

FLASHES

A MONTHLY MAGAZINE ON KNOWLEDGE AND DEVELOPMENT
BY THE MOHAMMED BIN RASHID AL MAKTOUM FOUNDATION

APRIL 2016
ISSUE 18

#2016YearOfReading



Professor
George Smoot



Professor
Kurt Wüthrich



Professor
Martin Chalfie

Education evolution

A love of science is in the DNA of three Nobel laureates



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CONTENTS

APRIL / 2016

ISSUE 18



COVER IMAGE:
Nobel Prize Series 2016

REGULARS

05: WELCOME

08: THE STORY BEHIND THE EXPO 2020 LOGO

17: ARAB KNOWLEDGE INDEX

46: ARAB CONTRIBUTION

Zinzana director Majid
Al Ansari on the future
of UAE cinema

50: CANVAS

Artists chalk The Walk
with mind-bending murals

54: FLASHBACK

We meet motoring mogul
Ralph R Debbas and trace
the evolution of the car



EXPLORE

INFINITE WISDOM

Three Nobel laureates debate the
future of science education/ 10

DREAMS OF THE DESERT

A Japanese poet was so impressed
by his trip to the UAE that he's
written a book about it/ 18

BIG SCHOOL

Shanghai is the latest metropolis
to declare itself a 'city of learning'.
What does this mean in practice, and
what lessons can be gleaned?/ 22

A LITERARY LEGEND

The acclaimed documentary *Gabo*
profiles Colombia's late literary
wonder Gabriel García Márquez/ 26

RINGING THE CHANGES

As 5G becomes a reality, get ready
for super-fast smartphones/ 30

EAR TO THE GROUND

A groundbreaking initiative is
helping deaf youngsters hear –
by providing them with cutting-
edge technology/ 34

POWERING AHEAD

Could nanotechnology hold the
key to cleaner fuel? Saudi scientists
think so/ 38

CLOCK WATCHERS

Arab physicists have teamed up
with their Canadian counterparts
to unlock the secrets of time/ 42



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Al Maktoum Foundation
T: +971 4 423 3444
F: +971 4 368 7777
PO Box 214444, Dubai
United Arab Emirates
www.mbrf.ae
flashes@mbrf.ae



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F: +971 4 428 02261
motivatepublishing.com
connect@motivate.ae

PUBLISHER

Chris Capstick
chris@motivate.ae

GROUP EDITOR - CONNECT

Dean Carroll

EDITOR - CONNECT

Lauren Steadman

SENIOR ASSIGNMENTS EDITOR

Ingrid Valles

SENIOR ART DIRECTOR

Tarak Parekh

SENIOR DESIGNER

Charlie Banalo

CONTRIBUTOR

Krishna Kumar

GENERAL MANAGER - PRODUCTION

Sunil Kumar

Printed by Rashid Printers



FOREWORD

Dear readers,

MBRF welcomed some very special people to Dubai as part of the Nobel Prize Series. We were privileged to host three Nobel laureates, who shared their wisdom with an audience of students, academics and the general public over two enlightening days of lectures. Astrophysicist George F Smoot and neuroscientist Martin Chalfie, both American, and Swiss biophysicist Kurt Wüthrich discussed ways to engage young people in science, thus ensuring the Nobel laureates of the future are nurtured at each stage of their studies.

Two Emirati scientists appeared at the event. Dr Maryam Matar, who founded the UAE Genetic Diseases Association, said youths today have more career opportunities than ever. The Chairperson of the UAE Council of Scientists, Sarah Amiri, praised the country's leadership for providing an environment in which young people could excel. Amiri also shared her experiences of working at Mohammed Bin Rashid Space Centre, where she is Emirates Mars Mission Science Team Leader.

In this issue of *Flashes*, we hear from two young pioneers who have triumphed in very different yet similarly competitive fields. Majid Al Ansari is the latest Emirati filmmaker to succeed on the global

cinema circuit – the director has been named Mid-East Filmmaker of the Year by entertainment magazine *Variety*. Meanwhile, Ralph R Debbas, the Beirut-born businessman behind the \$3.4m Lykan HyperSport, plans to make Dubai a centre of excellence for car design.

Culture lovers will find a wealth of inspiration, with highlights from the Dubai Canvas exhibition, which brought international street artists to the emirate, and a documentary about the late Colombian novelist Gabriel García Márquez. We also interview Japanese poet Kika Hotta, whose latest book is inspired by his trip to the UAE.

In the field of knowledge, we examine Shanghai's bid to become a 'learning city' that provides lifelong education to its citizens. Technology is also represented, with groundbreaking developments in energy, healthcare, communications and quantum mechanics among the topics explored.

We hope you will find this issue of *Flashes* illuminating.

Jamal Bin Huwaireb
MD of Mohammed Bin Rashid
Al Maktoum Foundation



ARAB READING CHALLENGE CONTESTANTS FINISHED MORE THAN 100M BOOKS

A drive to get the Middle East reading has been a huge success, with more than 100 million Arabic-language books read in the past six months.

The Arab Reading Challenge was launched last September in response to studies showing people in the region read markedly less than those elsewhere in the world.

Set up to promote a love of books, it's being run in partnership with broadcaster MBC Group and is supported by a number of regional media companies.

"I am pleased to see over 30,000 schools taking part in the Arab Reading Challenge, with over 100 million books read," tweeted His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister

of the UAE and Ruler of Dubai. "We have more than doubled our original goal of having 50 million Arabic books read in our region."

He added: "Rebuilding our intellectual capacity in the Arab world starts with reading, leading towards a love of science and innovation."

Incentives are both motivational and monetary, with prizes totalling an estimated AED11m (\$3m) up for grabs. Participants are rewarded as they reached various milestones, with recognition at school, local and national level. In May, the Middle East's biggest bookworm will be revealed – they'll receive a university scholarship worth \$100,000, while their family will be given \$50,000 in cash as a reward for their encouragement. The school whose pupils read the most will receive \$1m. [t](#)

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Prize of \$1m for Palestinian woman voted world's best teacher

A Palestinian teacher scooped a \$1m reward for helping troubled pupils to learn through play. Hanan Al Hroub, who was raised in a refugee camp near Bethlehem, won the Varkey Foundation Global Teacher Prize 2016 for her innovative classroom techniques, beating nominees from all over the world.

Pope Francis relayed the good news via video during the Global Education and Skills Forum (GESF) 2016, held at Atlantis The Palm, Dubai. Al Hroub was then presented with her award by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai.

On receipt of the accolade, she said: "I am proud to be a Palestinian female teacher standing on this stage. I accept this as a win for all teachers in general and Palestinian teachers in particular."

She went on to say: "We need to help children with questioning, dialogue, thinking and feeling to help them express themselves.

"We, as teachers can build the values and morals of young minds to ensure a fair world, a more beautiful world and a more free world.

"The future seems far and ambiguous; however, when you are involved in making it, the world represents a light."

Al Hroub, who teaches at Samiha Khalil High

School in the West Bank town of Al-Bireh, went into education after her own children witnessed a shooting, an experience that left them deeply traumatised. The subsequent meetings and consultations she attended to discuss their development, behaviour and academic performance inspired her to help other youngsters who, having grown up in similar circumstances, require special handling at school.

With so many damaged children in the region, Palestinian classrooms can be tense environments. Al Hroub embraces the slogan 'No to violence' and uses a special approach she developed herself, detailed in her book, *We Play and Learn*.

In addition to stressing the importance of literacy, she aims to develop trusting, respectful, honest and affectionate relationships with her pupils, paying attention to individual needs, rewarding positive behaviour and encouraging kids to work together. Her approach has led to a decline in classroom violence and inspired her colleagues to review their own techniques.

The Global Teacher Prize was set up to recognise exceptional teachers who have made outstanding contributions to the profession and to shine a spotlight on their vital role in society. Now in its second year, the US\$1m award is the largest prize of its kind. [↑](#)



Left: Hanan Al Hroub

Expo 2020 logo based on ancient ring



A 4,000-year-old gold ring found in the UAE desert is the inspiration behind the new Dubai Expo 2020 logo.

The design was revealed at a glittering ceremony at which its pattern was projected by light onto the surface of Burj Khalifa.

Unveiling the emblem at the event, held in Downtown Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of UAE and Ruler of Dubai, revealed why he had decided to depict the ancient relic.

The ring was found at the Sarouq Al Hadeed archaeological site, 100km south of Dubai, which was itself discovered by His Highness Sheikh Mohammed. He was flying over the desert by helicopter when he observed that the ripples in the

sand dunes differed from those he could see nearby.

Sheikh Mohammed said the logo “represents our message to the world that our civilisation has deep roots”.

He said: “We were and will always be a pot that gathers civilisations and a centre for innovation.”

“Over 4,000 years ago, the people who lived in this land had a deep creative spirit and today the people of this country are building the nation’s future for centuries to come.”

Three UAE residents who competed to create an Expo 2020 logo were presented with awards.

Their work will be featured at the Expo site, said Reem bint Ibrahim Al Hashimy, UAE Minister of State and director-general of Bureau Dubai Expo 2020. [↑](#)



إكسبو 2020
دبي، الإمارات العربية المتحدة
DUBAI, UNITED ARAB EMIRATES

Clockwise from top:
His Highness Sheikh Mohammed bin Rashid Al Maktoum holds the ring as Reem Al Hashimy looks on; the ancient relic; the new logo



Sheikh Mohammed bin Rashid named a top LinkedIn influencer

An open letter titled “Why Ministers for Happiness, Tolerance, Youth and the Future?” ranked among the top three most engaging posts globally from a political figure on LinkedIn’s Influencer platform, the networking site revealed.

The message, by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, has raised the bar for rulers’ community engagement via social media.

LinkedIn spokesman Ali Matar said: “In just the first 48 hours of publishing, Sheikh Mohammed’s post garnered more than 300,000 views and the figure is fast approaching half a million.

“Its success demonstrates the respect that he generates across geographies, and this recent piece has engaged with LinkedIn members far more than the most followed political influencers from different parts of the world.”

The post attracted and engaged readers from far beyond the UAE, proving particularly popular in the USA, UK and Canada.

The LinkedIn Influencer feature offers a platform on which selected high-achieving individuals from various disciplines can share their

experiences, wisdom and advice for the benefit of the website’s millions of members.

Other popular LinkedIn Influencers include Barack Obama, Hillary Clinton, entrepreneur Richard Branson, Indian Prime Minister Narendra Modi and media mogul Oprah Winfrey.

On Twitter, Sheikh Mohammed was the fourth-most popular global leader in 2015, reported the Washington-based Digital Policy Council (DPC), gaining almost two million followers last year. [f](#)

OTHER POPULAR LINKEDIN INFLUENCERS



Barack
Obama



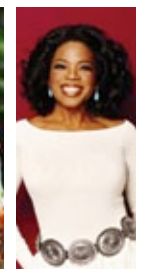
Hillary
Clinton



Richard
Branson



Narendra
Modi



Oprah
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NOBEL LECTURES LIGHT UP YOUNG MINDS IN DUBAI

*A series of sessions
linked to MBRF's
Nobel Museum
highlighted major
scientific discoveries*

Nobel laureates were united for a meeting of brilliant minds in a two-day meeting in Dubai.

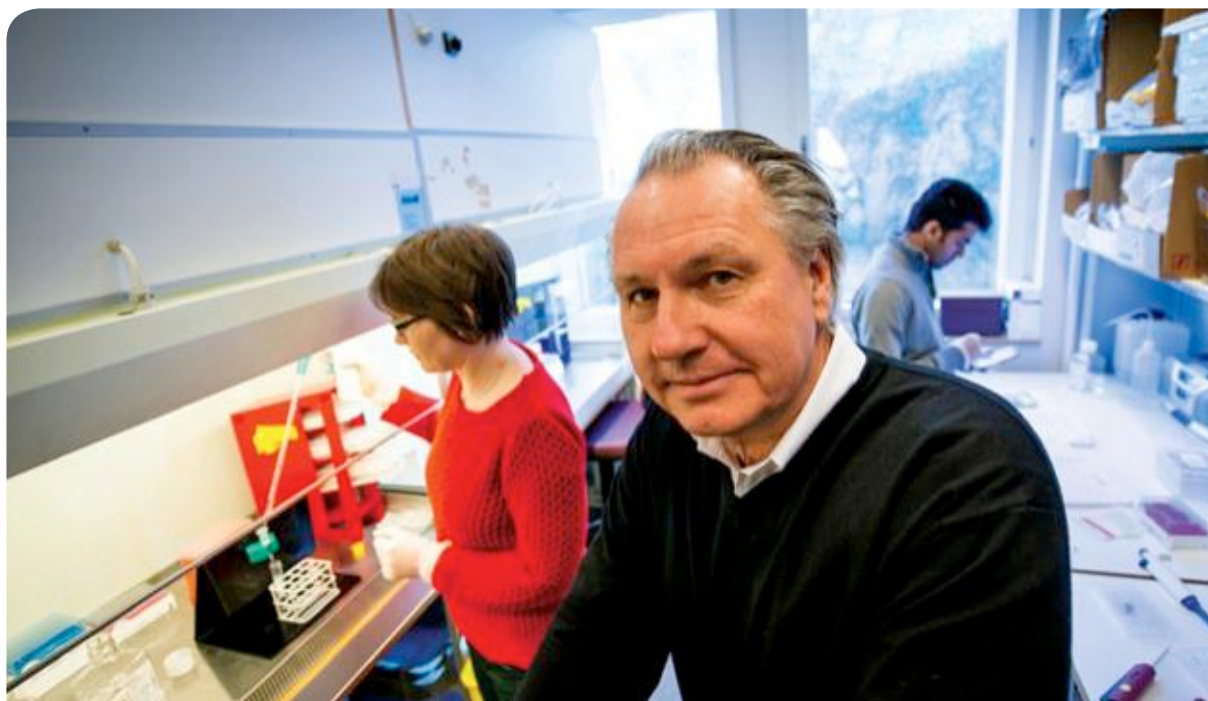
The Nobel Prize Series explored the theme of “Learning for Life”, enabling students, academics and members of the public to interact with world-renowned professors in physics and chemistry.

Held on 20 and 21 March, it was organised by MBRF in co-operation with the Nobel Foundation as part of the Nobel Museum touring exhibition, which will run in Dubai throughout May.

His Excellency Jamal Bin Huwaireb, Managing Director of MBRF, said the event reaffirmed the UAE's status as a supporter of major global platforms that promote innovation.

Dr Lars Heikensten, Executive Director of Nobel Foundation, said: “We are proud to present Nobel Prize Series in Dubai together with MBRF.

“This signals our ambition to encourage future generations’ curiosity and engagement in science, literature and peace – in line with Alfred Nobel’s vision.” >



➤ THE LAUREATE LINE-UP

Dr George F Smoot won the 2006 Nobel Prize in Physics with John C Mather for finding a relic of the Big Bang, “the blackbody form and anisotropy of the cosmic microwave background radiation”.

Now a professor of physics and research physicist at the University of California, Berkeley, he said studying the universe was like forensic science in that “you have to explain everything” – collecting evidence, making comparisons, studying models and discarding any theory that did not fit the evidence. Smoot said observing space was being like looking back in time, because light travels over time.

The neurobiologist Martin Chalfie won the 2008 Nobel Prize in Chemistry “for the discovery and development of the green fluorescent protein, GFP” as a biological marker, an accolade he shared with fellow American Roger Y Tsien and Japanese marine biologist Osamu Shimomura.

Chalfie is currently a professor at Columbia University, where he is working to find answers to two quite different biological questions: how do different types of nerve cells acquire and maintain their unique characteristics, and how do sensory cells respond to mechanical signals? He said scientific success come via many routes.

“Many discoveries are accidental,” he says. “Science students should be passionate and 100 per cent committed, and always thinking about your

area of work, at the back of the mind. You have to keep working on a couple of different problems.”

Asked how one might win a Nobel Prize, he said: “There is more than one set of ways to get a Nobel Prize. Nature has to give it. The Nobel Committee has to give it!”

Kurt Wüthrich won the 2002 Nobel Prize in Chemistry for the “development of nuclear magnetic resonance spectroscopy for determining the three-dimensional structure of biological macromolecules in solution” with John B Fenn and Koichi Tanaka. Now Professor of Structural Biology at The Scripps Research Institute, San Diego, his research interests lie in molecular structural biology and structural genomics.

Wüthrich advised aspiring young scientists to be competitive, as well as staying healthy! “You have to read up the background of your areas of interest and try to look for the big fish – and also be close to nature,” he said, illustrating the key highlights of his career. One a discovery has been made, he explained, several years must pass before a Nobel Prize could be awarded, allowing time for its practical impact to be assessed and for its validation by the global scientific community.

Each laureate described the journey that led him to win the Nobel Prize and revealed mistakes he had made early on in his career, before telling of how prize-winning discoveries were made through trial and error or by seeking the help of

Professor Klas Kärre, former Chairman of the Nobel Award Committee for Physiology and Medicine and a member of the Royal Swedish Academy of Sciences

others. With the accolade, Wüthrich added, came responsibility to become a good role model.

On each day, an Emirati scientist shared their own experiences and talked about the UAE's involvement in their area of expertise.

The Chairperson of the UAE Council of Scientists, Dr Sarah Amiri, praised the UAE's leadership for providing an environment in which young people could excel.

"Today, the way is well paved by our government that wants us to go forward on the path to creativity", she said. "Our dream is to reach the highest level of achievement and success."

Amiri, who is also Emirates Mars Mission Science Team Leader at Mohammed Bin Rashid Space Centre, told students that scientific progress requires constant work and the ability to learn from the experiences of others.

WORKSHOPS WERE ENLIGHTENING

MBRF organised three workshops exploring the Nobel Foundation's work. Swedish immunologist Professor Klas Kärre, former Chairman of the Nobel Committee for Physiology and Medicine, talked about chromosomes and vaccines.

Kärre was particularly excited by progress made in fighting skin and lung cancers.

"These new drugs can modulate the human immune system so that it can find and attack cancer cells," he said.

Dr Erling Norrby, a leading virologist and former permanent secretary of the Royal Swedish Academy of Sciences, highlighted laureates whose work concerned DNA, chromosomes or proteins. In 1962, Francis Crick, James Watson and Maurice Wilkins were jointly awarded the The Nobel Prize in Physiology or Medicine for their findings



on the molecular structure of nucleic acids and its significance for information transfer in living material. Norrby said that viruses played a central role in evolution, and that the next decade would yield many more insights into the use of vaccines.

He also spoke of the work of Frederick Banting, one of the youngest people to win a Nobel Prize. At the age of just 32, he was honoured for his work on insulin jointly with John Macleod.

Dr Katarina Nordqvist, Research Director at the Nobel Museum, spoke of the 1988 Nobel laureates Dr Gertrude B Elion, Dr George H Hitchings and Sir James Whyte Black, whose findings saved the lives of many children with leukaemia.

Alexander Fleming's discovery of penicillin, in 1945, and the identification of blood groups in 1930 by Karl Landsteiner were other achievements she admired. 🇦🇪

Professor Dr Katarina Nordqvist, Director of Research at the Nobel Museum and Associate Professor, with His Excellency Jamal bin Huwaireb, Managing Director of MBRF

(L-R): Alexander Fleming's discovery of penicillin, in 1945; the identification of blood groups in 1930 by Karl Landsteiner



Getty Images



ARAB KNOWLEDGE INDEX EXPLORED AT CAIRO UNIVERSITY CONFERENCE

The workings of the Arab Knowledge Index were discussed at a seminar held in Egypt

The workings of the Arab Knowledge Index were discussed at a conference in Egypt.

Mohammed Bin Rashid Al Maktoum Foundation (MBRF) and the United Nations Development Programme (UNDP) organised a seminar as part of the International Conference on Statistics and Modelling, held at Cairo University last month.

Delivered in partnership with the university's Faculty of Economics and Political Science, the discussion examined the mechanism of the index as well as its statistical

indicators, and suggested ways in which it might be refined.

Addressing the seminar, Dr Moataz Khurshid, former Egyptian Minister of Higher Education and Scientific Research, said the Arab Knowledge Index had adopted international methodologies that take the specific nature of the region into consideration.

He added that the creation of the index had integrated research and development with innovation.

The coordinator of the Arab Knowledge Project, Dr Hani Al-Turki, said the index is intended to be a highly reliable tool with which to study the strengths and weaknesses of various sectors, but had not been designed to classify countries according to the performance of individual sectors.

He pointed out that the Arab Knowledge Index covers areas that have a significant impact on society, such as technical education and vocational training, information and communication technology, higher education, pre-university education and the knowledge economy, plus innovation and research and development.

Dr Mohammed Ismail, Head of Statistics at the Faculty of Economics and Political Science, said the Arab Knowledge Index in its first phase adopted global statistical methodologies in the construction of the indicators.

Communications have been established with international statistical organisations to benefit from their expertise in this field, he added.

The first results of the Arab Knowledge Index were announced during the Knowledge Summit, organised by MBRF in December. The index was developed with the intention of helping decision-makers achieve their growth and development plans. 



FLASHES

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INDEX HIGHLIGHTS UAE'S PROGRESS IN KEY AREAS

We display knowledge data from the Arab world as an easy-to-read infographic

A robust economy and the ease of doing business are among the UAE's strengths, the Arab Knowledge Index reveals.

Created to measure knowledge levels in Arab countries, the project was launched last year by Mohammed bin Rashid Al Maktoum Foundation (MBRF) and the United Nations Development Programme (UNDP).

The index comprises six main indices covering crucial sectors – the economy; pre-university education; higher education; vocational education and training; research & development, and innovation; and information technology and communication.

The UAE's pre-university education, plus information and communication technology (ICT), are also rated highly in the report, which

identified room for improvement in the areas of research, development and innovation.

His Excellency Jamal bin Huwairib, Managing Director of MBRF, said the development of the Arab Knowledge Index had involved a year of field research plus in-depth studies and reviews, as well as workshops held in countries including Morocco, Jordan, the US, France and the UK.

He said: "The Arab Knowledge Index takes into account national, historical and cultural characters of each Arab country separately, and is flexible enough to be adopted in several countries."

Its findings are available on the Knowledge 4 All portal, www.k4all.org, a reference hub for researchers, professionals, students, stakeholders and members of the public. ↗

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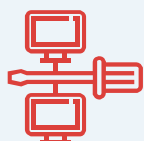
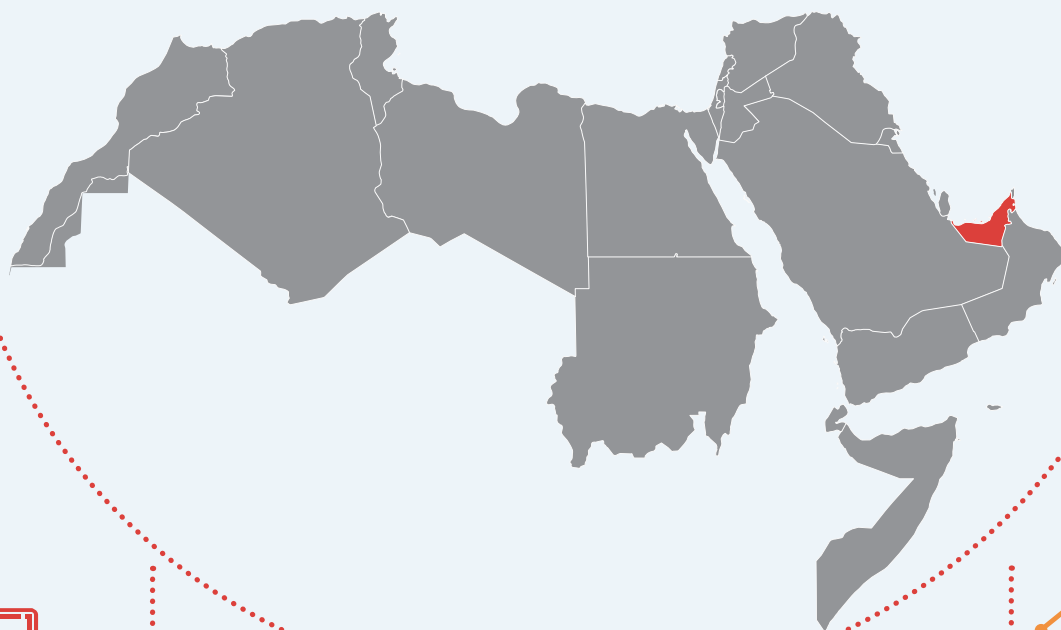
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60%

TECHNICAL
VOCATIONAL
EDUCATION
AND TRAINING

18%

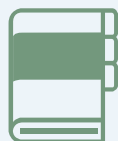
Labour Supply

88%

Labour Demand

89%

Entrepreneurship



68%

PRE-UNIVERSITY
EDUCATION



66%

Enabling
Environments



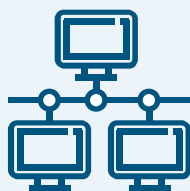
71%

Knowledge
Capital



64%

General
Developmental
Context



77%

INFORMATION &
COMMUNICATIONS
TECHNOLOGY INDEX



78%

Direct Indicators



76%

Indirect Indicators



72%

HIGHER
EDUCATION



67%

Higher
education
inputs



70%

Higher
education
outputs



50%

RESEARCH AND
INNOVATION



50%

Innovation



35%

Research &
Development



69%

Political, Economic,
social environment
and infrastructure



77%

ECONOMY



85%

Organizational
performances
and human
resources



81%

Competitiveness
and creative
development of the
economic structure



51%

Economy-related
information
technology

Literature

IN LOVE WITH ALL THINGS EMIRATI

The UAE's landscape and people are portrayed in a new anthology by Japanese poet Kika Hotta

“My body will become sand
And my memories into leaves of words”

A haiku poem by Kika Hotta on his experience of visiting
Dubai's Juma Al Majid Center for Culture & Heritage

When Japanese poet Kika Hotta travelled to the UAE, he wasn't prepared for the profound effect the experience would have on him.

The month-long trip left an indelible impression, and now he's released a book of poetry inspired by his travels, *Arabia: 99 Haiku*.

“It is a good number, a spiritual number as a mark of deep respect for the memory of this place and people,” says Hotta, whose anthology was published in Arabic, English and Japanese by MBRF's publishing arm, Qindeel.

Haiku is a traditional form of Japanese poetry dating back more than 600 years. Each piece should convey a single feeling or impression and contains just three non-rhyming lines of five, seven and five syllables respectively, while nevertheless evoking powerful mental images.

The style evolved from an even earlier, more elaborate form of Japanese poetry called tanka, which can loosely be translated as ‘short songs’.

Hotta, 40, writes both forms, but says he prefers haiku for its combination of tradition and modernity. His Excellency Jamal bin Huwaireb, Managing Director of MBRF, lauded

the book, saying it was “a piece of art beautifully versed by an expert in haiku poetry”.

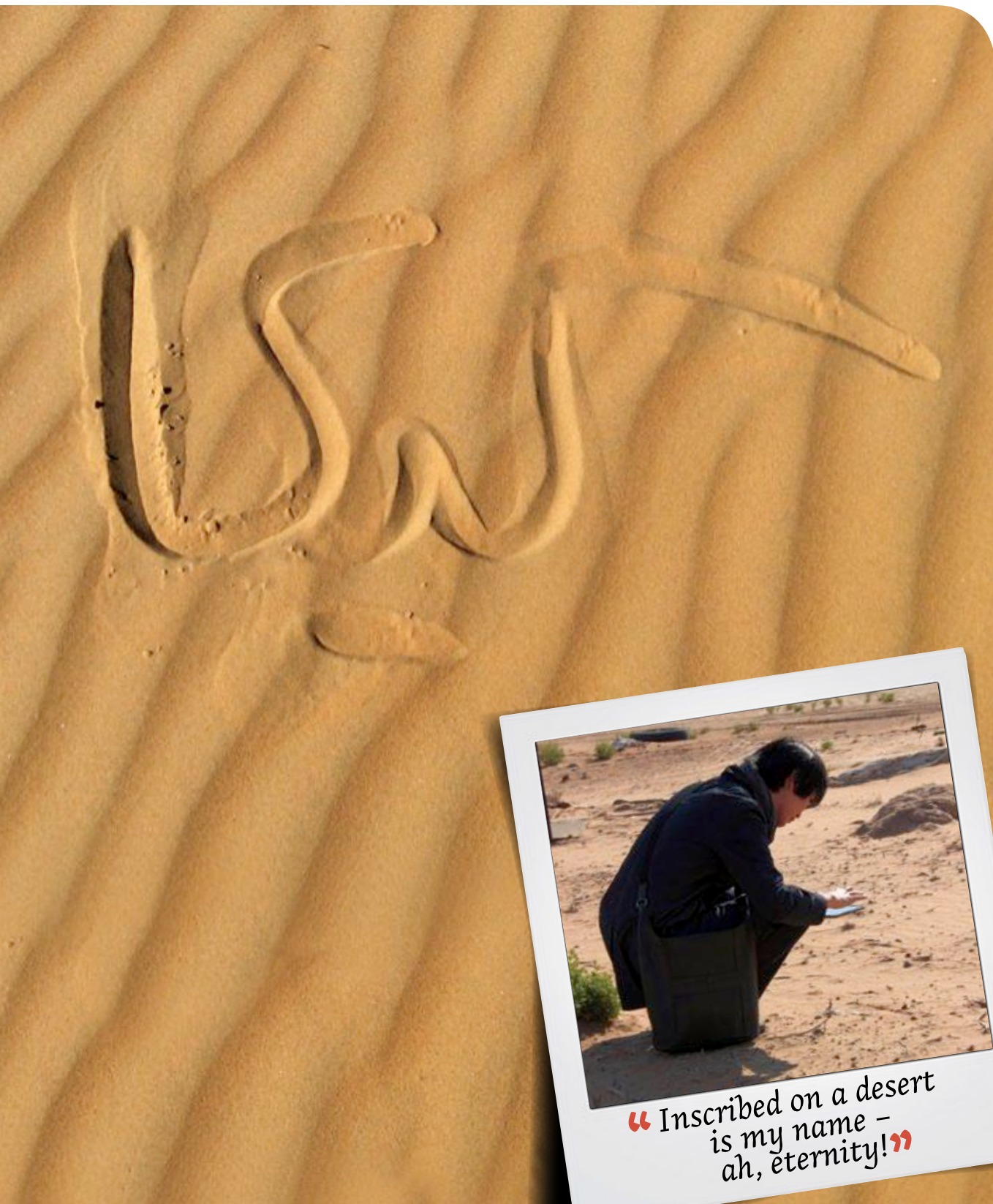
A poet himself, Bin Huwaireb added: “Using his poetic talent, Kika successfully personified the UAE and Dubai through 99 poems he wrote in Japanese and English, then we translated them into Arabic to add to the growing body of Arabic-language literature”.

The UAE's rich cultural heritage fired Hotta's imagination:

*I have come to a land
where poets choose not to use
pseudonyms –
how fragrant is its wind!*

Born in Tokyo, Hotta studied at Brown and Princeton universities before returning home to further his studies. His work has earned him a number of awards, including the third Shiba Fukio Haiku New Talent Encouragement Award and the 13th Sawa New Talent Award, both for haiku; and the second Ishikawa Takuboku Prize and the Chuubu Tanka New Talent Award for his tanka.

A linguist as well as a writer, he has translated haiku and tanka into English, Japanese, Chinese and French, >





and cites the work of Japanese poets Minoru Ozawa and Ban'ya Natsuishi as influential.

Hotta first came to the UAE through the Writers' Exchange Programme, in which Japanese and Emirati authors visit each other's country to challenge stereotypes and stimulate creativity.

Part of MBRF's Dubai International Programme for Writing, it is a joint initiative with the Tokyo-based Japan Arts and Cultural Foundation.

Having travelled extensively and lived overseas, Hotta initially thought he knew what to expect in the Middle East. The reality was quite different.

"When I came here, I was taken by surprise," he said.

"I visited every part of the UAE – the cities, the desert and the wadis.

"We mixed with local poets and writers, and I found there are lots of Emiratis dealing with cultural affairs."

Hotta was particularly affected by a visit to the vast Liwa region, of which he wrote:

*The desert is pregnant
her dunes
softly curved*

Another haiku was inspired by the Gulf region's rich history of pearling:

*Chanting a poem
the poet brightens up
the whereabouts of pearls*

While the Japanese perception of the UAE is often skewed, Hotta feels the countries do share certain characteristics.

"As a poet, I want the young generation in Japan as well as in the UAE to keep their culture," he said, adding that the Arab world and Japan share a love of poetry dating back many centuries and a spirituality that is "deep-rooted and part of everyday life".

And while Japanese and Arabic are phonetically quite different, he feels "the classical form of the two languages make use of special syllables and sounds. It is beautiful." ♪



Above: Japanese poet Kika Hotta writes in the haiku and tanka styles

Right: Hotta shares his experiences

Opposite page: Emirati writers Muhsin Suliman (second from left) and Al Hanouf Mohammed (third from left) in Japan

A JAPANESE JOURNEY

Emirati writers explore a unique Far Eastern culture and discover a refined way of life

When writers Muhsin Suliman and Al Hanouf Mohammed flew to the Far East, they found no end of inspiration. Each took part in the Writers' Exchange Programme, in which Emirati and Japanese writers travel to each other's country to challenge stereotypes and strengthen bonds between these very different places.

Organised jointly by Mohammed Bin Rashid Al Maktoum Foundation (MBRF) and the Tokyo-based Japan Arts and Cultural Foundation, the initiative offers young wordsmiths a way to broaden their horizons.

Suliman, an award-winning short story writer and playwright, joined poet Al Hanouf at Emirates Airline Festival of Literature, where they shared their experiences with Japanese participant Kika Hotta in the panel discussion "The Writers' Exchange: Emirati in Japan".

Each participant wrote a book upon his or her return, and these have been released by MBRF's publishing division, Qindeel.

Al Hanouf Mohammed's book *The Road to Japan* blends travelogue, history, sociology and poetry to find new insights into the similarities and differences between the UAE and Japan.

Muhsin Suliman ventured into the world of Japanese theatre, specifically noh and kabuki, with his title *Noh and Kabuki and the Drama of Masks*, offering an introduction to these highly stylised forms of performance.

THEATRE AND SPIRITUALITY

Suliman was impressed by the relationship between Japanese theatre and religion. There, many performances contain a religious element, especially those in the age-

old styles of noh and kabuki, which can last for up to seven or 24 hours respectively. In each performance, an actor puts on a mask and in doing so enters the spiritual world of the character he or she is portraying.

"As Arabs, we may not be able to comprehend this, as it is completely different from the kind of drama we have here," says Suliman. During the trip, he felt reassured by Japan's high degree of organisation and efficiency. He added: "I felt that three weeks were not sufficient."

A CHANGE OF PERSPECTIVE

As her first trip abroad, the exchange was life-changing for Al Hanouf. She explained that she felt at home in the UAE and hadn't previously felt the need to visit other countries.

"This journey changed my point of view and my perspective," she said. "In spite of my initial hesitation, I enjoyed the experience, as my hosts were very cooperative."

Comparing the role of women in each society, she said: "Japanese women, like my Emirati counterparts, strive to represent their legacy and a positive image.

"As a Muslim and as a representative of Emirati culture I felt very proud."

Japanese women appeared devoted to their families, she said. "We visited homes, tea rooms and restaurants. In each of these social settings, the sense of organisational detail and accuracy, and of tradition, exercised by the female host is exemplary."

Al Hanouf added that the Japanese women she met were very open-minded and curious about Islam. In addition, her hosts had earned her respect by always

providing halal food – even vendors had taken care not to sell her products that might go against her culture and religion.

Both Emirati writers felt challenged by Japanese food, which they found bland and said was served in tiny portions. Instead, they ate more familiar Indian food, such as biryani.

If given the opportunity to do so, Al Hanouf would like to return to Japan "to focus on writing poetry".

"Tokyo is magical and mythical," she added. "God has blessed Japan." ✨







Shanghai: A learning city leading by example

The Chinese megalopolis has made educating its citizens a priority, introducing initiatives promoting lifelong learning for all

Shanghai has become one of Asia's most renowned learning cities and has made remarkable progress towards this goal.

This was recently acknowledged by national and international experts gathered in the city in December 2015 for the Third Shanghai Forum on Lifelong Learning. These experts were there to share their experience and evaluate new approaches to developing and monitoring learning cities. >

FIVE AREAS IN WHICH SHANGHAI PROGRESSED

1



Enabling all citizens to have more opportunities for learning

2



Enabling learning to penetrate every stage of one's life

3



Enabling citizens to enjoy more learning platforms

4



Making learning approaches more flexible

5



Integrating lifelong learning into the legal system



> The forum was organised by the Shanghai Municipal Institute of Lifelong Education (SMILE), the Shanghai Municipal Government and the National Education Development Research Centre of the Ministry of Education of China.

The UNESCO Institute for Lifelong Learning (UIL), which coordinates the UN agency's Learning Cities project, also had a presence at the forum.

Shanghai set the pace back in 1999, when the city's Municipal Government began formulating and implementing policies to provide lifelong learning opportunities to its citizens. As per latest available data, 3,370,000 citizens out of a population of around 24 million now participate annually in learning programmes.

The progress Shanghai has made can be encapsulated in these five areas: Enabling all citizens to have more opportunities for learning; enabling learning to penetrate every stage of one's life; enabling learners to enjoy more learning platforms; enabling learning approaches to be more flexible; and integrating lifelong learning into the legal system.

These path-breaking steps that Shanghai has undertaken to promote lifelong learning add to the vibrancy of this modern metropolis.

DEFINITION

The guiding documents of UNESCO define a 'learning city' as a city that effectively

mobilises its resources in every sector to promote inclusive learning from basic to higher education; revitalises learning in families and communities; facilitates learning for and in the workplace; extends the use of modern learning technologies; enhances quality and excellence in learning; and fosters a culture of learning throughout life.

In doing so, it will enhance individual empowerment, social cohesion, economic and cultural prosperity, and sustainable development, says the document.

Enabling citizens to learn throughout life has become a priority for communities around the world. Lifelong learning as the foundation of sustainable social, economic and environmental development is also at the heart of UNESCO's learning city concept.

Cities and communities that embrace lifelong learning for all have seen significant improvements in terms of public health, economic growth, reduced criminality and increased democratic participation. These wider benefits of lifelong learning present strong arguments for increased investment in the building of learning cities.

FOSTERING THE CULTURE

Most people today experience a variety of learning environments. When the outcomes of all learning are valued, rewarded and celebrated by a city, this strengthens the position of learners in society and motivates

them to learn further. This motivation should be supported with the provision of comprehensive information and advice to help people make informed learning choices.

The guiding documents of Unesco Global Network of Learning Cities lists the following ways in which lifelong learning can be achieved within developing learning cities:

- ☞ **Recognising the role of communications media, libraries, museums, religious settings, sports and cultural centres, community centres, parks and similar places as learning spaces;**
- ☞ **Organising and supporting public events that encourage and celebrate learning;**
- ☞ **Providing adequate information, guidance and support to all citizens, and stimulating them to learn through diverse pathways; and**
- ☞ **Acknowledging the importance of learning in informal and non-formal settings and developing systems that recognise and reward all forms of learning.**

COMMUNITY CENTRES

As early as 2011, China had identified academic continuing education, professional training and community-based education as three areas of continuing education.

Five years ago, Shanghai also adopted legislation of lifelong learning at the provincial level when it issued the Lifelong Learning Promotion Act.

The city also established the Shanghai Commission for the Construction of a Learning Society and the Promotion of Lifelong Learning as the coordinating agency.

The Plan of Action for the Building of a Learning Society and Lifelong Learning in Shanghai was also launched.

To improve the learning environment for its citizens, Shanghai has 17 community colleges across the city's districts and county, 213 community schools in sub-districts and towns, and 5,330 learning sites. Also, no fewer than 1,560 classrooms were built.

The community learning centre established by the Yangpu District Government involving various primary schools and Siemens Corporation, provides a good example of how the city has created a culture of learning throughout life.

What the community centre does is provide a space in which people can learn how to make handicrafts and simple electronic devices. Siemens engineers make a point of visiting the centre regularly and share their knowledge with students. The learning city is also the city of longevity.

Of Shanghai's population, almost a third is aged over 60 and this group is a major target group for the learning initiative.

The community centre functions as an intergenerational learning centre, as it offers programmes that are also attractive to adult learners such as parents.

As part of efforts to improve health and well-being for all, 30% of the courses offered at these community education centres were on healthcare.

CHALLENGES, PROSPECTS

UIL emphasised that cities must adapt the key features of learning cities to their own learning needs, challenges, priorities and resources.

Both the National Centre for Education Development Research and the Shanghai Municipal Institute of Lifelong Education believe that the heterogeneity of cities across China is a key challenge to developing generally valid indicators for learning cities in the country. The lack of data at the local level poses another challenge.

But there is room for optimism. According to UNESCO, one of the most significant developments in recent years is the growth of 'learning communities', 'learning cities' and 'learning regions'.

In more countries than ever before, local authorities are expressing their interest in becoming learning cities and, worldwide, more than 1,000 have already been declared. ↑

Opposite page: China had identified academic continuing education, professional training and community-based education as three areas of continuing education
Below: Almost a third was over 60 years of age and was a major target group for the learning initiative





Getty Images



Recalling the magic of Márquez

Two years after his death, an acclaimed documentary sheds light on the enigmatic Nobel Prize-winning novelist

Acclaimed as the father of the magical realism genre, Colombian novelist Gabriel García Márquez won fans far and wide, yet surprisingly little has been said about his own life. Now, two years after his death, a startling documentary has shed light on the Nobel laureate, digging deep into the past to share the remarkable back story of this intensely private man.

Gabo: The Creation of Gabriel García Márquez is a thoughtful and personal study of the writer's life and legacy, from his birth in a small seaside town to his controversial friendship with Cuba's former president Fidel Castro.

The 90-minute film retraces the novelist's early career as a journalist, his family life, his political activism and, above all his uncanny ability to be in the right place at the right time.

EARLY LIFE

Márquez was born on 6 March, 1927 in the small town of Aracataca, northern Colombia. Shortly after his arrival, his parents moved to the coastal town of Barranquilla, taking his younger brother with them, and Márquez was raised by his grandparents until he was nine.

Márquez's world view and left-wing political leanings were strongly influenced by those of his grandfather; a colonel who had taken part in the Thousand Days War, the old man would narrate tales of battles and politics to his grandson. Márquez later said his grandfather was the one person in his life who had encouraged him to express himself. His grandmother was equally influential, sharing her

➤ fascination with the supernatural through stories of ghosts and premonitions, omens, portents and death. Marquez started literary life as a journalist, finding work with a number of major newspapers and developing a reporting style that was to influence his creative writing and keep him grounded throughout his career.

INFLUENCES

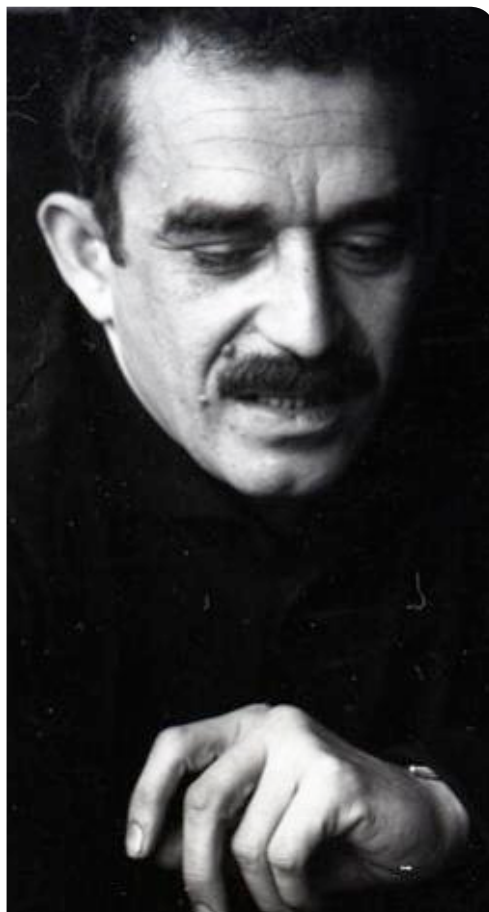
As well as revealing how Márquez's experiences fired his creative imagination, the film sheds light on his hitherto hidden role in negotiations between Fidel Castro and American President Bill Clinton in a bid to lift sanctions that was later thwarted by the US Congress. Both Clinton and former Colombian president César Gaviria appear onscreen; also featured are the writers Juan Gabriel Vásquez and Plinio Apuleyo Mendoz; journalists Enrique Santos, María Jimena Duzán and Xavi Ayén; New Yorker correspondent and author Jon Lee Anderson; biographer Gerald Martin; literary agent Carmen Balcells and Márquez's siblings, Aida and Jaime García Márquez.

A SOLITARY SOUL

The two key ingredients of Márquez's fiction were loneliness and nostalgia. Like his literary idol, William Faulkner, he was obsessed about the fate of humankind pitted against destiny. For him, life was what mattered most. He felt death was unjust, and that it trapped people. From his 20s, Márquez dreamt about the Nobel Prize for Literature and had a deep intuition he would win it – and deservedly so. Being told his dream had come true, in 1982, was the most joyous moment in his life. But at the same time, he felt that the accolade was a distraction from his writing. In his acceptance speech, *Solitude of Latin America*, he said: "We have had to ask but little of imagination, for our crucial problem has been a lack of conventional means to render our lives believable. This, my friends, is the crux of our solitude."

He went on to relate his theme of seclusion to the Latin American experience, writing: "The interpretation of our reality through patterns not our own, serves only to make us ever more unknown, ever less free, ever more solitary."

Clockwise: Former US President Bill Clinton (R) speaks to Marquez during the IV International Congress of the Spanish Language; Márquez as a younger man; and talking to Cuban President Fidel Castro (L)





Left: Nobel laureate Gabriel García Márquez greets wellwishers upon arrival at his hometown of Aracataca, Colombia

THE UAE PAYS TRIBUTE

Colombia's Ambassador to UAE was among dignitaries at an evening dedicated to Márquez's life and legacy. Fayhan Al Faye Shalhoub attended a special screening of *Gabo: The Creation of Gabriel García Márquez*, the highlight of a magical evening befitting the memory of one of South America's most beloved writers.

Held at cultural centre House of Poetry in Dubai's historic Al Shindagha district, the event was organised by Mohammed Bin Rashid Al Maktoum Foundation in association with the Embassy of Colombia in the UAE, and featured a photographic display depicting the author at pivotal moments in his life.

Shalhoub said: "For us, bringing the history of Gabriel García Márquez was a personal commitment. When you find an author who gives you so much joy that you want to share it with other people, that is the magic of literature and the magic of poetry. And when you find even greater joy when reading that author for the second time, then it deserves to be conveyed to others."

"Translating Márquez into other languages is very difficult as you are not only translating words; you are translating humour, ideas, the environment of the Caribbean."

He added: "As for Márquez, there is something special that links Latin America and the Arab world... Arabs were in Spain for eight centuries, and they came to Latin America also. And then, in the 19th and 20th centuries, there was mass Arab immigration to Latin America."

"Arabs in the works of Márquez were not only depicted as merchants, but also as politicians;

not only as small characters but some of them are the main characters, as in *The Chronicle of a Death Foretold*.

Shalhoub added: "Márquez's works have been translated into more than 40 languages, including Arabic, of course, and it shows the bridge that we want to build and to increase every day. I think this is the most powerful bridge we have, with culture and literature."

"I hope that those who have already read Márquez's works will find some explanation about his life from the documentary... and hope those who have not read anything about him so far will be compelled to read him after seeing it."

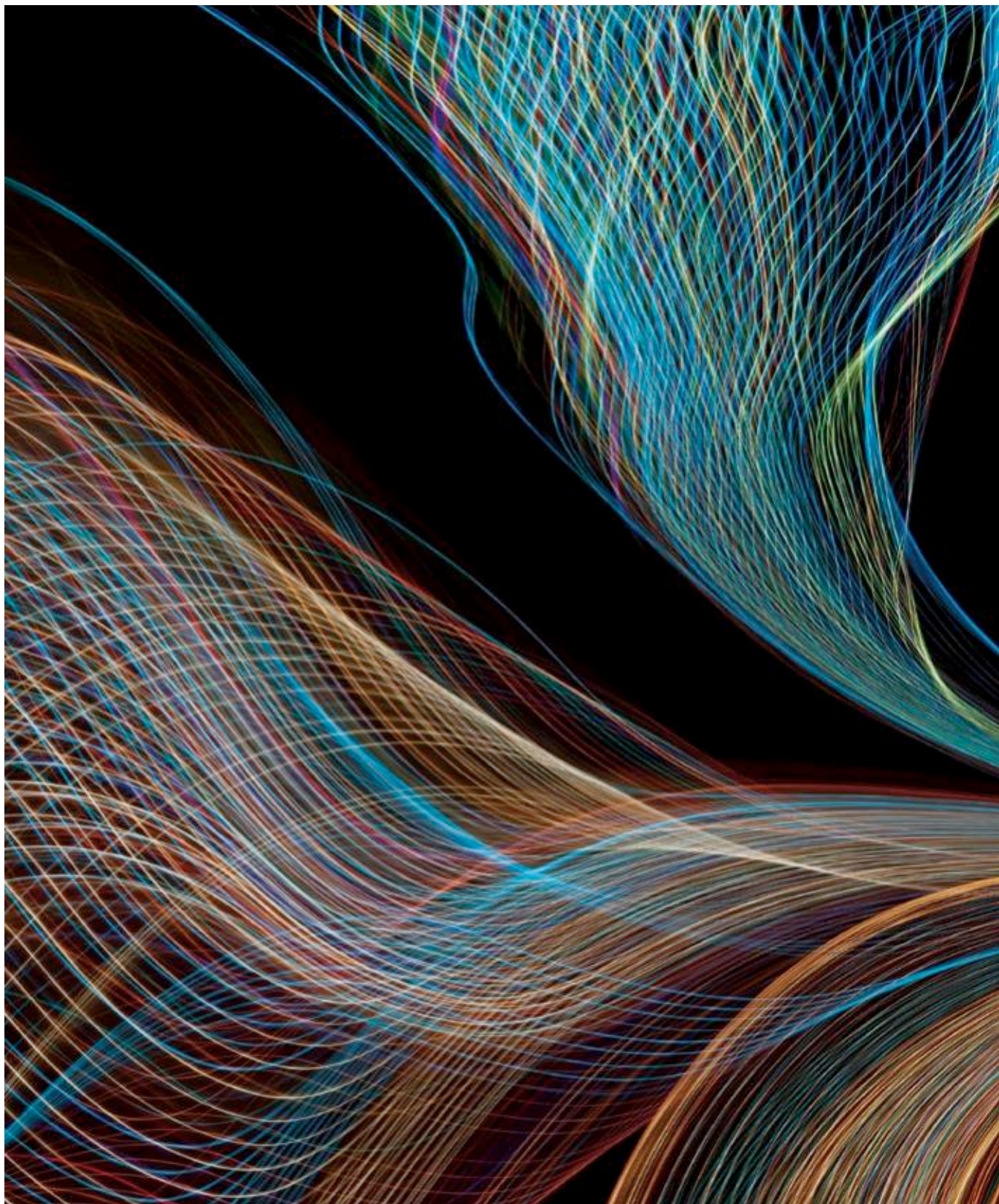
His Excellency Jamal Bin Huwaireb, Managing Director of Mohammed Bin Rashid Al Maktoum Foundation, gave a speech welcoming guests to the gathering, which he said "brings civilisations together and sheds light on other cultures and literary works that have contributed to the promotion of the global cultural movement."

Huwaireb praised Dr Saleh Almani, an award-winning Syrian translator, now based in Spain, who has translated a number of Márquez's works into Arabic.

Quoting the New York Times critic William Kennedy, he added that Márquez's seminal work *One Hundred Years of Solitude* "should be required reading for the entire human race." ♪

GABO: THE CREATION OF GABRIEL GARCÍA

MÁRQUEZ was made by Icarus Films and is available to buy on DVD and on selected video streaming portals, including Amazon Video. It has been nominated for an award in the 2016 Chicago Latino Film Festival, which runs from 8 to 21 April.



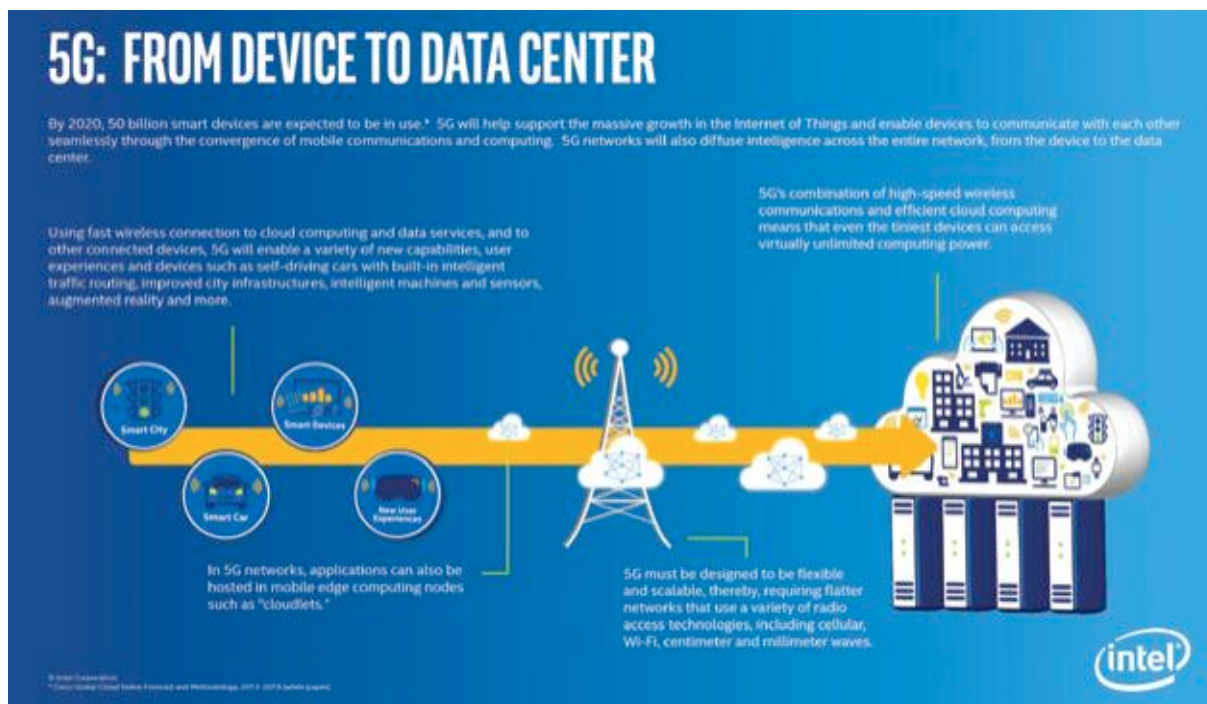
Supersonic smartphones

Tech researchers are achieving mobile internet speeds 100 times faster than ones we can reach today

The world's fastest next-generation mobile and wireless connectivity system is under development. Even though the concept of 5G is not yet fully defined, the basic requirement is the ability to deliver much higher data rates for an immense variety of devices. The need for 5G is driven by the ever-increasing demand for mobile data and the emergence of the Internet of Things (IoT), through which billions of devices will become connected.

In the future, technologies such as Smart Cities, nonintrusive healthcare and advanced logistics will require far shorter network response times to enable rapid reactions. At the same time, there is a pressing need to reduce end user costs (to ensure applications are widely accessible) and minimise energy consumption. ➤





➤ 5G will facilitate IoT, the interconnection via the internet of computers embedded in everyday objects that enables them to send and receive data.

In addition, it will boost energy efficiency, cut costs and, most crucially, provide real-time communications with vastly reduced latency.

Latency is the delay from input into a system to desired outcome, and it greatly affects how useable and enjoyable we find electronic products, machines and communication devices.

A DIFFERENT APPROACH

Looking at research on 5G worldwide, one can see a number of approaches. While the US and Japan depend upon academia and private enterprise, the EU, South Korea and China have launched national-level R&D programmes.

When will this technology be rolled out? One common factor among the initiatives is the earliest date by which 5G is likely to be deployed commercially – 2020. The United Nations'

International Telecommunication Union (ITU) set a timeline for 5G standardisation, known as IMT-2020 (International Mobile Telecommunications 2020) back in 2012, setting the stage for the research activities which have since emerged across the world.

The ITU will begin writing regulations this year in the hope of having a complete agreement by 2020. As per its plan, standards proposals will begin in late 2017 through to mid-2019, with consensus-building beginning in 2018 and continuing into 2020.

It anticipates an outcome and definitive 5G standards to be in the early stages by mid-2019.

In September 2015, the ITU's focus group met in Turin, Italy, to cover network standardisation requirements, with emphases on lower latency, increased speed and diversity of use, as well as reliability comparable to that of fibre-optic networks.

ITU is continuing to work closely with administrations, network operators, equipment

“In the future, technologies such as Smart Cities, nonintrusive healthcare and advanced logistics will require much shorter network response times to enable very rapid reactions. At the same time there is a pressing need to reduce end user costs (to ensure applications are widely accessible) and to minimise energy consumption.”

manufacturers and national and regional standardisation bodies to include today's 5G research and development activities in the IMT-2020 global standard for mobile broadband communications.

The opportunity to spotlight 5G at the upcoming Olympic Games is helping drive developments in Asia. South Korea hopes to launch a 5G trial network for the Winter Olympic Games in 2018, while Japan intends to roll out a 5G trial network for the Summer Olympic Games in 2020.

By the time 5G becomes universal, in 2020, mobile penetration is likely to be more than 100% in nearly all markets, and it is likely that mobile broadband will overtake home broadband in popularity. This presents an opportunity to make it the de facto communications system.

ACADEMICS FORM LINKS WITH TECH FIRMS

At the UK's University of Surrey, researchers aim to build the world's fastest mobile phone network and mobile internet through a collaboration with major tech companies including Samsung and Fujitsu.

Its 5G Innovation Centre (5GIC) has established strong relationships with a number of key global, national and regional players in communications.

The centre is headed by Professor Rahim Tafazolli, Director of the Institute for Communication Systems (ICS). Tafazolli is one of the world's foremost experts in mobile communication technology. The editor of the book *Technologies for Wireless Future*, he was appointed as a Fellow of the Wireless World Research Forum (WWRF) in recognition of his personal contribution to the field of wireless communications.

He is also a board member of the UK Future Internet Strategy Group (UK-FISG).

"5G will intelligently understand the demands of users in real time, dynamically allocating network resources depending on whether the connected device needed voice or data connectivity," he says.

Tafazolli told the BBC he "hoped to demonstrate the technology to the public in 2018".

At 5GIC, the researchers have achieved record-breaking speed during tests of 5G data connections of one terabit per second (Tbps) – 65,000 times faster than the speed of the average 4G download.

At 1Tbps, it would be theoretically possible to download a file 100 times the size of a feature film in as little as three seconds.

The team at 5GIC carried out the tests in lab conditions over a distance of 100m, although



they have yet to replicate the speeds in real-world conditions.

PREDICTING USER DEMAND

To meet the requirements of the future, it will be possible to predict demand for 5G network systems more accurately, enabling applications to perform bandwidth-heavy tasks, and also making better use of all available wireless networks for ultra-high reliability.

Ultimately, the 5G network will need to be flexible enough to evolve, adapt and grow for unforeseeable applications, just as the internet has. This is essential if the infrastructure is to support an expanding digital economy and connected society. ↑

Top: Japan intends to roll out a 5G trial network for the Summer Olympic Games in 2020. **Above:** At 1Tbps, it would be theoretically possible to download a file 100 times the size of a feature film in as little as three seconds

The gift of hearing

Ana Asma'a – 'I hear' in Arabic – uses cutting-edge technology to transform deaf youngsters' lives

When toddler Hanah Sarmiento lost her hearing, her devastated parents sought the best possible treatment. But spiralling medical bills left them in despair... until help came in the form of a pioneering philanthropic scheme.

"We cannot explain the happiness we felt when we heard our firstborn baby daughter saying 'Mom' and 'Dad' to us when she was only 10 months old," recalls Hanah's mother, Analyn. "But when she was one year and four months, I noticed that she did not respond when we tried to get her attention."

Perplexed, Analyn and her husband Alvin sought medical advice.

"We took her to Al Baraha Hospital in Dubai and, since we have no history of hearing problems in our families, we were hoping it would just be an infection or something we could cure with medicine.

But we were shocked when the doctor told us that

Hanah had only 30 per cent hearing in

her left ear and zero per cent in

the right one." >



Photo: Getty Images



Above: Hana Sarmiento was born deaf and had cochlear implants fitted in Dubai
Below: A surgeon uses a microscope to implant the internal part of a binaural cochlear receiver into a patient's ear

➤ Stunned, the couple, from the Philippines, sought a second opinion, but the test results came back the same. Medics aren't sure how or when Hanah lost her hearing, but it's thought a virus she caught at 10 months old may have been to blame.

"We were given two options: to try hearing aids or, the best solution to help her hear again, the cochlear implant. The doctor told us we'd need to do it as soon as possible because she would benefit most while she was still young enough to develop her speech."

COSTLY PROCEDURE

A cochlear implant, or CI, is a surgically implanted electronic device that provides a sense of sound to a person who is profoundly deaf or severely hard

of hearing in both ears. A tiny microphone, usually placed behind the ear, transmits signals to electrodes inside the cochlea, the inner ear. These stimulate the nerve that sends sound signals to the brain. The device is highly effective, especially in very young children, but at well over AED100,000, the technology doesn't come cheap. Instead, Analyn, a teaching assistant, and draughtsman Alvin had Hanah fitted with hearing aids.

The couple's medical bills came to AED10,000 (\$2,723), and at the school where Analyn worked, the Parents and Friends Association rallied around to help with the cost. But nine months later, Hanah's hearing hadn't improved, leaving the family distraught.

"Knowing the price of cochlear implants would be around Dhs120,000 (\$22,578), we were left with no hope as to how we could give Hanah the life she deserved," Analyn said. "How could she enjoy life if she couldn't hear?"

"This is when the doctor at hearLIFE Clinic in Dubai Healthcare City told us about Al Jalila Foundation and how it was helping less fortunate residents, especially children."

Al Jalila Foundation is an international philanthropic organisation dedicated to transforming lives through medical education and research. Aimed at positioning the UAE at the forefront of medical innovation, it was founded in 2013 by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai. In 2015 alone, it spent AED1.5m (\$4.1m) treating more



“Knowing the price of cochlear implants, we were left with no hope.
How could Hanah enjoy life if she couldn't hear?”

than 40 patients. The Foundation's A'awen programme ('support' in Arabic) provides practical assistance and financial aid to UAE-based patients who can't afford high-quality healthcare. While within this, its initiative Ana Asma'a ('I hear' in Arabic), provides severely hearing-impaired youngsters with cochlear implants. On 2 December 2015, Hanah became the second child to benefit from the scheme.

A BRIGHTER FUTURE

Speaking shortly after Hana's surgery, Dr Abdulkareem Al Olama, Al Jalila Foundation's Chief Executive, said: "I am very proud of all our children, particularly Hanah. She can now fulfil her potential. It is a miracle she can now hear and talk."

He added: "Research has made such life-changing medical procedures possible. Today, cochlear implants can restore hearing and offer recipients an improved quality of life. We work with renowned healthcare partners to provide cutting-edge technologies to address hearing impairments, in addition to post-operative medical care, which includes rehabilitation and speech therapy.

"Through Ana Asma'a we are helping parents give their children the opportunity to undergo the latest medical procedures, offering them renewed hope for their children's future. We consider it an enormous privilege to be able to give children in the UAE the gift of hearing."

Hanah is now three years and seven months old, and life has definitely changed for the better. "After a year of having the cochlear implant, she can now say 130 words and understands more than 200, and she can follow directions and instructions," says Analyn. "She will need more years of speech therapy, but, little by little, we know she will catch up with the things she lost when she was not hearing."

She adds: "We are forever grateful to Al Jalila Foundation, the doctors and the support I received from my school for helping our daughter enjoy the world of sound. We will pray that may God continue to bless the Foundation and the people behind it."

To learn more about Ana Asma'a and Al Jalila Foundation, visit aljalilafoundation.ae

Hearing
impairment affects

360 MILLION

people globally (or five per cent of the world's population), of whom 32 million are aged under 15, says the World Health Organization (WHO).

In the Middle East, it's one of the top five health problems and is estimated to affect

**ONE IN
25 PEOPLE**

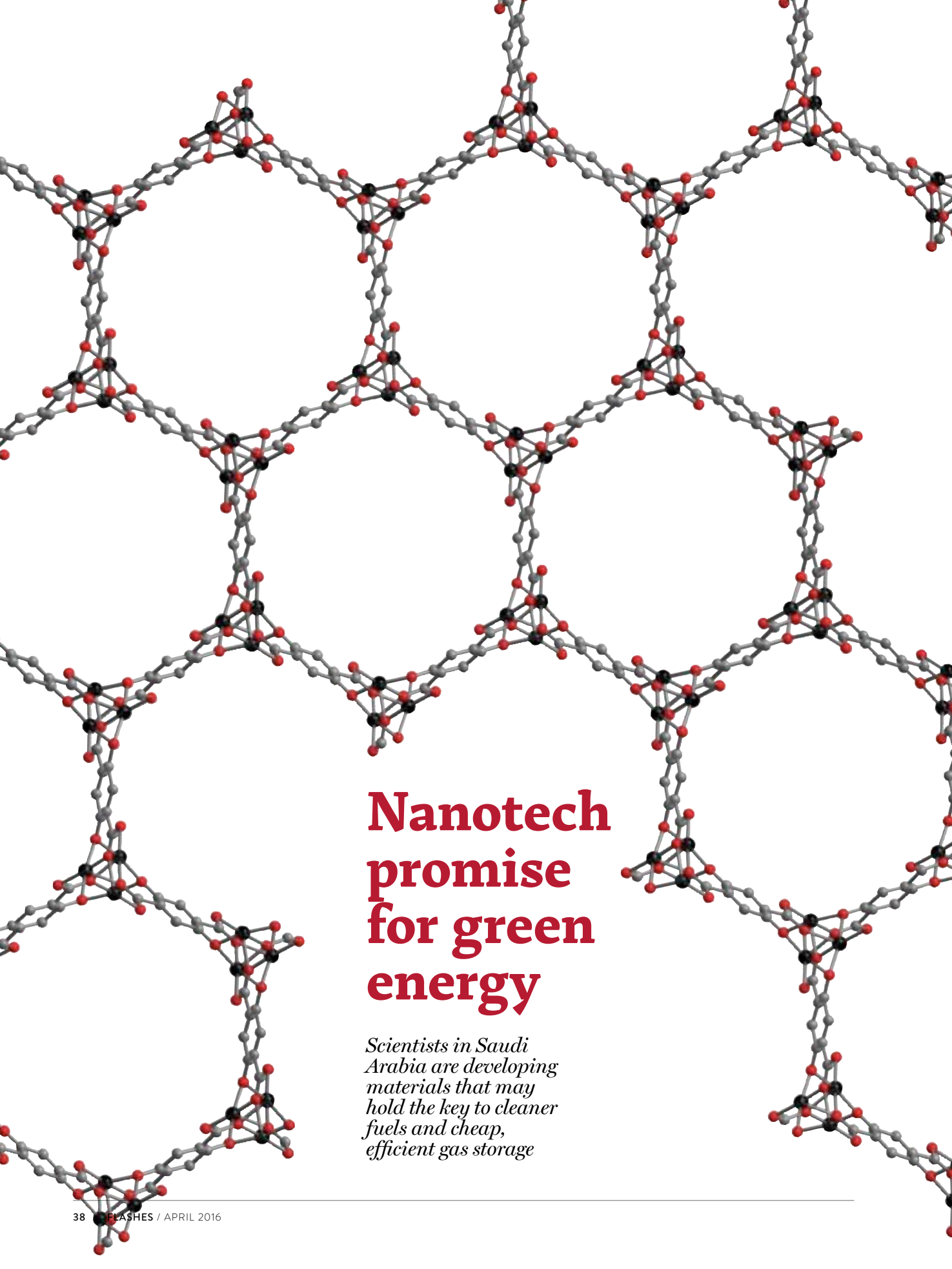
While most sufferers are born with the condition, others lose their hearing due to infections, injury or excessive exposure to noise. Early intervention is vital if they are to have the best outcome. Studies show that loss of hearing can have devastating consequences for interpersonal communication, psychosocial wellbeing, quality of life and economic independence.

400,000

Globally, 400,000 people with severe to profound hearing loss have benefited from cochlear technology.



Left: Al Jalila Cultural Centre for Children



Nanotech promise for green energy

Scientists in Saudi Arabia are developing materials that may hold the key to cleaner fuels and cheap, efficient gas storage

In our quest for green energy, the search for clean fuels and the best means by which to store them have long engaged scientific minds.

Now researchers at King Abdullah University of Science and Technology (KAUST), western Saudi Arabia, are developing materials that could potentially be used to assist in this quest for clean energy, which includes the search for cleaner fuels and the ability to store various gases.

According to KAUST, there has been a surge of interest in recent times in a group of manufactured materials known as metal-organic frameworks (MOFs), noted for their extremely high surface areas and very low crystalline densities.

MOFs are designed from the molecular level up.

Formed by reticular synthesis, MOFs are characterised by strong bonds between inorganic and organic units.

Reticular synthesis can be described as the process of assembling judiciously designed rigid secondary building units into pre-determined ordered structures (networks) which are strongly bonded together. The structural integrity and rigidity of the building blocks in reticular synthesis stays the same throughout the construction process – an important aspect that could help researchers fully realise the benefits of design in crystalline solid-state frameworks.



Top: King Abdullah University of Science and Technology (KAUST). **Above:** The interiors of MOFs can be chemically altered for use in gas separation, gas storage and various other applications.

> These materials are entirely synthetic and are created from preselected molecular building units into networks of metal ions connected by organic linkers.

Their flexible structures can be manipulated for a multitude of highly specific applications. Technically speaking, the interiors of MOFs can be chemically altered for use in gas separation, gas storage and various other applications.

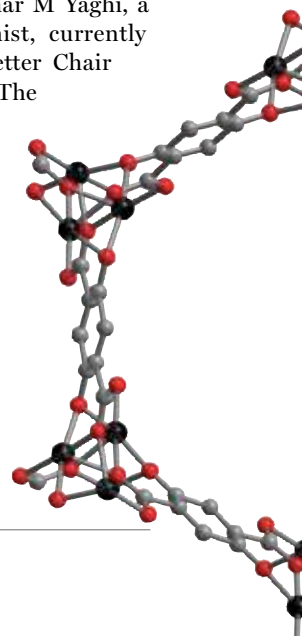
By carefully selecting the constituents, crystals of ultra-high porosity and high

thermal and chemical stability can be created.

This chemistry has yielded materials designed to have predetermined structures, compositions and properties. In particular, highly porous frameworks held together by strong metal-oxygen-carbon bonds and with exceptionally large surface areas and capacity for gas storage have been prepared, with pore metrics that are systematically varied and functionalised.

MOFs are now being manufactured on an industrial scale and are being used in practical tests of hydrogen-powered cars. According to Professor Omar M Yaghi, a Jordanian-American chemist, currently the James and Neeltje Tretter Chair Professor of Chemistry at The University of California, Berkeley, this technology will make the difference in the current carbon emission equation.

Yaghi should know – he's been leading the work in the design and production of MOFs and has successfully developed these materials from basic science to applications in clean-energy technologies including

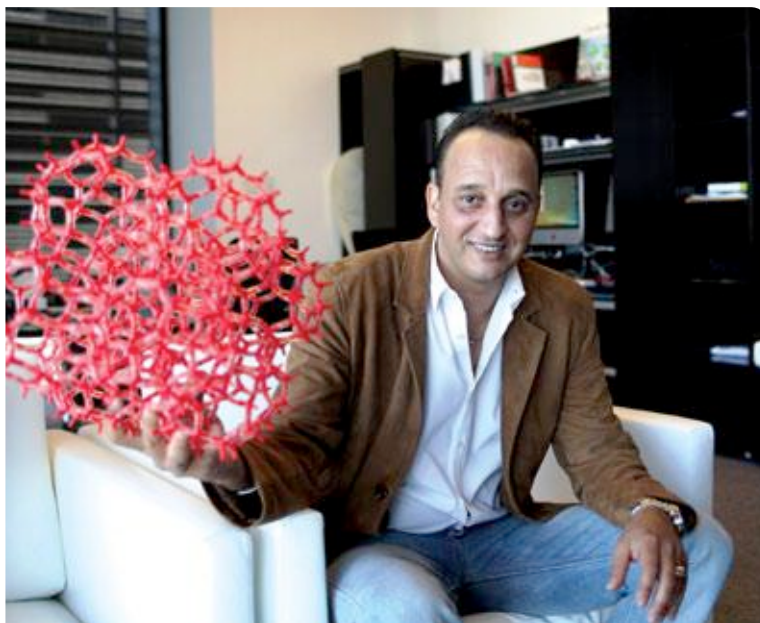




carbon dioxide capture and storage, and the storage of hydrogen and methane.

At KAUST, this research is headed by Professor Mohamed Eddaoudi from the university's Physical Science and Engineering Division, a leader in the field of MOFs who has devoted his career to designing and building them.

Eddaoudi conducts his research at the university's Advanced Membranes & Porous Materials Center, which was purpose-built

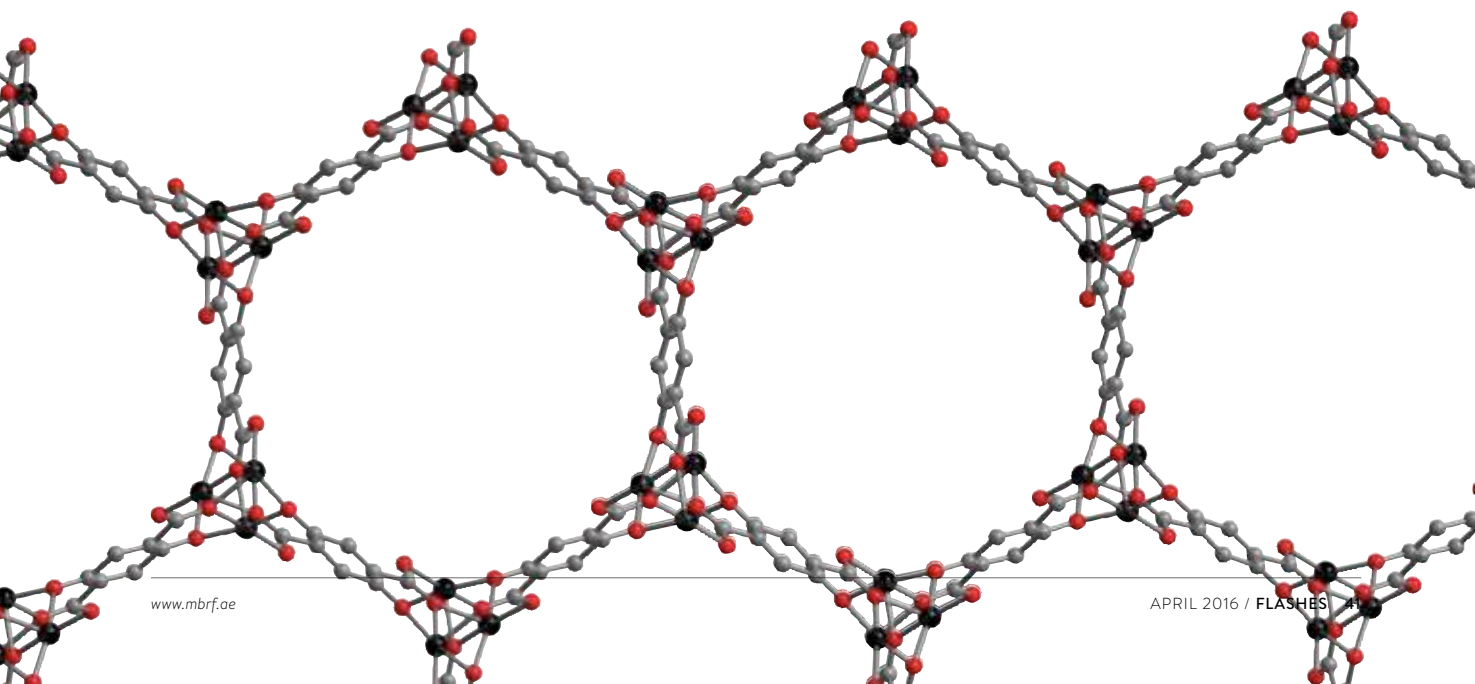


to support the KAUST ambition of the university becoming a world-class centre for research into sustainable clean energy and power.

Professor Eddaoudi said: "The energy costs associated with the separation and purification of industrial commodities such as gases, fine chemicals and fresh water currently represent around 15 per cent of global energy production, and the demand for such commodities is projected to triple by 2050."

"The ongoing challenge is to develop effective separation and purification technologies that have much smaller energy footprints." 

Above: Professor Mohamed Eddaoudi from the KAUST's Physical Science and Engineering Division, has devoted his career to designing and building them.







Physicists throw light on the structure of time

Findings in Egypt and Canada have far-reaching implications for both philosophy and quantum mechanics

In philosophy and literature, the nature of time is a perennial theme. More than 1,500 years ago, Saint Augustine wrote in his autobiography *Confessions*: “What, then, is time? I know well enough what it is, provided that nobody asks me, but if I am asked what it is and try to explain, I am baffled.”

The German Nobel Laureate in Literature Thomas Mann, echoes Saint Augustine in his 1924 novel *The Magic Mountain*: “What is time? It is a secret – lacking in substance and yet almighty.” >

THE PLANCK TIME IS DEFINED AS:

$$t_P \equiv \sqrt{\frac{\hbar G}{c^5}} \approx 5.39106 (32) \times 10^{-44} \text{ s}$$

In physics, the Planck time (t_P) is the duration in which light travels, in a vacuum, a distance of one Planck length. The system of natural units is named after physicist Max Planck, the first person to propose it

➤ Now researchers at Alexandria University, Egypt, and Canada's University of Waterloo and University of Lethbridge have published the results of their investigations into the structure of time, which have profound implications for both quantum mechanics and philosophy.

In modern physics, the smallest physically meaningful interval of time is widely considered to be the Planck time, which is approximately 10^{-43} seconds – the time required for light to travel, in a vacuum, a distance of one Planck length (about 1.6×10^{-35} m). This limit supposes that it is not possible for any two events to be separated by a time frame smaller than this.

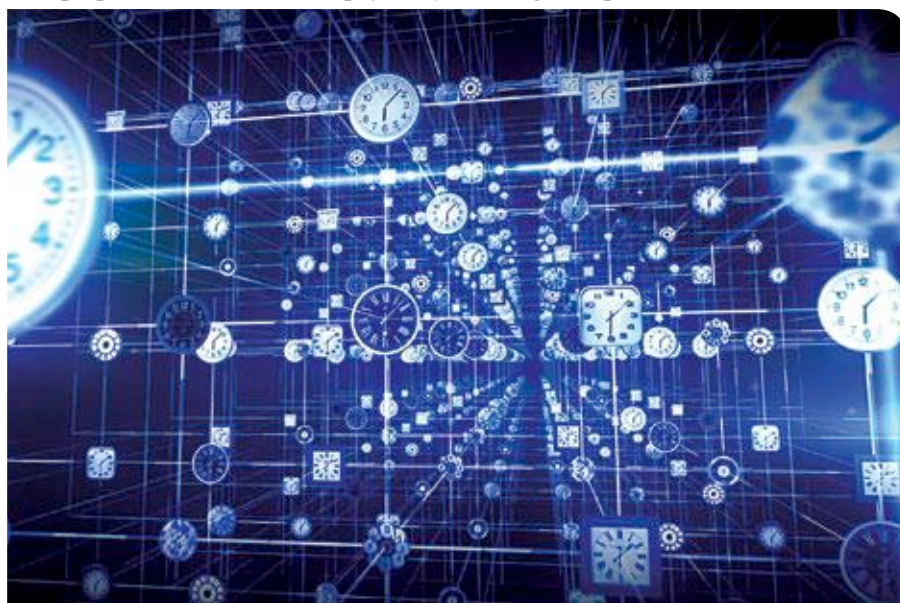
In the recently released paper, the physicists propose that “the shortest physically

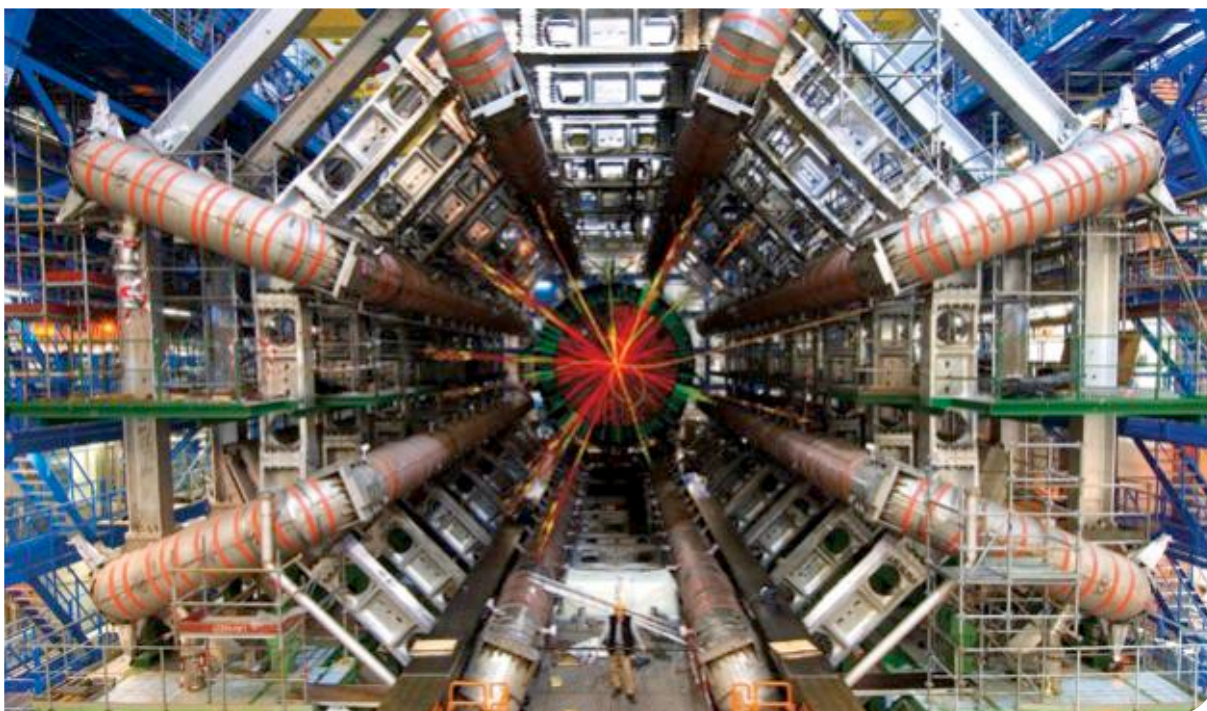
meaningful length of time” may actually be several orders of magnitude longer than the Planck time. In addition, they have demonstrated that the existence of such a small time frame alters the basic equations of quantum mechanics, and as this branch of mechanics describes all physical systems on a very small scale, this would change the description of each system within it.

Titled “Time crystals from minimum time uncertainty”, the paper, published in *The European Physical Journal C*, was produced by researchers Mir Faizal at the University of Waterloo, Saurya Das at Lethbridge and Mohammed M Khalil at Alexandria.

In an interview with science and technology news portal *Phys.org*, Faizal said: “It might be possible that, in the universe,

“It might be possible that, in the universe, the minimum time scale is actually much larger than the Planck time, and this can be directly tested”





the minimum time scale is actually much larger than the Planck time, and this can be directly tested experimentally.”

Until recently, it had been commonly agreed among physicists that it is not possible to measure a length of time shorter than the Planck length, and by extension impossible to measure a time shorter than the Planck time, since the Planck time is defined as the time it takes light to travel a single unit of the Planck length in a vacuum.

The three researchers also examined the question of the structure of time and, more crucially, the long-debated question of whether time is continuous or discrete.

“In our paper, we have proposed that time is discrete in nature, and we have also suggested ways to experimentally test this proposal,” Faizal said.

Contending that time behaves like a crystal, with discrete, regularly repeating segments, the team proposed altering the quantum algebra, which follows Heisenberg’s Uncertainty Principle that position and velocity cannot both be measured, exactly, at the same time. This will lead to corrections of all quantum mechanical systems, and they then analysed the effect of such a reformulation on the rate of spontaneous emission in a hydrogen atom.

Based on their theoretical analysis of the spontaneous emission of hydrogen, the researchers estimated that the minimum time may be orders of magnitude larger than the Planck time.

Future experiments, they suggest, could lower this limit on the minimum time or determine its exact value.

The proposed changes to the basic equations of quantum mechanics as a result of these findings would modify the very definition of time, the scientists indicate.

As per their explanation, the structure of time can be thought of as a crystal structure, consisting of discrete, regularly repeating segments. In philosophical terms, the notion that time is discrete suggests that our perception of it as a continuously flowing phenomenon is merely an illusion.

According to Faizal, this underlying mathematical structure has created the illusion of physical reality based on continuous motion – a hypothesis harking back to Plato’s theory that true reality exists independently of our senses and that physical reality is platonic in nature.

Faizal continued: “Unlike other theories of platonic idealism, our proposal can be experimentally tested and not just be argued for philosophically.”

Above: Data from the Large Hadron Collider at nuclear research institute CERN was crucial to the findings

“It’s all about the characters”

Majid Al Ansari wowed audiences with his Arab-language thriller Zinzana. As the movie is released on Netflix, he chats about Hollywood, horror and the new wave of Emirati film talent...

When Majid Al Ansari was eight, an uncle showed him *The Exorcist*, sparking not just nightmares but a love of film that’s taken him to Hollywood. William Friedkin’s notorious 1973 chiller can freak out grown adults, but the after-hours treat remains a firm favourite.

“I was at my uncle’s house – he’s a film buff and he used to watch all sorts of stuff,” says the 28-year-old Emirati.

“He would stop it at certain scenes and explain what they meant, and of course I wouldn’t get it – I was eight.

“It’s one of the best horror films ever because it’s not all jumpy and gory, it’s about the human psyche.

“By the time I was 13 I’d probably watched it about 10 times. I’m still terrified!”

Suspense and strong characters are what drives a movie, says Al Ansari, whose debut feature film, *Zinzana*, has thrust him into the spotlight. In February, he was crowned Mid-East Filmmaker of the Year at Berlin International Film Festival; in March, Netflix acquired the rights to stream it worldwide.

Set in a rundown police station, the tense psychological thriller, also known as *Rattle the Cage*, is almost entirely driven by its two leads, disorderly drunk Talal (Saleh Bakri) and demented cop Dabaan, played by Ali Suliman, who’s holding him under arrest. Best known for his role in the Oscar-nominated *Paradise Now*, Suliman is outstanding as the increasingly psychopathic baddie.

The story takes place “somewhere in Arabia in the 1980s”, but the screenplay from which it’s adapted, by Georgia couple Ruckus and Lane Skye, is set in America’s Deep South.

“My favourite genres are thrillers, horrors and sci-fi, where often it’s not specifically about the location,” says Al Ansari.







➤ “It’s about what those two characters bring to each other and how that plot develops within that one small location. I loved that about the script.”

ANIME AND AMBITION

In his teens, Al Ansari became obsessed with Japanese anime. “When I was 16 I thought ‘wow, this is great, but I would love to make it as a live-action movie’. And that’s when I got the idea of going to study film.”

At 17, he enrolled at California State University, but “drifted off” into music production before returning home.

“The only thing I could really work as was a DJ,” he says. “But deep down inside, I knew I wanted to make films.”

Al Ansari was in luck; it was 2008 and in his absence, the UAE’s fledgling film scene had blossomed.

“Image Nation had just started and twofour54; there was Abu Dhabi Film Festival and Dubai International Film Festival and Abu Dhabi Film Commission, and they wanted Emiratis to come and get involved.”

Al Ansari joined an internship scheme solely for local youths, called Mawaheb. “It’s a division that Image Nation started that gives opportunities to young talent to get exposure to the filmmaking world,” he says.

As part of the programme, Al Ansari spent time in Los Angeles with Participant Media, Image Nation’s US partner.

“I was in the development section. I really liked it a lot. I would read five or six scripts a day and dissect them and so on.”

He was hired as trainee assistant location manager on Nawaf Al-Janahi’s coming-of-age drama *Sea Shadow*.

His second professional role was quite a different affair. Filmed in the UAE, *Djinn* was directed by horror auteur Tobe Hooper.

Best known for iconic slasher flick *The Texas Chainsaw Massacre*, Hooper also directed *Poltergeist* in 1982, and in an echo of its plot, *Djinn* features an Emirati couple who move into a new flat, only to find that the site it’s built on is haunted.

The film was poorly received, with critics arguing Hooper was long past his heyday.

“Honestly speaking, I think he’s done with filmmaking and that was a bit of a surprise,” says Al Ansari. “I thought ‘he’s a legend’, but I think he’s over it, unfortunately.”

After a stint as assistant location manager, Al Ansari spent “a whole month” as Hooper’s driver.

“He was weird. He’d go to this Chinese restaurant and I’d sit there for like 12 hours waiting for him.” On reflection, he adds: “It was a great experience, though.”

Above: Ali Suliman plays demented police officer Dabaan

A NEW DIRECTION

Al Ansari's first feature film was the sci-fi short *The Intruder!* After premiering at the 2011 Dubai International Film Festival, where he scooped the Muhr Emirati Award, *The Intruder!* was screened at 12 further film festivals worldwide, winning accolades in Boston, Mexico and even Puerto Rico.

It was inspired by two of Al Ansari's heroes – B-movie maestro Roger Corman and the creator of *The Twilight Zone*, Rod Serling

He says: "To me, *The Intruder!* is basically a recreated episode of *The Twilight Zone* that was originally called *The Invader!*"

Al Ansari's influences come from near and far.

"I love musicals. Actually, the crazy character in my film, Dabaan, is based on John Leguizamo's character in *Moulin Rouge*."

One of his favourite directors is Korea's Chan-wook Park, best known among cineastes for *Oldboy* and the *Vengeance* trilogy.

"He made one of my favourite vampire films, *Thirst*. It's incredible, beautiful. He's the kind of filmmaker I would love to be."

THE ROUTE TO SUCCESS

With a view to learning about the business side of showbiz, Al Ansari took a full-time job at Image Nation. Mentored by its CEO, Michael Garin, and finance chief Ben Ross, he became a production executive on *From A to B*.

The tragicomic road movie about a journey from Abu Dhabi to Beirut was put on general release in a number of countries, putting UAE cinema on the map. It's the second full-length feature by British-Emirati filmmaker Ali F Mostafa, and Al Ansari felt privileged to work with him.

"I was a fly on the wall, just watching him do

his thing and asking him questions," he shrugs.

"I consider him to be one of my mentors and he's an incredible talent who really opened the doors for all of us, and for me specifically, to really pursue this and believe that there is potential."

Al Ansari hopes his work has inspired younger Emirati filmmakers to 'think big'.

"My goal for this film, to inspire the new generation, was to kind of say, 'You know what? We don't need to just do social dramas."

"We could think out of the box. We could do something that's different."

He adds: "We have a leadership that really, really is supporting filmmaking, is supporting the arts, so there's really no excuse for someone to say 'I can't be a filmmaker'." †

Below: Majid Al Ansari, right, with crew on the set of *Zinzana*
Bottom: Yasa and Ali Suliman in a scene from the film





MASTERS OF ILLUSION

Pavements were covered in mind-bending murals as Dubai Canvas brought world-class street art to the city...

Dizzying drawings adorned UAE streets during this year's Dubai Canvas festival.

Painters and illustrators from all over the world worked along popular hangout The Walk at JBR, covering the 2km strip with an array of colourful pictures.

The line-up of talented artists included American Kurt Wenner, a veteran of the 3D pavement art genre.

Inspired by classical paintings, he plays with perspective to create optical illusions – subjects seem to rise from the ground when viewed from certain angles.

Among the thousands of visitors was His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai. >



TRICKS OF THE MIND

His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, visits the exhibition (above). Elsewhere, visitors pose for a photo on top of a vertigo-inducing cityscape (left)



ART WITH AN EDGE

A giant stencil was among this artist's tools



TAKING THE PLUNGE

A would-be surfer gets ready to ride the waves





TERRIFIC TURTLE

This creature's shell appears to be rising up above the surface of a swimming pool



SKY HIGH

Dubai's stunning cityscape is reimagined



MAKING A SPLASH

Aquatic themes proved popular as marine creatures brought the ocean inland



A WORK IN PROGRESS

The creator of this massive mural had to hire a crane!



POND LIFE

Plants meet planets as lily pads appear to drift off into space

SUPERCAR SUPREMO

*Its fabulous Lykan HyperSport took a starring role in the film Furious 7. Now the CEO of W Motors, **Ralph R Debbas**, talks about its latest luxury line – and his dream of building cars in the desert...*

Ralph R Debbas was nicknamed Wolf as a child, but if he has any fearsome characteristics, he hides them well. Dapper and refined, the 30-year-old is full of enthusiasm for his company's next move – a supercar plant in Dubai.

Launched just four years ago, W Motors scored a major publicity coup when its \$3.4m supercar, the Lykan HyperSport, was picked to appear in the hit film *Furious 7*.

In one scene, Hollywood hardman Vin Diesel drives the vehicle through a 45th floor window of Abu Dhabi's Jumeirah Etihad Towers hotel, and the spectacular stunt – plus the car's lavish embellishments – turned the head of many a millionaire.

Its gold-stitched leather and diamond-encrusted headlights certainly had the 'wow' factor, but Debbas stresses that the glitter was merely a gimmick.

"The car had to be different in every way, so we wanted to propose new materials, new ways of attracting attention, especially with the media," he says.

"Most of the Lykans we produce now don't have the diamonds inside or the gold; however, it was a way to get people talking about it."

A FIRST FOR THE REGION

In early 2013, W Motors shifted its headquarters from Lebanon to the UAE, where all the design now takes place.

The vehicles are produced and assembled in Italy by contract car manufacturer Magna Steyr, which works with auto giants including BMW and Fiat Chrysler, while the unique six-cylinder engine was created in Germany by RUF Automobile.

However, plans are afoot to move all production to Dubai's dusty Jebel Ali industrial zone.

"Dubai is our headquarters for management operations and marketing.

"Jebel Ali will be the base for the assembly, the carbon fibre, the leather shop, technology and development – everything will take place in Jebel Ali next year."

He adds: "It will be the first supercar manufacturing facility in the region. There are many manufacturers that produce cars for other companies, in Saudi Arabia, in India, in Egypt, in Iraq... however, no one has created a brand from the region the way we have done, and no one has set up a facility for the production of supercars on a big scale, as we're doing now." ➤



> Entrepreneurship is in Debbas' blood. Raised in Beirut, he comes from a long line of innovators – the family business, electrical goods conglomerate Debbas Group, has a 100-year pedigree.

He gained a degree in automotive design at England's Coventry University, a centre of excellence for the subject, then moved back to Beirut.

Debbas has grand designs for the firm, aiming to create a hub for automotive innovation in a part of the world renowned for its love of cars.

"It's a completely new project, not only in the matter of the production of cars but also in technology development, in what we're giving to the region, to create new workforce training and education as well. So it's very important for us."

The Lykan and its successor, the Fenyr, remain incredibly niche products – W Motors isn't the Middle East's answer to Ford. Without the vast wealth of the automotive giants, there are limits to what the firm can achieve in terms of technological advances.

"We don't go in this direction," says Debbas. "The car has new technologies in matters of comfort and entertainment; we don't go into engine technologies."

"We want to keep it as a pure driving machine."

UNLEASHING A BEAST

While the Lykan gave W Motors credibility, know-how and a recognisable brand, its second car, the Fenyr SuperSport, was launched with an eye firmly on the future.

Far cheaper than its predecessor – a snip at just \$1.85m – it's aimed at motorsports fanatics, not posers.

"It's just pure performance – ultralight, with a carbon fibre body. It's not with the bling-bling and all the luxury extras."

W Motors hopes to reach a "much wider market", albeit still a tiny one, and the Fenyr is being positioned alongside similarly priced vehicles such as the Koenigsegg Agera and the Pagani Huayra.

"It's in a similar price range – it has similar performance as well – so we are going into direct competition with people who have one of these cars and want an addition to it. I think we've made a good job of it."

He adds: "The Lykan is a car that has no competition in terms of its position, its exclusivity, its luxury, its place in the world. We wanted to create something that competes with the market today and we did it with the Fenyr."



- ☞ It's named after a ferocious wolf in a 12th century Icelandic folk tale.
- ☞ Just 25 will be produced each year.
- ☞ It can achieve 0 to 100km per hour in less than 2.7 seconds, with a top speed exceeding 400km per hour.
- ☞ With an aluminium chassis and a body composed entirely of carbon fibre, it weighs just 1,300kg.
- ☞ It has a unique six-cylinder twin turbo engine.
- ☞ The seven-speed double clutch gearbox delivers 900 horsepower and 1,100 Newton metres of torque.



“It will be the Middle East’s first supercar manufacturing facility. No one has created a brand from the region the way we’ve done and no one has set up a facility here for the production of supercars on a big scale, as we’re doing now”

From combustion engines to carbon fibre, car technology is constantly in flux. So what’s the next big thing in motoring?

Tesla, the world’s leading maker of electric cars, hit headlines with the launch of its long-awaited latest model, but in the grander scheme of things, the California firm’s sales are dwarfed by those of the major Chinese manufacturers.

“Many companies are focusing on electric cars and on environmentally friendly vehicles; however, I don’t see this as the future”, Debbas says.

With rechargeable batteries requiring “an incredible amount of investment”, this isn’t an avenue W Motors is likely to pursue.

In an age when smartphones are used for everything from gaming to making payments, integrating mobile technology and transport seems like the next logical step.

With this in mind, W Motors worked with a Croatian company to develop an app for the Fenyr.

“You can follow the car wherever it is in the world, you can turn it on, you can go into the infotainment, change the radio station, put

the A/C on... everything is connected to the mobile phone.

“We wanted to create an integrated feel between the driver and the car itself, by offering these things as options. The application is entirely new.”

Some electric cars come with basic apps enabling owners to check battery reserves, but Debbas thinks the Fenyr is the first petrol car to be integrated with mobile technology in this way.

What about the Google car? The firm’s self-driving experiment came to an abrupt halt earlier this year when it hit a bus the day it was unveiled.

Debbas says autonomous motoring is a definite growth area, not “to have cars that are driving by themselves all the time but to prevent drivers from making mistakes.

“It’s going to help reduce accidents.”

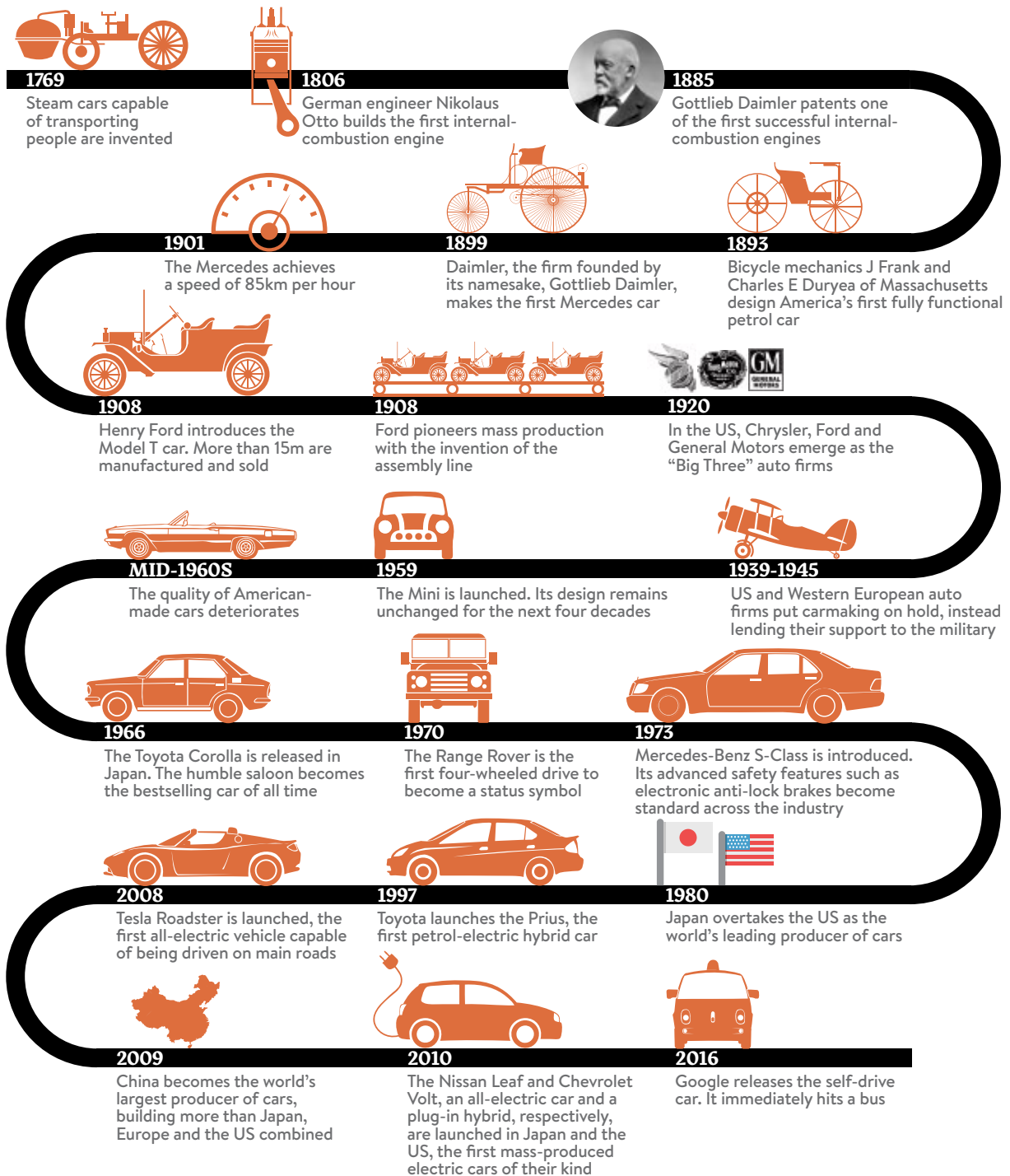
‘Smart cars’ that ‘talk’ to each other could also be on the horizon. Yet while change is afoot, there’s no substitute for being behind the wheel.

“In our field, in the hypercar field, cars will always be like this, in my opinion.

“People want to feel that they’re driving.”

Above: The Lykan HyperSport had a starring role in Hollywood action movie *Furious 7*, which was filmed in Abu Dhabi
Opposite page: The Fenyr SuperSport is aimed at a far wider market

AS GOOGLE'S SELF-DRIVE CAR MAKES A FEW FALSE STARTS, WE LOOK AT THE ASCENT OF THE AUTOMOBILE. FROM CARBON-FIBRE BODIES TO HYDROGEN CELLS, THE PAST DECADE HAS FEATURED SOME OF THE BIGGEST INNOVATIONS IN THE 200-YEAR HISTORY OF MOTORING...





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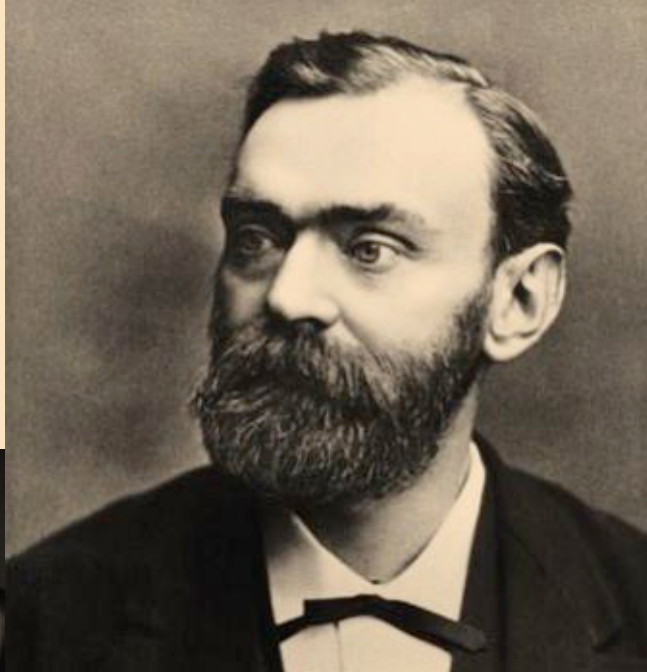
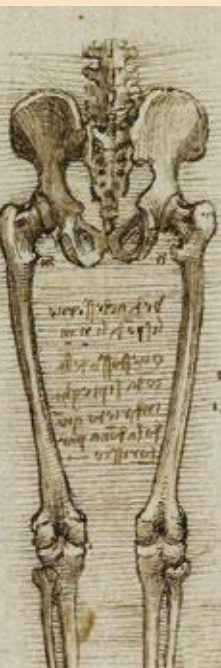
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