulting from a combination of factors that are specific to the UK. There have been suggestions and initiatives in other countries, such as the vote launched by Viktor Orbán in Hungary or Marine Le Pen’s promise to hold a ‘Frexit’ referendum if she is elected president of France, but so far these have only been about building hype. No EU member state is powerful and independent enough, whether economically or politically, to actually want to leave the Union. Brexit, by comparison, is the expression of a dissatisfaction that had remained latent in the UK for over a decade and...
that has crystallised around issues such as border control. The immigration crisis has resulted in walls being put up between member states, which is preoccupying: we must be wary of a possible unravelling of the Schengen area. Then, there is the eurozone: the financial crisis was overcome by tighter EU controls over national budgets, but the policy remains difficult and controversial. So the question is, how long can the EU keep these policies active?

So the EU now must rebuilt trust...

"That’s right: citizens are currently distrustful of the EU’s political institutions. Brexit was a result of this, but this was also a factor in debates about CETA. The EU can no longer develop policies far from the public eye. Citizens must be represented, participate, and have their voice heard, and not just during elections. I believe that decision-makers at both the national and EU levels must work on creating mechanisms through which a democratic debate can be led in the EU about fundamental questions that matter to us all: what social and economic model do we want? How do we want migratory flows to be managed? This cannot by decided only by heads of state during summits; citizens must also be involved in a true democratic debate.

Amandine Crespy

A professor at ULB’s Faculty of Philosophy and Social Sciences, Amandine Crespy conducts research within CEVIPOL (centre for the study of politics) and the IEE (Institute for European Studies). She has a particular interest in European integration, especially as regards socio-economic policies. Her other topics of interest include the European model and the opposition to Europe.
Looking back: Friday, July 15
At 10.06 p.m., Turkish Prime Minister Binali Yildirim denounces an «illegal attempt» to seize power by a group inside the army. In the following hours, tanks are deployed, jet fighters fly over Ankara, gunfire is exchanged; thousands of Turks take to the streets in support of president Erdoğan.
Saturday, July 16. At noon, the Prime Minister announces the coup attempt has failed: 104 soldiers involved in the coup were killed, nearly 200 other people were killed and hundreds more wounded, 2,839 soldiers are arrested, 2,745 judges are dismissed. President Erdoğan promises to purge state bodies of the «virus» responsible for the attempted coup. A state of emergency is declared. Day after day, the government’s list of «enemies» grows longer and longer, with judges, teachers, policemen, journalists, etc. who are arrested, dismissed, or harassed.

Firouzeh Nahavandi, has Turkish president Erdoğan gained more power after the failed coup attempt this summer?

"In a way, he has. This thwarted attempted has given him the opportunity to instrumentalise the situation in such a way as to consolidate his extra powers, eliminate any opposition – including in parliament –, and move ahead with his presidentialisation agenda by amending the country’s constitution. With a weaker army and a multiplication of purges among opponents, Recep Tayyip Erdoğan can effect the constitutional changes he is seeking. The country is experiencing a period of terror and repression: some 110,000 people are reported to have lost their jobs, 500,000 have been entered into a government database, and 37,000 have been arrested (November, 2016 data). Despite this, Erdoğan remains the president that the Turks have elected, and he is still supported by a majority.

How do you account for his public support?

"Erdoğan claims to be a leader who can fight terrorism, ensure economic growth for Turkey – the GDP growth rate has long been close to 4% –, resist the EU's overarching authority... And, more importantly, he presents himself as the defender of Turkish identity, which is a source of pride not only for the people living in Turkey, but also for part of the Turkish diaspora, especially in Europe. Some have called him the new father of the nation, a nationalistic and Islamic Turkey with redesigned borders. Thus, in early October, Erdoğan questioned the border between Greece and Turkey."
Is Erdoğan attempting to rewrite the country’s history and geography?

"The 1923 Treaty of Lausanne defined Turkey’s borders, and Erdoğan is questioning it, claiming Mustafa Kemal Atatürk had not gained enough. In reality, by asserting Turkish identity, Erdoğan is continuing Atatürk legacy of nationalism, albeit with an added Islamist touch. But Turkishness is a historical construct.

Still, there are many disparities and discordant voices within the country…

"That’s right, there are divisions, which Erdoğan is taking advantage of: divisions between Turks and Kurds (who make up 20% of the population); divisions between Sunnis and Alevis (who make up 15 to 20% of the population); and divisions between secular progressives and Muslim conservatives.

And let us not forget the division between men and women: in Turkey, women have been able to vote since 1934, and the media is showing us women writers, university professors, or activists. But in today’s Turkey, 43% of women aged 16 to 29 are not enrolled in education, 26% of them are married before the age of 18, etc. With 80 million inhabitants, Turkey is a very diverse country that largely remains traditional.

What might tomorrow bring?

"As of now, this question cannot be answered. The president has the support of a majority of the population, but for how long still? Citizens are suspicious of one another and call the authorities on their neighbours; repression has gradually targeted the army, political opponents, Kurds, the press, and, eventually, the business world and even Erdoğan’s inner circle. But if the economy stagnates or gets weaker, the president may have to pay the price. Another threat to his power are his own delusions of grandeur.

On the international scene, his arrogance may eventually become an annoyance to Western leaders. He has started getting closer to Israel and Russia, with whom there have been talks of gas pipeline projects; US president-elect Donald Trump’s positions, meanwhile, are still unknown. President Erdoğan seems to be distancing himself from Europe, even symbolically, with Turkey not switching its clocks to winter time this year. An issue that is far from symbolic is the agreement between the EU and Turkey on migrants: it was concluded in March, 2016, but its actual implementation is still a ways away.

Firouzeh Nahavandi

A full-time professor at ULB’s Faculty of Philosophy and Social Sciences, Firouzeh Nahavandi is the head of the centre for the study of development and international cooperation, or CECID. Her research deals both with the socio-political evolution of the Middle-East, especially in Iran, and with topics related to development, especially to national and international inequalities.

More recently, she has been looking into the position of women in the Islamic world and the extraction of more resources in Southern countries by Northern countries through the commodification of women’s bodies. Firouzeh Nahavandi has authored a number of books, including *Turquie. Le déploiement stratégique* and, in September, 2016, *Être femme en Iran. Quelle émancipation ?*. 
Looking back: Friday, August 5

The Summer Olympics kick off in Rio with a grand ceremony. For more than two weeks, some 10,500 athletes will compete in a variety of events and attempt to break records, while the International Olympic Committee is announcing multiple cases of doping among the athletes who competed in 2008 and 2012. The Rio Olympics had been claimed to be «clean», yet an anti-doping expert told UK daily newspaper The Telegraph that these Olympics were «by far the worst I’ve seen».

Jennifer Foucart, the Rio Olympics have been called the worse in terms of doping. Why is that?

These Olympics were expected to be «clean», according to the International Olympic Committee. Yet a number of dysfunctions were observed, including: a shortage of staff to monitor anti-doping tests; failures in the testing process – for instance, unauthorised persons were seen entering the testing area –; a laboratory recovering its accreditation at the last minute after having been banned by the World Anti-Doping Agency (WADA); and other incidents. These dysfunctions even resulted in the WADA calling for an independent investigation. In the end, 12 tests were positive and one weight lifter was stripped from his medal following a positive test for strychnine. The Rio Olympics also saw a number of athletes disqualified after positive tests for doping… during the Beijing (2008) and London (2012) Olympics!

Does this mean sports and doping are intimately linked?

Yes, I’m afraid doping will exist for as long as athletic competition does. Viewers always expect to see impressive feats during meets, and athletes are under tremendous pressure. We end up forgetting that sports is above all a pleasure that should be shared, rather than a competition to be won. But there is a ceiling to performance: we can improve equipment, training regimens, and diets, for instance, but the human body is reaching its limits; we will not be able to keep on beating records forever! Some see doping as a way to improve their performance despite these limitations, and this is all the more common that our society has accepted the idea that we need assistance to function better.
Is doping only used by professionals, or do amateur athletes also engage in these practices?

"The idea of relying on a boost to perform better is common among amateurs, and even outside of the world of sports: for instance, the same idea is behind vitamin supplements or energy drinks that we take when we have lots to do or to study. The same goes for protein powder and legal performance-enhancing drugs that gyms coaches might suggest you use. According to a US study, between 5 and 15% of adult amateur athletes use doping products, and 3 to 5% of children! Another study reveals that 2.7% of children aged 9 to 13 use anabolic steroids: obviously they did not make the decision to use these products, but they were given the drugs by others, because society has accepted the idea of a product that can improve our performance. Yet beyond its direct side effects, doping has other adverse effects; in particular, it can be a cause of drug addiction.

Can sports itself become an addiction?

"It’s true that an intensive sports activity can take on an addictive nature. Athletes are constantly in motion; when they stop being physically active, they can quickly show symptoms of withdrawal such as insomnia, irritability, loss of appetite, etc. Some then compensate by using actual addictive drugs. Studies show that 15% of drug addicts are former professional athletes. It is true that physical activity has positive effects on both body and mind, but only if one does not overexert oneself and constantly try to push one’s limits. As often, moderation is key.

Jennifer Foucart

Jennifer Foucart is a doctor of psychology. She teaches at the Faculty of Motor Sciences, and works in research unit on the psychophysiology of movement. She is also head of research at the Ilya Prigogine institute of higher education. Her areas of expertise and research are sport psychology – including addiction in sports –, eating disorders, the normal and pathological development of children, and communication in therapeutic relationships.
Looking back: Friday, September 2

An extraordinary meeting is called in Caterpillar’s Gosselies plant. It is only 8.30 a.m. when the news breaks: the multi-national company’s US headquarters is shutting down the Charleroi site. The 2,000 workers are incredulous, angry, dismayed. Factoring in the many subcontractors, this will result in over 6,000 jobs lost. Politicians, unions, workers from Charleroi, Wallonia, Belgium and all Europe take action; at the end of 2016, the Renault consultation and negotiation period continues.

Robert Plasman, does the closure of Caterpillar’s Gosselies plant mark the end of an industrial model?

While it is true that we are at the end of an era, I would offer a more nuanced view: after the steel and glass industries, manufacturing is going through difficult times. In the 1970s, Caterpillar created hundreds of jobs in Charleroi, employing up to 4,000 people in 2008. This model of a large manufacturing company with dozens of subcontractors is being replaced by a model dominated by innovating SMEs.

Does this mean Wallonia is no longer attractive to large businesses?

Not at all: Caterpillar has never stated that they were closing Gosselies because costs were too high or because the area was not attractive. The decision was rather made to concentrate production on a smaller number of sites. Since the last restructuring, the Gosselies plant had already specialised in products – namely excavators – intended for the European market; yet this market is not doing well. Still, Wallonia remains an attractive region for multi-national companies, as evidenced by GSK Biologicals or Alstom, for instance. What makes these companies healthy is not just their size, but also more importantly their ability to innovate.

Is research and development currently the biggest driver of success for companies of all sizes?

This is a well-known fact: innovation, technology, and research are incredibly important. And Charleroi is actually above Wallonia’s average in this respect, with a specialisation index of 1.6 for high-technology industries and 1.1 for services with a substantial technological component, the reference value being 1. So Charleroi has not only traditional industrial activity, but also – and especially! – cutting-edge and promising activities.
Are these high-tech companies creating jobs in Charleroi?

Yes, and the Biopark is a great example: in 1999, ULB installed a research institute in biology and molecular medicine in Gosselies, employing some 200 people, most of whom in research positions. By 2016, the Biopark covered four research institutes, a number of technological platforms, dozens of companies, a training centre, etc., employing nearly a thousand people in total. The statistics are very telling: in Charleroi, for instance, the specialisation rate is 1.6, meaning the share of jobs in high-tech branches is higher than the average in Wallonia.

Other numbers are not quite as flattering: according to the EU, the unemployment rate in Charleroi is 20%, while the average in Wallonia is 10%...

This is true: other indicators are more preoccupying, with a 52.2% employment rate in the Charleroi area, compared to 58.6% in Wallonia; the higher education graduation rate is also lower in Charleroi, with 14.1% while the average in Wallonia is 23.4%. This means that training and education are major challenges in Charleroi. It is important, of course, to ensure that local graduates remain in the area and to attract graduates from other areas; but efforts should also be made to encourage locals to pursue a higher education. This can be done by offering new BAs and MAs in the area, or by making the city itself more attractive to students. By developing its teaching and research activities in the new Zénobe Gramme university centre, located in the city centre, ULB is doing its part to rise to the challenge.

These initiatives may prove fruitful in a few years. In the meantime, what can we tell the 2,000 Caterpillar employees and the many subcontractors, who are about to lose their jobs?

The consultation period, as imposed by the Renault law, is ongoing, and it is too early to give a definitive answer. Many measures were taken in order to identify the potential for reusing all or part of the site. The Gosselies aerospace cluster is growing rapidly, and could bring new industrial and technological activities to the region. The committee for the strategic development of Charleroi, headed by Dominique Demonté (Biopark Charleroi Director), plays an important role in this context. Then, retraining units will also inevitably be set up, as happened previously for the workers who had been laid off by Duferco and Caterpillar after the 2011-2013 restructuring. These units have demonstrated their value, as an arrangement was found for 80% of workers. What makes things more difficult now is that only two years have passed. Can we achieve a similar redeployment rate? The coming months will tell.

Robert Plasman

A full-time ULB professor, Robert Plasman heads the department of Applied Economics – DULBEA – in the Solvay Brussels School of Economics and Management. He studies labour economics and regional economics. More specifically, he is interested in labour policies, working hours, the microeconomics of the labour market, wage structures, industrial relations, and economic performances.
Looking back: Friday, October 28

The parliaments of Wallonia, Brussels, and the Wallonia-Brussels Federation officially approve the signature of the planned free trade agreement between the EU and Canada, known as the Comprehensive Economic & Trade Agreement (CETA). This concludes two weeks of negotiations, which brought Wallonia worldwide media attention: the members of parliament, led by Walloon Minister-President Paul Magnette, had spent months asking for details about certain points of the treaty. The agreement was officially signed on October 30 between Canadian Prime Minister Justin Trudeau, European Council President Donald Tusk, and European Commission President Jean-Claude Juncker. CETA must now be ratified by each member state’s national and regional parliament.

In October, members of the Wallonia and Brussels parliaments fiercely resisted the free trade agreement between Canada and the European Union, mentioning arbitration courts, health protection standards, the protection of farmers... Have their concerns truly been heard?

"Not really. Much progress had already been made before the Wallonia and Brussels parliaments protested, such as the exclusion of dispute settlement mechanisms (the Investment Court System or ICS, also known as “arbitration courts”) during CETA’s provisional period. In practice, this remains a substantial obstacle to the treaty’s ratification, as the ICS itself remained unchanged; opponents continue to point out that future judges might be biased, and that multi-national corporations could indirectly influence national regulations by threatening to call upon the ICS in order to receive sizeable financial compensation. This means more protests can be expected when the time comes to ratify the treaty, and not just in Wallonia.

Belgium has also secured a guarantee regarding standards and the EU’s precautionary principle (according to which a product must not be put on the market if there are doubts as to its impact on public health): it was agreed that CETA would not affect EU legislation, and that standards could only be raised, never lowered. Still, there are debates regarding the interpretation of this agreement, and therefore its legal value. Belgian MPs have also added a safeguard clause in case the market becomes unstable, so as to protect the agriculture sector."
Regarding agriculture, one of the major concerns was competition…

"That’s true: legislators feared that European farmers, who were already in a precarious position and who could become the big losers as CETA opens the market to many new competitors. This is a legitimate concern, that is typical for any trade relationship, not just CETA: all trade liberalisation agreements have winners and losers. Still, this is not exclusive to trade agreements: technological innovations and automation can also create inequalities. It is essential to think on a global scale and implement policies that help cope with inequalities, regardless of what they were caused by.

Are large-scale agreements like CETA and TTIP the only viable model for trade relations in the future?

"Until recently, customs duties seemed like the main obstacle to the development of international trade. Now, most tariff barriers, such as between the US and the EU, are already relatively low (25% of products imported into the EU from the US are subject to no tariffs). We can therefore expect agreements on aspects that are not just trade-related, such as investment, standards, and so on. Services are also becoming a significant part of global trade, and they should also be included in negotiations.

At the same time as these international agreements, a number of initiatives are being launched on a local scale: for instance, some people want to consume local products, or to be in direct contact with producers. Is this a sign of a divide between two worlds?

"At the very least, this trend is a reaction to globalisation: increasing emphasis is placed in environmental issues, people want to know what they are eating, and so on. This return to a more local scale is not, however, immune from the influence of international trade: foreign companies can set up shop on local markets and sell directly to customers at a lower price. I believe we are headed towards a middle ground.

Mathieu Parenti

Mathieu Parenti joined ULB in 2015 as an assistant professor of economics at the Solvay Brussels School of Economics and Management. A researcher in the European Centre for Advanced Research in Economics and Statistics (ECARES), he is especially interested in international trade and industrial organisation. Mathieu Parenti teaches several courses for Bachelor and Master students in economics.
Looking back: Tuesday, November 8

Donald Trump wins the US presidential election against democrat Hillary Clinton. Immediately, people in several large cities take to the streets and demonstrate against Donald Trump, especially inflamed by the candidate’s racist and misogynistic statements on the campaign trail. They also call the US electoral system into question, as the democratic candidate led the popular vote by several million votes. This is the 5th time in the history of the US that a candidate has been elected without a popular majority. Donald Trump will officially become the 45th president of the US in January, during Inauguration Day.

Marie-Catherine Wavreille, in the aftermath of Donald Trump’s election, is it fair to say American society is more divided than ever?

“American society was already divided, between states that are traditionally democratic and republican. This is nothing new. Other divisions can be observed based on gender, age, ethnic origin, and income. This year, there is a specially significant difference in terms of education. Counties with a high number of college graduates supported the democratic candidate by an even wider margin than they had supported Barack Obama in 2012. As could be seen immediately after the election with demonstrations in many large US cities, Donald Trump is a very controversial figure, even within the republican party! Republican governor of Ohio John Kasich has refused to endorse him, as has the Bush family.

Donald Trump will have to unite all Americans: can be expect a change in his attitude?

“This will not be an easy task. Regarding his attitude, he has already been observed changing postures during the campaign. Trump had to set himself apart from his rivals during the republican primary, hence a number of highly publicised controversial statements. Once he was chosen as his party’s nominee, his position changed. And now that he has been elected president, he is adjusting course again: parts of his agenda have changed, and he his victory speech was very measured. Some have interpreted this as meaning he will be more moderate in the future and attempt to rally a majority of Americans by being less incendiary.
In Europe and across the world, the new president and his programme are met with much concern...

"President Obama himself was reassuring European heads of state during his last visit in mid-November. It is important to keep in mind that the president is not alone at the helm: he is surrounded by a team of advisers, and legislative power is in the hands of Congress. As Donald Trump has no political experience, he is expected to surround himself with competent people. Republicans have won a majority in Congress, but they do not all support the agenda Trump has presented during his campaign. However, mainstream republican policies (e.g. on abortion, tax reform, etc.) will likely be easier to enact. As for Donald Trump, he will have to learn political negotiation: he is a «president in becoming», with much to do and even more to prove.

What are the main initiatives Donald Trump will take as president?

"It is hard to tell, obviously, and he will not be able to implement his entire programme overnight! One item he would like to take care of quickly is the dismantlement of the healthcare programme created by his predecessor, known as Obamacare. However, there is currently no agreement as to what will replace the scheme. Another issue that will likely be put on the table soon is immigration: securing the country's borders, accelerating deportation procedures for criminal illegal immigrants, etc. Also important to mention is that Trump is to appoint a new justice to the Supreme Court. Internationally, he has stated he wants to renegotiate trade agreements, especially the trans-Pacific partnership (TPP). Trump has also said he wanted to cancel the Paris climate agreement, and there are fears that US support to developing countries – totalling 10 billion dollars – could be jeopardised. Should the US back out of the Paris agreement, the lack of American leadership in the fight against climate change would likely benefit China. But a few weeks after the election, Trump is making statements that go against his campaign promises: right now it is hard to tell what will happen.

Marie-Catherine Wavreille

A FNRS researcher at the CEVIPOL, part of ULB’s Faculty of Philosophy and Social Sciences, Marie-Catherine Wavreille is interested in US politics, with particular emphasis on direct democracy in the US, which she has studied for her thesis. She is currently completing a research visit at the University of California, San Diego.
One year after the Paris climate conference, countries are taking steps to implement a historic agreement. Alessandro Parente, do you think the objective of limiting the temperature rise to 1.5°C is realistic?

"It’s an optimistic objective, but we can achieve it, provided we act quickly. The main problem with greenhouse gases (GHG) is CO₂: it is mainly produced during the combustion process involved in transportation, heating, and industrial activity, and we are currently unable to live without these processes! While renewable energies can produce green energy, their energy density is too low for them to be viable for energy-hungry processes such as flying an airliner."

Does this mean we need to create new, more efficient fuels?

"Not only more efficient, but smarter: we need to improve the efficiency of combustion while limiting GHG emissions. This is the challenge we are facing right now. One possible way to achieve this is by using green energy for water electrolysis, separating oxygen and hydrogen and using the latter as fuel: not only does hydrogen allow for very efficient combustion, it is very energy-dense. The first hydrogen-powered passenger train will be tested in Germany in December 2016, while several hydrogen-powered buses have been operating in Switzerland since 2011. Here at ULB, we are currently taking part in testing a hydrogen-powered automobile, which shows this is a very promising area of research. Storage remains the main challenge: hydrogen is difficult – and therefore expensive – to store, due to the high pressure necessary. One solution would be to combine it with CO₂, creating methane that could then be sent through traditional gas networks, just like the gas used for heating or cooking. Not only would this produce a fuel that is green, powerful, and easily accessible, but it would allow us to use CO₂ from the air, which is the main culprit of climate change!"
So what are we waiting for? What is keeping us from implementing this technology?

“...The main issue is extracting CO$_2$ from the atmosphere. It is relatively scarce when compared to other gases, which means we would have to process large quantities of air in order to collect enough CO$_2$; the extraction process would require more energy than would be produced in the end. This is the paradox researchers are currently trying to solve. Prototypes have been built, but they are not quite operational.

Could this be a solution to climate change?

“...I don’t believe there is a single solution: researchers at ULB and across the world are looking into a number of solutions and fuels. By combining these technologies and adapting them to whatever resources are available in any given region, we might find a global solution. The technologies and infrastructures needed for these new fuels exist, but we must improve them and leverage synergies between experimental analyses and digital simulations in order to ensure systems are flexible, safe and green in a wide range of conditions. This can be a very quick process – and I hope it happens as soon as possible, so that we can stop before the point of no return for climate change. At this stage, it’s a question of political will.

Alessandro Parente

A professor of thermodynamics, combustion, and transportation issues at ULB since 2010, Alessandro Parente is also a researcher at the Brussels School of Engineering, in the aero-thermo-mechanics department. As a part of the ULB-VUB joint research group “BURN”, he studies new combustion technologies; this topic is also at the centre of his ERC project “VADEMECOM”.