A scientific perspective for 12 events in 2015

Charlie Hebdo attack  New ceasefire in Ukraine
Destruction of thousand-year-old remains in Syria  Earthquake in Nepal
Elections in the United Kingdom  Pedestrian Brussels
Greece: the euro put to the test  Refugee crisis  Creative algorithms
Vaccination  Paris attacks  COP21

Politics, society, economics, law, science and health… 2015 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!

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Looking back: Wednesday, January 7

Two hooded men burst into the newsroom of the satirical magazine Charlie Hebdo. They shot. They killed. Cartoonists Charb, Cabu, Wolinski, Tignous and Honoré were among the victims. On the run, the perpetrators, two jihadist brothers, were killed two days later. France was in shock and the entire world was shaken: freedom of expression had been attacked. Heads of State and government gathered in Paris for a republican march. Demonstrations of solidarity were organised. On 14 January the first issue of a bereft Charlie Hebdo was published: over 7 million copies were printed, compared with the usual 60,000.

Florence Le Cam, is there a long tradition of editorial cartoons in France?

Yes, the cartoon is a historical form of journalistic discourse which, in the 18th century, allowed people to express their views on current events and to criticise them, by transforming the features of public figures – politicians, lawyers, etc. – or by sketching situations, for example. The cartoon was thus already important in media production, often appearing on the front page of a newspaper, sometimes even taking up a full page. Established in 1970, Charlie Hebdo occupied a special place in the French media landscape: many of its illustrators had taken part in television programmes or had published extensively, and they were well known, almost familiar figures; that’s why after the attack of 7 January people spoke of a whole generation in mourning.

If the cartoon is a form of journalistic discourse, does this mean cartoonists are journalists?

Yes, because they have a take on the current affairs they have chosen to cover and analyse, and they transmit what they have to say via a media outlet. Additionally, in countries which have a press card or legislation on the status of journalists, cartoonists are considered journalists. They are obviously journalists who express their opinions, rather than journalists who report the news impartially, adopting the position of a writer within the editorial policy of the newspaper: each cartoon is in keeping with the newspaper’s editorial identity, in other words its history, the way it positions itself, the tone it adopts, etc. The internet nonetheless calls that into question.
How?

"Nowadays, cartoons are shared on the internet, they are therefore visible more quickly and to a larger number of people, but also taken out of their media format. If you only receive the drawing, you cannot know the context in which it was produced. The cartoon may be signed, but who in Latin America or in Asia, for example, would know a Charlie Hebdo illustrator, or even Charlie Hebdo itself? The drawing might be offensive to some; everyone will interpret it in their own way, without knowing the editorial policy it falls within, and therefore without understanding why it has been done.

Florence Le Cam
Lecturer in the Department of Information and Communication, in the Faculty of Letters, Translation and Communication, Florence Le Cam is a member of the Information and Communication Research Centre (ReSIC).
Her research there focusses on visual representations of newsrooms, the construction of professional identities and the careers of journalists.
Looking back: Thursday, February 12
The Minsk II Agreement was signed.
Negotiations between the French President François Hollande, the German Chancellor Angela Merkel, the Ukrainian President Petro Porochenko and the Russian President Vladimir Putin lasted around sixteen hours.
A new attempt after Minsk I, the Minsk II Agreement aims to bring to an end the conflict in Eastern Ukraine (Donbass), primarily by imposing a ceasefire and disarmament.

Aude Merlin, the Minsk II Agreement attempts to bring to an end the conflict which has been tearing Ukraine apart for several years. Can you briefly remind us how we got there?

The story began with a mass rally of citizens: the Ukrainian President at the time, Viktor Yanoukovitch, announced that he would not sign the Association Agreement with European Union, despite having made a longstanding promise to do so. A large part of the Ukrainian population felt conned and on 21 November 2013, took to the streets, occupying Independence Square in Kiev, Maidan Nezalejnosti. The protest lasted several weeks. When I went to Kiev at the end of December 2013, dozens of tents were still there, in the cold; the demonstrators were determined. It was a citizens’ movement, predominantly pacifist, but it degenerated: the police tried to disperse those at Maidan, the Rada (the Ukraine parliament) voted in laws restricting freedom; there was mounting anger. On 19 January 2014, the clashes led to casualties, the first deaths in what would become a war. On 19 and 20 February, over a 100 people were killed; President Yanoukovitch fled. In one month, Russia completed the annexation of Crimea. Two regions in the east – Donetsk and Lugansk – saw the emergence of separatist demands. The Ukrainian army intervened against separatists who were joined by volunteers from the outside. To date over 8,000 people have died in the hostilities.

The Minsk II Agreement signed in February 2015 primarily aims for a ceasefire. Is it being respected?

The ceasefire has made it possible to reduce the number of casualties, which would probably have been higher without it. Nevertheless, it has only been partially respected. In fact, we see tension rising at regular intervals, in fits and starts, with peaks of violence leading to a significant number of deaths. At the same time, one cannot really talk of disarmament or demobilisation. Furthermore, President Hollande declared in October that Minsk II was not being respected. Minsk I had already been a failure; we will have to see if the parties keep their promises this time. President Putin had among other things ensured that the Minsk II Agreement would include the principle of constitutional reform in Ukraine, with a view to regionalisation or even the granting of special autonomy status for the two self-proclaimed republics.
The populations of the self-proclaimed republics have a large proportion of people with Russian origins...

True, but this area was part of Ukraine, recognised as a sovereign and independent state in 1991. Moreover, in the Budapest memorandum of 1994, Ukraine committed to getting rid of the nuclear weapons it had inherited from the USSR – which it has done – and in exchange it received guarantees on its security, independence and territorial integrity, delineated by the geographical contours of what was Soviet Ukraine. Russia signed this agreement. It's true that Ukraine is a territory which has been constructed very progressively and recently, with different territories being incorporated at different periods. 17% of the population is Russian, there are a lot of mixed marriages and the country is certainly fragmented, but so are Russia and even Belgium!

The outcome of the conflict is uncertain. What are the stakes?

Through this conflict, Russia is appropriating a role for itself on the international stage, and is trying to re-establish its influence over what the Russian authorities call its «near abroad», in other words the post-Soviet republics. Russia is preventing Ukraine from developing closer ties with the European Union and especially NATO. The conflict has also raised the question of global security and the international order born after the Cold War. In the end, it is Ukraine’s sovereignty that is at stake: what political model does it want? What kind of democracy? Today the State is (still) in the hands of oligarchs who wield economic and political power, even if certain reforms have taken place. Will Ukraine manage to carry out these reforms successfully, in the context of an ongoing war?

Kiev is merely 2,000 kilometres away from Brussels. Does the European Union also have a stake in this?

Yes, of course, Ukraine is a neighbouring State of the European Union. It is among the States which make up the «Eastern Partnership», launched by the EU in 2008, and Ukraine is European in many ways, first of all geographically. What is happening in Ukraine unquestionably raises the question of European external policy and the ability of the EU to carry out a consistent external policy. In the context of an unresolved war, Ukraine has major internal challenges to overcome: fighting against corruption and anti-democratic tendencies, carrying out reforms whilst ensuring that they do not lead to social fragility, doing away with the inbreeding between the political and the economic world, and the fact that the oligarchs continue to run political affairs. But Ukraine also offers huge potential, with its 42 million inhabitants, a high level of education, industries, agriculture, etc. Will the European Union be able to support this, while managing to establish a dialogue with Russia without compromising its principles and values?

Aude Merlin

Lecturer on Russia and the Caucasus in the Faculty of Philosophy and Social Sciences, Aude Merlin carries out research on the Caucasus at the Centre for the Study of Politics, CEVIPOL. She is participating in a FP7 European research project on the Caucasus, CASCADE.
Syria: age-old monuments reduced to rubble

Didier Viviers
Research Centre in Archaeology and Heritage, CReA-Patrimoine

Looking back: March, April, May...

Month after month, Syrian heritage is being reduced to dust or sold to the highest bidder. Apamea and Palmyra, with its temples of Bel and Baalshamin and its Triumphal Arch, as well as Aleppo, with its historic souk, are being ruined, destroyed and looted. While the war in Syria has led to the deaths of over 240,000 and millions in exile, it is also devastating a heritage which is unique in the world. In reaction to this, UNESCO is proposing to send cultural peacekeepers, and the international scientific community is mobilising.

Didier Viviers, not a month goes by without mention being made of the destruction of monuments or the plundering of relics in Syria. Why is the heritage being targeted?

There are several reasons for the destruction of Syrian heritage. There is the war, of course, and these sites are being targeted by shelling and explosions, particularly because Syrian heritage – such as the Aleppo souk, for example, one of the finest and oldest souks in the Middle East – is often clearly visible, full of life. Next there is the looting, facilitated by the breaking down of the State: people loot for personal gain or to supply Daesh – after the sale of oil, antiquities are the second largest source of funding for this war! Apamea, for example, where Belgium carried out excavations, has been subject to very widespread looting. Finally, the last reason is the desire to shock and to destroy the archaeological heritage, especially if it is on the World Heritage Site list. When Daesh blows up the temples of Bel and Baalshamin, or the Triumphal Arch in Palmyra, it is making a political statement: it is opposed to the West, but also to the values which the city symbolised. Palmyra was a town of merchants, where the caravans of the Silk Road ended their journey; it was open to the world, a site of multicultural exchange, where different religions and several languages cohabited.
How is the scientific community reacting?

The scientific community is shocked, firstly by the killing of colleagues who were archeologists. Let us remember that in August, Khaled el-Asaad was beheaded. What was Daesh accusing him of, this 81 year-old man, the former Director of Antiquities in Palmyra? Of taking part in international conferences and working with foreign colleagues – in other words, us! We cannot help but feel outraged! We are also shocked to see the age-old monuments of civilisation being reduced to rubble.

How can the total disappearance of this world heritage be avoided?

It is of course difficult to intervene when there is a full-scale war going on; can we really send in cultural peacekeepers, as UNESCO is suggesting? We must at least retain the memory of these vestiges; scientists are thus working hard to publish material on the sites they are excavating. We are also trying to find objects which have been looted and are thought to be on the antiquities market: we are posting as many photos as we can on the internet, but our means are nevertheless limited. Today UNESCO is experiencing serious financial problems, in particular because the United States decided to suspend its aid. However, the destruction being carried out in Syria is making us aware of the key role it should be playing: UNESCO must be strengthened so that it can systematically help to record the heritage. It is a disaster when heritage is destroyed, but it is destroyed a second time if it has not been logged or recorded.

Didier Viviers

Rector of the ULB since 2010, Didier Viviers is Full Professor in the Faculty of Philosophy and Social Sciences. The former Director of the ULB’s Research Centre in Archaeology and Heritage, CReA-Patrimoine, Didier Viviers is also Director of the Belgian Archaeological Mission in Apamea, Syria. He is therefore very interested in issues related to heritage and the saving of historical monuments around the world.
Looking back: Saturday, April 25
At 11.56 a.m., the earth shook in Nepal. An earthquake with a magnitude of 7.8, the most powerful recorded in this country since 1934. In a few hours 47 aftershocks followed the first tremor. The epicentre was located 80 km from the capital, Kathmandu, and its some 1.5 million inhabitants. The earthquake claimed several thousand victims.

Alain Bernard, could scientists have predicted the April earthquake in Nepal?

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We know that Nepal is a high-risk zone, but we are still unable to say when an earthquake will happen. Nowadays, we know the hazardous areas, i.e. regions where geophysical events occur. We know, for example, that San Francisco is under threat, as are Istanbul, Japan, New Zealand and Indonesia. We also know the frequency of extreme events: around every century or every 200 years. But it is currently impossible to predict an earthquake of tectonic origin – the tectonic plates shift deep down, pressure builds up and crustal rocks ultimately rupture. States are trying to limit the consequences of these unpredictable events, for example by making the construction of earthquake-proof buildings compulsory, where people can shelter.

On the other hand, warning systems exist for tsunamis. What about volcanic eruptions?

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There are in fact warning systems for volcanic eruptions: if we observe the number of seismic events rising each day, we suspect that a volcanic eruption will occur. We also know that a volcano which is waking up after several centuries of inactivity is more dangerous than a volcano that erupts regularly. The monitoring is not perfect, of course, because there are also false alarms, and our research must help to improve the warning systems. But overall the monitoring works. Nevertheless, not every volcano is currently being monitored! And, above all, how do we react to the threat? If people are threatened, the civil authorities must evacuate them, but to house them where? And how are these provisional camps to be funded? In 2013, there were three times as many refugees as a result of natural disasters than of conflicts!
Is the situation more worrying today than it was in the past?

Certainly, because of demographic growth. There were about 9,000 victims of the 2015 Nepal earthquake; that has become the annual norm. But, we are expecting a disaster before the end of the century which would result in one million deaths! There have always been natural disasters linked to geological events. However, nowadays, overpopulation risks turning every event into a genuine disaster: in 1900 Indonesia had 32 million inhabitants, today there are over 220 million. How many victims will there be after the next earthquake? Our priority must be to help the population prepare for a disaster and teach it how to react correctly. In our research projects in Asia, we have, in recent years, added an «education» component, managed hand in hand with local associations. Emergency aid is important and we have seen human generosity in action, relayed by the media, be it in Nepal (2015), Haiti (2010) or in the Indian Ocean (2004), for example, but it is just as important to invest beforehand in educating people. Especially, when those people are too poor to be able to construct earthquake-proof buildings or flee the disaster.

Volcanologist in the G-Time Laboratory in the Faculty of Science, Alain Bernard specialises in geochemistry. In recent years his research and collaborations have primarily focused on Indonesia, which has some 150 active volcanoes. Regularly involved in fieldwork, Alain Bernard works in particular on improving eruption warning systems.
Looking back: Thursday, May 7
The Conservatives won the general election in the United Kingdom. The party led by the Prime Minister, David Cameron, won 331 seats, an absolute majority in the House of Commons. Won by a wide margin, this victory has a direct impact on Europe. In the winter of 2013, David Cameron had promised the British people a referendum on staying in the European Union. Now elected, he has to keep his promise by the end of 2017.

Nathalie Brack, observers have said that David Cameron has fallen into his own trap with Brexit. Did he play his poker hand badly, hoping to bluff through?

David Cameron was serious when he made the promise of a referendum on staying in the European Union. But, at the beginning, the promise was above all addressed to the Eurosceptic faction within the Conservative Party, during Cameron’s campaign for the Tory leadership. It then became one of the arguments in the general election campaign, in order to win back the Eurosceptic electorate and prevent it from voting UKIP, which is relatively surprising because the majority of the British people were above all concerned with questions related to the economy, employment, immigration, healthcare, etc. Once elected, the Prime Minister had to clarify his strategy: he would campaign for the «Yes» vote, provided that he could obtain European Union reforms.

On 10 November, in a letter to the President of the European Council, David Cameron set out his conditions. Could you remind us what they were?

Indeed, on 10 November, he sent this letter and made a speech to the British public detailing his demands for European Union reforms in four main areas. Firstly, competitiveness, with support for the European Commission to legislate less (but better) and an appeal for global free-trade agreements. Secondly, economic governance, with a plea for better recognition of the status of non-eurozone members. According to Cameron, States which are not members of the eurozone should not be negatively affected by decisions taken by members of the eurozone, and every decision concerning economic and monetary governance affecting the whole of the EU should be taken by all of the States. Thirdly, he insists much on national sovereignty, demanding on the one hand that the United Kingdom be exempt from the Treaty objective to move towards an «ever-closer Union», and on the other hand that national parliaments be able to block European legislation. Finally, immigration is one of the sensitive subjects: Cameron is calling for restrictions on free movement within Europe, notably for future new member states as well as the possibility of fighting against «abuse» of the benefits system (for example by restricting access to unemployment benefits and social housing).
Can these conditions be considered reasonable?

It is important to note that these demands are the result of informal discussions that Cameron has held with the various Heads of State and Government. He first tested the waters before issuing his demands. Nevertheless, that does not mean that they are seen as reasonable by all of his partners or by the European institutions. As far as competitiveness is concerned, this is on the European Commission’s work agenda, and is therefore not the most contentious point. And this allows David Cameron to continue to receive the support of British industry. A discussion on the role of national parliaments should also be possible. However, the question of economic governance, and above all that of immigration, might prove to be a lot more contentious. The free movement of European citizens has been at the heart of European construction since the Treaty of Rome and it is unacceptable for certain Member States to call it into question. It remains to be seen what Cameron manages to obtain from his partners and the European institutions on this issue. Finally, he is demanding legal guarantees. If this entails a revision of the Treaties, that would obviously complicate things where timing is concerned, and also because each State could then put their own demands on the table, and several, including Belgium, could take advantage of this to call for greater integration on certain aspects. Certain demands will thus be more difficult to meet and it is likely that we will see distinct coalitions emerge on each of the questions raised by David Cameron in his letter.

Would the European Union weaken itself in accepting a «variable-geometry Europe»?

There already exist different forms of integration in the European Union: the United Kingdom, for example, is neither in the eurozone nor in the Schengen Area. Belgium has a vision of a great European federalism, which Germany and France also back, even if it is sometimes discreetly, but this is just one vision of Europe. Others exist. We already have a de facto variable-geometry Europe.

Another potential crisis is looming for Europe: the integration of ‘new’ states such as Catalonia, for example.

The question of the membership of a hypothetical Republic of Catalonia would effectively place Europe in a difficult position. While very popular a few years ago, the concept of a «Europe of the regions» has today been abandoned to some extent. Each time a new member joins, there is tense debate, but here it would be particularly tense, because not only would Spain’s attitude be important, but also the position adopted by other States that are also facing separatist claims. But beyond the various tensions and crises, it should be noted that these States are pro-European. And overall, Europe conforms to a pragmatic model: whenever there is a crisis, the European Union discusses, adapts and moves forward, certainly slowly, but it’s fairly healthy.

Nathalie Brack

FNRS Postdoctoral Researcher at the Centre Cevipol, in the Faculty of Philosophy and Social Sciences, Nathalie Brack is interested in Eurosceptics and their strategies; she also studies European institutions and European elections, focussing on Belgium, the United Kingdom and France.
Looking back: Monday, June 29
Some celebrated it, others hated it; 29 June will no doubt not have left Brussels residents indifferent.
On that date, a large proportion of the boulevards in the city centre were pedestrianized. Around 50 hectares of pedestrian zone, extended cycle networks and a new traffic plan in test phase for 8 months.

Judith le Maire, is Brussels a city designed for pedestrian mobility from the start?

Yes, if we go back to the Middle Ages, we can see that the major roads which converged on the centre of Brussels from Louvain, Wavre or Flanders were certainly used by horses and carts but above all by pedestrians who traded on the Grand-Place. On the other hand, the boulevards which are currently being tested as a pedestrian zone are very wide, built around 1870, on which horse-drawn carriages and trams would travel! At this time, pedestrians were also present but they had to cohabit with other modes of transport. In the 19th century, another street is of interest: it linked the gare des Bogards (now the gare de Midi) and the gare du Nord, both stations where trains terminated; travellers therefore had to move between the two stations in order to continue their journey. On what is now the rue du Midi, there was heavy pedestrian traffic and a separate lane for pedestrians, mainly to ensure that vehicles were not held up on their way through. The street’s local residents were encouraged to use side streets. It is therefore rather the sharing of streets that is historical, but with pedestrians being major users.

Pedestrian zones are often associated with the activity of shops. But could they also have an impact on cultural life?

There are many types of pedestrian. They might come to Brussels for the shops, the museums or the theatres; but often they are people living or working locally, commuters in a hurry to get back home. These particular groups of people will not change their cultural consumption because Brussels is pedestrianized. On the other hand, we could look at where the main cultural attractions are located and suggest others nearby, i.e. less than 400 metres away, a distance which a pedestrian covers without even thinking about it. A cultural network could thus be created in one or another Brussels neighbourhood. Reflection on shopping streets in Brussels is linked, at various times in history, to the question of turning pedestrian shoppers into strollers.
So pedestrianizing a city does not suffice to change its dynamics?

No, moreover major European cities, such as Copenhagen, which have tried pedestrianization have often opted for a shared space, in which pedestrians mix with bicycles, public transport, cars, etc…. and their immobility in public space at certain moments. Brussels therefore needs to consider its forms of mobility and the urban planning they require. Where can people sit? Where can they shelter while waiting for the bus? Where can they park their car?

Could Brussels seek inspiration from other cities?

Yes; I mentioned Copenhagen, but there is also Barcelona, whose city centre was revitalized around its historical rambles, with their benches, cafes and small shops for pedestrians and cyclists and bordered by avenues for cars. Lyon is without doubt a wonderful example of urban planning, of both the touristic city centre and the more disadvantaged outlying neighbourhoods: the project started in the 1990s and lasted nearly 20 years. Today, it is a success, integrating different types of mobility – pedestrian, bicycle, tram and car – and where culture plays its part.

Judith le Maire

Director of CLARA – Centre des Laboratoires Associés pour la Recherche en Architecture – for four years, and of its journal, CLARA Architecture/Recherche, whose first issue focused on «La marche et l’espace urbain de l’Antiquité à nos jours», Judith le Maire lectures in the Faculty of Architecture.

With the LOUISE laboratory, she is involved in the Concerted Research Action MICM-Arc Culture, Mobility, Territories – the Emergence and Transformation of Brussels Metropolitan Identity (18th - 21st centuries).
Looking back: June, July, August...

It was a hot summer in Greece. The refusal on the part of creditors to extend their aid beyond 30 June, the tense stand-off with Prime Minister Alexis Tsipras, who submitted the bail-out plan to a national referendum; the closure of Greek banks; threats to leave the eurozone. The crisis also highlighted the divide between northern and southern Europe. Greece obtained a hard-fought third aid package; the end of the chapter but not the end of the story.

André Sapir, has the Greek crisis been revelatory for the European Union?

"Yes, because Greece was the first country to be affected by the eurozone crisis and the one where attempts to find solutions to the crisis were the least satisfactory. The other eurozone countries affected by the crisis – Ireland, Portugal, Spain and Cyprus – fared much better, even if significant problems remain today. Nobody had really imagined that a eurozone country could be faced with a sovereign debt crisis, ie. that the State could be incapable of paying off its debts. We can all remember the debt crises in Latin America and Asia in the 1980s and 1990s and other more recent ones, but no developed country had been in such a situation for over 50 years! And because it had not foreseen the possibility of such a crisis, Europe found itself intellectually and institutionally unprepared when the Greek crisis hit at the end of 2009, already 6 years ago. In that sense the Greek crisis was indeed revelatory of inadequate European governance.

So, Europe took action in the end?

"Yes, but it took it some time to break the vicious cycle that several eurozone countries found themselves in, where the fragility of the financial system undermined public finances, and at the same time the fragility of the public finances undermined the financial system. A European stability mechanism first of all needed to be put in place in order to give aid to the States, then the much discussed «Banking Union» needed to be established and responsibility for banking stability entrusted to European institutions such as the European Central Bank (ECB). It was only then that Mario Draghi, the President of the ECB, could declare that the ECB would do everything in its power to safeguard the euro and bring to an end the crisis of confidence in the eurozone, triggered by the Greek crisis but which subsequently spread to a significant part of the rest of the zone.
Several observers pointed to the lies told by Greece when it joined the eurozone, in 2001.

Every candidate country looking to join the eurozone is supposed to have a debt lower than 60% of GDP, or at least make attempts judged sufficient to get close to this figure. Yet Greece not only significantly exceeded this level, but above all lied to the European authorities about the actual level of its public debt when it joined the zone in 2001. Worse, it continued to rig its accounts and it was only in 2009, in the throes of a global economic recession, that the full extent of the problem was understood. The fact that the eurozone crisis began in a country which had accumulated a massive public debt and had rigged its accounts had far reaching consequences on the way some countries – particularly Germany – interpreted the causes of the eurozone crisis and thus the measures required to overcome it. Not everything is the fault of Greece and its transgressions!

Do you believe in writing off the Greek debt?

Writing off the Greek debt without major reforms in the country would be pointless. But, at the same time, it must be acknowledged that the burden of debt is preventing an exit from the crisis and the resumption of economic activity in Greece. It will therefore be necessary for Greece and its European partners to quickly find the right balance between European solidarity and Greek responsibility as regards its future in the eurozone. Solidarity must not only mean a loan, but also lifting the debt burden. Greece must use this crisis as an opportunity to carry out far reaching reforms. It is already on its third support package in 6 years, there will not be a fourth!

**André Sapir**

Professor at the Solvay Brussels School of Economics and Management and a researcher at ECARES, the European Centre for Advanced Research in Economics and Statistics, and the European Bruegel Centre, André Sapir studies international economics and European integration. An internationally recognised expert, he was economic advisor to the President of the European Commission, Romano Prodi, from 2001 to 2004.
Looking back: Wednesday, August 26
71 people were discovered dead, suffocated in a lorry in Austria. A few days later, others were found drowned in the Mediterranean. It’s just one tragedy after another for these thousands of men, women and children who are fleeing the war in Syria, often with the help of unscrupulous smugglers. The German Chancellor, Angela Merkel, warns: «It is a warning that we should get down to work, to solve this problem and show solidarity».

Philippe De Bruycker, since this summer, not a day has gone by without the media mentioning the refugee crisis. It’s a strange kind of performance which Europe is putting on, is it not?

" We hear a lot of criticisms of the European Union, but in reality it is first and foremost a crisis of Member States: they are either incapable of or unwilling to implement European asylum policy, which defines who has the right to international protection and according to what procedure, and the conditions under which these refugees should be welcomed.

Nevertheless, Europe has the power to distribute refugees among Member States.

" Indeed, and it is trying to do so, but so far in vain: the European Union’s Council of Ministers came to an agreement on relocating 160,000 asylum seekers who arrived in Italy and Greece. But what do we see on the ground? Several months after these decisions were taken, 159 refugees have been relocated. The process is a long and difficult one. At that rate, it would take decades to reach the target of 160,000 people! Yet, this objective is more than modest given the hundreds of thousands of refugees who have arrived and who continue to arrive.
How can this «operational inefficiency» be explained?

"The European Asylum Support Office does not have its own human resources; it can only encourage cooperation between Member States and so must rely on national administrations working together. However, there is no spontaneous solidarity between European States. Only the German Chancellor, Angela Merkel, has assumed her responsibilities concerning this difficult and unpopular subject: she has clearly stated that these refugees must be accepted in Europe and today Germany is taking a good deal more than its share. The track record at European level is pretty dismal, particularly as regards certain new Member States in the East, which are trying to close their borders to refugees.

Is the free movement of people in Europe under threat, or indeed a threat in itself?

"Asylum seekers do not benefit from freedom of movement in the Schengen Area, but in practice, as the monitoring of internal borders has disappeared, they are now able to move around. The European Union created enormous de facto solidarity by abolishing internal borders, however the process only went halfway: a common asylum and immigration policy should have been established. Today we have this quota policy, but can you imagine sending refugees to countries which are hostile to them? Don’t forget that this policy concerns men and women who have their own life choices.

Philippe De Bruycker

Professor at the Institute for European Studies, Philippe De Bruycker is a specialist in European immigration and asylum law. He is the founder of the Academic Network for Legal Studies on Immigration and Asylum in Europe, the ODYSSEUS network. He also worked for several years in the European Commission’s «Immigration and Asylum» Unit, where he was responsible for drafting legislative proposals related to immigration.
Axel Cleeremans, does it surprise you that a computer can paint in the style of famous artists?

"No, even human artists use algorithms to produce their work! And it is this series of different paintings, but with numerous similarities as regards colour palette, type of line or theme, for example, that leads us to speak of a Magritte or Rothko "style". The artist has a creative idea at the outset, but then subsequently reproduces this idea, which can lead to interesting variations. Unlike a computer, where each step must be made explicit, a human being starts by using conscious knowledge which then becomes implicit, and in the end acts almost automatically.

But the first creative idea is born within a human brain, not an artificial intelligence?

"It could also come from a computer! That is also the ambition behind deep learning, which several Silicon Valley business companies are dreaming of: simulating neuronal connections using algorithms, thus allowing a computer to learn. A piece of work is often produced within a particular context – it follows a movement or alternatively runs counter to an approach or an epoch, for example. We could therefore imagine having access to immense databases characterising all the classic works of an era and instructing a computer to create something radically different."
Does being an artist come down to a series of algorithms?

"No, because an artist has a conscious intent to communicate something which would provoke a reaction in you or in me, an emotion. And that is purely human. An artificial intelligence could certainly create a piece of work considered aesthetically pleasing, but it will never have an intent, or an outlook on life to share. It is that which makes an artist and it is for that reason also that a work speaks to us or not. A machine is capable of capturing the creative mechanism but in no way can it share its experience of existence.

In other words, we have the ability today to create an artificial intelligence but not an artificial consciousness?

"Indeed! If the machine had consciousness, it would mean something to it to be this machine rather than another one! And this is not the case. Human beings, on the other hand, are aware of their own existence; they also have the capacity to feel things, to have emotions, to have subjective experiences, etc. Some scientists believe that human beings are born with consciousness; others, including myself, feel that consciousness is something the brain learns to «do», through family and social interactions: I imagine what your mental state must be in order to understand or anticipate your reaction, and through this I develop consciousness of myself.

If the brain learns consciousness, could we imagine one day creating an A.C., Artificial Consciousness?

"We can always imagine, but we are a long way off that, a very long way. Consciousness is difficult to study. In 1974, the philosopher Thomas Nagel wondered: «What is it like to be a bat?» The answer was that we don’t know: we might know everything about the algorithms of the bat’s nervous system, but we would still not know what a bat’s experience of the world was. The only way of knowing it would be to actually be a bat! Consciousness remains private, inaccessible to the simple external observer. And it probably plays a role in the process of human creativity. How many artists, or researchers for that matter, have gone to bed with a problem in their minds and have woken up next day with a clear idea of how to solve it! Their creative intent was born during their sleep, without them really knowing how.

Axel Cleeremans

FNRS Research Director, Axel Cleeremans heads the Center for Research in Cognition and Neurosciences, in the Faculty of Psychology and Education, and is Vice-Director of the ULB Neuroscience Institute. He is particularly interested in consciousness and the role that fundamental learning processes play in behaviour. Having already been awarded a European Research Council Advanced Grant, he received the FNRS quinquennial prize in 2015.
Looking back: October, November...

Here, in October, the first cold snaps heralded the flu vaccination campaign.

In other corners of the world, another vaccine appeared, and for the very first time: the European Medicines Agency approved the use of the anti-malaria vaccine RTS,S, the first vaccine against malaria. A large-scale evaluation has been launched for one million children in Africa.

Arnaud Marchant, this year the European Medicines Agency authorised the use of the RTS,S vaccine against malaria. Is this the end of a long struggle?

At any rate, it is a very important step. It is the first anti-malaria vaccine to be approved and its development by GSK Vaccines and its partners took around 30 years. Its efficacy however remains incomplete, because it only protects 36% of children and 28% of infants. Despite this partial efficacy, the World Health Organisation has decided to evaluate it in Africa on a very large scale by vaccinating one million children. Malaria kills around 300,000 children around the world each year, and preventing a third of these deaths would obviously constitute extremely significant progress. The authorisation to use this vaccine and its large scale evaluation are also very encouraging signals for research. We can hope that more effective vaccine candidates will be developed and tested in the coming years.

So the mood is optimistic?

We have witnessed a fair bit of success this year. GSK Vaccines has demonstrated the efficacy of a vaccine protecting the over-50s from shingles. Sanofi has also published the promising results of a vaccine against dengue fever. These successes indicate that we are probably witnessing the birth of a new era in vaccinology. Pathogens reputed to be complex and very difficult to control using traditional vaccinology approaches can today be controlled by vaccines developed thanks to a deeper knowledge of pathogens and their interactions with the immune system. Emerging pathogens also represent a significant challenge, with new vaccines having to be developed and tested over a very short period of time. In this respect, the demonstration by a large international consortium of the protective effects of a vaccine against the Ebola virus is very encouraging. All these results are very promising, but there still remains a lot of work to be done. We still do not have a vaccine against HIV and the vaccine which is available today against tuberculosis is only partially effective.
Progress in vaccinology is also very promising in the field of cancer therapy. In a similar way to complex pathogens, tumoral cells escape immune defences. Understanding these escape mechanisms has led to the recent successes in cancer immunotherapy and is also encouraging the search for antitumor vaccines.

**Here, vaccination seems to have eradicated a number of diseases to the extent that some people are wondering: is there any point in still vaccinating?**

Yes, vaccination is still vital here, be it against measles, whooping cough or polio, for example. These pathogens are still in circulation around the world even if in our countries, thanks to vaccination, the diseases they cause occur less frequently or have disappeared. As we have been able to observe in recent years, a reduction in vaccination coverage brings about a resurgence of the disease and the development of epidemics. Demonstrating the safety of vaccines is very important in order to promote vaccination. This demonstration has been clearly made for vaccines that are currently administered. Considerable effort is made to ensure the safety of new vaccines. The results of these evaluations are essential for the decision to add new vaccines to the recommendations.

**Each autumn, we also see the reappearance of the flu vaccine. There again, is vaccination imperative? And effective?**

The flu vaccine is effective and is particularly recommended for people at risk – in particular the elderly, patients suffering from chronic diseases, and pregnant women – or those in contact with these vulnerable people, especially health care staff. Seasonal flu can be caused by various types or sub-types of the influenza virus, which can change from one year to the next. This makes it difficult to produce a vaccine which is 100% effective. In order to improve the efficacy of vaccination, a vaccine covering four frequent sub-types, rather than three, has been made available this year. We are always making progress...

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**Arnaud Marchant**

FNRS Senior Research Associate, Arnaud Marchant has carried out research in the laboratories of the Medical Research Council in Gambia and at the Weatherall Institute of Molecular Medicine in Oxford. Director of the Institute for Medical Immunology (IMI) and lecturer in the Faculty of Medicine, he primarily studies the ontogenesis of the human immune system and immunity to viral infections.
Looking back: Friday, November 13

An almost ordinary evening in Paris: football supporters gathered at the Stade de France for the France-Germany match, rock fans made their way to the Eagles of Death Metal concert at the Bataclan and lovers and friends dined or had a drink together at the Petit Cambodge or the Comptoir Voltaire in the 10th arrondissement.

Suddenly, explosions, shots, screams, blood… Armed with assault rifles, wearing explosive belts, terrorists killed in the name of the Islamic State. That evening they left 130 dead and 350 injured in Paris.

Very quickly, investigators identified the suicide attackers, took in presumed accomplices for questioning, foiled another potential attack and pointed fingers at Belgium: Molenbeek-Saint-Jean was said to be one of the European bases of Islamist terrorism.

On November 21, Brussels raised its security alert level to 4, the highest level, due to an «imminent» terrorist threat.

After the Paris attacks, fingers were pointed at Belgium, particularly Molenbeek; the Le Monde newspaper notably leading with the headline, «Molenbeek, hub of Islamist terrorism». Dirk Jacobs, is Molenbeek a European base for jihadism?

Let’s not exaggerate; the problem exists in other major European cities where a small proportion of the Muslim community is influenced by extremist tendencies, notably radical Salafism which can veer towards jihadism. In 1967, Belgium gave the keys to the great mosque in Brussels to Saudi Arabia, which sent imams to Belgium who had an ultra-conservative vision of Islam and a complete lack of understanding of Belgium. It was a mistake: imams should be similar to regular believers and should be aware of local realities. We cannot change history, but the Paris attacks must make us think and dare to take a clearer stance between our economic interests with Saudi Arabia and our Western values. But I must stress that being Muslim is not a problem in itself; it is one of the religions recognised in our country and a very large majority of Muslims consider that Daesh or Al-Qaeda have nothing to do with Islam. My French colleague Olivier Roy provides a good analysis, I think, when he says that this is not so much «a radicalisation of Islam but an Islamisation of radicalism».
What is the explanation for young people leaving to fight in Syria or blowing themselves up in Paris in the name of Islam?

"The social psychologist John Barry distinguishes between attitude towards society and host institutions, and attitude towards country of origin and family culture. There are four possibilities. First possibility: the person is positive about their host society and about their family culture; this is what is called integration. Second possibility: the person is critical of their host society and positive about their culture of origin; this is what is called separation. Third possibility: the person is positive about the society in which they live, wishing to forget their differences, and rejects their family culture; this is what is called assimilation. Finally, the fourth possibility: the person rejects both the society in which they live and their family culture; this is what is called marginalisation, which can lead to certain forms of criminality (notably drug abuse) or even radicalisation: the young people who leave to fight in Syria have an identity-based fantasy. But when they return to Belgium they represent a real danger: how do they feel in our society? What are their plans for the future?

These young people were born in Belgium, why are they rejecting the country in which they grew up?

"They feel excluded by our western societies; they are looking for identity reference points. Some of them, those more easily influenced, become the targets of Salafist recruiters. It’s not an excuse for these individuals, but we must try to understand. Identity issues and exclusion are realities at school: the PISA studies carried out by the OECD show that Belgium and France are the countries in which the education system reproduces the most social inequality – pupils with an immigrant background are less successful. We do not offer the same quality of education to all our children! And when these pupils do manage to pick up qualifications they are then faced with a new reality: discrimination during the hiring process! Of course, that is not the only reason, but the situation would be a whole lot better if all inhabitants felt they were fully fledged citizens. It is essential that we work on social cohesion. We have commemorated the bilateral agreements with Morocco and Turkey: they are 50 years old, which is older than I am, and nonetheless some would have me believe that I am more Belgian than other people of my generation who were born here like me! We have to accept that the Belgium of the future is a multicultural Belgium, diversified, with many different family histories.

Dirk Jacobs
Professor of sociology in the Faculty of Philosophy and Social Sciences, Dirk Jacobs is the Director of the research group on ethnic relations, migration and equality, GERME. The holder of a European Research Council (ERC) Starting Grant, his research interests focus on education, political involvement, immigration and equality.
Looking back: Saturday, December 12

The United Nations Conference on Climate Change, COP21, came to an end. For two weeks, no less than 195 countries met to conclude a new international climate agreement. After tough negotiations, an agreement was finally signed. «A differentiated, fair, durable, dynamic, balanced and legally binding agreement», said Laurent Fabius, COP21 President.

More ambitious than the initial objective which was to limit global warming to a global average increase of 2 degrees Celsius between now and 2100, the agreement aims to keep global warming «well below 2 degrees above pre-industrial levels» and to «drive efforts to limit global warming to 1.5 degrees Celsius».

Frank Pattyn, while COP21 was being held in Paris this autumn, climate change sceptics were continuing to make themselves heard. Is the climate really in trouble?

"I don’t want to get into an argument about that: scientific data show that human-induced climate change is a fact. The average temperature of the Earth calculated over the past 30 years is one indicator, but there are others: the warming and thermal expansion of the oceans, sea levels, the condition of the ice sheets, etc. The climate has always been changing, but over periods of thousands of years, and the environment and species have had time to adapt. However, we are witnessing today radical climate change in less than a century!"

What are glaciologists such as yourself observing in the Arctic and the Antarctic?

"The situation is different in the north and the south. In the Arctic (North Pole), the atmospheric warming is higher than elsewhere; year after year, the sea ice is melting, reflecting less energy into space and absorbing more energy in the oceans. In the Antarctic (South Pole), on the other hand, the sea ice cover has remained more stable (and is slowly increasing). The phenomena observed in the north and south are different, yet they are both linked to climate change."
Which means?

"It is a lot colder at the South Pole — the Antarctic is isolated, «protected» by ocean and air currents which limit exchanges with equatorial regions; the melting of surface ice is thus less marked there. But because the climate is changing, the winds are also changing, and they are thus now bringing with them more humidity, more snow, etc. We also observe that glaciers in contact with the ocean, which is warming up, are melting from below, which can produce instabilities.

Let's go back to the Arctic: what are the consequences of this melting of ice?

"There is less ice, the ice pack is shrinking, there are more storms, the coasts are eroding to the extent that today entire villages have to be relocated, biodiversity is threatened, etc. The glaciers are melting and sea levels are rising by 3 mm per year! However, oceans are slow to react; even if we succeed tomorrow in limiting the melting of the glaciers, sea levels will continue to rise for several more centuries.

Does this mean that it is too late to act?

"No, but we must act urgently! In limiting the planet’s average global warming to 2 degrees Celsius we can stabilise the situation, or, in other words, limit the damage; and this is crucial! 97% of the planet’s ice is in the Antarctic and in Greenland; if it becomes unstable the consequences could be dire. That is why today our scientific priority is to understand and to measure what is happening on the two ice sheets. We cannot repair damage which has already been done but we can avoid certain tipping points, thresholds of irreversible change which we must not go beyond, if we want to limit the effects and be able to adapt to them.

Frank Pattyn

A glaciologist, Frank Pattyn is the co-Director of the Glaciology Laboratory in the Faculty of Sciences where he teaches. He has developed numerous ice-sheet models, capable of simulating ice flows, and participates in several European projects and networks in this field. He regularly takes part in missions to the Antarctic and the Arctic to study the interactions of glaciers and ice sheets with subglacial waters.