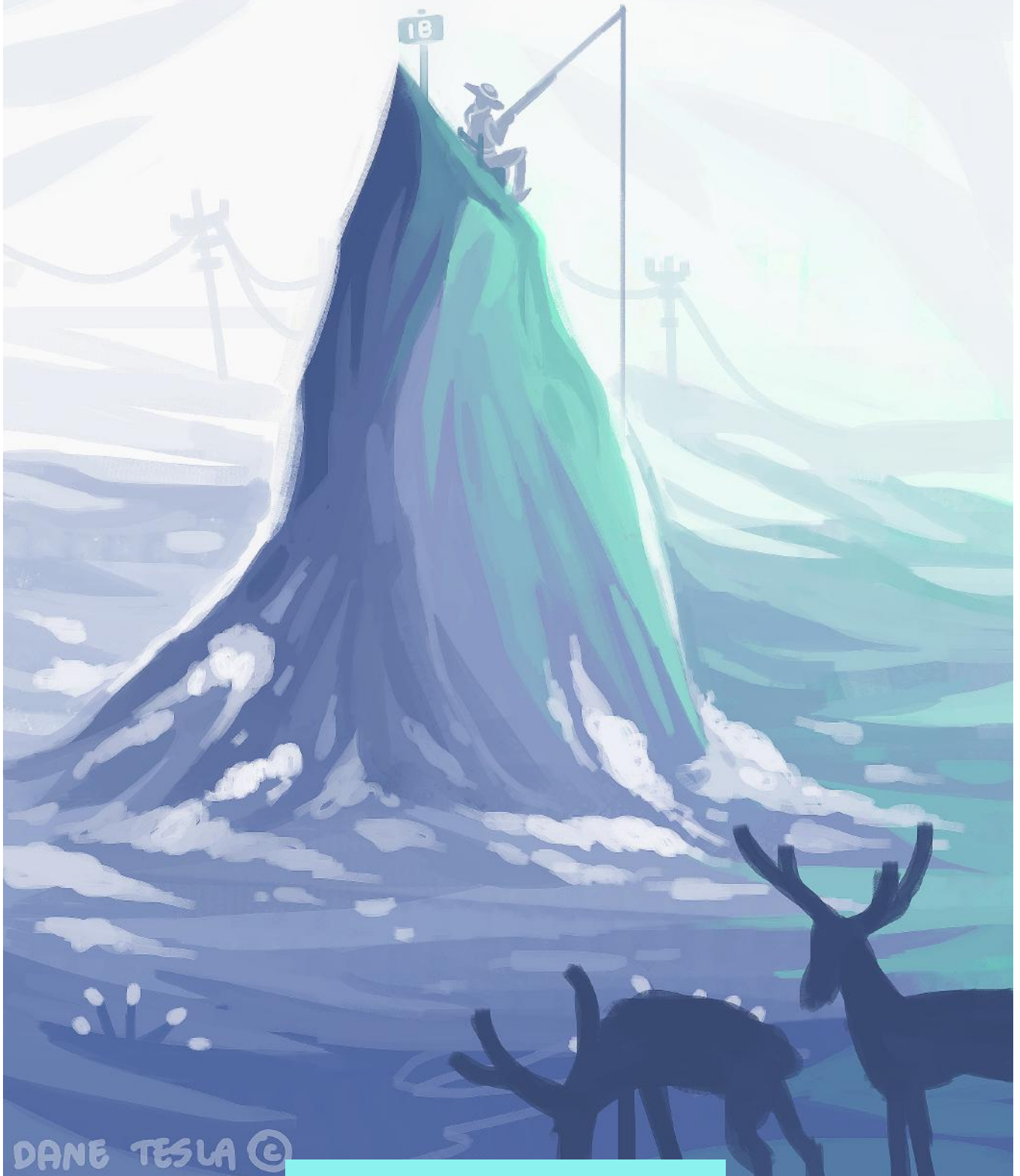
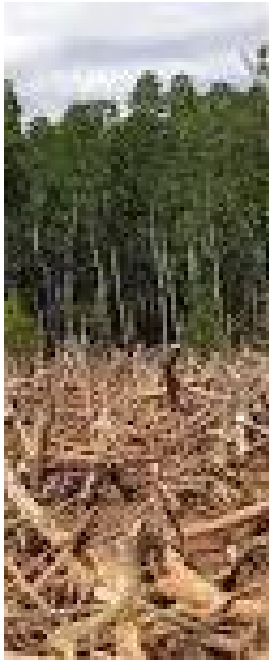


IB TIMES



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Drodzy Czytelnicy!

Z wielką radością pragniemy powitać Was w nowym wydaniu The IB Timesa! Na wstępie chcielibyśmy zaprosić wszystkich do obserwowania fanpage'a na Facebooku: The IB Times Białystok, na którym będą pojawiały się kolejne numery gazetki.

Mamy nadzieję, że czytanie tekstów będzie dla Was przyjemnością, a różnorodna tematyka artykułów sprawi, że każdy z Was znajdzie coś interesującego dla siebie. Również chcielibyśmy podziękować bardzo utalentowanej @DaneTesla, która tworzy okładki do kolejnych numerów gazety.

Mamy nadzieję, że The IB Times nie zawiedzie Waszych oczekiwań!

Redaktor naczelna Barbara Niemoćko

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‘CLIMATE CHANGE’

ALEKSANDRA POPŁAWSKA

‘CLIMATE CHANGE’ These two words have been used very frequently and almost everywhere recently. You probably have seen them on TV, in newspapers or on the Internet, of course. Because of the media, most of us thankfully is aware of the rapidly changing temperatures, melting glaciers and destruction of the precious habitats of many species (ours included).

You probably heard about the many climate strikes that took place all around the world from Białystok to New York City. We, the Earth’s youth, have been very passionate about this burning issue. Many of us have actually sneaked out of school to attend the protests.

But since we don’t have enough power, besides showing our strong support to the climate change movement, to influence some matters directly (such as how the energy in our country is produced), what can we actually do that will help to reduce our massive ecological footprint?



The answer is not as complicated as we may think. I am sure some of you might have heard about the three R's - REDUCE-REUSE-RECYCLE. This is sort of a guide on how to lead a sustainable and ecological life. First of all, minimise your consumption, and therefore waste. Before buying something think if you really need it and is it actually necessary or is it just a passing craving. This also applies to food. Before buying it you should find out whether it is locally grown and unprocessed. For instance, fruit like bananas or mangos cannot be grown in the Polish climate, consequently, they have to be here somehow transported and that creates so much pollution. That's why it is a lot wiser eat an apple that has been grown probably in your region.

Another crucial change everybody should implement in their day-to-day life is limiting the consumption of animal-based products.

Did you know that producing 1kg of meat uses up the same amount of water as growing 7kg of wheat? Not only that, but the United Nations report from 2006 'Livestock's Long Shadow' states that meat is 'one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global'. Thankfully, we can replace it with protein-rich beans and pulses, locally grown of course. Another thing to consider is: will you be able to reuse/re-purpose it or will you just instantly throw it away. Nearly every product nowadays comes in so many layers of excess plastic packaging. It is estimated that as much as 8 tonnes of plastic end up in the oceans every year. That is why we should avoid buying over-packaged products as well as using disposable items such as plastic straws, cups and so on.

We should try as much as we can to purchase food in, for instance, in glass containers instead of plastic ones. And finally, the last R - recycle. It means that the waste we created will be transformed into something else. That's why we should buy products that can be recycled (there are actually very few that cannot) and always remember to segregate your trash! However, since it is last in the hierarchy, you should treat it as your last resort. Often people forget about reducing and reusing because they can just recycle it. This should not be the case. We should remember that turning our plastic bottles into new ones uses up tons of energy since they have to be melted and as a result, this creates pollution that is emitted into the atmosphere.

ZNACZENIE SNU



GABRIELA WOJTULEWICZ

Czy kiedykolwiek zastanawiałeś się, jaki wpływ na twój organizm ma brak snu? Wiesz, co się dzieje, kiedy zarywasz kolejną noc, aby się uczyć, grać w gry czy oglądać filmy? Według badań ludzie z dekady na dekadę śpią coraz krócej. Jeszcze 80 lat temu średnia ilość przesypianych godzin wynosiła około osiem, w ostatnich latach spadła natomiast do niemal sześciu na dobę. Obok zbalansowanej diety i regularnych ćwiczeń, to właśnie sen jest jednym z podstawowych filarów zdrowego życia. Warto więc zadbać o odpowiednią jego jakość i ilość tak, aby nie czuć się zmęczonym za dnia.

Sen jest szczególnie ważny dla prawidłowego rozwoju ludzkiego mózgu. Niewyspanie powoduje rozkojarzenie i częstą utratę koncentracji w wykonywaniu codziennych czynności i obowiązków. Może ono być także powodem stanów depresyjnych (według badań WHO bezsenność ponad 5-krotnie zwiększa u człowieka możliwość wystąpienia depresji). Brak snu często sprawia także, że niezwykle łatwo się irytujemy i wpadamy w huśtawki nastrojów, co może prowadzić do pogorszenia relacji z otoczeniem.

Przewlekłe niewyspanie może prowadzić do znacznie poważniejszych konsekwencji - zachorowania na cukrzycę, wystąpienia poważnych problemów z sercem czy układem pokarmowym. Mogą także pojawić się problemy z pamięcią, refleksem i zdolnością ruchową. Dla wielu ogromną wadą braku snu może się także okazać pogorszenie wyglądu - podkrążone, przekrwione oczy, blada cera, gorsza kondycja włosów i paznokci z pewnością nie są dla nas korzystne. Jak więc radzić sobie z bezsennością i jakie są jej przyczyny? Przede wszystkim warto zadbać o odpowiednią jakość snu. Przed planowanym spoczynkiem należy wywietrzyć pokój (pamiętając przy tym o zachowaniu odpowiedniej temperatury,

która powinna wynosić od 14 do 18 stopni), zgasić światła, zapewnić sobie ciszę i spokój. Nie można zapomnieć także o pozbyciu się wszelkich rozpraszaczy - zwłaszcza urządzeń elektronicznych, które zaburzają nasz rytm snu. Przyczynami bezsenności są najczęściej zaburzenia pracy serca, stany depresyjne, chroniczne bóle różnych części ciała, a przede wszystkim - zaburzenia rytmu dobowego organizmu (nocna nauka, zmiana strefy czasowej itd.) Pamiętajmy o zadbaniu o odpowiednią ilość snu - czasem lepiej jest odpuścić kolejny odcinek serialu, wszystko dla dobra naszego organizmu!



HOROS COPE

Małgorzata Rojs

**ARIES (21.03 -
19.04)**

The main advice for this month is not to worry about things that you have no influence on. Do sports, rearrange your room and don't look at other; if you get angry, it's better to run away from you. You will be very intense and even despotic. In love, avoid conversations about difficult topics. If someone does not agree with you about important matters, do not attack them, just calmly explain your point of view to them. This way you will avoid any troubles. At work, you'll do everything faster, better and more efficiently than others. It will be hard to keep up with you. If you try, you'll achieve a lot. Don't just command people who have more experience than you and don't argue about trivial matters. At the end of the month, things will get calmer. Then you can count on your friends' help in a very important issue. Signs favourable for you are Gemini and Libra, you will have some rest with them. Avoid the Capricorn who criticizes and corrects everyone.

**TAURUS (20.04 -
22.05)**

Everyone will do their responsibilities and you will start to disappear somewhere. You will be consumed by a new hobby or passion. You will be very mysterious and unreachable for your friends, even loved ones. The fewer others know about you, the better. Secrets and surprises await you in love. You can have a secret affair with a mysterious stranger. However, before you leave everything, listen to the advice of experienced friends. Maybe it is not the best time for a total revolution? You will handle a lot of confidential matters at work, so don't let your superiors down. The chance for cash flow and the new tasks will turn out to be quite interesting. In the last week of the month, you will demonstrate your diplomatic skills and will be able to resolve a difficult dispute. With Leo and Pisces, the world will be more interesting.



**GEMINI (23.05 -
21.06)**

This month is conducive to social gatherings and artistic endeavours. The group of your friends will expand significantly, and you will feel good about it. At the parties, you will be at the centre of attention. Despite the start of the fall, your friends will not let you get bored. However, you won't have much energy to work. With a little cleverness and thanks to the help of your friends, you can manage to survive, but it's better to stay focused on your goals. Your love life will revive and devotees will come. However, think about what you want to achieve, because it will not be easy for you to make any decisions. In the last week of October, you will become determined and confident. During the family meeting, you will learn something important and surprising about your partner. The signs favourable for you are Aries and Libra; cooperation with them will pay off. Avoid the Scorpio who collects rumours.

CANCER (22.06 - 22.07)

You will get what you want, but you will have to master your temperament. You won't achieve anything at work or in love with shouting and calling the shots. Try to negotiate and take into account different points of view, and it will all work out well. You will see the results very quickly and everyone will be amazed. Don't take on too many responsibilities and extra tasks. You can overestimate your strength. Take care of your mental and physical health. Do not decline party invitations or sit alone at the weekends. If you are lonely and still looking for someone special, this month you might get lucky. Aquarius and Sagittarius will be a good companion.

LEO (23.07 - 23.08)

A very good month ahead of you. Even though it is autumn, you will have a lot of energy right now. At school, things will go well if, of course, you will do your work regularly. Even so, social life will consume you completely. There are some nice events on the way, so check your inbox to not miss any invitations. You will live from weekend to weekend, having fun and meeting interesting people. If you are lonely, now is the time for you to meet someone special, so don't forget to give them your phone number. However, you may have more work and responsibilities in the last week of the month but don't lose your good mood, because you will get through it. The signs favourable to you are Taurus and Capricorn, you can trust their advice. Avoid Pisces that want to do everything their way

VIRGO (24.08 - 22.09)

This month you will be very sensitive in dealing with people. Any word or gesture will be able to move you or make you angry. Try to stay calm, however, exposing your sensitive side can help with some of the relationships. Autumn is also a good time to return to various old acquaintances and friendships. Under no circumstances engage in school dramas, or repeat rumours or unverified information. Otherwise, you will become a victim of someone's double-dealing. At the end of the month, more peace is guaranteed and various difficult matters will begin to clear up. In the last week of the month, you will become less whimsical and picky. The stars will bring you true happiness in love. Signs favouring you are Sagittarius and Scorpio, you get along with them the fastest. Avoid the Ram, who is not afraid of anything and then complains.



LIBRA (23.09 - 22.10)

In November, you will be tempted to travel, even short trips will appeal to you. Although the holidays are long over, you feel like going on vacation or at least for a weekend trip. Maybe you could relax for a few days? Listen to your intuition and do what your heart tells you. This month will bring you many love surprises especially if you decide to go on your spontaneous trip. You'll be curious about what's happening to your friends you haven't seen for a long time. Call first and propose the meeting yourself. You'll also need a change at school. Get new skills, sign up for a foreign language course, or get another valuable skill. Such investments will pay off next year when completely new possibilities will be open for you. You will also uncover a secret or obtain confidential messages. Favourable signs are Aries and Gemini, they will give you courage if needed. Avoid Aquarius who only thinks about his benefits.

SCORPIO (23.10 - 21.11)

In the first days of November, you will be calmer than usual. You will avoid loud parties and large meetings from afar. You want more peace. Maybe writing a diary will help you collect thoughts and impressions from past adventures? At school, you won't be able to get used to your everyday, tedious duties. You will still feel the smells and flavours of last summer. Don't worry, there will be a great surge of energy in the middle of the month. You will see better and better opportunities appear every day. All things will move sharply forward and you will feel like a newborn. Be attentive and open to people and you will form a very beneficial alliance. You are successful in love, but you idealize the person you are besotted with. Remember that he/she also has flaws, and you will not be disappointed later. The signs that favour you are Virgo and Pisces.

SAGITTARIUS (22.11 - 21.12)

If you want to impress someone, don't wait! November is the best time to show everybody what you can do. Stars are especially favourable for you. They will make your ideas unique and this month you will be exceptionally creative. All plans, connected both with school and love, have a chance to succeed, but you need to get to work. There will be a lot to do now. However, it will be an exciting and positive job. You'll have fun and probably won't even feel like you're working hard. If you devote yourself entirely to previously planned tasks, you will achieve one success after another. However, do not play with the feelings of someone you care about. Signs favourable for you are Cancer and Scorpio, they will understand and support you. Avoid other Sagittariuses who might compete with you.

CAPRICORN (22.12 - 19.01)

This year you can achieve a lot using your talents. Especially if you use the help of various people - specialists, teachers and ... critics. This may seem surprising, but negative opinions about your work will only motivate you and push you towards new solutions. As you can see, competition - even painful and stressful - can be very helpful. All you have to do is not to take unpleasant words to your heart. Use them as stepping stones to make another qualitative leap in your actions.

It may happen that in November there will be several changes that will shake the foundations of your life. You will try to adapt to new conditions. I warn you this may not be too easy. Develop the ability to react more spontaneously to different life situations. Pay attention to the jealous Sagittarius who may not be as friendly as you think.

AQUARIUS (20.01 - 18.02)

This is another month of hard work. you can't rest on your laurels. You should devote all the time to the implementation of your goals. Discipline will be the key to success. The same as last month. Nothing will change and you still need to be careful. Get up every morning and then focus on work and relationships with your loved ones. At school, do what you think is right and do not be taken aback by those above you. Just don't worry about what others think about you, and you'll gain a lot. Step by step you are getting closer to truly unique circumstances that are very rare in human life. You have to be prepared. Otherwise, you will miss the chance of achieving such stunning successes that you will regret it for the rest of your life.

Avoid Libra, which engages everyone in their problems.

PISCES (19.02 - 20.03)

November promises to be busy. You will be a role model for others and even an oracle in every area of your life. Friends or neighbours will advise you on many matters. At school, your opinion will also start to count a lot more, and the people you care about will now start to notice you. Thanks to this, you can become interested in more interesting projects. You will succeed in love. Someone very attractive will look at you with admiration and interest. Don't show off too much though. In the last week of November, you will get to work hard. It's even worth focusing more on learning than on social gatherings. Stars are conducive to your concentration and commitment. The signs that favour you are Taurus and Scorpio, you will overcome any difficulties with them. Avoid the Leo who likes to brag.

Every nation has its own beliefs and legends which form its individuals' life perspectives. In some parts of the world traditions are immensely cultivated by families or the government. 文化 (wénhuà) means culture. One of the oldest civilizations had enough amount of time to create and broaden its traditions. To these days culture of symbolism remains alive among the Chinese nation. On its fundamentals all customs had been created. If you are interested in China and its culture, read this article to learn about the facts which may be unusual for Europeans. To understand the meaning behind the symbols it's important to start with fundamentals of China's culture. Everything has a connection with yīn-yáng, qì and fēng-shuǐ. This trio complements each other. I will describe the first one in order to move onto the symbols.



•URSZULA CHOCIAN

Chinese 文化 of symbolism

Yīn-yáng 阴阳

Yin-yang is an ancient philosophical tradition. It is over two thousand years old and is at the core of Daoist tradition, together with Five elements, Feng-shui, Yi Jing and Qi. It seeks a balance between two alternatives. The best-known one is light/dark. There are plenty of such alternatives, which we can find in our daily life: hot/cold; male/female; strong/weak, even/odd numbers; and, historically, imperial/barbarian.

The "yīn" is represented by light colour and "yáng" by dark one. Within yin is a little yang and within yang a little yin, which represents their mutual dependence. Yin cannot exist without yang and yang without yin. They have to co-exist in order to maintain balance and harmony. A symbol can be also presented as two fish creating the same swirl shape. Both yin and yang consist of "good" and "bad". They have their own virtues and flaws – they show alternatives not opposites. Seeing balance in the opposites has had a huge influence on Chinese culture. It seeks objective arguments and not subjective ones. The example of a flaw in yin-yang is the Chinese perception of lie. Lie co-exists with truth. In their culture lying is not associated with rude or bad behaviour.



Number 數 shù

What surrounds the symbol of yin-yang are numbers, from 1 to 8, in form of bars called trigrams. Numerology in China is important as it established a concept in creating Chinese terms. For example: 8 八 bā is the number of trigrams in yin-yang and symbol of eight Daoist immortals. It is heavily featured in tradition as it stands for luck. This may be due to the similarity in sound to 福 fá (good fortune) in Cantonese. The number which is strictly avoided is 4 四 sì. It sounds similar to die, death 死 sǐ. You will never find the 4th floor or the name of a company with this digit. People strive to get as many eights in their phone number and as few fours as possible. Another is 7 七 qī. It sounds similar to the Mandarin word "even" 齊 qí, so it's good for relationships. Chinese Valentine's Day is held on the 7th of July. However, July is also considered a "ghost month", when death lurks for the living ones. In the past executions were held only in July. 3 and 9 are the luckiest numbers. 3 三 sān is often found in phrases and slogans. It refers to three main Chinese religions (Confucian, Daoist, Buddhist), and for each of them, three main teachings. 9 九 jiǔ is the square of 3 and resembles a long life. Its special meaning has a connection with Nine Dragons, the emperor and the division of China into nine provinces during the Xia and Shang dynasties. It was used even in the architecture. The example is the number of rooms in the Forbidden City (according to UNESCO the largest palace complex in the world), which is 9,999.

Dragon 龍 lóng As we are discussing the topic of numbers, we will move onto the Nine Dragons. Chinese dragons are not portrayed as in the West. They are not evil, fire-breathing creatures but powerful, imperious, good-natured species. They are the composite of nine creatures: camel's head, deer's horns, rabbit's eyes, cow's ears, snake's neck, frog's belly, carp's scales, hawk's claws, and tiger's palms. Traditionally, a dragon has 81 scales (9x9) running along its spine; whiskers and a beard on its face. Dragons are the lords of nature: reigning mountains, sky, sea, and land. Chinese people needed to seek their favour. The categories of dragons vary, as there are heaven dragons, spirit, earth and treasure ones. People born in the year of the Dragon are considered to be born leaders, having natural courage, energy, tenacity, and perception. They are healthy and prosperous yet spiteful. They are more prone to danger compared to other astrological animals.

Colour 色 sè

Throughout Chinese history, colours have had specific associations and meanings. Each dynasty had its own colour used for robes and emblems. The five primary colours are said to originate from five elements. "Red is the colour of joy and celebration and is the lucky colour. Red paper is often used for writing expressions of good wishes. White is the colour of mourning and funerals. It represents purity. Blue/Green is the colour of growth and vegetation and so life itself. Black is the colour of illness, death and criminality. Yellow is the national colour and the colour of the emperor. Roofs are yellow to represent yin and earth, while walls were painted red to represent yang and heaven." Lucky red is used in P.R.C.'s flag symbolizing communism and the Han dynasty, while yellow stands for Yellow River and the skin colour of the Han Chinese people. People tend to wear more red during their zodiacal year to bring them luck. If you would like to give a gift to the Chinese, never pack it in white, silver or black paper. This could be viewed as a disgrace and wishing misfortune. The safest option is to choose colour red.



Chinese traditions have a connection with the fundamentals of China's culture: yīn-yáng, qì, and fēng-shuǐ. In order to understand Chinese mindset it's obligatory to learn about their customs, due to the Chinese still being superstitious. This knowledge will help you to make friends in China and not be perceived as a rude person. These are only a few examples of Chinese symbolism as it is an extensive topic. When visiting this country, remember to respect its symbols, as they played an important role in the history of the country. You may easily offend an adult or an elder using words with "bad" association. For the Chinese, their traditions will not be forsaken.

How does one create something from nothing?

IS THAT NOT IMPOSSIBILITY IN AND OF ITSELF? HARD AS YOU MAY FIND TO BELIEVE IT, IT IS VERY MUCH POSSIBLE. IT IS A PHENOMENON OCCURRING REGULARLY 100 METERS BELOW A FEW IDYLIC VILLAGES SOMEWHERE IN REMOTE SOUTHERN FRANCE – ONE THAT HAS SINGLE-HANDEDLY ALLOWED US TO REVOLUTIONIZE OUR UNDERSTANDING OF CUTTING-EDGE PHYSICS. ALLOW ME TO INTRODUCE YOU TO THE LARGE HADRON COLLIDER AT CERN.

BUT FIRST, LET'S TAKE A FEW STEPS BACK, SHALL WE? TO ACCELERATE A BODY, OR IN OTHER WORDS TO INCREASE ITS VELOCITY, YOU MUST GIVE IT ENERGY, NAMELY KINETIC ENERGY. THIS IS THE ENERGY THAT IS ASSOCIATED PURELY WITH THE BODY'S MOVEMENT. STOPPING THAT BODY CAUSES THE ENERGY TO BE RELEASED – TRANSFERRED INTO OTHER TYPES OF ENERGY: HEAT, PERHAPS CHEMICAL ENERGY OR ELECTRICITY. IF YOU STOP A SPEEDING BODY VERY ABRUPTLY, YOU WILL PRODUCE HIGH AMOUNTS OF ENERGY VERY QUICKLY, RESULTING IN A VERY HIGH POWER. EXPLOSIVELY HIGH.

THAT'S THE PRINCIPLE WHICH THE LHC WAS BUILT IN MIND WITH. THE 27 KM LONG ACCELERATOR SPEEDS PROTONS UP TO INCREDIBLE VELOCITIES – 99.999999% OF THE SPEED OF LIGHT, OR NEARLY 300 000 KM/S. BUT THAT NUMBER IS FAR TOO LARGE TO HAVE ANY MEANING TO US.

TO HOPEFULLY PUT IT IN A MORE MEANINGFUL CONTEXT, SUCH A PROTON WOULD ONLY NEED A SECOND TO GET FROM THE EARTH TO THE MOON, A TRIP WHICH TOOK ASTRONAUTS ABOARD THE APOLLO 11 JUST OVER 3 DAYS. THAT PROTON WOULD ALSO CIRCLE THE EARTH ALONG THE EQUATOR 7.5 TIMES EVERY SECOND. IT IS AN INSANE SPEED FOR A PARTICLE TO HAVE.

THERE ARE TWO COMPONENTS OF KINETIC ENERGY: SPEED AND MASS. LET'S EXAMINE THE WEIGHT OF THE PROTON AND COMPARE IT TO ITS BEST FRIEND, THE ELECTRON. THE PROTON IS 1800 TIMES HEAVIER THAN THE ELECTRON, MEANING THAT IT CAN HAVE A MUCH HIGHER KINETIC ENERGY THAN IT, EVEN WHILE ZIPPING AROUND AT THE SAME SPEED. HOW LARGE IS THE KINETIC ENERGY OF THAT PROTON IN THE LHC, THEN? LESS THAN MICROSCOPIC. IF ONE HIT YOU IN THE NOSE, YOU WOULD FEEL AS IF A MOSQUITO HAD LANDED ON IT. IT IS ALMOST UNNOTICEABLE. HOWEVER, THAT PARTICLE IS NOT TRAVELING THROUGH THE LHC ALONE. INSIDE THE ACCELERATOR, THERE ARE TWO BEAMS, ONE GOING CLOCKWISE, AND THE OTHER COUNTERCLOCKWISE. EACH BEAM CONSISTS OF 300 TRILLION PROTONS. ALL OF THEM TOGETHER POSSESS AN INCREDIBLE MOMENTUM AND KINETIC ENERGY, FOR JUST A BUNCH OF PARTICLES, ESPECIALLY. IF IT HITS SOMETHING, THE FORCE OF THAT COLLISION WILL BE SIMILAR TO ONE WITH A HURTLING FREIGHT TRAIN.

IMAGINE ALL OF THAT MOMENTUM AND ENERGY HITTING A MULTI-BILLION DOLLAR SUB-ATOMIC PARTICLE DETECTOR. THAT WOULD LEAVE ONE NASTY MARK. LUCKILY, THE LHC IS WELL PROTECTED AGAINST THAT. FIRST-OFF, THE DIPOLE. IT IS AN ELECTROMAGNET THAT HAS TWO POLES, HENCE THE NAME. THERE ARE OVER 1200 CAREFULLY PLACED DIPOLES AROUND THE COLLIDER. THE MAGNETIC FIELD IS WHAT IS USED TO CURVE THE PARTICLES' TRAJECTORY AND THE DIPOLE MANAGES THAT BY MAKING USE OF THE LORENTZ FORCE. IN SHORT, THE LORENTZ FORCE CAUSES MOVING CHARGED PARTICLES (SUCH AS A PROTON, FOR INSTANCE) TO CHANGE THE DIRECTION OF THEIR MOVEMENT IN A MAGNETIC FIELD. CERTAIN INDIVIDUALS WOULD CLAIM THE LORENTZ FORCE ON ITS OWN CONSTITUTES 90% OF ALL PARTICLE ACCELERATOR SCIENCE.

THERE IS ONE MORE GLARING ISSUE. PROTONS ARE ALL POSITIVE PARTICLES – THEY REPEL EACH OTHER. THE BEAM WOULD SIMPLY FALL APART IF LEFT TO JUST THE DIPOLES, BECAUSE THE PROTONS WOULD PUSH THEMSELVES APART FROM EACH OTHER. BUT THEN THERE ARE MORE ISSUES, STILL!

HAVE YOU HEARD OF GRAVITY? PARTICLES FEEL IT TOO, AND WOULD DROP TO THE BOTTOM OF THEIR 6.3 CM DIAMETER PIPES NEARLY INSTANTLY. (MORE THAN LIKELY OBLITERATING THEM IN THE PROCESS) ANOTHER KIND OF ELECTROMAGNET CAN SOLVE THIS PROBLEM, ONE THAT HAS FOUR POLES (2 OF THEM SOUTH AND 2 NORTH, OF COURSE!) – A QUADRUPOLE. IT IS QUITE A COMPLICATED BEAST IN COMPARISON WITH THE DIPOLE, BUT WE CAN MANAGE IT. THE QUADRUPOLE SQUEEZES PARTICLES IN A BEAM TOGETHER, BUT ONLY VERTICALLY OR HORIZONTALLY. WHAT IS MORE, IF ONE SQUEEZES THE BEAM HORIZONTALLY, IT ALSO STRETCHES IT VERTICALLY, WHICH SOUNDS VERY PROBLEMATIC... HOWEVER, IF WE SEQUENCETHE MAGNETS, SO THAT VERTICAL AND HORIZONTAL QUADRUPOLES CONSTANTLY ALTERNATE, WE CAN MAKE A FINE, CONCENTRATED BEAM. IT ALSO COUNTERACTS THE CONSTANT DOWNWARDS PULL THE PARTICLES ARE EXPERIENCING DUE TO GRAVITY BY PULLING THE BEAM TO THE MIDDLE OF THE PIPE, WHERE THE MAGNETIC FIELD STRENGTH OF THE QUADRUPOLE IS ACTUALLY EXACTLY ZERO. OH, AND ONE MORE THING: THE BEAM 'WIGGLES'. I JUST FIND THAT KIND OF SCIENTIFIC JARGON AMUSING.

THE LHC SEEMS TO BE SO COLD AND CALCULATED. WELL, IT IS COLDER THAN YOU MAY THINK. ELECTROMAGNETS ARE MADE OF METAL AND THEY ARE CONNECTED TO A SOURCE OF ELECTRICITY. THE LARGER THE CURRENT THAT FLOWS THROUGH THEM, THE STRONGER THE MAGNETIC FIELD THAT THEY CREATE BECOMES. THAT IS WHY THEY ARE MADE FROM THERMAL SUPERCONDUCTORS. THESE ARE MATERIALS THAT CONDUCT ELECTRICITY WITH NO RESISTANCE WHEN COOLED. SOME PARTS OF THE LHC ARE LITERALLY COLDER THAN OUTER SPACE! THE COLLIDER'S FIRST SECTOR, FOR EXAMPLE, HAS A TEMPERATURE OF ONLY 1.9 K, WHICH MEANS IT IS BELOW-270°C. IT IS ONLY THANKS TO THE BOOST THAT THE MAGNETS GET FROM THE THERMAL SUPERCONDUCTIVITY, THAT THE LHC IS SO "SHORT". TO ACHIEVE THE SAME BEAM ENERGIES WITHOUT IT, ONE WOULD NEED A MACHINE AT LEAST 120 KM LONG.

BUT WHY WOULD SOMEONE GO THROUGH SUCH A HASSLE? THE ANSWER IS LINKED TO OUR ORIGINAL QUESTION: HOW DOES ONE CREATE SOMETHING FROM NOTHING? SMASHING TWO PROTONS TOGETHER TURNS OUT TO BE JUST THE RIGHT WAY. THEY COLLIDE IN A VACUUM, SO THERE IS NO HEAT TO TRANSFER THEIR KINETIC ENERGY INTO.

EVEN THOUGH THEY REPEL EACH OTHER ELECTROMAGNETICALLY, THAT FORCE IS OVERCOME EASILY, AND NO KINETIC ENERGY IS TRANSFERRED INTO ELECTRIC ENERGY AFTERWARDS. THERE IS NO BONDING, SO NO CHEMICAL ENERGY IS PRODUCED. WHAT IS SUPPOSED TO HAPPEN WITH THAT FREIGHT-TRAIN LOAD OF KINETIC ENERGY WE HAVE ACCUMULATED IN THE PROTONS? THERE IS NOWHERE FOR IT TO BE TRANSFERRED TO. WHERE DOES IT GO? DO YOU RECALL $E = MC^2$? YOU ARE ABOUT TO SEE HOW THE MOST FAMOUS EQUATION IN ALL OF PHYSICS REALLY WORKS. AS ALBERT EINSTEIN TOLD US, THERE IS ENERGY IN MASS ALONE. JUST BECAUSE SOMETHING HAS A MASS IT HAS ENERGY. IF YOU GET RID OF THE MASS, ANNIHILATE PARTICLES OR SO ON, YOU CREATE ENERGY. THIS IS THE LITERAL TRANSLATION OF THE REAL PHYSICAL PROCESSES OF "ANNIHILATION" AND "CREATION". JUST LIKE YOU CAN GET ENERGY STRAIGHT OUT OF MASS, YOU CAN CREATE MASS FROM JUST ENERGY. MASS IN THE FORM OF NEW PARTICLES, SPONTANEOUSLY GENERATED WHEN TWO PROTONS COLLIDE AND RELEASE MASSIVE (PUN INTENDED) AMOUNTS OF ENERGY INTO THEIR SURROUNDINGS.

FOR A VERY BRIEF MOMENT WE CAN SEE EXOTIC PARTICLES COME TO LIFE THAT WE NEVER COULD HAVE OBSERVED IN EVERYDAY LIFE. INSIDE THE SENSORS OF THE LHC THEY POP INTO EXISTENCE FOR JUST A SPLIT-SECOND. THEY THEN DECAY INTO OTHER, MORE MUNDANE PARTICLES. THEY ARE SIMPLY NOT STABLE ENOUGH, AND IF THERE IS ONE THING NATURE WANTS, IT IS STABILITY. WE CAN TRICK NATURE FOR AN INSTANT, BECAUSE OF JUST HOW ENERGETIC THE COLLISION IS. THIS CAN FORCE PARTICLES INTO ARRANGEMENTS THAT, AS I HAVE SAID, CAN ONLY COME ABOUT ON THEIR OWN VERY RARELY. THEN, WE CAN OBSERVE THEM AND DISCOVER NEW PHYSICS.

THE MORE ENERGY WE GIVE, THE MORE INTERESTING PARTICLES WE WILL BE ABLE TO OBSERVE. THE LARGE HADRON

COLLIDER IS CURRENTLY BEING UPGRADED TO INCREASE ITS LUMINOSITY – HOW MANY COLLISIONS PER SECOND PER M³ IT CAN SUPPORT. THE BEAM WILL BE QUICKER AND MORE FOCUSED. BUT THERE IS A LIMIT TO THE LHC'S PROTONS' ENERGY. PHYSICISTS SPECULATE THAT NO MORE GREAT DISCOVERIES CAN BE MADE AT THE LHC. WE NEED STRONGER ACCELERATORS TO LOOK EVEN DEEPER INTO THE FUNDAMENTAL BUILDING BLOCKS OF MATTER AND EVERYTHING THAT SURROUNDS US. AND THAT IS WHY THERE ALREADY ARE PLANS FOR A 100 KM LONG PROTON ACCELERATOR AT CERN. IF YOU HAPPEN TO HEAR ABOUT IT, NOW YOU WILL KNOW WHY IT DOES ACTUALLY MAKE SENSE!

Marcin Andraka

How to finally stop procrastinating?

GABRIELA
KRUAZE

Here we present some of them so that you can look through them and decide whether they would be useful for you:

1. Break enormous assignments into little, convenient pieces.
2. Recognize your effectiveness cycles and timetable your assignments accordingly.
3. Set solid cutoff times for yourself.
4. Get rid of distractions in your surroundings.
5. Count to 10 before you give in to an urge to linger.
6. Kick yourself off by resolving to work for just 5 minutes.
7. Switch between assignments deliberately in order not to stall.
8. Give yourself credit for every day on which you complete all your tasks.
9. Reward yourself for your achievements.
10. Don't be a fussbudget.
11. Imagine your future self.
12. Concentrate on your objectives rather than on your undertakings.

Procrastination isn't just a human problem. Even Isaac Newton discovered that a body at rest will stay at rest until compelled to do otherwise, so continuing his way of thinking - the entire universe procrastinates. But just because procrastination is universal doesn't mean it's a good idea. What exactly stands for „procrastinating“? First of all, it is the act of unnecessarily postponing decisions or actions. People procrastinate because factors such as anxiety or fear of failure outweigh their motivation and self-control. However, there do exist some effective ways to overcome this humane and common issue. First of all, you have to figure out what your goals are, then pose 3 main questions: when, how, and why you procrastinate. Knowing that, you should create a plan of action based on relevant anti-procrastination techniques and implement it.

"If you start your work now you'll have plenty of time and you won't be stressing out at the last minute"



