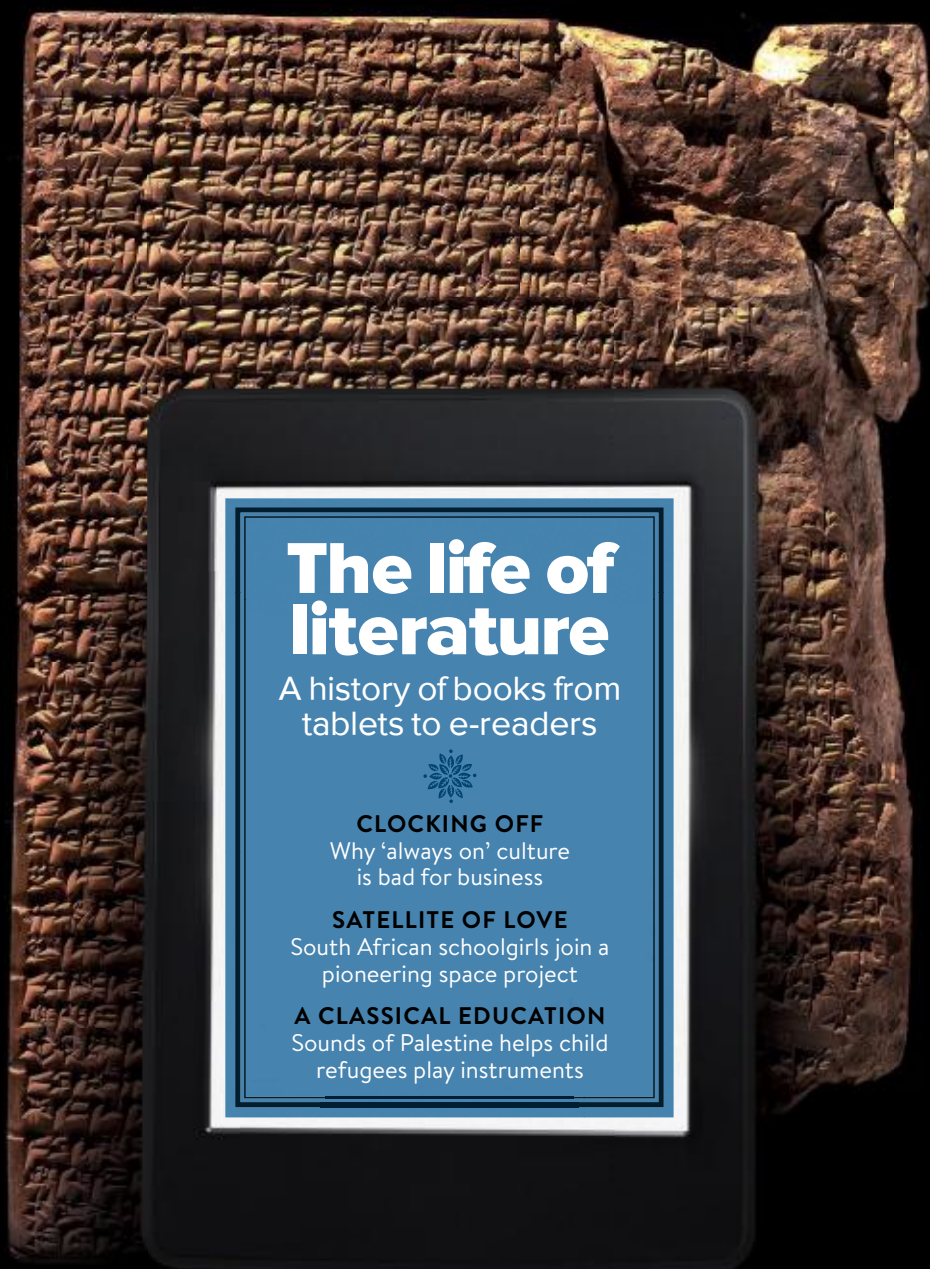


FLASHES

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

MAY 2016
ISSUE 19

#2016YearOfReading



The life of literature

A history of books from tablets to e-readers



CLOCKING OFF

Why 'always on' culture is bad for business

SATELLITE OF LOVE

South African schoolgirls join a pioneering space project

A CLASSICAL EDUCATION

Sounds of Palestine helps child refugees play instruments

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TRAVEL BACK 6 CENTURIES IN A FEW HOURS: DUBROVNIK

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FOREWORD

Dear readers,

Here at MBRF, we're expanding our efforts to disseminate, transfer and localise knowledge across the Arab world in line with His Highness Sheikh Khalifa's directive to make 2016 the year of reading. As well as attending book fairs in London, Riyadh and Abu Dhabi, we've developed a number of projects for people all over the region. Planned with the intention of promoting knowledge dissemination both within the UAE and across the Arab world, it was launched by His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE, based on the directives of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai.

Keeping us especially busy is **Dubai Digital Library**. This electronic platform showcases an array of Arabic-language publications, plus magazines, maps, photographs, dictionaries and biographies.

Knowledge Chair is a mini library comprising a varied selection of high-quality reading matter including children's stories, novels and factual material on topics such as management and innovation. The facility will be introduced in a number of public places across Dubai with the aim of encouraging people to read whenever they are out and about, whether they're using public transport, waiting for

appointments, grabbing a coffee or simply relaxing on the beach.

Book clubs have soared in popularity over the past decade and we're promoting the phenomenon right here. The aim of **Ladies' Lounge** is to encourage women to get together and discuss a heap of acclaimed Arabic-language offerings, and we think it'll be a big success.

Recordings of top regional broadcasters reading are being made for the **Audio Book** scheme. This aims to address the dearth of high-quality Arabic-language spoken-word books currently available.

Studies show that children whose parents read are more likely to do so themselves, and with this in mind we're distributing thousands of books to UAE homes. **My Family Reads** aims to promote literacy and a love of literature across the generations and will be rolled out across the country later this year.

Everyone should make time for reading, and **Book in Minutes** helps the busiest of people do just that. Non-fiction titles on a wide variety of subjects will be translated into Arabic and abridged so their core messages can be digested in minutes.

Jamal Bin Huwaireb
MD of Mohammed Bin Rashid
Al Maktoum Foundation



Middle Eastern youths' admiration for UAE

Young Arabs see the UAE as a safe, secure and stable place to live, researchers have found. The Arab Youth Survey aimed to provide a snapshot of the hopes and fears of a generation who are bearing witness to monumental changes across the Middle East and North Africa.

Researchers interviewed Arab men and women aged 18 to 24 living in 16 countries in the Gulf, the Levant and North Africa, asking them in-depth questions about subjects ranging from the personal to the political, including concerns and aspirations, the economy, unemployment, women's rights, the media, terrorism and the Arab Spring.

For the fifth year in a row, the UAE was judged both as the top country in which to live and as the best place for interviewees' homelands to emulate; it was also seen by would-be entrepreneurs as the best Arab nation in which to start a business.

Author Afshin Molavi, an expert on Middle East geopolitical risk and geo-economics, said: "The UAE owes its rise to a number of factors but,

in my view, they come down to two essential ones: visionary leadership and the people who live and work in the seven emirates."

Respondents received a series of positive and negative phrases and were asked to choose the ones they associated with the UAE most. "Safe and secure" was the most commonly cited phrase, by 36 per cent, followed by "growing economy", a "wide range of work opportunities" and "generous salary packages" (all 29 per cent).

Would-be entrepreneurs cited it as a top location in which to start a business, with one in four (24 per cent) citing it as the top business destination in the Arab world, followed by Saudi Arabia (18 per cent) and Qatar (13 per cent).

"It's hardly a secret that UAE leaders have been delivering the goods for their people and residents in terms of a growing economy, women's empowerment, access to education and opportunity, efficient delivery of government services, and much more," Molavi added.

"Scan the rapidly proliferating list of

indexes from the Global Competitiveness Index to the Global Innovation Index to the World Happiness report and the UAE consistently ranks at or near the top."

METHODOLOGY

The Arab Youth Survey was released by PR firm ASDA'A Burson-Marsteller and administered by international polling firm PSB, whose researchers conducted 3,500 face-to-face interviews from 11 January to 22 February 2016.

Held in Arabic and English, they took place in North Africa (Algeria, Egypt, Libya, Morocco and Tunisia); the Gulf states (the six GCC members plus Yemen and Iraq) and Jordan, Palestine and Lebanon. The researchers could not travel to Syria.

Men and women were divided 50:50. All of the respondents were nationals of the countries in which they were interviewed and youths from many different backgrounds were selected to provide an accurate reflection of each state's socioeconomic make-up. †

Head teachers keep up with technology as school leadership scheme expands

An ambitious project to help teachers stay technologically savvy will be rolled out to hundreds of schools.

Mohammed Bin Rashid Smart Learning Programme (MBRSLP) was set up to develop leadership skills among senior teachers, offering briefings to help them ensure that lessons on information technology and communications (ITC) education reflected current practice within the field.

His Excellency Mohammed Gheyath, Director General of Mohammed Bin Rashid Smart Learning Programme, said: “We believe that teachers cannot effectively teach 21st century skills using technological resources and tools unless they have the skill and the practice themselves. The same goes for our school principals. Principals who are comfortable with technology become models of technology use in their schools and education zones.

“We also truly believe that leaders of technology must be lifelong learners and explorers of the new and the innovative in order to excite and encourage both teachers and students when it comes to technology use.”

Currently, head teachers and deputies at 202 schools are involved in the scheme, which has been expanded following a promising pilot study held in 2015.

Noura Al Muhairi, Principal of Umm Suqeim Model School for Girls, took part last year.

She said: “We are now not only advocates of smart learning but also are able to model the technology use and are comfortable doing so.”

Trainers with international experience in strategic leadership techniques acquired within the ITC sector will hold sessions organised in partnership with the UAE Ministry of Education.

Part of the programme is the ‘smart school transformation framework’, which equips teachers with the tools needed to assess the effectiveness of ITC education provision in their schools and make modifications if necessary.

Core elements include management, curricula and assessment of pupil progress, with an emphasis on techniques of proven effectiveness.

Through the training, teachers gain the confidence to establish monitoring and evaluation processes of relevance to the subject. Additionally, principals foster a culture of innovation by



Above: A leadership development training session
Left: His Excellency Mohammed Gheyath

promoting the use of technology across their schools, with ‘early adopters’ encouraged to integrate technology in their lessons.

Gheyath added: “Strong leadership in an educational setting means that school principals and other school leaders must play multiple roles in the change process, including those of motivator, role model, leader and facilitator.”

Every academic year, more pupils will take part, with all UAE government schools expected to be involved by 2019. ↑

To find out more, visit <http://smartlearning.gov.ae> and [facebook.com/smartlearningae](https://www.facebook.com/smartlearningae), and follow twitter.com/smartlearningae and [instagram.com/smartlearningae](https://www.instagram.com/smartlearningae)



Endowment plan to boost corporate social responsibility raises Dhs6.3bn

Government entities have been asked to promote a new endowment scheme by incorporating its branding into their marketing materials.

Funding to help public and private bodies undertake community service was announced by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister and Ruler of Dubai, on 22 March.

He pledged Dhs 5bn towards social and charitable goals throughout the Middle East in tandem with the launch of a global philanthropy hub.

Named Mohammed Bin Rashid Global Centre for Endowment Consultancy, it offers free advice to organisations on setting up endowments and was launched alongside a Dhs 3.5bn knowledge endowment pledge aimed at funding a variety of education projects.

Sheikh Mohammed said the UAE had “opened the doors to become the most supportive nation for endowment for the service of humanity”.

“Many businessmen provide charity in secret,” he said.

“We want them to announce their endowments and lead by example.”

The request for government workers to display

the endowment scheme logo comes at the behest of Sheikh Hamdan Bin Mohammed Bin Rashid Al Maktoum, Crown Prince of Dubai, who said the initiative would promote corporate social responsibility by reviving the endowment concept as a tool for economic development.

Assets of Dhs 6.3bn in value were allocated by individuals and institutions of Mohammed Bin Rashid Global Centre for Awqaf and Endowment in the month following the launch.

The annual generated, Dhs 503m, will support a number of causes including education, health, youth projects and medical research.

Also launched were a Dhs 1bn innovation endowment that will be controlled by Dubai’s Museum of the Future, Dhs 500m pledged for “general purposes” and a cultural endowment to support Emirati writers amassed from the proceeds of sales of Sheikh Mohammed’s bestselling book *Flashes of Wisdom*.

Dubai Awqaf and Endowment District, described as the emirate’s first social housing project, will be built on donated land and will be populated by people who can afford to build their own homes but have no land on which to do so. ↗

Above: Mohammed Bin Rashid Global Centre for Endowment Consultancy offers free advice on setting up philanthropic schemes



Massive fund to help brightest pupils study STEM subjects at university

One of the world's largest privately funded philanthropic learning initiatives has been launched in the UAE.

Abdulla Al Ghurair Foundation for Education aims to equip young Arabs with the knowledge and skills they will need to become the Middle East's future leaders.

The organisation has pledged to help at least 15,000 promising students to pursue STEM (science, technology, engineering and mathematics) education over the next decade, as well as supporting 5,000 high-achieving Emirati pupils in government schools to enable them to study such subjects in top universities.

The announcement, made at Dubai's Zayed University, was attended by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai.

It included a signing ceremony with representatives of Khalifa University, American University of Sharjah, American University of Beirut and American University in Cairo.

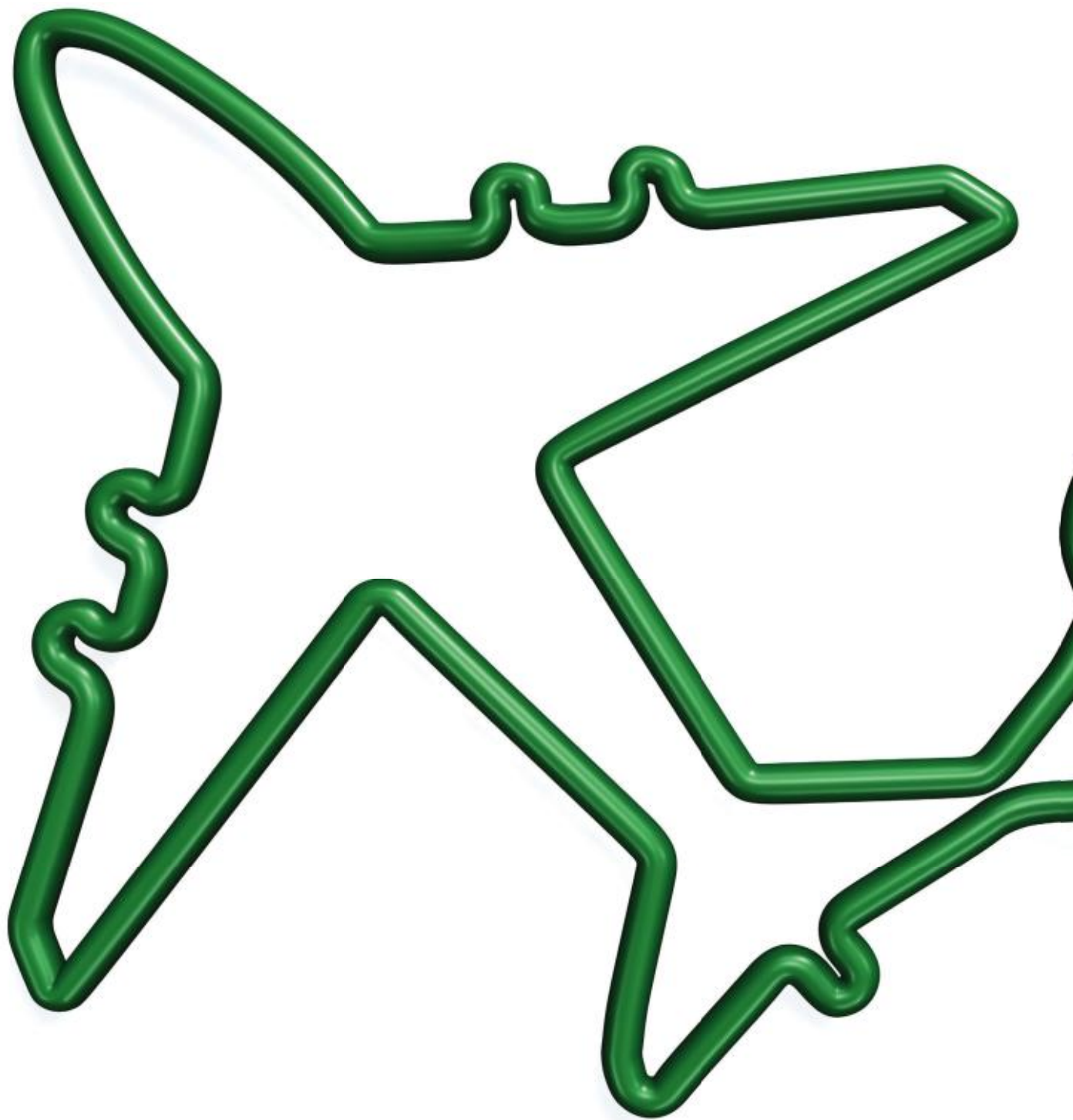
The CEO of Abdulla Al Ghurair Foundation for Education, Maysa Jalbout, said: "This is an incredibly exciting time for the foundation and we are committed to improving the lives of Emirati and Arab youths by working in partnership with

some of the world's best education institutions. Our tailor-made programmes offer more than just financial support – with academic counselling, skills development and mentoring as well as access to internships, they are designed to prepare our students for their transition to university and the world of work.

"Ultimately we hope that the foundation will empower young people to learn for life and to become leaders in their communities and ambassadors of education in the region."

With an investment of Dhs 4.2bn, Abdulla Al Ghurair Foundation for Education hopes to give high achievers scholarships to top universities all over the world. [↑](#)







A MAGNET FOR MEDICAL TOURISM

Sun, sea and surgery equal a winning economic strategy for Dubai...

An initiative targeting ‘medical tourists’ could help Dubai woo half a million holidaymakers per year by 2020.

The scheme, called Dubai Health Experience (DXH), aims to tap into this lucrative global market, worth a staggering Dhs 202bn per year. The emirate attracted 630,833 medical tourists in 2015, 47 per cent of whom came from abroad, generating Dhs 1.5bn in revenue.

Dubai Health Authority’s chairman of the board and director general, His Excellency Humaid Mohammad Obaid Al Qutami, says: “It is an epochal step for the authority, which prepared this ambitious medical tourism sector project through the experience of Dubai’s healthcare programme.

“It offers a range of world-class medical specialities.”

The strategy was launched last month by His Highness Sheikh Hamdan Bin Mohammed Bin Rashid Al Maktoum, Crown Prince of Dubai and Chairman of the Dubai Executive Council, having been approved by him a year previously.

Dubai Health Authority has teamed up with the medical, tourism and marketing sectors to attract those who travel abroad for medical procedures that are unavailable in their home countries, of poor quality or prohibitively expensive.



➤ It is targeted at so-called ‘medical tourists’ as opposed to the broader term of ‘medical travellers’, the former of whom typically seek elective procedures such as aesthetic and weight loss surgery, in vitro fertilisation (IVF) and cosmetic dental work rather than treatment for critical illness.

This first type of patient typically combines their visit with sightseeing and other leisure facilities, and the groundbreaking DXH scheme makes arranging the whole process super-easy.

HOW IT WORKS

The DXH website, dxh.ae, contains a searchable database of 25 healthcare facilities, all of which have been evaluated by Dubai Health Authority to ensure quality, safety and high-quality service.

Once the patient has chosen a healthcare provider, he or she books an appointment by completing a simple form and uploading their medical records.

A physician will then contact them to quote a price and discuss the procedure further; the visitor will be offered a health and travel insurance policy devised especially for the scheme. Flights and accommodation can also be booked via the site – Emirates Airline, hotel group Marriott and travel agency Dnata have all signed up to the scheme – with a number of all-inclusive package deals offered.

If required, travellers can take advantage of a 90-day medical tourism visa offered in cooperation with the General Directorate of Residency and Foreigners’ Affairs. This must be applied for via the healthcare facility providing the treatment. A vast

array of treatments is offered including cosmetic surgery, orthopaedics and sports medicine, ophthalmology, dental, dermatology and preventive health check-ups, as well as assisted reproductive techniques and weight loss management.

Root canal treatment, for example, costs from Dhs 1,300, while fees for IVF start at Dhs 37,000. Rhinoplasty, meanwhile, is offered by a number of facilities, with prices ranging from Dhs 13,140 to many times more.

DHA has developed a transparent patient protection plan which includes a charter of patients’ rights and responsibilities, a comprehensive travel insurance scheme geared to the needs of medical tourists and a complaints procedure in case anything goes wrong. Key markets for DXH include the Gulf Cooperation Council nations, Central Asia, India, Pakistan and parts of Africa.

WHY DUBAI?

“The healthcare system in Dubai is already well known for its flexibility and ability to keep pace with the latest trends and changes,” says Al Qutami.

“DXH will play a pivotal role in strengthening Dubai’s growing and expanding global reputation in the medical tourism sector.

“We are committed to providing a unique healthcare environment to visiting tourists who are seeking the highest-quality medical standards delivering enriching experiences that can add happiness to their quality of life.”

The emirate is already marketed as a family-friendly destination offering amusement parks and world-class shopping, and this latest

DUBAI HEALTH EXPERIENCE

FOLLOW THE TRAIL OF THE MEDICAL TOURIST...



initiative supports the vision of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, to attract 500,000 tourists per year by 2020.

Dr Layla Mohamed Al Marzouqi is acting director – health regulations department and head of clinical governance of Dubai Health Authority.

She says: “DXH will provide medical tourists with a truly exceptional and integrated experience that will be delivered by a group of prominent healthcare specialists in addition to providing translation services when required and facilitating all travel procedures.

“Dubai has always been successful in exceeding visitors’ expectations and experience from all over the world – especially the GCC and other Arab nations – which provides us with the foundations for the Dubai Health Experience to change the concept of medical tourism on a truly global scale.”

BENEFITS TO EMIRATIS

Emiratis have long shunned local healthcare services; as recently as 2010, the government spent a quarter of its healthcare budget on sending its citizens abroad for treatment, while a 2009 survey by YouGov found that more than 70 per cent of UAE residents would seek treatment abroad if they were seriously ill (Underwood, 2009).

The DXH scheme has great potential to transform the healthcare offered to UAE nationals and residents, but Sheikh Saud Bin Saqr Al Qasimi Foundation for Policy Research cautions that measures will be necessary to prevent an influx of foreign patients from “crowding out” UAE inhabitants. A study carried out on its behalf

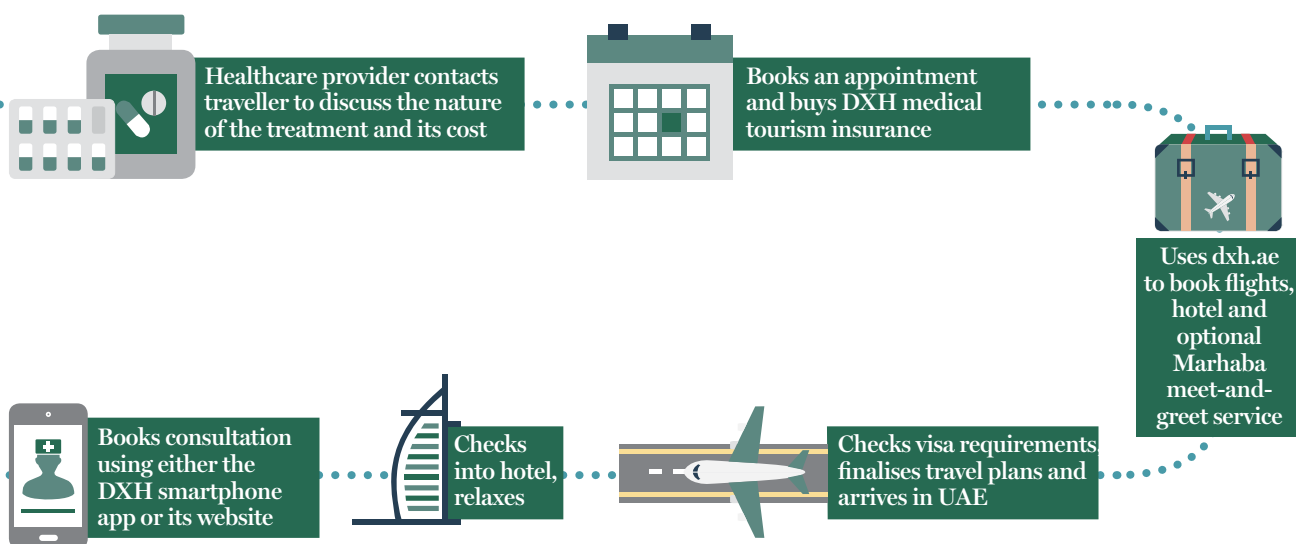
last November highlighted the huge discrepancy between the kinds of procedures sought by medical tourists, such as dentistry and aesthetic surgery, and those needed by inhabitants, for whom cardiovascular disease, cancer, traffic accidents and respiratory illness are the leading causes of death.

It seems clear that care must be taken to ensure that healthcare does not become skewed towards the needs of medical tourists over those of nationals and residents.

Dubai has one of the world’s highest ratios of plastic surgeons, with one per 18,000 inhabitants, and in 2014 DHA projected an oversupply over the coming decade. These figures are problematic when measured against the growing deficit of specialists – particularly in cardiology, emergency medicine and endocrinology – expected in the years ahead.

Continual investment in the training and recruitment of medical professionals will be essential. Figures from the World Health Organization show that between 2007 and 2013, the UAE had roughly 25 doctors per 10,000 residents, a number well above the regional and global averages of 13 and 14 respectively. Yet, as the Al Qasimi Foundation report states, this “belies the country’s rapid population growth – and the challenges of hiring enough professionals to keep up with it”.

By 2020, Dubai will need nearly 6,800 more doctors to meet healthcare demand driven partly by its medical travel activities, DHA predicted in 2014. DXH brings the promise of massive investment in healthcare, with a resultant boost for the economy and benefit for both holidaymakers and all of those who live in Dubai. ↑



QINDEEL TAKES PART IN HUGE LONDON BOOK FAIR



MBRF's Qindeel Printing and Publishing Services division took part in London Book Fair for the second year running.

His Highness Dr Sheikh Sultan Bin Mohammed Al Qasimi, Supreme Council Member and Ruler of Sharjah, visited the MBRF pavilion with His Excellency Mohammed Al Murr.

His Excellency Jamal Bin Huwaireb, managing director of MBRF, handed Dr Sheikh a copy of the Qindeel book *Sefr Almajd (Glory Chapter: Heroes' Tale)* to mark its debut at the show.

In the title, relatives of the recently martyred UAE soldiers recount their loved ones' brave actions in battle and share their most treasured memories of the deceased.

MBRF staff met representatives of Middle Eastern and international publishing houses

at the show to discuss partnerships and share best practice in the fields of copyright management and e-publishing.

Qindeel takes part in many international and regional book exhibitions around the world, either directly or through the authorised agents, and its presence in the UK follows its involvement in Abu Dhabi and Riyadh book fairs, held last month and in March respectively.

London Book Fair, which turned 45 this year, ran from 12 to 14 April at the city's huge Olympia exhibition centre.

The annual event has emerged as a global marketplace for rights negotiation and sale and distribution of content across print, audio, TV, film and digital channels, attracting more than 25,000 publishing professionals from around the world. [f](#)

Present: His Excellency Jamal Bin Huwaireb, Managing Director of MBRF, presents a book to His Highness Dr Sheikh Sultan Bin Mohammed Al Qasimi, Supreme Council Member and Ruler of Sharjah

PLENTY PLANNED FOR 2016 YEAR OF READING

MBRF has unveiled an array of activities to run during the 2016 Year of Reading initiative. Planned with the intention of promoting knowledge dissemination both within the UAE and across the Arab world, it was launched by His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE, based on the directives of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai.

Dubai Digital Library (DDL)

This electronic platform showcases an extensive collection of Arabic-language books from a variety of genres. It also contains Arabic and international periodicals, dictionaries, biographies, photographs and maps.

My Family Reads

Books from all over the world, including bestsellers and much loved classics, are selected according to strict MBRF criteria and translated into Arabic. These are being distributed to 50,000 homes across the UAE and more than 150,000 books have already been given away.

Knowledge Chair

To encourage a culture of reading in public places, MBRF has launched the Knowledge Chair scheme, in which mini libraries are placed in settings such as transport interchanges. They will stock an array of outstanding recent works, including novels, children's stories and factual titles covering topics such as innovation and management.

Audio Books

In a bid to address the scarcity of high-quality spoken-word audio in the Arabic language, some of the Arab world's most prominent figures will be recorded as they narrate some of its finest literature. These files will be published on a variety of online platforms in order to maximise their reach across the region.

Book in Minutes

Through this programme, various works by prominent authors are summarised and translated to ensure that their messages can be understood by the reader within a matter of minutes. A wide range of topics is covered and each publication is adapted in a creative way.

Ladies' Lounge

This book club for Arab women is being launched to promote the culture of reading. The Ladies' Lounge aims to encourage women to meet on a regular basis to discuss books they have read and exchange their opinion on them. †



Dubai Digital Library



My Family Reads



Audio Books



Ladies' Lounge



A Book in Minutes



Knowledge Chair

GROUNDBREAKING SURVEY ARRIVES IN AMMAN

Her Royal Highness Princess Sumaya Bint El Hassan attends Jordanian launch

MBRF has concluded a seminar to launch the Arab Knowledge Index in Jordan's capital, Amman. Organised in collaboration with the United Nations Development Programme (UNDP), it was held under the patronage of Her Royal Highness Princess Sumaya Bint El Hassan, President of the country's Royal Scientific Society, who said the partnership illustrates the importance of integrated efforts to further economic development.

"The index has a fundamental role in building a society based on justice and tolerance," she said.

"It will offer qualitative and accurate diagnosis of prevailing knowledge situations to support decision-makers, experts, researchers and academics in preparing strategic plans and meeting challenges to contribute to the comprehensive and sustainable development of society."

The event is one of a number of events planned in key cities across the Middle East and North Africa to announce the national results of the Arab Knowledge Index, officially launched by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, during the 2015 Knowledge Summit.

His Excellency Jamal Bin Huwairib, Managing Director of MBRF, said the project had measured the current status of knowledge in the Arab world, findings that had a significant impact on the region's ability to compete on a global level.

Urging governments and other authorities to promote initiatives that contribute to knowledge distribution and transfer, as well as helping communities to achieve sustainable development, he noted that the project had not been designed to make comparisons between countries' levels of economic development but instead to provide a mechanism with which to explain their status.

The first session of the seminar stressed the contribution of a university education towards creating knowledge and transferring information.

It also pointed to the importance of ensuring such institutions were equipped with the latest digital communications technology.

Her Excellency Zena Ali Ahmad, Director of



the UNDP in Jordan, said the Arab Knowledge Index reflected the state of knowledge development in the Middle East and North Africa, taking into account the varied idiosyncrasies and cultures of the region.

Younger people had a pivotal role to play in building knowledge societies, she added, stating that the index represented a major leap in efforts to monitor the development of regional knowledge and ultimately attain sustainable human development.

Professor Hani Aldmour, the country's Secretary-General of the Ministry of Higher Education and Scientific Research, praised the project for supporting higher education and enhancing knowledge management in various sectors.

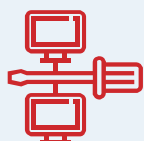
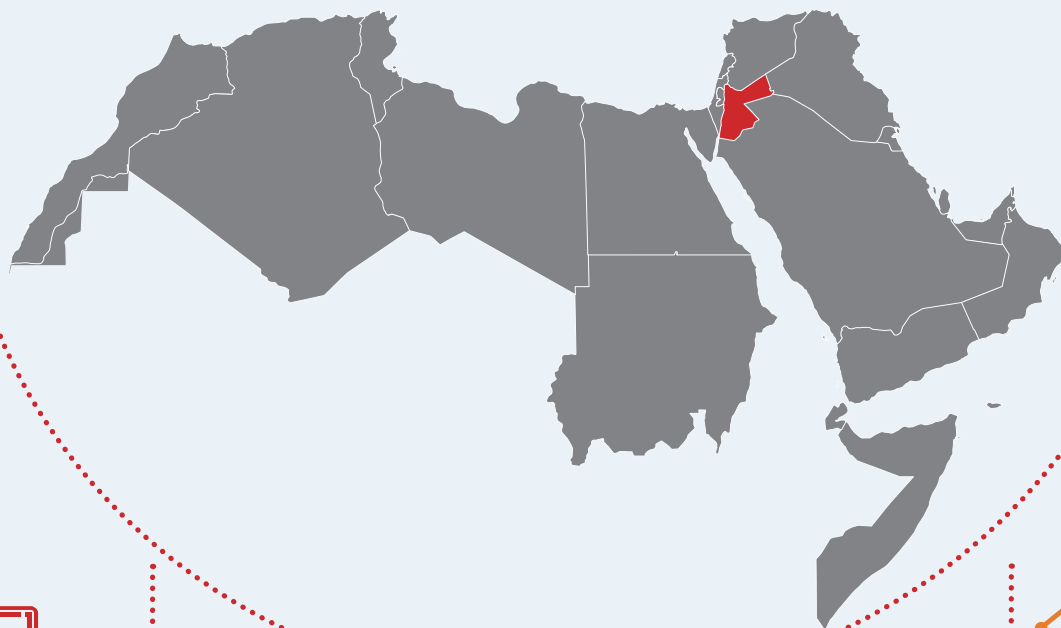
He added that the index was a major step towards meeting universities' needs and supporting young people, as well as entities involved in the management and dissemination of knowledge.

Other esteemed guests included knowledge specialists and the deans of Jordanian universities.

At the second session of the seminar, the objectives, methodology and results of the project were discussed, with an emphasis on how Jordan had fared. [▶](#)

His Excellency Jamal Bin Huwairib with Her Royal Highness Princess Sumaya Bint El Hassan

ARAB KNOWLEDGE INDEX 2015: JORDAN



58%

TECHNICAL
VOCATIONAL
EDUCATION
AND TRAINING

65%

Labour supply



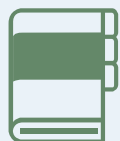
51%

Labour demand



61%

Entrepreneurship



55%

PRE-UNIVERSITY
EDUCATION



50%

Enabling
environments



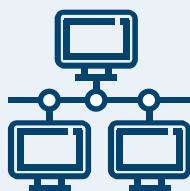
60%

Knowledge
capital



50%

General
developmental
context



55%

INFORMATION AND
COMMUNICATIONS
TECHNOLOGY INDEX



51%

Direct indicators



59%

Indirect indicators



59%

HIGHER
EDUCATION



43%

Higher
education
inputs



59%

Higher
education
outputs



39%

RESEARCH AND
INNOVATION



47%

Innovation



26%

Research and
development



48%

Political, economic,
social environment
and infrastructure



58%

ECONOMY



58%

Organisational
performance
and human
resources



67%

Competitiveness
and creative
development of the
economic structure



45%

Economy-related
information
technology

Template for an eco-friendly future

As it sets out on its next phase of growth, Abu Dhabi's Masdar City is a hive of architectural innovation

Conceived as an integral part of the UAE's knowledge-based economy, Masdar City is going through an exciting phase of expansion.

A short drive from the capital and just 40 minutes from Dubai, this model town of the future is well on its way to becoming a fully fledged innovation hot spot, with 35 per cent of the planned built-up area set to be completed in the next five years.

At its heart is Masdar Institute of Science and Technology, the world's first postgraduate university dedicated to providing real-world solutions to pressing global problems.

Masdar's approach to urban development is based on social, economic and environmental sustainability to attract investment and encourage entrepreneurship, improve the quality of life and limit the carbon footprint of our urban areas.

Chris Chi Lon Wan, head of design management at Masdar City, says: "With more than half of the world's population already living in towns and cities, and with that number expected to reach nine billion by 2030, Masdar is applying technologies and solutions to minimise the environmental impact of urban communities and ensure their sustainability.

"Masdar City serves this objective by providing a template for an innovation ecosystem – it is a thriving community, a business and investment-free zone and a hub for knowledge

creation, and R&D pilot projects leading to commercially viable clean technologies."

MASTER PLAN

Masdar City's detailed blueprint will create a welcoming and pedestrianised community that fosters creativity and collaboration.

"By taking an integrated approach to community design, this plan creates a continuous public realm that inspires community building, innovation and the exchange of new ideas at all scales," Wan adds.

"The next phase of Masdar City's evolution, phase 2, will see the further development of Abu Dhabi's first R&D cluster, pursuing pilot projects aimed at commercialising clean technologies, served by a community that includes homes, offices, a school, a mosque, parks and F&B outlets – all within walking distance.

"Constituting around 17 per cent of the overall Masdar ecosystem, this phase will also have a significant educational element, integrated with residential projects built around dedicated open green areas."

In addition to phase 2, Abu Dhabi Urban Planning Council (UPC) has approved a detailed master plan for phase 5 of the city, primarily villas and town houses with recreational facilities nearby.

Anthony Mallows, executive director at Masdar City, says that obtaining the UPC





approval opens the way for the future ambitious expansion, and is further evidence of our commitment to realise the world's most sustainable urban development.

Mallows says: "Our aim at Masdar City is to have a talent base and community that can work, live, learn and play here. If you can design cities where people can walk, you have the geometric framework for a sustainable community."

He adds: "We are aligned to Abu Dhabi's ambitious 2030 Plan and Masdar City will grow in tandem with the emirate."

Masdar City hopes to be rated as a four-pearl Estidama Community, the UAE's first. Estidama, which means 'sustainability' in Arabic, is a UPC initiative aimed at transforming Abu Dhabi into a model of sustainable environmental, economic social and cultural urbanisation.

The Estidama Pearl Community Rating System (PCRS) promotes the development of complete sustainable communities (CSCs) and will ultimately improve the quality of life for all residents. Furthermore, the PCRS encourages water, energy and waste minimisation.

INTELLIGENT BUILDING DESIGN

Masdar City's buildings are constructed with locally sourced, environmentally responsible building materials, such as recycled aluminium, low-carbon cement and timber from sustainable sources. Each structure must meet an Estidama certification of three pearls, comparable to the internationally accepted standard of LEED Gold.

The Siemens regional headquarters at Masdar City is the first LEED platinum-certified office in Abu Dhabi and also holds an Estidama Pearl Building Rating System (PBRs) three-pearl rating, while the International Renewable Energy Agency (IRENA) headquarters is rated four Pearls.

Wan says: "From an R&D and innovation perspective, the city's building cluster serves as a working laboratory to monitor and study how cities use, conserve and share resources.

"Overall, Masdar City consumes 40 per cent less energy and water than built-up environments of a comparable size."

TRADITION IN A MODERN SETTING

Another aspect Wan highlights is the use of traditional Arabic architectural elements. "The street pattern, for example, is influenced by traditional urban design in the Arab world," he says.

"Long-established features such as wind towers and narrow streets have been very effectively



employed to create a passive cooling effect. The city's designers were aware that shorter and narrower streets could create just enough wind turbulence to push air upwards and ensure that it cools the street. By incorporating these elements into the design, the result is that Masdar City feels up 10 degrees cooler than the rest of Abu Dhabi."

Its design reflects a strong revival of interest in the use of traditional Arab architecture in a modern setting.

The layout also reflects Emirati-style urban planning, maximising natural shade and open courtyards and ensuring natural ventilation. Streets are oriented on a south-east to north-west axis, thereby providing shading at street level throughout the day.

SMART INVESTMENTS

At its core, some smart investments at Masdar City have helped to dramatically reduce its environmental impact. "We are an energy-efficient, low-carbon, low-waste development," says Wan.

"We are achieving all this through the energy supplied by our 10-megawatt photovoltaic solar plant and combining passive and intelligent

Above: The architecture fuses futurism with rich Arabian elements
Opposite page, clockwise from left: A wind tower; the personal rapid transit system; the International Renewable Energy Agency (IRENA) headquarters
Previous page: Masdar Solar Hub



design to reduce the city's energy and water demand by around 40 per cent."

Energy and water efficiency is encouraged by the absence of light switches and taps within Masdar City's buildings. Instead, movement sensors are used to reduce lighting and water usage by as much as half.

Other appliances used to enhance efficient water usage include smart meters and the recycling of treated waste water.

Masdar City is working to promote a low-waste lifestyle through the reduction, reuse, recycling and recovery of refuse.

Much of the discarded organic matter is composted and used to fertilise landscaped green areas. In addition, Masdar City's research and development cluster is working intensively on developing and refining advanced waste treatment technologies for tomorrow's smart cities.

CLEAN ENERGY

The district is partly powered by renewable energy generated by rooftop solar panels, a system that is set to be expanded as tech prowess develops. Masdar City currently uses less than 30

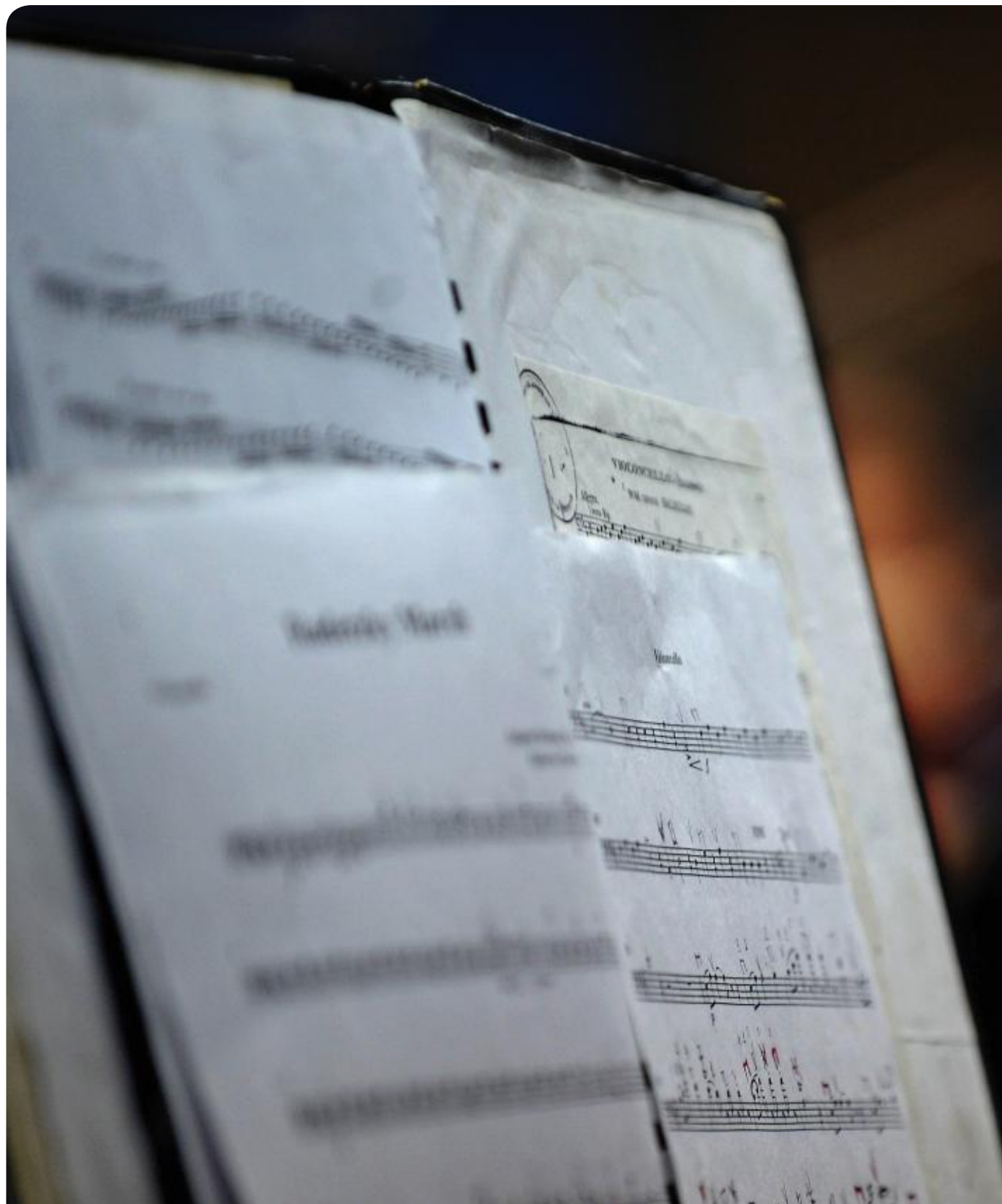
megawatts of energy, generated sustainably onsite by rooftop solar photovoltaic panels, and energy from the national grid, supplied by a 10-megawatt solar photovoltaic array near the city and the 100-megawatt concentrated solar power plant in western Abu Dhabi. The 10-megawatt solar photovoltaic array produces 17,500 megawatts of clean electricity per hour.

Masdar City is being built in phases but, of course, real cities are never finished. Its target is to house 40,000 people, with an additional 50,000 commuting there daily to work and study.

Wan says: "In the future, Masdar will continue to lead the refinement and practical application of solar power technologies through the Masdar Solar Hub, which is already operating a photovoltaic test centre and a testing facility for advanced research into the photovoltaics field.

"Our approach provides the flexibility to embrace new technologies, apply lessons learned and make improvements moving forward."

He adds: "We can be sure that Masdar City will be transformed over the next decade as a host of R&D, technology, residential, commercial and educational projects come to fruition." †





Sounds of promise

An uplifting social project provides music therapy for traumatised Palestinian youngsters

"I close my eyes so I don't see anything but the audience! No walls, no allies and checkpoints — it's just me, the sound of my violin and the audience," says little Raghad Khumais.

The seven-year-old girl, who lives at Dehesha refugee camp, south of Bethlehem city, first took part in the Sounds of Palestine project two years ago and became a member of the children's orchestra it founded.

Since 2012, this local organisation has provided weekly music workshops for up to 200 four and five-year-olds, sessions held in nurseries and schools in al-Azzeh and Aida refugee camps. There, they perform in choirs and take lessons in the violin, cello and percussion instruments such as the tabla.

Sounds of Palestine's artistic director, Fabienne Van Eck, says: "Sounds of Palestine works to provide a safe space for the children to express themselves in a non-verbal and non-threatening way and provides extra support for children with special needs such as hyperactivity, autism and speech problems.

"We plan to expand the programme every year, accepting new children at kindergarten level and continuing as they progress through the higher grades in school."

For Raghad's father, Abdulrahman Khumais, playing





➤ music was the best use of her time. He said he would do anything to make his kids' childhoods better than his own, growing up as a refugee.

"We don't have any gardens or space for the kids to play – the only thing they can do here is run from one corner to another", he says.

"The project is not only filling the children's time, it's raising their awareness, culture and motivating them to be better people."

THERAPY THROUGH MUSIC

The obstacles of living in the harsh camp environment affect the children's personalities, making them stubborn or fearful of others. For this reason, social workers are on hand to help bring out the best in the youngsters, both musically and psychologically.

Social worker Fadi Al-azza says playing music offers a form of psychological release.

"We believe that our duty here is not only teaching music," he says.

"We have another job besides this."

Al-Azza calls the pupils' parents to give them advice and update them on their offspring's emotional wellbeing.

"I grew up in a refugee camp and because of my experience, when I interact with these kids I know what they are going through," she adds.

"We face some very difficult situations. I remember a girl who refused to deal with any of the teachers or children.

"She was angry and shouting all the time for the first few days, unlike another child, a boy who was really introverted and quiet, sitting alone and not talking."

Later on, Al-Azza says, the pair became more sociable and are now valued members of the orchestra.

Al-Azza explained the children's inappropriate behaviour resulted from what they had witnessed, such as members of their families being arrested and beaten.

"What we are trying to do here is to mutate these emotions into music – we call it social music therapy," she adds.

"We have introduced this to help address the emotional needs of children in the region and continue to respond to requests that will strengthen local support of their emerging music therapy practice."



DREAMS OF EXPANSION

Initially the group travelled between the schools and nurseries of Aida and Al-Azza refugee camps, but it was later decided that the activities should take place elsewhere.

They moved into a two-storey building in Beit Sahour, east of Bethlehem, which contains several rooms equipped for music lessons.

This had two benefits – on the one hand, it took the children outside the formality of a classroom setting and on the other an adjacent park offered space for sports and recreation.

Yasmine Al-Atrash, a music teacher, says: “It’s not easy to control these children. We do not deal with them as teachers; here we are friends.

“I always tell them that the musical instrument is a friend; they can tell ‘him’ what they feel, and usually the way they play on instrument reflects their psychological condition and the emotions they feel.”

Al-Atrash’s colleague Albeer Bassel says, smiling: “I didn’t imagine that one day I’d work with kids. And not any kids.

“I’ve gained many skills during the past three years while working with them, socially in the first place and then musically.”

Bassel, Al-Atrash and other people who are involved with Sounds of Palestine seek to take the project nationwide.

The kind of music they teach is not widely played in the community – living under Israeli oppression can kill creativity.

“We are working under the concept of sustainability, to expand our orchestra and improve the children’s abilities, and increase their self-confidence to enable them to face the difficulties in life and to get out of the ‘fear bubble’ that the continuous Israeli attacks cause,” Al-Azza states.

Abdallah Qandeel, eight, plays his contrabass



softly with his hands. He wants to run a sweet shop – and play music in his free time.

“I want to continue learning music until the rest of my life, but my dream is to have a sweet store and sell sweets to the camp’s children,” he says. Qandeel’s brother was often arrested at their house, and he describes the Israeli attacks as a brutal assault on innocent people like himself.

Al-Azza adds: “For a child who wakes up at night, watching his relatives being shot or arrested or beaten, it’s not normal.

“This is why we need social workers to deal with those little musicians.”

Money remains a challenge for Sounds of Palestine, which runs on donations from the public and organisations. Yet despite the limited funds and the fast-increasing intake of children, the project workers are determined to build a huge orchestra and to enable more youngsters to express their feelings through instruments, away from the sounds of bombs. †

Top: A professional guitarist entertains children and a cello class is held at a UN-run school in Aida refugee camp
Left and opposite page: Boys take part in a musical workshop at the Nativity School of Bethlehem



Treasures past are the future

Bahrain is exploring the potential of cultural tourism

While Dubai attracts the party set, Bahrain has a much more relaxed vibe. It's already a tourist destination in the Gulf (most retailers in Bahrain accept all currencies of the region). Could its unique selling point become its arts and crafts scene? The tourism board certainly thinks so.

As an island known for its trade relations, it's unsurprising that it has such a colourful culture. A former port, the country is a melting pot of influences from India to Portugal. Bahrain's long history is very different to that of the rest of the Gulf – it goes back over 5,000 years, resulting in a unique way of life that places a strong emphasis on art, and it's art that it is now keen to capitalise on.

A fascinating mix of old and new, Bahrain may lack the glitz of the UAE, Kuwait's oil reserves and the wealth of Doha, but that's part of its charm. A popular tourist destination within the Gulf, especially among the Saudis, for its relaxed atmosphere, the island's tourism board hopes to attract an international crowd with its unique and intriguing sights. Although it's small, the country's heritage is evidenced by the Dilmun empire burial mounds dotted around Manama – 20ft pyramids which look like the by-products of construction.

In the past few years, Bahrain has put aside more than \$100m (Dhs 367m) to position itself as the cultural capital of the Gulf in order to attract more visitors. The plan is to invest money into choice projects such as arts festivals over a number of years



- instead of seeking a short-term fix, and Bahrain is looking to the legacy of its past to secure its financial future. Keen to renew efforts to open itself up to tourism, it is putting its hope in the burgeoning arts and crafts scene to pull in the punters.

TRADITIONAL HANDICRAFTS

There has been a growing interest and reverence for the old traditions and the work of artisans and artists for some time now. Every spring for the past two decades, Manama has hosted a heritage festival that fills visitors with wonder.

So what kind of handicrafts does it boast? Basket weaving is popular – palm leaves are used to make everything from dining mats and baskets to chicken coops. Still one of the most prominent crafts, it's predominant in the villages of Karbaba, Jasra and Budaiya.

As an island, boat-making is a historic and iconic Bahraini industry. Made from teak transported from India, the dhows are a beautiful sight to behold in the harbours. Pottery is also a popular handicraft in Bahrain – a vast quantity of

millennia-old examples has been found in archaeological sites across the island.

Embroidery is important in Bahraini culture. The 'kurar' technique produces beautiful hand-made ribbons of gold and silver which are used to decorate both male and female clothing. Another kind of stitching is 'naqda', Arabic for the measuring unit of silver weight. The silver thread in embroidery is also used to decorate clothing, particularly that worn at weddings. These days, the Bahraini Women's Society uses it in everything from napkins to tablecloths.

The national identity has always been closely tied to palm trees. As a source of food and shelter, it has long been an indispensable element in daily life. In an initiative to reinterpret the use of palm leaves, Children & Mothers Welfare Society hosts a palm paper workshop in which participants make cards, notebooks and pictures.

So popular are these handicrafts that, as part of the Manama Gulf Capital of Tourism 2016 campaign, Bahrain launched a festival devoted to craftsmanship. Held last month, Hurafana

Clockwise:
Weaving, pottery
and boat-building
have been part of
Bahraini life for
many centuries





Left: Bahrain boasts many ancient sites

Handicrafts Festival was a 10-day celebration of the kingdom's burgeoning traditional arts. Wildly successful, it was attended by more than 60,000 visitors, including a number of celebrities – former Spice Girl Geri Halliwell was spotted on the lookout for a handwoven carpet.

The crafts centre in Manama is run entirely by women and already a hugely popular site for tourists. There, you can find numerous workshops – in one project, a collaboration between the women of Diraz village and the Ministry of Social Development, high-quality woollen goods such as handmade carpets, cushions and wall hangings hark back to the age-old skill of weaving.

GRASS-ROOTS MOVEMENTS

Apart from government aided art festivals, there is a burgeoning grass roots scene, at the heart of which is Al Riwaq Art Space. Dedicated to promoting local contemporary art and design on a regional and international level, it's responsible for Market 338, an annual platform for designers and creative entrepreneurs, and the art and design festival Alwan.

Nader Alabbasi, a renowned Bahraini visual artist who is currently exhibiting his work at Al Riwaq, says local artists young and old are getting a lot of exposure in the country and advocates sustainable cultural tourism.

"The Ministry of Culture is doing a great job," he says. "We have a few galleries that promote regional art and other artistic discourses.

"Is there potential to grow? Yes. Are there people who need more exposure? Yes."

On the topic of the economy, he's enthusiastic about the Ministry of Tourism's work.

"Her Excellency Culture Minister Sheikha Mai Bint Mohammed Al Khalifa has been working hard to push cultural tourism as a concept and as an economy. It's extremely important for a few reasons," he adds.

"Cultural tourism is important for the economy; this region has been depending on one source for its main income – fossil fuel – and tourism has been neglected.

"It's important for people to realise that Bahrain is tolerant and accepting of other ideas, proposals and people, all of which is integrated within the fabric of the island. This is the side effect of art that enriches the country as a whole."

Alabbasi points out that other countries in the Gulf have invested heavily in art.

"Qatar has lots of museums and brings in huge artists and the Crown Prince of Saudi Arabia has just announced that the kingdom is going to build the biggest museum of Islamic art in the world," he says. When asked about preserving culture and traditional crafts, Alabbasi muses on the question.

"The classical answer is yes, and it is very important and we have to embrace it. But what does that mean? I've been mulling it over in my mind for a long time.

"Craftsmanship in isolation is not significant, in my opinion, but as a vehicle it has worth if it's used as a baseline from which to push other ideas. Contemporary artists think you have to remove the old and start something new, but I think you have to build on the old with something new." †

The new power GENERATION

Solar energy could create thousands of jobs by 2030. What will they involve and how will people be equipped to perform them?

With oil prices at rock bottom, the UAE faces unprecedented challenges as it seeks to diversify its economy. They say every cloud has a silver lining, however, and just as fossil fuels fall in value, one eco-friendly alternative is proving surprisingly lucrative.

Renewable energy is generally defined as power collected from resources that are either naturally replenished or available in bountiful supply, such as sunlight, wind, waves and geothermal heat. Given the UAE's sizzling rays, investment in solar power would seem to be a no-brainer, but for many years it was assumed it would always be more expensive to produce than that derived from coal or gas.

In more recent times, however, spurred by the need to mitigate climate change, its cost has dropped dramatically.

Early last year, Dubai Electricity and Water Authority (DEWA) and ACWA Power, a Saudi

Arabian developer and power plant operator, jointly announced that they had embarked upon a 260-megawatt (MW) photovoltaic facility at Dubai's Mohammed Bin Rashid Solar Park.

Amazingly, the price of energy it will produce – less than Dhs 2 per kilowatt (kWh) – is the cheapest ever recorded for solar electricity, even below that generated by fossil fuels.

GREEN-COLLAR WORKERS

Almost eight million people currently work in renewable energy worldwide, a number that is expected to rise.

Across the Gulf Cooperation Council (GCC), projections indicate that the sector will generate 116,000 jobs per year by 2020, and in the UAE plans are afoot to create 160,000 positions





annually until 2030, boosting the nation's gross domestic product (GDP) by 4 to 5 per cent over the same time frame.

The considerable groundwork required will come in the form of a Dhs 100bn 'green fund' to facilitate investment in clean energy, according to the *State of Green Economy* report, released by think tank Dubai Carbon Centre of Excellence in partnership with the United Nations Development Programme.

But what is a 'green' job, and how does one land such a position?

"Green job categories are as diverse as the umbrella term encompassing the values and benefits of sustainability," says Eng. Waleed Salman, vice chairman of the World Green Economy Summit and the executive vice president of strategy and business development at DEWA. In practice, he adds, the majority fall within the renewable energy sector.

"The resilience of economic demand can best be seen during times of economic volatility," Salman says. "During the world's most damaging recession in recent history, employment in green





“ We recognise that preserving our energy resources will be one of the greatest challenges in our drive towards sustainable development. This, however, will not materialise unless the different facets of our society adopt energy conservation principles in their core values ”

His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai

➤ sectors managed to grow against all the odds.

“Just as the Industrial Revolution called for a legion of skilled workers to mine coal, stoke engines and work on assembly lines, we are now in an age where the longevity and success of world economies is contingent on the green workforce.”

For every megawatt of solar energy generated, Salman says, 15 jobs could be created, most of which will be within engineering, construction and financial consultancy, as well as the heating, ventilation and air-conditioning sphere.

Adapting existing buildings to reduce their energy consumption, a practice known as retrofitting, will also require skilled workers, as will water desalination, in which the parched UAE has a particularly strong track record.

REAL-WORLD EXPERIENCE

It's estimated that an additional 30,000 graduates will be required to support the implementation of the UAE Green Growth Strategy, adopted last year. The first green jobs fair was held during 2013's World Energy Summit in Abu Dhabi, and to keep pace with the demand for increasingly

specialised skills a number of schemes has been set up to help prep young people for careers in the industry. For instance, the Renewable Energy Learning Partnership (IRELP) promotes technical development and education in the sector through engagement with private training institutions and renewable energy employers. This is run by intergovernmental body the International Renewable Energy Agency (IRENA), which supports countries' adoption of sustainable energy.

IRELP's website lists more than 3,000 relevant courses, including degree programmes, plus web tutorials, internships and teaching resources, while its research identifies education shortcomings that could hinder development in the sector.

In April 2015, it held the Model IRENA programme, a two-week course in which young adults met to discuss the industry's future.

Fifty students from seven UAE universities and young professionals from various backgrounds assumed the roles of IRENA delegates as they proposed educational initiatives and more.

The agency also offers the IRENA scholarship and Junior Professional Associate programme,

Above: DEWA announces the third phase of Mohammed Bin Rashid Al Maktoum Solar Park in Dubai

the first of which provides promising applicants with graduate bursaries for Masdar Institute of Science and Technology. Twenty people have taken part to date, a number of whom were then offered internships and temporary paid positions.

The Junior Professional Associate Programme provides an entry point into the international energy industry. Promising graduates and postgraduate students undertake salaried one-year jobs, gaining first-hand experience of IRENA's activities.

Mohamed El Farnawany, IRENA's chief of staff and director of strategic management, says: "Youth engaged with IRENA through these various platforms are joining the vanguard of the movement for a sustainable energy future.

"We hope that through our work, young people will return to their universities and workplaces with fresh ideas for the adoption and use of renewable energy."

Meanwhile, DEWA's Ruwad Initiative sent 383 Emirati orphans to Singapore for six days, where they teamed up with Singaporean students to enter competitions and exchange creative ideas.

They also visited General Electric's Ecomagination Centre in Abu Dhabi, which fosters dialogue between customers, think tanks, universities and industry, and received training on the management of social projects.

Yet another initiative is the UN-sponsored Carbon Ambassador Programme, in which Emirati undergraduates learn about sustainable development, carbon management and climate change mitigation. Participants are expected to develop leadership, project management and decision-making skills in order to help them become advocates for low-carbon development within their peer groups.

"The challenge in training the next generation of sustainability leaders lies in emphasising the connection between sustainable development and jobs and businesses of the future," El Farnawany adds.

"The success of the Carbon Ambassador Programme highlights how tertiary training, with the knowledge and financial backing from private-sector partners, can effectively encourage green innovation that can impact an entire nation."

Robert Okpala is group director at BuroHappold Engineering, which took part in the scheme last year.

He says: "There is a need for more seasoned professionals to support, to inspire, to teach, to guide and ultimately to mentor the young green warriors of today into becoming the leaders of tomorrow and to uphold the UAE spirit of innovation, sustaining the economy for future generations."

One example of how this works in practice is

the World Energy Council's Young Future Energy Leaders programme, in which 100 young professionals are offered opportunities to find practical solutions in sustainability and renewable energy.

In the UAE this is coordinated by Masdar Institute for Science and Technology alongside corporate sponsors including Abu Dhabi National Oil Company, Emirates Nuclear Energy Corporation, Dolphin Energy and Abu Dhabi Water & Electricity Authority.

His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, says: "We recognise that preserving our energy resources will be one of the greatest challenges in our drive towards sustainable development. This, however, will not materialise unless the different facets of our society adopt energy conservation principles in their core values.

"The future generations will be the chief beneficiaries of our achievements and the best judges of what we accomplish in this field." †

Below: Dubai's solar-powered Smart Palms can charge phones and offer Wi-Fi



Keeping it in the family

Blood is thicker than water within many Middle Eastern firms – a new networking hub is helping them share their expertise



The Arab world is known for its closely knit communities, so it's hardly surprising that family-owned firms contribute a huge chunk of cash to the region's economy.

Generating a whopping 80 per cent of non-oil gross domestic product (GDP), they represent nine out of 10 companies in the Middle East and North Africa (MENA), yet despite this, the idiosyncrasies of this age-old corporate structure are seldom explored in depth. For this reason, The Tharawat Space was founded to

help such firms thrive in the region's fast-changing economic climate.

It's the latest initiative of Dubai-based networking group Tharawat Family Business Forum, set up specifically to help multigenerational companies.

The group's general manager, Farida El Agamy, says: "Most businesspeople only network with firms involved in their own sector. Tharawat is unique in that it unites them by company ownership.

"Globally, a lot of facilities for

family businesses are attached to universities – there are very few places where family members can meet others in similar situations on a normal weekday."

It's this void that she hopes The Tharawat Space will fill.

A MEETING OF MINDS

Why was an organisation for family-run firms deemed necessary? After all, many companies join trade bodies devoted to their specific activities. Isn't that enough?



Illustration: Shutterstock



EXPLORE



➤ El Agamy says there are several crucial differences between these firms and those that follow more pluralistic hierarchical structures.

For instance, planning for succession of the business can prove tricky, and restructures are harder when family loyalties are involved.

She says many firms outsource the whole process in the hope of minimising internal conflict, yet believes this strategy becomes less effective over time.

“When a family firm is founded by the father, mother or both, they are able to educate their kids about the specific culture of the business. The children grow up with it,” she says.

“Once you get to the second or third generation, you have a far more diverse group of people – perhaps 60 or 70 cousins who may have grown up in different areas, studied abroad and so on.

“They together have to own an enterprise that was left to them. How do they organise it?”

El Agamy believes families must drive such changes themselves.

“Too many owners outsource decisions on structure to avoid conflict,” she says.

“We empower families, giving them information and expertise.”

A REGIONAL FIRST

Tharawat Family Business Forum was founded a decade ago by El Agamy's father.

Dr Hischam El Agamy, the executive director of Swiss business school the Institute of Management Development, wanted to form an association for family firms that would take the challenges presented by cultural, sociopolitical and historic factors into account.

Now a decade old, Tharawat's membership comprises dozens of prominent families from all over the Arab world.

Privately owned, independent and not-for-profit, it places an emphasis on education, research and thought leadership.

Initiatives include Leading the Family Business, aimed at executives and owners, Arabian NextGen, for younger members, and the self-explanatory Women in Family Business.

When Farida El Agamy realised there was no independent centre in the MENA region suited to Tharawat's members, opening a permanent networking space seemed to be the next logical step.

“We had the idea of becoming an accessible space where members of family businesses could meet each other and get to know the association better,” she says.

“There are very few opportunities for family

Above: Farida El Agamy is the general manager of Dubai's Tharawat Family Business Forum
Below: The Tharawat Space is the organisation's latest initiative



THE THARAWAT COMMUNITY

Members of the Tharawat Family Business Forum come from all over the Arabic-speaking world, from the Levant to North Africa and beyond, and from industries as diverse as agriculture and tourism.

In order to join, at least two generations of family members must be involved in the business, the headquarters of which must be in the Middle East or North Africa. Unsurprisingly, given the UAE's relative youth, Emirati firms represent a relatively small proportion of members. They include Al Ghurair Investments, which dates back to 1960 and counts property, food and construction among

its interests. The firm now operates in 20 countries.

Crescent Group was established in 1971, and its subsidiaries, Crescent Petroleum and Crescent Enterprises, span a number of industries.

Dr Sulaiman Al Habib Medical Group was founded 21 years ago. Although based in the UAE, it is best known in Saudi Arabia – it runs the kingdom's largest hospital complex.

Khartoum's Elnefeidi Group began life as a shop in 1934 and became involved in commercial transport 40 years later. It now has stakes in a number of Sudanese industries, from agriculture to mining and

infrastructure. Saudi Arabia's Al Nahla Group, a founding partner of Riyadh Bank and construction contractor SARCO, has been run by the Sharbatly family since the 1930s. Meanwhile, the Beirut-based Fattal Group has distributed luxury goods since 1897.

Even older is Omani firm WJ Towell. Established in 1866, it now has interests in more than 40 industries, from construction and property to cars.

Also in the automotive sector is AMTC. Yemen's leading Toyota dealership, it has been run by the Bazara family since 1956 and has since branched out into banking, insurance, steel manufacturing and fishing.

business members to meet each other on weekdays, during the day, and not only during events."

The Tharawat Space is thought to be the region's first coworking base created with the needs of families in mind.

Set in the heart of the Dubai's arty Al Quoz district, a once-barren expanse of warehouses now home to a growing number of galleries, shops and creative businesses, the centre was envisaged as an 'office away from the office' where executives could meet others facing similar professional challenges.

Coworking involves sharing an office space with people from different organisations who work independently yet have certain values or interests in common. Those who use them can benefit from observing the differing approaches taken by firms that bear similarities to their own, in a relaxed,

non-corporate and welcoming environment.

Spanning 1,700 square feet (158 sq m), the facility, which opened on 1 May, is a hub in which to share best practice and activities for all generations.

Anyone wishing use it must belong to a business-owning family, defined as a first or multigenerational business in which relatives holds a majority share. In the case of start-ups, at least two family members must be involved.

A series of workshops and presentations on leadership, entrepreneurship and innovation is offered; the premises is also home to the forum's sister project, a bilingual business magazine also called *Tharawat*.

The word means 'riches' or 'fortune' in Arabic – and El Agamy hopes the organisation's latest endeavour will bring good fortune to all who use it. ↑



Left: Managers of Middle Eastern firms mingle



**When
did we
stop
sleeping?**



Working around the clock doesn't just harm our health – it's also bad for business

Boosting productivity in the workplace could be as simple as ensuring staff members can get a good night's sleep.

A new study that examined the sleeping habits of more than 1,000 professionals, mostly at managerial level, indicates that firms seriously underestimate the impact of sleep deprivation, not only in terms of employee health and wellbeing but also in relation to work performance, decision-making and general organisational success.

While the link between sleep and performance is nothing new, there is limited research into the topic in relation to corporate life. This is surprising, considering the ways modern technology has rapidly contributed to a culture in which employees find it difficult to switch off once the working day is done. Hands up if you've ever had 'a quick check' of your work email account during a family gathering or while on holiday? What about replying to one late in the evening on the basis that it will save time for more pressing tasks the next day?

In the report *The Wake-up Call: The Importance of Sleep in Organisational Life*, presented to the World Economic Forum in Geneva in April, Professor Vicki Culpin and Ayiesha Russell argue that "there is a definite

Illustration: Tarak Parekh



need to challenge a corporate culture of sleeplessness". A 24/7 'always on' globally networked and technologically connected business ethos and the pressure to be seen 'performing' appears to be contributing to a sleep-deprived workforce, the researchers wrote. In addition, people may, due to job-related performance pressures, be under-reporting the impact on their own performance and that of their colleagues.

The research was conducted by Hult International Business School and involved a total of 1,055 respondents ranging in age from 20 to over 50. Most (88 per cent) were from the United Kingdom, but there were also participants from elsewhere in Europe, the Middle East, Africa, Asia and the Americas.

Predictably, the study found most professionals don't get nearly enough sleep. Individuals who took part in the survey slept an average of just six hours, 28 minutes a night, compared to a benchmark of seven hours – considered the minimum for a healthy adult according to recent American Academy of Sleep Science research. Younger people (20 to 34-year-olds) fared slightly better, with an average of six hours and 47 minutes, than those aged 35 to 49 (six hours, 24 minutes) and people aged 50 or over (six hours, 19 minutes).

The researchers found a clear impact on social and emotional wellbeing across all ages, with 86 per cent of respondents reporting a lack of energy, 84 per cent irritability, 78 per cent being less likely to socialise, 75 per cent feeling stressed and 72 per cent struggling with motivation.

Physical effects included slower reaction times, headaches and loss of libido. Symptoms indicative of more serious health problems, such as heartburn and signs of an impaired immune system, were reported across all age groups.

Even if sleep-deprived managers don't fall ill, they are more likely to make poor decisions. All age groups reported that sleep loss affected their organisational performance, with common problems including frustration when projects didn't go to plan (71 per cent), having trouble staying focused in meetings (69 per cent) or on daily objectives (66 per cent), taking longer to complete tasks (68 per cent) and finding it harder to work with challenging colleagues (65 per cent). More than seven out of 10 professionals said staying motivated was a real problem when tired.

Hult's Global Dean of Research, Professor Culpin has spent over 17 years researching memory and the effects of reduced sleep on workers and managers. She described

CALL TO ACTION: REPORT RECOMMENDATIONS

For HR professionals, managers and leaders

- ❖ Put sleep on the agenda, talk about it at all levels within the organisation and share the array of ways in which sleep loss can affect people
- ❖ Recommend breaks before major meetings in which key strategic decisions may be made
- ❖ Develop a travel policy for your employees and ensure it includes provision for sleep and recovery days for national or international trips
- ❖ Encourage a sensible work-life balance and healthy lifestyles in staff
- ❖ Act as a role model in terms of sleep management
- ❖ Create flexible ways of working that enable employees to operate at their peak



CALL TO ACTION: REPORT RECOMMENDATIONS

For individuals

- ❖ Ask your colleagues for comprehensive feedback on your performance when tired and encourage a review for the whole team
- ❖ Be mindful of the causes of sleep loss such as the use of electronic devices late at night, sleeping in a room that is too light, caffeine consumption and eating or drinking heavily in the evening
- ❖ Take exercise (although not just before sleep) and practise relaxation techniques such as meditation
- ❖ Think about your sleep needs when arranging travel, training sessions and especially when planning the performance of more complex cognitive and interpersonal tasks

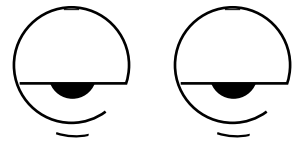
the study as a “call to action” for not only people working in human resources but all individuals in a position to implement organisational change, with an emphasis on line managers. “The data within this report highlights the many ways that sleep loss affects work performance, physical health and the emotional life of business people,” she wrote in the study.

“The high levels of responses that agree with the breadth of measures of poor health and performance is worrying. This report... provides an opportunity for individuals, those responsible for developing others and organisations to understand the ways that sleep loss affects employees, and begin to address them to enhance individual and organisational longevity and success.”

The million-dollar question, of course, is how can this be done?

For decades, corporations and government departments around the world have experimented with methods aimed at producing better-rested and, presumably, more productive employees – from company nap rooms to more flexible work hours. More recently, technology companies have come to the party. For example, Apple’s Night Shift feature adjusts the colour temperature of the display on your mobile device in the evening on the premise that exposure to bright blue light can affect your circadian rhythms and make it harder to fall asleep. Likewise, electronic readers, or e-readers, are promoted as more conducive to sleep than using a laptop just before bed.

However, the Hult report indicates that we need to take a more macro view of the corporate culture of sleeplessness, so celebrated in our go-go-go world. “A lack of quality sleep is far more serious than many managers and HR professionals appear to believe,” the researchers stress. “As well as increasing performance, organisations have a duty of care towards all employees, including their health and safety in the workplace... The most important actions that can be taken are to raise awareness, communicate the challenges of sleep deprivation and bring discussions on sleep into the open. Policies and working practices may need to be changed to integrate sleep into the organisational resilience and wellbeing agenda.” †



RARING TO GO?

Percentage of managers/professionals who agreed a lack of sleep hindered their performance by:

Increasing the time taken to complete tasks

68%

Making it challenging to generate new ideas

60%

Fuelling frustration when projects did not go to plan

71%

Making it hard to stay focused in meetings

69%

Making it hard to stay focused on daily objectives

66%

Finding it harder to work with challenging colleagues

65%



The sky's no limit

Teenage girls are building Africa's first private satellite. Yes, really. Flashes investigates how space science is being used to welcome more young women into technical careers...

When a new satellite is launched from the Californian desert later this year, there will be a group of schoolgirls in South Africa with more than a passing interest.

They may be in their teens, with not one science degree among them – yet – but these aspiring space engineers are already fulfilling their dreams, building what will be Africa's first private satellite. As the device orbits more than 300km above earth, the students will use the data and images it collects for five experiments of their own creation. Examples include developing an early-warning system for bush fires or monitoring signs of climate change.

If it sounds like an ambitious project, it is. And it is about to become a lot more so, as the Meta Economic Development Organisation (MEDO), the South African group behind the scheme, intends to roll it out across the continent in a bid to encourage more girls to consider a career in the STEM fields – science, technology, engineering and mathematics.

Judi Sandrock is a chemical engineer and co-founder of MEDO, which has run economic development programmes for private-sector sponsors since 2008. A few years ago, the company started to realise there was a huge disparity between the number of vacant technical positions and the graduates capable of filling them. “Jobs were being created, but we didn’t have the applicants for the jobs,” Sandrock explains. “We realised that it was actually a global challenge, a global gap, and there was even more of a gap in terms of women in STEM.” Sandrock says that while 80 per cent of jobs were predicted to require STEM-related knowledge by 2020, fewer than 10 per cent of young women were interested in studying these subjects in further education.

Her views are supported by numerous international studies. For instance, statistics published in 2013 by the National Girls Collaborative Project in the United States, partly funded by government agency the National Science Foundation, showed females comprised fewer than 20 per cent of students awarded bachelor's degrees in engineering, computer sciences and physics. And although women made up 47 per cent of the workforce, they held just 27 per cent





Top: The ground station close-up
Right: Building an early satellite model



> of science and engineering positions. Historically, institutional and cultural sexism prevented all but a handful of brilliant women from excelling as scientists – Nobel Prize-winning physicist Marie Curie for one – but this is wearing a bit thin in 2016. While entrenched discrimination is still a factor, of equal concern is that young girls are not being encouraged to apply themselves at maths and science from a young age and that there are few female role models.

MEDO decided the best approach to this dilemma was to find a project that was already working and adapt it. After benchmarking programmes from around the world, the organisation decided the best it had come across was a ‘women in STEM’ programme run by Morehead State University in Kentucky since 2009, giving female students hands-on experience building payloads (subsystems responsible for the main functions) for small-format satellites.

“Certainly, not all the young women who have gone through that programme ended

up being space engineers, but a lot of them have taken up medicine, or become actuaries or entered the technical field in some way,” Sandrock says.

“Some of them combined their creativity with their technical side to become game designers, or to work in architecture or some other form of design.”

The MEDO Space Programme began in June 2015, in collaboration with Morehead and with funding from private sponsors including some major multinationals.

The company’s satellite is scheduled to be launched along with 35 other small-format satellites in late 2016.

While many people visualise a satellite as being about the size of a bus, Sandrock explains that advances in technology means it is now possible to launch into space with an

TAKING OFF: THE MEDO SPACE PROGRAMME AT A GLANCE

- A project to give young South African women hands-on experience of satellite technology
- MEDO has bought a small-format satellite and its launch is scheduled for late 2016. It has paired up with Morehead State University in the US to plan further launches up to 2020 (Morehead has run a satellite programme since 2009)
- Participants are 16 to 18-year-old high school students from under-resourced communities in and around Cape Town
- Participants study STEM subjects (science, technology, engineering and mathematics) in their own time using internet-based learning materials
- Funding is provided through corporate sponsorship and grants; the programme costs an estimated \$265,000 per year per city

The next steps

- The programme will be showcased at the World Economic Forum for Africa in Kigali, Rwanda, this month
- It will be expanded to other cities and towns in Africa as sponsorship becomes available, reaching roughly 500 students per year per region through introductory workshops. For details, visit <https://medo.site>



object that is little larger than a Rubik's cube. MEDO Sat1 is just one litre in volume but is expected to be able to take five payloads – in other words, it can perform five experiments.

Determining what those experiments will be, and the practical steps to implement them, is the task of the budding scientists selected for the programme.

The project works on a number of levels, including 'space prep', one-day workshops to introduce students to the concept of small satellites and the electronics involved; and 'space trek', a one-week boot camp during which participants use weather balloons to test payloads. The final stage is the satellite build and launch, when the students will work with university graduates to build the payloads they have designed before the satellite is shipped to the US for launch.

About 150 students are currently involved, drawn from schools in poor areas of South Africa's Western Cape. Their schools often do not have laboratories or other standard science facilities, and the students may be the first in their families to pursue a higher education.

Sandrock said the participants are highly self-motivated and she urged local governments to support them by providing free internet access. "They are going to the local library, using the free internet, downloading lessons and learning through YouTube videos and all kinds of electronic education media," she says. "They are taking responsibility for their own education."

Participant Nwabisa Sitole, 17, who plans to become an electrical engineer, said the project had been a huge inspiration. "I



never imagined a girl from a township doing these big and amazing things, learning from world-renowned astronomers," she says.

Fellow learner Bhanekazi Tandwa, also 17, enjoyed seeing how scientific theory could be put into practice. "Every day you get to explore something new, create something new with your own hands, create magic with your own hands," she explains.

When MEDO Sat1 launches this winter, it will hopefully encourage many more young African students to become involved. The plan is to launch satellites every year for a decade, as well as expanding the scope to include as many African cities as possible. MEDO estimates that its workshops could reach more than 500 young women per region per year, potentially igniting the careers of thousands. When it comes to women and science, reaching for the stars does not seem so elusive after all. ♪

Clockwise: MEDO's Judi Sandrock; on deck; the group visits CPUT SpaceLab



SMASHING SUPERBUGS ONE CELL AT A TIME

A medical breakthrough may yield cures for fatal infections

Scientists have made a major advance in the fight against one of the scariest health crises of our times.

‘Superbug’ is the colloquial term for mutant bacteria that can resist antibiotics and with more than 100 strains now immune to all known drugs, doctors’ ability to tackle onerous infections is now under threat.

A MODERN MENACE

The overprescription of antibiotics and, in some countries, their sale over pharmacy counters is partly to blame for the crisis, as is the growth of international travel.

Viruses such as flu, sore throats and the common cold should not be treated with antibiotics, yet doctors say more must be done to get this through to the public.

Highlighting the scale of the problem, the World Health Organization says: “Without urgent, coordinated action, the world is heading towards a post-antibiotic era in which common infections and minor injuries that have been treatable for decades can once again kill.”

POOLED EXPERTISE

Researchers from Singapore’s Nanyang Technological University (NTU) have made a major breakthrough in the battle against a number of potentially deadly bacterial diseases.

Their four-year study at NTU’s Singapore Centre on Environmental Life Sciences

Engineering (SCELS) received funding from the city-state’s Ministry of Education and its findings were published in academic journal *Nature Communications* in spring.

Biologists with a variety of specialisms came together to share their expertise.

Researchers were drawn from three disciplines – systems and chemical biology and microbiology ecology, and this multidisciplinary approach was a significant factor in their success, says assistant professor Yang Liang, who led the 10-strong team.

Professor Michael Givskov is a world-leading scientist in the field of biofilm research and bacterial cell-to-cell communication at SCELS.

Another member of the group, associate professor Newman Sze Siu Kwan of NTU’s School of Biological Sciences, is an expert in the study of proteomics (relating to protein), whose expertise was key to discovering the chemical signals that bacterial cells in the biofilm use to communicate with each other.

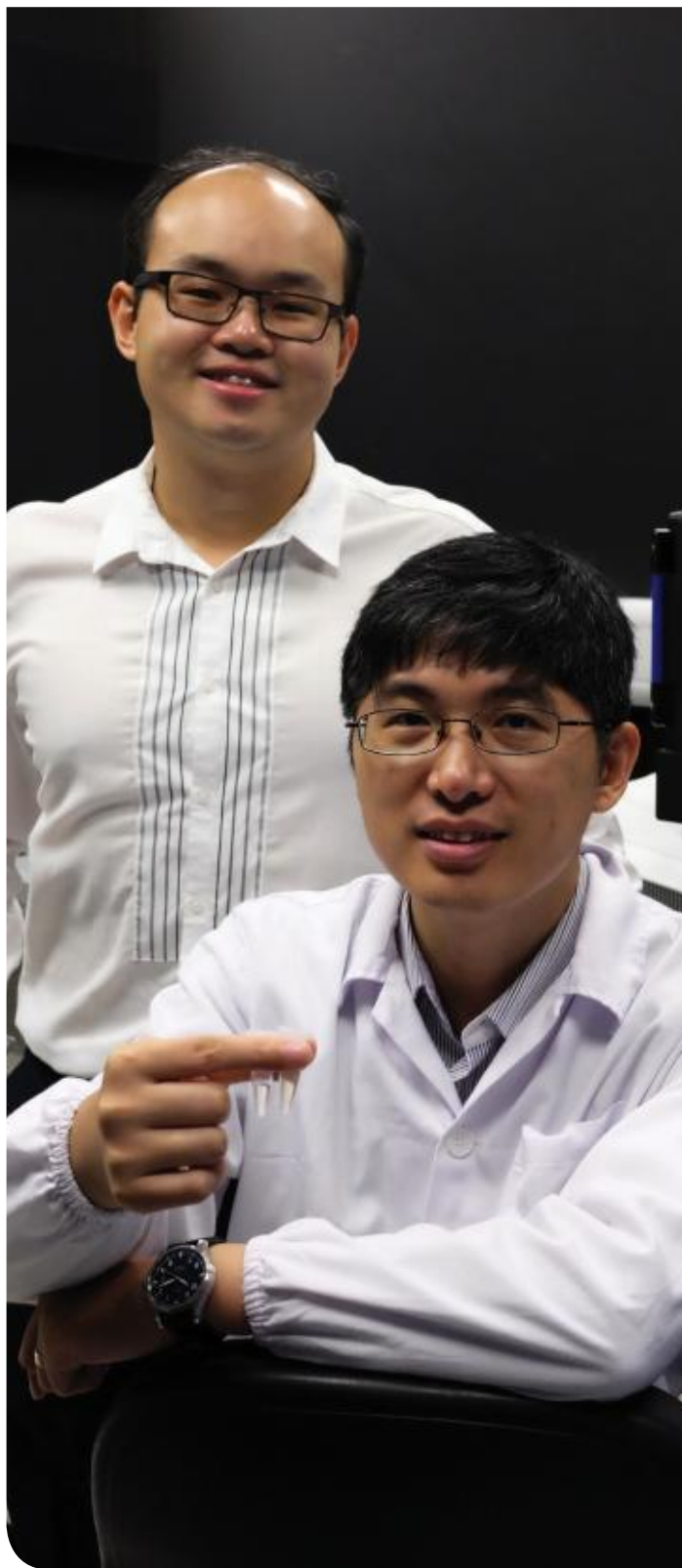
METHODOLOGY

The common bacterium *P. aeruginosa* was used in the experiments.

One of a number of ‘multi-drug-resistant pathogens’ (MDRs), it is widely studied due to its ubiquity and its associations with life-threatening conditions such as sepsis and pneumonia.

Furthermore, the bacterium has developed a sophisticated mechanism that enables it to tolerate antibiotics.





PENETRATING THE SHIELD

Bacteria develop antibiotic resistance in one of two ways – either by acquiring antibiotic-resistant genes or by forming biofilms.

According to the Center for Biofilm Engineering at Montana State University, United States, biofilms form in wet environments as bacteria stick to surfaces and begin to secrete a slimy adhesive substance, enabling them to attach themselves to all manner of surfaces, including human tissue.

This layer forms a protective barrier around bacterial communities, impenetrable to medicines and enabling cells to build up their tolerance to the drugs.

It was only in the 1970s that scientists started to acknowledge the amount of bacteria in existence that had taken this form.

For many years, studies focused on biofilm in external environments, such as swimming pools, and research on its effects inside the human body has only gained traction within the past decade.

DIRTY DEVICES

Patients often contract *P. aeruginosa* in hospital through devices such as catheters and heart valves that have come into contact with the virus.

In order to emulate these people's experiences, surgical implants coated with *P. aeruginosa* biofilms were inserted into the abdomens of mice.

Bacteria were allowed to form a wall of biofilm, then the antibiotic colistin was introduced. First used in the 1950s, this medicine had fallen out of favour with medics but is now attracting attention once more.

The colistin killed most of the bacterial cells, yet those that survived managed to reproduce rapidly.

In order to inhibit this growth it was necessary to disrupt bonds between the cells. The scientists achieved this by adding the drug erythromycin into the mix.

Erythromycin is also an antibiotic, approved by the United States' Food and Drug Administration for the treatment of various conditions including diphtheria, pertussis ('whooping cough') and acute pelvic inflammatory disease (PID), which can cause infertility.

It works in a different way than colistin, however. Rather than kill the cells outright, it hinders their ability to communicate with one another.

Used together, the drugs proved to be a winning combination, wiping out all the remaining bacteria.

Left: Dr Chua Song Lin and Nanyang Technological University Assistant Professor Yang Liang

THESE ONCE-CURABLE ILLNESSES ARE COMING BACK WITH A VENGEANCE

TUBERCULOSIS

In 2013, the World Health Organization recorded an estimated 480,000 new cases of multi-drug-resistant tuberculosis (MDR-TB). Globally, 3.5 per cent of new TB cases and 20.5 per cent of previously treated TB cases are estimated to have MDR-TB, with extensively drug-resistant TB (XDR-TB, defined as MDR-TB plus resistance to any fluoroquinolone and any second-line injectable drug) has been identified in 100 countries across all continents.

CLOSTRIDIUM DIFFICILE

Commonly found in hospitals, this bacterium can cause life-threatening diarrhoea. A 2015 study by America's Center for Disease Control found that *C. difficile* caused almost half a million infections among patients in the United States in just one year, resulting in an estimated 15,000 deaths.

TYPHOID FEVER

This deadly disease affects at least 21.5 million people worldwide. Reduced susceptibility to the fluoroquinolone class of antibiotics has been seen, particularly in South Asia, making vaccination more crucial than ever. Typhoid fever is caused by the bacterium *salmonella typhi* and is mainly transmitted by the consumption of contaminated food and drink.

BLOOD INFECTIONS

Untreatable and hard-to-treat infections from carbapenem-resistant *Enterobacteriaceae* (CRE) bacteria are on the rise. Mainly contracted in hospitals, CRE have become resistant to most if not all known antibiotics in existence. In the United States, a study found that almost half of patients whose blood becomes infected with CRE die from the infection, the country's Center for Disease Control reported in 2013.



Top: Research on biofilm inside the human body has only become commonplace within the past 10 years. **Below:** Antibiotic sensitivity test. *Pseudomonas aeruginosa* bacteria, seen as green, growing on gel in a Petri dish to which various antibiotic drugs have been added

Only the creatures that were treated with the combined antibiotics recovered.

Disrupting cell-to-cell communication eradicates the tolerance of the bacteria and patients are cured more efficiently than they would be by the antibiotics currently in use, said Yang.

HOPE FOR THE FUTURE

Kevin Pethe, associate professor of infectious disease at NTU's Lee Kong Chian School of Medicine, says the discovery may yield new treatments for chronic and persistent bacterial infections.

"Being able to disable biofilms and its protective benefits for the bacteria is a big step towards tackling the growing concern of antibiotic resistance," he says.

"While the scientific community is developing new types of antibiotics and antimicrobial treatments, this discovery may help to buy time by improving the effectiveness of older drugs."

Yang adds: "What we hope to do is to develop new compounds that

are able to better target biofilms.

"This will help existing drugs perform better at overcoming biofilm infections, which is commonly seen in cases of patients with artificial implants and chronic wounds as they have very limited treatment options that are effective." †



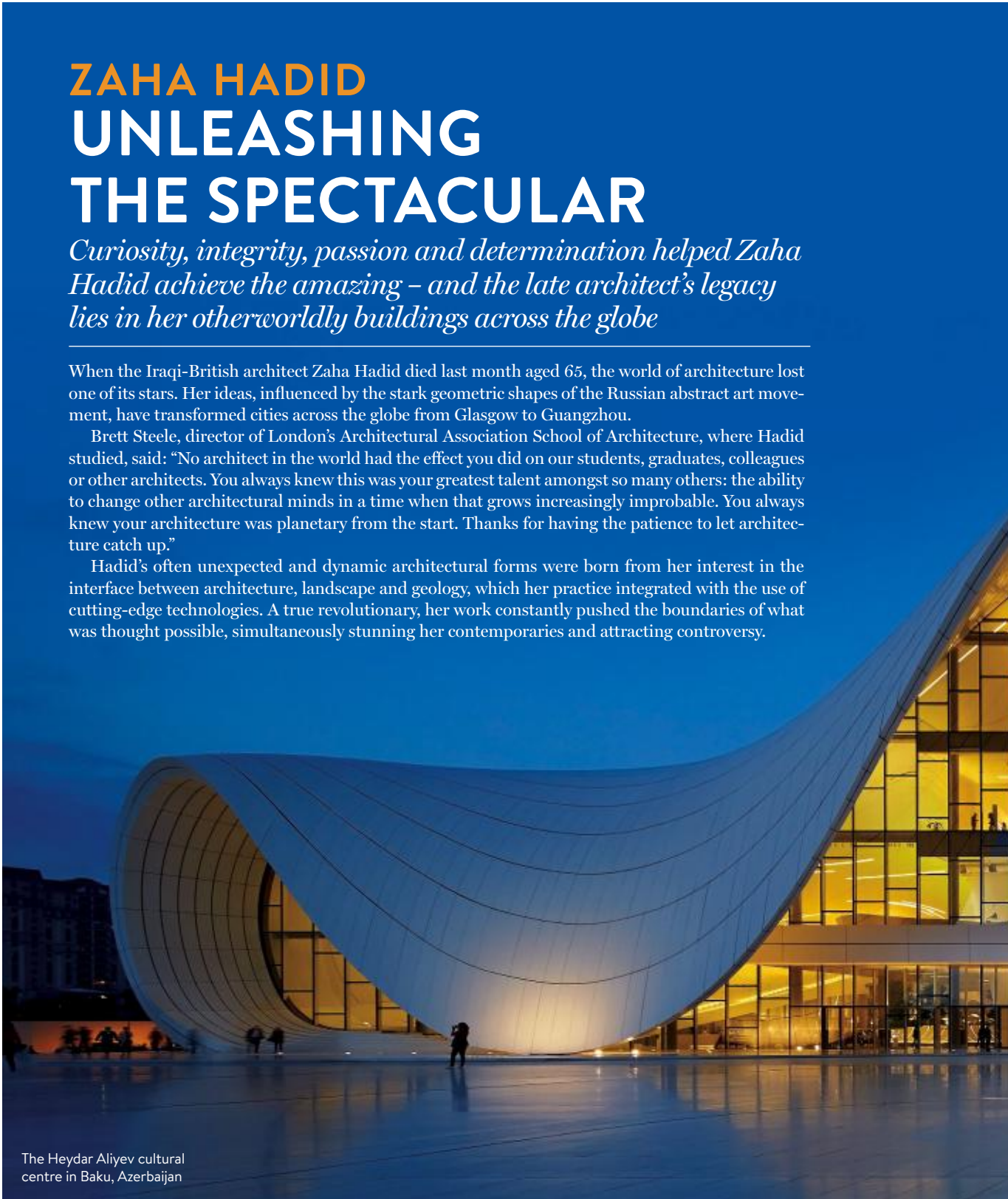
ZAHA HADID UNLEASHING THE SPECTACULAR

Curiosity, integrity, passion and determination helped Zaha Hadid achieve the amazing – and the late architect's legacy lies in her otherworldly buildings across the globe

When the Iraqi-British architect Zaha Hadid died last month aged 65, the world of architecture lost one of its stars. Her ideas, influenced by the stark geometric shapes of the Russian abstract art movement, have transformed cities across the globe from Glasgow to Guangzhou.

Brett Steele, director of London's Architectural Association School of Architecture, where Hadid studied, said: "No architect in the world had the effect you did on our students, graduates, colleagues or other architects. You always knew this was your greatest talent amongst so many others: the ability to change other architectural minds in a time when that grows increasingly improbable. You always knew your architecture was planetary from the start. Thanks for having the patience to let architecture catch up."

Hadid's often unexpected and dynamic architectural forms were born from her interest in the interface between architecture, landscape and geology, which her practice integrated with the use of cutting-edge technologies. A true revolutionary, her work constantly pushed the boundaries of what was thought possible, simultaneously stunning her contemporaries and attracting controversy.



The Heydar Aliyev cultural centre in Baku, Azerbaijan

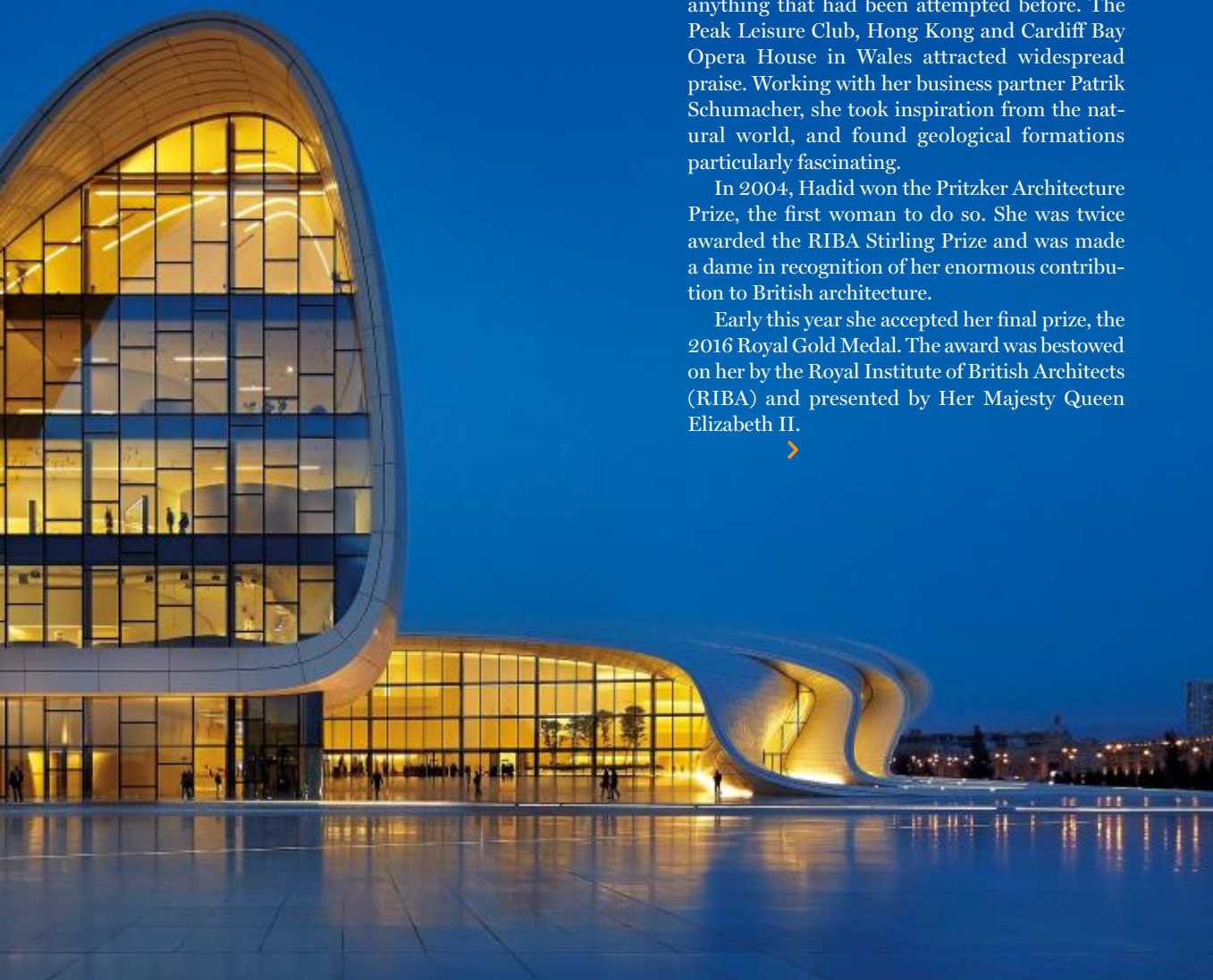
A JOURNEY OF DISCOVERY

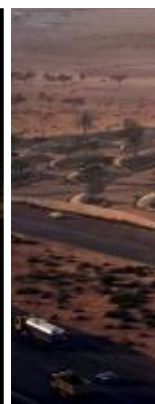
Hadid was born in Baghdad in 1950, the daughter of the industrialist and politician Muhammad al-Hajj Husayn Hadid. Determined from a young age to become an architect, she would later credit her parents with helping her to develop her forthright personality and independent spirit. After attending boarding schools in Britain and Switzerland, she took a degree in mathematics at the American University of Beirut, later saying she had been inspired to do so by the Arab world's great mathematicians. In 1972, she moved to England to study architecture and founded her firm, Zaha Hadid Architects, in 1979.

From the outset, Hadid's designs were unlike anything that had been attempted before. The Peak Leisure Club, Hong Kong and Cardiff Bay Opera House in Wales attracted widespread praise. Working with her business partner Patrik Schumacher, she took inspiration from the natural world, and found geological formations particularly fascinating.

In 2004, Hadid won the Pritzker Architecture Prize, the first woman to do so. She was twice awarded the RIBA Stirling Prize and was made a dame in recognition of her enormous contribution to British architecture.

Early this year she accepted her final prize, the 2016 Royal Gold Medal. The award was bestowed on her by the Royal Institute of British Architects (RIBA) and presented by Her Majesty Queen Elizabeth II.





➤ On receiving it, Hadid said: “I am very proud to be awarded the Royal Gold Medal, in particular, to be the first woman to receive the honour in her own right.

“We now see more established female architects all the time. That doesn’t mean it’s easy. Sometimes the challenges are immense. There has been tremendous change over recent years and we will continue this progress.”

She added: “Part of architecture’s job is to make people feel good in the spaces where we live, go to school or where we work – so we must be committed to raising standards.

“For me, there was never any doubt that architecture must contribute to society’s progress and, ultimately, to our individual and collective wellbeing. It performs and facilitates everyday life.”



HOMELAND PRIDE

While signing an agreement in 2012 to build the Central Bank of Iraq, she said: “I was born in Iraq and I still feel very close to it. I feel very privileged to be working in Iraq on a design of such national importance.”

Despite her clear admiration for her Middle Eastern roots, Hadid said she found it hard to articulate her ideas while speaking in her mother tongue of Arabic as she could not find the appropriate terminology.

While proud of her Iraqi origins, she grew to consider herself to be a Londoner, finding the city gave her greater freedom in which to practise her profession.

British architect Lord Norman Foster, a close friend of Zaha’s, paid a moving tribute to her upon learning of her death. He said: “I became very close to her as a friend and colleague in parallel with my deep respect for her as an architect of immense stature and global significance. She was one of the very few architects as friends who was invited to my

80th birthday party in London last year.

“By a strange coincidence, some days ago I received an email from one of her clients – someone she had designed a home for. With great pride, he sent me about 20 pairs of images.

“Each pair showed the visualisation that Zaha presented and the reality as finally built. It was a beautiful juxtaposition of what Zaha promised and what she delivered.” He added: “I think it was Zaha’s triumph to go beyond the beautiful graphic visions of her sculptural approach to architecture into reality that so upset some of her critics.

“She was an individual of great courage, conviction and tenacity. It is rare to find these qualities tied to a free creative spirit. That is why her loss is so profound and her example so inspirational.”

IMPRINT IN THE DESERT

Zaha Hadid also left her mark on the United Arab Emirates, with Abu Dhabi’s landmark 843-metre Sheikh Zayed Bridge, completed in 2010, among her most iconic structures.

Top: Abu Dhabi’s landmark 843m Sheikh Zayed Bridge, completed in 2010

Above: Hadid was one of a kind



Left: Zaha Hadid's sweeping design for Bee'ah's headquarters rises from the desert
Below: Guangzhou Opera House in China is one of her most highly regarded buildings

Others include the performing arts centre on the capital's Saadiyat Island, the Opus mixed-use tower in Business Bay, Dubai, and the new headquarters of Sharjah waste processing firm Bee'ah.

A representative of the firm said it had been working with Zaha Hadid Architects since 2013 and felt "privileged to have had her direct input and know-how informing the direction and design".

The employee said: "As the largest fully integrated environmental waste management company in the Arabian Gulf region, the design and functionality of the 8,500sq m building and 90,000sq m site needed to reflect the natural environment of the UAE.

"To this end, Hadid's design of intersecting sand dunes is both iconic and relevant to Bee'ah's environmental principles."

He added: "Its innovative design, inspired by sand formations created by the wind movement and direction, addresses advanced environmental solutions in terms of structure, work environment and visitor-staff interactivity.

"Fully powered by renewable energy, the building will be an icon for sustainability in the UAE."

Hadid's desire for the building to be integrated into the natural world led to innovations for orientating the intersecting sand dunes design so as to optimise the prevailing shamal winds, for natural ventilation.

Karishma Asarpota, an urban planner with Ras Al Khaimah Municipality and founder of sustainable architecture blog *The Tryptic Note*, said: "Zaha Hadid's life story is inspiring for budding architects and designers who dream of making an impact through their work.

"Her impressive portfolio of works encompasses buildings, products and interior design. "The dominance of her work in the arena of iconic structures is undeniable. Even Abu Dhabi, Dubai and Sharjah have projects in the pipeline she designed.



"Her work captures her design philosophy and will leave a long-lasting impression in the architecture world. Undoubtedly, the design world will definitely feel the loss of this visionary architect."

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THE BIRTH OF BOOKS

*We trace the medium's
evolution from ancient
times to the modern day*

When you hold a book in your hands, the innocuous object doesn't seem to be a highly evolved piece of technology – over 2,000 years in the making – and yet that's exactly what it is. Although the medium seems almost anachronistic in these increasingly digital days, it shows no sign of becoming redundant. It's actually more popular than ever; more books are being written and produced every year and literary festivals attract ever-growing numbers of visitors, all of them hungry for quality reads. The world wants to read more and while the media is increasingly occupied with questioning the future of the book, it's worth investigating its origins.

The story begins with the development of writing, followed by the invention of paper and, many centuries later, that of the printing press. Desktop publishing software and, latterly, the rise of e-books have made literature yet more accessible. Our reading habits have changed drastically over the centuries and some of the practices of our ancestors may seem strange, even alien to us.



ANCIENT ORIGINS

The story of the book began thousands of years ago in the Middle East. First came clay tablets in Mesopotamia, part of present-day Iraq, which were often held in the Assyrian kings' library and used as trading agreements. Then came papyrus in ancient Egypt. The marrow of this reed-like plant was used to make scrolls of up to 10m in length. The ancient library of Alexandria was stocked with papyrus scrolls and books, and codices were used – early handmade books constructed out of sheets of paper, papyrus or even wood. Founded by the Egyptian scientist and mathematician Ptolemy in the third century, the library was said to have amassed an estimated 400,000 manuscripts and was considered the world's leading intellectual metropolis.

The Chinese invented paper almost 2,000 years ago, but before that they wrote on silk and even made books out of bamboo.

In ancient South America, the Mayans and Aztecs produced codices, one of which was recovered in Spain in the 1860s. *The Madrid Codex* is one of the few surviving books from the Mayan culture, which was wiped out in the 16th century in the Spanish conquest. It's written in Yucatecan, a mixture of Mayan languages, and is very beautiful – a work of art in itself.

Parchment scrolls gave way to codices – small pages were more practical and 1,500 years later, the book still uses this format. By medieval times, travel was

beginning to open up and books were used to spread religion. Clerics painstakingly copied each one out with ink – a long and tedious task! One of the best examples of this process is when The Prophet Mohammed (Peace Be Upon Him) had duplicates of the Qur'an produced to maintain accuracy and consistency before they were sent out to each caliphate.

Medieval Europe lagged behind when it came to books; literacy was exclusively for religious orders. There was a strong culture of storytelling – myths and history were transmitted orally through songs and poems by bards who were illiterate themselves. Often hugely derivative and transparently ingratiating, or surprisingly critical of bad rulers, this oral history was used to cement bloodlines and celebrate the deeds of the ruler. Words had a purpose in society – and it was to maintain stability in turbulent times – but they weren't written down yet. Only works considered holy were rendered on paper.

One of the earliest known examples is *The Book of Kells*. Thought to be about 1,200 years old and displayed at Trinity College Dublin, this beautiful manuscript is a masterpiece of Western calligraphy and Celtic design. Made from sheep skin and inlaid with gold, it was written in Latin by clerics. However, it was not intended to be read, or indeed to be seen by the general public – something a 21st century reader might find surprising – but to glorify the spiritual.

A book was a status symbol, a signifier of wealth. Not only did its rarity render the contents exclusive, but it took an age to create and the cost was huge. Incunabula, as books made before the 15th century are called, are rare and hugely valuable. Lapis lazuli from Afghanistan was used to make blue ink – as you can imagine, this was a hugely expensive undertaking.

Top to bottom: Clay tablets in Mesopotamia; papyrus marrow, once used to make books; the Madrid Codex, one of the few surviving books from Mayan culture; the Book of Kells, believed to be about 1,200 years old



THE RISE OF THE MACHINES

The invention of the printing press by Johannes Gutenberg in 1440 changed everything. Gone were the days when a book took months or even years to create, carefully handmade by scholars by candlelight from pricey materials. Mass production meant that thousands of pages could be printed in a single day and for far less money.

Not only did the printing press make it easier and cheaper for religious works to be distributed, but multiple copies meant there was a far lower risk of precious writing being destroyed. For example, William Shakespeare's plays would have been lost forever if they had not been recorded for posterity in *The First Folio*, a collection of his plays released in 1623.

PULP FICTION

Japanese noblewoman Murasaki Shikibu is credited with writing the first modern novel in the 11th century. Called *The Tale of Genji*, the tale, about the dalliances of an emperor's son, was written on small rolls of paper called handscrolls and sadly ends mid-sentence.

While most books had previously been about history or religion, works of fiction slowly became more popular, and by the 17th century the novel was on the rise. The 1830s saw the explosion of the format when

Charles Dickens became the first celebrity novelist. Dickens' work was originally published chapter by chapter in literary magazines. Each week, his readers were left with a dramatic cliffhanger, and after the final instalment had been published, the entries were collated into a novel. Dickens, who had spent time in a workhouse as a child, was hungry for societal change and his writing had a major influence on public opinion towards poverty.

In the 21st century, novels are more popular than ever, with the United Kingdom producing about 184,000 new titles a year (more per capita than any other country) and literary festivals popping up worldwide. Events such as London Book Festival attract novelists, writers and journalists from near and far, and Mohammed Bin Rashid Foundation's Qindeel division is one of a number of publishing houses to have opened across the Gulf. However, the medium changed once again with the advent of the e-book. New self-publishing technology gives a platform to any aspiring writer, making the rarefied world of literature more accessible, but as detractors say, perhaps without a quality filter. While media doomsayers herald the end of the book, editors have embraced the brave new world of digital – and an abundance of books is no bad thing. ♪

Top-bottom left: Books are changing with the advent of the e-book; Charles Dickens became the first celebrity novelist; William Shakespeare's plays would have been lost forever if they had not been recorded for posterity in *The First Folio*; *The Tale of Genji* was written on a portable roll of paper; Johannes Gutenberg changed everything when he invented the printing press in 1440



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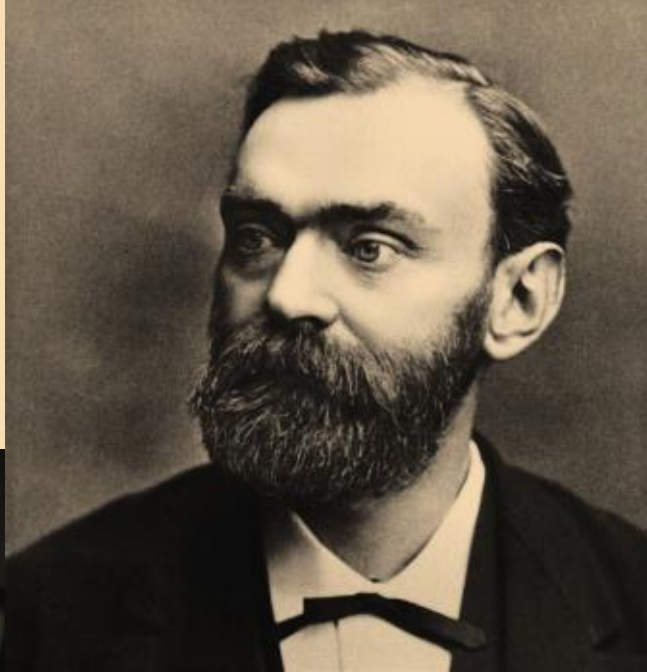


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