

FLASHES

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

FEBRUARY 2016
ISSUE 16

Innovation Roadmap

—

2015 Year of Innovation

—

30 National Initiatives

—

Focus on: Renewable energy, Transport, Education, Health, Technology, Water, Space

Mohammed Bin Rashid Al Maktoum Global Initiatives

28 Organisations
116 Countries
1,400 Programs
Educating 20 million children
Treating 30 million people
AED2 billion Investments

United Arab Emirates Mars Mission

Enter Mars' Orbit in 2021

Dubai Smart City

100 Initiatives

—

100 Govt. Services will go smart in the next three years

Arabic Language Award

Patron of the Arts Award

Mohammed Bin Rashid Centre for Government Innovation

Al-Azhar Restoration of Rare Documents

Mohammed Bin Rashid Award for Young Business Leaders

Mohammed Bin Rashid Al Maktoum Solar Park

—

Green Economy for Sustainable Development

Decade of Vision

HH Sheikh Mohammed's exceptional achievements in the last 10 years

Arab Social Media Influencers Summit

—

Positive use of Social Media

Mohammed bin Rashid Al Maktoum Foundation

Mohammed bin Rashid Knowledge Award

Knowledge-based Societies, Education, Entrepreneurship, and Research and Development

Drones for Good

World Drone Prix

Dubai Expo 2020

Connecting Minds, Creating the Future

Museum of the Future

- An incubator for ideas
- A driver for innovation
- Destination for inventors and entrepreneurs

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FOREWORD

Dear Readers,

It has been an era-defining decade for Dubai under the stellar leadership of His Highness Sheikh Mohammed bin Rashid Al Maktoum. *Flashes* has highlighted some of the groundbreaking initiatives that have been undertaken during his rule. In addition, HH Sheikh Mohammed had an extremely productive meeting with Microsoft head Satya Nadella. In another interesting development, HH Sheikh Mohammed was declared the most popular leader of the GCC region on Facebook. It is no surprise that Dubai is growing from strength to strength under his leadership.

Arab contributions to the world of arts and letters are growing, and *Flashes* is delighted to give readers an insight into some of these victories: *Theeb* is the first Jordanian film to be nominated for an Oscar for its authentic portrayal of Bedouin culture; Palestinian intellectual Elias Sanbar has been awarded the UNESCO-Sharjah Prize. Closer home, we look at some of the strides the UAE is making in the life sciences sector by interviewing Mr Marwan Abdulaziz of Dubai Science Park.

The MBRF initiated a rather innovative and interactive tool to promote reading – the Knowledge Chair merges the bookshelf and the chair to promote reading in public places. Since 2016 has been designated the year of reading (#2016YearofReading), we have also launched the Dubai Digital Library. In keeping with the theme of knowledge, our Explore section highlights how other nations have promoted the habit of reading.

All in all, we, at *Flashes*, intend to make this a publication that celebrates knowledge and intellect in all its forms, locally and internationally. We have introduced a new section titled Canvas (to focus on the arts) and Media Moments (to focus on the media). In the coming months, we'll also be throwing light on literary voices from the Arab world and the globe. We thank you for your continued support of our magazine.

Jamal Bin Huwareb
MD of the Mohammed Bin Rashid
Al Maktoum Foundation

A DAZZLING DECADE

Ten years of visionary leadership have seen the UAE take quantum leaps in the fields of education and research. We look at some of the highlights of HH Sheikh Mohamed's era-defining policies.

THE MOHAMMAD BIN RASHID AL MAKTOUM GLOBAL INITIATIVES

Merging the values of several organisation, the key focus areas of the Mohammad Bin Rashid Al Maktoum Global Initiatives are: spreading knowledge, combating poverty, empowering communities and innovation for the future. The new foundation will combine the work of 28 organisations fighting poverty and illness; spreading knowledge and culture; empowering the community and driving innovation. It will work within 116 countries using 1,400 human development programmes, focusing mainly on the Arab region. Two billion dirhams will be invested in medical research centres and hospitals in the region.

INNOVATION ROADMAP

HH Sheikh Mohammed launched the National Innovation Strategy to make the UAE one of the world's most innovative nations in seven years: renewable energy, transport, education, health, technology, water and space. The first phase includes 30 national initiatives to be completed within three years including new legislation, innovation incubators, investment in specialised skills, private-sector incentives, international research partnerships, and an innovation drive within government. In keeping with this strategy 2015 was marked as the Year of Innovation.

THE UAE MARS MISSION

Looking forward to commemorating the 50th anniversary of the nation's independence, the UAE Space Agency's Mars Mission called Al Amal, or Hope, plans to enter Mars' orbit in 2021. It will be the first space exploration mission by an Arab state. The teams are working with scientists

and academics at the University of Colorado. Workshops and interactive exhibitions will target families and schools to promote future astronauts and space engineers.

DUBAI SMART CITY

To transform Dubai into a 'Smart City', 100 initiatives will bolster six key pillars: transport, communications, infrastructure, electricity, economic services, urban planning. Under the strategy, 1000 government services will go smart in the next three years.

MOHAMMED BIN RASHID SMART LEARNING PROGRAMME (MBRSLP)

208 schools, 5,295 teachers and 34,513 students in 1,735 equipped classrooms comprise the Smart Learning Programme, to coincide with UAE Vision 2021 to become a knowledge-based economy through the integration of technology in education. The MBRSLP will shape a new learning environment and culture in federal schools through the launch of "smart classes" that will provide every student with an electronic tablet and access to high-speed 4G networks by 2019.

AL JALILA FOUNDATION

Al Jalila Foundation, a global philanthropic organisation dedicated to transforming lives through medical education and research, was founded in April 2013, to position Dubai and the UAE at the forefront of medical innovation. It promotes medical education and research by investing in the UAE's medical treatment capabilities; it gifts scholarships to nurture a homegrown generation of medical professionals and supports cutting-edge inventions that address health issues in the Middle East.







MOHAMMED BIN RASHID SCHOOL OF GOVERNMENT

Launched in 2005, this is the first research and teaching institution focusing on governance and public policy in the Arab world. The school looks to foster good governance in the UAE and the Middle East, and nurture future leaders via education and training programmes, as well as research and studies. The school's operations has a tie-up with the Kennedy School at Harvard University and also collaborates with several government and private institutions both regionally and internationally. The school also hosts international and regional conferences and workshops to encourage a dialogue between the Arab region and the world.

ARABIC LANGUAGE AWARD

The award aims to encourage excellence in the Arabic language and honours its patrons aside from highlighting successful examples in

disseminating and educating the Arabic language. The award includes five branches, in the areas of education, media, Arabisation, technology and preservation and dissemination of the Arab linguistic heritage. The annual prize includes 10 categories and aims to reinforce the status of the UAE and its leading position as a centre of excellence for the Arabic language.

PATRONS OF THE ARTS AWARD

Launched in 2009, the Sheikh Mohammed Bin Rashid Al Maktoum Patrons of the Arts Awards is the first initiative of its kind in the Arab world. It stresses the importance of patronage, whether financial or in-kind, and its role in strengthening the growth of the city's artistic landscape. Recipients are recognised under four categories – Distinguished Patrons of the Arts, Patrons of the Arts, Supporters of the Arts and Friends of the Arts – each distinguished by the amount of money or time donated to arts initiatives.

Museum of
the Future

MOHAMMED BIN RASHID CENTRE FOR GOVERNMENT INNOVATION

Launched in September 2014, the Centre aims to encourage and motivate innovation in the public sector by making available tools essential to develop organisational structures and procedures. It also organises innovation labs in government entities to build capacity for innovation across the national workforce. The Centre is also building a national database for innovative government initiatives and international best practices in this field. The Centre also welcomes delegations from other countries, thus promoting UAE's status as a leading destination of innovation in this area.

MUSEUM OF THE FUTURE

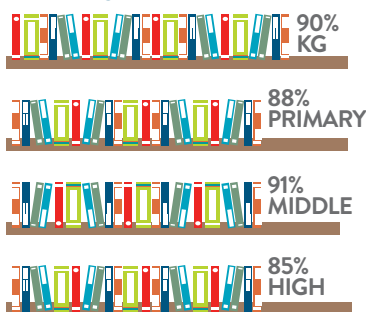
The Museum of the Future is an incubator for ideas, a driver for innovation, and a destination for inventors and entrepreneurs from around the world. In addition to becoming a major tourist destination, the Museum will offer advanced courses and specialised workshops, as well as public talks and events. It is intended to offer a platform to demonstrate and test the latest inventions and prototypes from start-ups and the world's technology giants. The building, costing 500 million dirhams, will be built in part using 3D printing technologies, and will change over time to test and reflect the latest advancements in various fields.

AL-AZHAR RESTORATION OF RARE DOCUMENTS

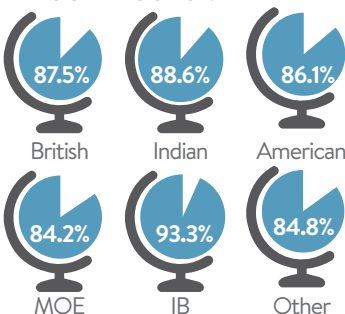
This project aims to preserve the rare scripts contained in Al-Azhar University, Cairo, one of the Arab world's oldest and most prominent universities. To protect the scientific and historical heritage contained therein, and to enable these treasures to become accessible on the internet to users and scholars the world over, the entire sum of the project's budget, amounting to \$5 million, was generously provided by HH Sheikh Mohammed. HH Sheikh Mohammed has always stressed the necessity of using technology to implement the cultural, intellectual, social, and economic development of the Arab world. ↑

Illustration: Tarak Parekh

BY PHASE

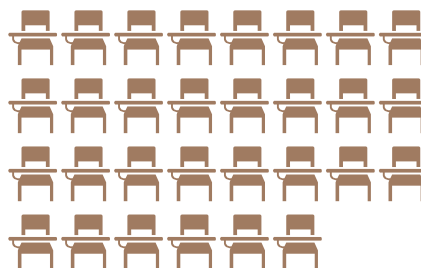


BY CURRICULUM

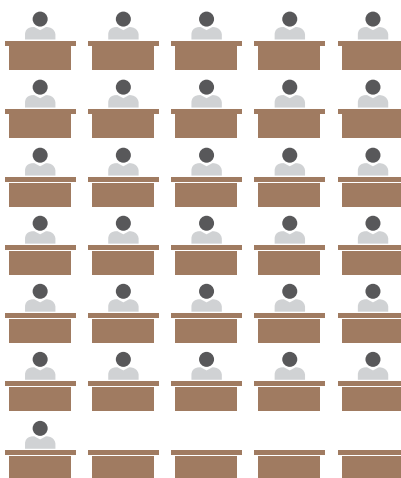


HOW FULL ARE SCHOOLS IN THE UAE?

CAPACITY OF SCHOOLS

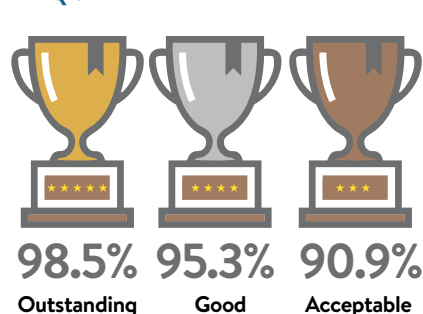


292,301 Total number of seats available in schools



87% Capacity Utilisation Rate – percentage of seats with students

BY QUALITY



PROFIT VS. NON-PROFIT

For profit schools

86.2%

Not for profit schools

93.5%

Source: KHDA

A clever collaboration

HH Sheikh Mohammed discusses smart government services with Microsoft chief



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His Highness
Sheikh Mohammed
bin Rashid Al
Maktoum and the
CEO of Microsoft
Corporation Satya
Nadella

His Highness Sheikh Mohammed bin Rashid Al Maktoum received the CEO of Microsoft Corporation Satya Nadella on 4 January to discuss the UAE's plans and projects in the field of smart government services. It is an apt meeting of two pioneers – one leader has shaped a young country into a regional superpower, whilst the other heads one of the world's IT giants – because to transform Dubai into a 'Smart City', 100 initiatives have been introduced to bolster the fields of transport, communications, infrastructure, electricity, economic services, and urban planning. Under the strategy, 1000 government services will go smart in the next three years.

During the meeting, HH Sheikh Mohammed lauded Microsoft for its role in the global information and communication technology sector, while also highlighting the long-standing cooperation between the UAE and major technology developers and providers, including Microsoft. The meeting also discussed the UAE's plans to utilise the latest and most efficient technology solutions

in the government sector to enhance services and improve government performance with the aim of furthering the UAE's growth and progress and achieving national development objectives.

Some of the subjects discussed included UAE's National Innovation Strategy, launched in 2014, and Dubai's innovation strategy, which includes 20 initiatives aimed at further enhancing Dubai's profile as one of the world's most innovative cities. Microsoft CEO Satya Nadella praised the UAE's approach towards development and the leadership's vision to implement the latest technology and communication solutions. Nadella thanked the UAE's leadership for providing a supportive environment for businesses and foreign investments. He said the cooperation between Dubai and Microsoft goes back 15 years to the beginnings of Dubai Internet City, home of Microsoft's regional office. Nadella affirmed Microsoft's keenness to explore new opportunities that will increase cooperation in the coming years. [↑](#)

The Most Popular GCC Leader on Facebook

His Highness Sheikh Mohammed ranks first in the GCC and third in the entire MENA region, with an astounding 3.1 million 'likes'

HH Sheikh Mohammed bin Rashid Al Maktoum is the most popular leader of the Gulf Cooperation Council (GCC) on Facebook – with 3.1 million 'likes' on the social platform, according to a new study. HH Sheikh Mohammed, who joined the social networking site in 2009, also ranks third in the list of the most followed leaders on Facebook from the Middle East and North Africa (MENA), said the study by Burson-Marsteller, a public relations and communications firm.

HH Sheikh Mohammed, who has over 11.4 million followers across a number of social networks, including Twitter, Instagram, LinkedIn and Google+, is a pioneer in using social media platforms in the Arab world, the study said. The study 'World Leaders on Facebook' is the latest research into how world leaders, governments and international organisations communicate via social media.

Over the past eight years, Facebook has emerged as the platform of choice for world leaders and governments to engage with their constituents. According to the study, 169 of the 193 UN member states maintain an official Facebook page.

"Home to a young, increasingly connected and mobile population, the MENA region is progressing into a dynamic and vibrant area. The UAE, in particular, is known for its open business environment, cosmopolitan nature and impressive adoption of smart devices, making it a model country of what is best about the region," said Sunil John, Founder and CEO Burson-Marsteller.

The study found that 87 head of states, 82 head of governments and 51 foreign ministers maintain personal pages on the platform. Additionally, as of 4 January last, the combined accumulated total of 'likes' from world leaders reached 230,489,257 with a published total of 302,456 posts. ↑



3.1 Million

No. of likes HH
Sheikh Mohammed
has on Facebook



A STELLAR YEAR OF REMARKABLE ACHIEVEMENTS

From star-studded conferences to cutting-edge workshops, from wide-reaching collaborations to life-changing initiatives, MBRF was in top form in 2015



MBRF's activities struck a chord at the local, regional and international levels in 2015 with a series of impressive initiatives and projects which established the leading role of the Foundation in the dissemination of knowledge and culture. Here are some of the highlights from the year:

KNOWLEDGE SUMMIT 2015:

Following the spectacular success of the first edition of the Knowledge Summit in 2014, MBRF took the event a notch higher in 2015. With directives from His Highness Sheikh Ahmed bin Mohammed bin Rashid Al Maktoum,

Chairman of the Foundation, to expand the scope of the summit, the Knowledge Summit 2015 was based on the theme, "The Way to Innovation" with a focus on the pillars of education, IT, scientific research and innovation in the media and film industry. Experts from all over the world lent a dazzle to a forum that explored ways to establish the culture of creativity and innovation in Arab societies.

THE SHEIKH MOHAMMED BIN RASHID AL MAKTOUM KNOWLEDGE AWARD

To encourage stakeholders and knowledge workers, and to instill the

concept of creativity and innovation in the transfer and dissemination of knowledge around the world, the Sheikh Mohammed Bin Rashid Al Maktoum Knowledge Award announced three winners during the opening session of the Knowledge Summit 2015. National Geographic Channel won the Award for its impressive dual function of being a television channel and an educational provider all at once. The second winner was Ahmad Alshugairi, notable presenter of the Khawater programme, while the third winner was Hiroshi Ishiguro, globally renowned professor of the Department



Noble Museum Exhibition

of Innovation Systems in the Graduate School of Engineering Science at Osaka University.

RESULTS OF THE FIRST ARAB KNOWLEDGE INDEX

At the summit, the Foundation announced, in collaboration with the United Nations Development Programme (UNDP), the results of the first Arab Knowledge Index, which included the most important outputs and statistics related to each Arabic country based on six main pillars covering the most vital sectors that represent knowledge levels in every country: Pre-university education; University education; Vocational education and training; R&D and innovation;

IT and communication; and Economic sector. The index elucidated the national, historical and cultural characteristics of each Arab country, thus offering a spectrum of ready-to-use information across the Arab world.

THE LAUNCH OF THE KNOWLEDGE FOR ALL PORTAL

The Knowledge Portal initiative, an electronic platform that offers experts, researchers and university students the opportunity to gain access to the Arab Knowledge Index results and other vital information, is yet another success story of the MBRF. It will offer vital scope for researchers to evaluate the needs of the region.

NOBEL MUSEUM EXHIBITION ORGANISED FOR THE FIRST TIME IN THE REGION

In March 2015, MBRF launched the Nobel Museum exhibition in Dubai, which was hosted for the first time in the region under a new theme, "Nobel Prize: Ideas Changing the World". The event threw light on the most prominent winners of the award, as well as inventions and discoveries that have transformed the lives of human beings. It attracted local visitor and luminaries from the field of academics and science.

DUBAI INTERNATIONAL PROGRAMME FOR WRITING

MBRF's Dubai International Programme for Writing achieved significant goals in two categories – Writing and Writer Exchange. A novel workshop led by Lebanese novelist Najwa Barakat concluded with the participation of eight young Emirati writers. The Foundation will eventually publish the books written during the workshop with reputed publishing houses locally and internationally.

The first phase of the programme with Japan, organised in cooperation with Japanese Culture and Arts Foundation, brought to the UAE three writers from Japan. They stayed in the UAE for a month during which they visited the most important historical,



Writer Exchange programme with Japan, organised in cooperation with the Japanese Culture and Arts Foundation.



MBRF Stall at Frankfurt Book Fair 2015



Dubai Statistics Centre

cultural, social and recreational monuments accompanied by three Emirati writers. In the second phase, three Emirati writers visited Japan to learn about the culture and lifestyle of its people. The Emirati and Japanese writers are currently working on books based on their experiences during their stay.

A Writer Exchange with Germany was also organised in collaboration with the Goethe Institute, featuring three writers from Germany.

ONLINE OXFORD ARABIC DICTIONARY

As part of its commitment to promote Arabic in all fields, and to enhance its role in building sustainable economies and communities based on knowledge, MBRF signed a memorandum of understanding with Oxford University Press to put the Oxford Arabic language dictionary on the internet. The dictionary

is available free of charge for students of universities and schools, and government agencies and public libraries. The dictionary includes a detailed guide on the latest vocabulary used in several areas such as computing, business, media, arts, and others.

POETRY NIGHTS PROGRAMME

A series of events was organised as part of Poetry Nights Programme, a new initiative under MBRF's House of Poetry project. It included a Saudi Poetry Night as the first activity under the initiative. A Kuwaiti Poetry Night hosted a group of poets from Kuwait, while other events brought bards from the UAE and the Gulf, attracting huge audiences of poetry lovers.

REGIONAL AND INTERNATIONAL PRESENCE

As part of its efforts to strengthen the

role of knowledge in Arab countries and the world, a series of specialised workshops were held on the Arab Knowledge Index in Jordan, Tunisia and the UAE. MBRF also organised five workshops in collaboration with the United Nations Development Programme in key Arab and international cities, including Amman, Cairo, New York, Paris and London, to discuss the results of the Third Arab Knowledge Report, which was launched during the first Knowledge Conference in 2014.

LOCAL AND INTERNATIONAL PARTICIPATIONS

MBRF participated in the London International Book Fair 2015 and Frankfurt Book Fair 2015. At the local level, MBRF participated in the Abu Dhabi International Book Fair 2015 and the Sharjah International Book Fair 2015.

EXPANSION AND DEVELOPMENT INITIATIVES

The Foundation's My Family Reads initiative attracted institutions such as Dubai Courts, Emirates Post and Dubai Statistics Centre, which offered their employees knowledge packages to benefit all members of their families. MBRF's Book in Minutes also translated into Arabic summaries as many as 75 world renowned books benefiting over 5,000 readers.

BEL-ARABI INITIATIVE LAUNCHES AUDIO BOOK AND SHORT STORY CONTEST

The Bel-Arabi initiative, organised by the Foundation in December each year as part of World Arabic Language Day, entered its third year in 2015. The initiative promoted the use of the Arabic language and vocabulary and contributed to strengthen the position of the language with a series of activities at shopping centres in various emirates. A short story contest was launched for school students and teachers in collaboration with the Ministry of Education. Besides, an audio book was also launched to support the Arab audio content on the internet. ↑



A Very Smart Idea

MBRF launches the Knowledge Chair to complement the Year of Reading 2016

Mohammed Bin Rashid Al Maktoum Foundation (MBRF) has come up with an impressive and innovative concept to complement the 'Year of Reading 2016' initiative and the Arabic Reading Challenge: the Knowledge Chair is a mini-library comprising a bouquet of quality publications on varied topics such as management, innovation, children's stories and novels. However, what has caught the attention of the creative community is the unique design of the The Knowledge Chair itself: it merges bookshelves into a chair to create a mini-library; it also features quotes of HH Sheikh Mohammed Bin Rashed Al Maktoum about the importance of knowledge. By placing these chairs in public areas such as bus stops and customer service centres, it will bring books directly into the daily life of people, thus encouraging them to read more and make the best use of their waiting time.

The Knowledge Chair thus become an extension of education itself, but a mode of knowledge that is not limited to schools and homes – it is literally education and knowledge merging with the public domain. The Knowledge Chair has been designed and manufactured in such a way that it can be shifted to several locations in order to broaden the benefit of the initiative and encourage people to read more.

To push this concept in the public sphere, MBRF to expand this brilliant idea to be featured at airports, malls, service centres, etc.

Looking forward, post the initial phase, the Knowledge Chair will also be made e-savvy and equipped with smart devices such as tablets for e-reading and speakers for audio books in addition to mobile chargers.

The first phase was launched in collaboration with RTA. Speaking on the occasion of the Knowledge Chair's launch, His Excellency Jamal bin Huwareb, Managing Director of MBRF, said: "The Knowledge Chair echoes the objectives of the MBRF to spread knowledge and nurture generations capable of owning and applying knowledge for the benefit of communities.

The initiative aims at embedding the culture of knowledge among all community segments and effectively contributing to nurturing a generation educated in all fields, rendering reading a key daily life activity. The initiative also supports the idea of reading in public places and making the optimal use of the transit time."

On the occasion, HE Jamal Bin Huwareb, along with HE Mattar Al Tayer, Director-General and Chairman of the Board of Executive Directors of the RTA, inspected the Knowledge Chair which had books placed in circular shelves with a chair placed in the centre.

The chairs will be distributed at five locations; two chairs at Rashidiya and Abu Hail Bus Stations; two chairs at customer service centres at Umm Al Ramool and Al Barsha; and one chair at the premises of Public Transport Agency, Muhaisna. 



MBRF launches first phase of Dubai Digital Library

It will boost the #2016YearofReading initiative and enrich Arabic content on the internet



The first phase of the Dubai Digital Library was launched by the Mohammad Bin Rashid Al Maktoum Foundation (MBRF) at an event organised by MBRF at, one of the first Higher Colleges of Technology, Dubai Men's College in Academic City.

The Dubai Digital Library aims to provide an advanced electronic platform that supports a culture of reading by showcasing an extensive collection of Arabic books, including translated works covering all genres. The Digital Library will also feature Arabic and international periodicals, dictionaries, biographies, photographs and maps.

Addressing the event, HE Jamal Bin Huwairib, MD of MBRF, said: "The Dubai Digital Library initiative complements the announcement of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, declaring 2016 as the Year of Reading in the UAE. The initiative is also led by the directives of HH Sheikh Mohammed bin Rashid Al Maktoum and HH Sheikh Ahmed bin Mohammed bin Rashid Al Maktoum to provide an advanced electronic platform with books covering all genres." ➤

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BY THE MOHAMMED BIN RASHID AL MAKTOUM FOUNDATION

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“The Dubai Digital Library aims to provide an advanced electronic platform that supports a culture of reading by showcasing an extensive collection of Arabic books, including translated works covering all genres. During the first phase, the Dubai Digital Library will have over 1,600 books covering all aspects of documented knowledge, including language, medicine, pharmacy, geography, history, religion, sociology, biographies and others.”

Bin Huwareb stressed that through the various projects, MBRF aims to provide advanced platforms that facilitate knowledge sharing of Arab culture with the rest of the world and underline its leading position among global cultures and civilisations. “Our goal is to preserve our national heritage, culture and identity while building bridges of communication and understanding with different global cultures.”

During the first phase, the Dubai Digital Library will have over 1,600 books covering all aspects of documented knowledge, including language, medicine, pharmacy, geography, history, religion, sociology, biographies and others.

“It took us few years, not just one month or two months, to collate the books,” HE Bin Huwareb told *Khaleej Times*. “It was not an easy job but in the coming months this digital library will be the biggest repository of knowledge in the Arab world. We are now going to Phase Two with a bigger

collection not just of books but we will also have maps, manuscripts and biographies. “Many Arab people have written books that were not printed yet. It will be good (for the authors) to publish them on DDL,” he added.

HE Jamal Bin Huwareb said that the Dubai Digital Library is one of MBRF’s ambitious project that seek to enrich the volume of Arabic content online as well as promote the use of Arabic language, while providing knowledge in a fast and interesting way for the community.

The library aims to reach the widest possible segment of the people through its features such as Arabic and international books, dictionaries, translations, biographies, periodicals, pictures and maps. “MBRF also has several other initiatives such as the Dubai International Programme for Writing, the ‘Book in Minutes’ initiative, *Flashes* and *Wamadat* magazines.”

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An MoU was signed by HE Jamal bin Huwairb, Managing Director of MBRF, and HE Saeed Mohammed Al Tayer, MD and CEO of DEWA

MBRF ties up with DEWA to boost Year of Reading

To complement the Year of Reading 2016 and the Arab Reading Challenge initiatives, the two organisations will launch three special programmes

MBRF signed an MoU with Dubai Electricity and Water Authority (DEWA) to strengthen and support strategic partnerships, and to foster synergy between local government departments – both of which will encourage a culture of reading. To complement “The Year of Reading 2016” and “Arab Reading Challenge” initiatives, aimed at getting one million students in the Arab world to read 50 million books during their academic year, an MoU was signed by HE Jamal bin Huwairb, Managing Director of MBRF, and HE Saeed Mohammed Al Tayer, MD and CEO of DEWA at a press conference held at the Burj Al Arab.

To kickstart MBRF’s tie-up with DEWA, three initiatives were launched to encourage reading and knowledge: the first is “Reading is Positive Energy”, which organises cultural activities that

promote the year of positive reading. The second is to set up a book fair at Zabeel Park during 2016 (with a dedicated pavilion for Emirati publishers). The third initiative will entail sponsoring some units of the Knowledge Chair, a uniquely-designed library containing books and useful publications, with quotes of HH Sheikh Mohammed bin Rashid Al Maktoum on the importance of science and knowledge.

Speaking on the occasion, HE Jamal bin Huwairb, Managing Director of MBRF, said, “Since its inception, Mohammed bin Rashid Al Maktoum Foundation is always keen to launch initiative, projects and partnerships with all the UAE government and private departments and institutions to spread innovation, leadership and excellence at both national and Arab-world levels. Today’s initiative comes in line with the

directives of our visionary leadership, and in implementation of the directives of President His Highness Sheikh Khalifa bin Zayed Al Nahyan, who announced 2016 as The Year of Reading, and in line with the launch of the Arab Reading Challenge by Sheikh Mohammed bin Rashid Al Maktoum.”

HE Saeed Mohammed Al Tayer said, “DEWA established key pillars to materialise its strategy to become ‘A Sustainable Innovative World-Class Utility’ playing a key role in disseminating creativity and excellence, and help make our students among the best students in the world in terms of reading, knowledge and scientific research. We also seek to discover innovators, creative minds and talents, promote their capabilities and excellence aspects, as well as acquiring and adopting them as part of our manpower.”



#2016YearofReading



POWER OF THE WRITTEN WORD

The UAE has declared 2016 as the Year of Reading to boost its position as a global capital for knowledge and culture. We also look at similar initiatives around the globe that celebrate literature

According to UNESCO, “From the internet to text messaging, the ever-wider availability of communication makes for greater social and political participation. A literate community is a dynamic community, one that exchanges ideas and engages in debate. Illiteracy, however, is an obstacle to a better quality of life, and can even breed exclusion and violence.” Even though the battle for full literacy is an uphill battle, every day one hears about advances in education and literacy from far corners of the world. Nowhere is this truer than in the UAE, which has declared 2016 as the Year of Reading to create a generation of bibliophiles and consolidate the country’s position as a global capital for knowledge and culture.

His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE and Ruler of Abu Dhabi, made the declaration on December 4, 2015, underscoring the importance of reading in promoting tolerance, openness and intercultural communication. Commenting on the initiative, His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, said: “We are preparing a comprehensive national framework to bring about behavioural change in our society and produce a generation of readers. >



“We have a reading crisis in the Arab world. We have to push the younger generation to read if we are to form a path of growth and knowledge.”

**HH Sheikh Mohammed Bin Rashid Al Maktoum,
Vice-President and Prime Minister of the UAE**

We aim to make the UAE a capital of knowledge. We have a reading crisis in the Arab world. We have to push the younger generation to read if we are to form a path of growth and knowledge.”

To complement the directives of the President, on January 12, 2016, HH Sheikh Mohammed attended a reading retreat, along with 100 important national figures to promote reading and make it a permanent habit in the UAE. The participants discussed more than 100 ideas and initiatives, which will be the pivot of its long-term strategy. A number of initiatives from public and private sectors have been launched in the UAE as well.

On January 17, a project titled ‘From the UAE, The World Reads’ was launched from Abu Dhabi. 10,000 books will be donated by the UAE to other countries as part of the efforts to promote reading in 2016. Last October, the Roads and Transport Authority (RTA) in Dubai launched the second edition of ‘Read More’ Initiative. The initiative is aligned with the Arab Reading Challenge scheme of HH Sheikh Mohammed, with the aim of encouraging the habit of reading across the Arab world. The Challenge envisages reading 50 million books by more than a million students during the academic year. The second edition of the Read More initiative comprises five

mini-initiatives; two of them being undertaken in collaboration with the Mohammed bin Rashid Al Maktoum Foundation (MBRF). The first entails the setting up of public libraries in four metro stations and the second initiative is the ‘Knowledge Chair’. The chairs will be distributed at five locations; two chairs at Rashidiya and Abu Hail Bus Stations; two chairs at customer service centres at Umm Al Ramool and Al Barsha; and one chair at the premises of Public Transport Agency, Muhaisna.

On December 29, 2015, the National Media Council (NMC) announced its first activity for 2016 themed ‘UAE Reads’. As one of the early priorities of the programme, NMC will launch an account on Instagram under the name ‘UAE Reads’ to encourage the public to read and post their pictures accompanied by the hashtag #UAEreads in order to be featured on the account. [f](#)



CHANGING LIVES: ROOM TO READ

An NGO called Room to Read, a global organisation launched in 1990 by John Wood and Erin Keown Ganju, is transforming the lives of millions of children by focusing on literacy and gender equality in education. Room to Read’s innovative model focuses on deep, systemic transformation within schools in low-income countries during two time periods which are most critical in a child’s schooling: early primary school for literacy acquisition and secondary school for girls’ education. Room to Read works in collaboration with local communities, partner organisations and governments to develop literacy skills and a habit of reading among primary school children and ensure girls can complete secondary school with the skills necessary to negotiate key life decisions. Room to Read has benefited 10 million children across 17,500 communities in Asia and Africa, and aims to reach 15 million children by 2020.



The park benches in Reykjavik are fitted with barcodes so that lovers of literature can listen to a story on their smartphones

SIMILAR INITIATIVES ACROSS THE WORLD

THE CURIOUS CASE OF ICELAND

It may come as a surprise to many, but Icelanders produce more books per capita than any other nation. The island nation is barely home to 300,000 people, but it has more writers, more books published, and more books read than any other part of the world. One in 10 Icelanders will publish a book in their lifetime. In fact, so literate is this society that park benches in its capital, Reykjavik, are fitted with barcodes so that lovers of literature can listen to a story on their smartphones. *Jólabókaflóðið* in Icelandic, literally translating to “The Christmas Book Flood” is the annual flood of new books in Iceland that occurs in the months before Christmas every year.

Part of the literary confidence of this tiny island nation comes from two special reasons: a historical base and an early international success: Icelandic “sagas”, or folk tales, go back to the 13th century. Depicting early years of Icelandic history (though a lot of it is also folklore), this colourful mythological cast of Icelandic sagas has inspired writers across the globe. Moreover, thanks to the poetic *eddas* and medieval sagas, Icelanders have always had their own stories to tell. After gaining freedom from Denmark in 1944, its society largely took to literature to define itself. In 1955, Halldor Laxness won the Nobel Prize in Literature, further giving this literate society a boost. It not only put Icelandic literature on the cultural atlas, it gave its citizens the confidence to embrace literature in all shapes and forms.

YEAR OF READING, 1998 (UK)

All across the globe, the world has initiatives similar programmes to uplift the educational standards of its society. In 1998, the UK kick-started its Year of Reading.

Its Education Secretary, David Blunkett, chose a rather unique platform to introduce the scheme; on the set of popular TV series *EastEnders*. Producers of the programme were keen to “introduce plots supporting the literacy campaign”, said the BBC.

Mr Blunkett later announced that he would be allocating an extra £24m to schools to buy books, as he introduces what the government hopes will be a high-profile campaign to transform the nation’s attitude to reading. “By encouraging people to read, we’ll be making a social contribution but we’ll also be making an economic contribution,” he said. Organisations, including book publishers, libraries, the media and local authorities, all worked to push reading habits in children and adults. The government then wanted to see 80% of 11-year-olds in the UK to reach a level in English by the year 2002. Around 60% reach that target in the year itself. A mandatory ‘literacy hour’ was also introduced for primary schools, accompanied by an extra £19m worth of books.

YEAR OF READING, 2012 (AUSTRALIA)

In 2012, Australian libraries and library associations came together behind the National Year of Reading, with more than 4,000 events, \$5.6 million in in-kind support, \$26 million-worth of media mileage, much of it emphasising the sore point that nearly 50% of the population was struggling without literacy skills. 15 founder partners decided to carry forward a sequel to the programme titled the Love2read brand in 2013, making the most of the inspiration that had been created during the National Year of Reading. 📖



The Rise of the Cyber Plants

Could lead to a new breed of cyber-plant that could double as environmental sensors and even change colour on command

By substituting the vascular system of plants, researchers in Sweden have developed a cyber rose. The vascular system in plants is usually used to distribute water and nutrients within circuits. Researchers at the Linköping University Laboratory for Organic Electronics, led by Professor Magnus Berggren, hope the findings can eventually be used to regulate plant physiology. They say it could lead to a new breed of cyber-plant that could double as environmental sensors and even change colour on command.

A polymer called PEDOT-S was discovered, which converted to a hydrogel when absorbed by the rose. The polymer forms a thin film, inside the vascular system. A 3D sponge-like structure was then created by sending nano-cellulose fibres through the rose using vacuum infiltration. The polymer interacts with ions in the rose when voltage is applied and the leaves change colour.

One cool part about this experiment is that the rose does most of the work. The scientists had to snip a rose at the stem and place the stem in a solution containing the polymers. The rose's vascular system drew the material in and distributed it throughout the rest of the plant.

There are several potential uses for the technique, according to researchers. Plant cycles can be monitored by biologists on a much more precise level, increasing our knowledge on how plants actually work.

With that knowledge, we might be able to grow plants more effectively, which could increase harvest yields and lower food costs. Organic electrochemical fuel cells or using photosynthesis to generate electricity, for example are some of the ideas that can fuel some sci-fi movies.

"Previously, we had no good tools for measuring the concentration of various molecules in living plants. Now we'll be able to influence the concentration of the various substances in the plant that regulate growth and development. Here, I see great possibilities for learning more," says Ove Nilsson, professor of plant reproduction biology at the Umeå Plant Science Center.

Another researcher, Eleni Stavrinidou, was then able to get the plants to produce thick membranes of the conductive polymer, creating an analogue transistor. "We've produced the perfect measurement values, which show that it is really a fully functional transistor," says Stavrinidou.

The research aims to apply these findings for developments in energy, sustainability and plant interaction. "As far as we know, there are no previously published research results regarding electronics produced in plants. Now we can really start talking about 'power plants' – we can place sensors in plants and use the energy formed in the chlorophyll, or produce new materials. Everything occurs naturally, and we use the plants' own very advanced, unique systems," says Berggren. ¹



**APPLIED
VOLTAGE
MAKES IONS
INTERACT,
CAUSING
LEAVES TO
CHANGE
COLOUR**



William C. Campbell



Satoshi Omura



Youyou Tu

Celebrating the Nobel laureates in medicine

Discoveries used to fight malaria and river blindness bagged scientists top honour. The MBRF, in turn, is organising its second session of the Nobel Museum, with a focus on medicine

One distinguishing aspect regarding last year's Nobel Laureates in Medicine is that they have developed therapies that have revolutionised the treatment of some of the most devastating parasitic diseases.

The 2015 Nobel Prize in Physiology or Medicine was won by William C. Campbell and Satoshi Omura, for their discoveries concerning a novel therapy against infections caused by roundworm parasites, while the other half of the prize went to Youyou Tu for her discoveries concerning a novel therapy against malaria. >



Campbell and Omura discovered a new drug, Avermectin, the derivatives of which have radically lowered the incidence of river blindness and lymphatic filariasis, as well as showing efficacy against an expanding number of other parasitic diseases.

Tu discovered Artemisinin, a drug that has significantly reduced the mortality rates for patients suffering from malaria.

According to The Nobel Assembly at Karolinska Institutet, which announced the prize, “After decades of limited progress in developing durable therapies for parasitic diseases, the discoveries by this year’s laureates radically changed the situation.”

NEW STRAINS FROM SOIL SAMPLES

Equipped with extraordinary skills in developing unique methods for large-scale culturing and characterisation of *Streptomyces* bacteria, Omura, a Japanese microbiologist and expert in isolating natural products, isolated new strains of this bacteria

from soil samples and successfully cultured them in the laboratory. From many thousand different cultures, he selected about 50 of the most promising, with the intent that they would be further analysed for their activity against harmful microorganisms.

Campbell, an expert in parasite biology working in the USA, acquired Omura’s *Streptomyces* cultures and explored their efficacy. Campbell showed that a component from one of the cultures was remarkably efficient against parasites in domestic and farm animals. The bioactive agent was purified and named Avermectin, which was subsequently chemically modified to a more effective compound called Ivermectin. Ivermectin was later tested in humans with parasitic infections and effectively killed parasite larvae (microfilaria).

SUCCESS AGAINST MALARIA

Malaria was traditionally treated by chloroquine or quinine, but with declining success. By the late 1960s, efforts to eradicate malaria had failed and the disease was on the rise. At that time, Youyou Tu in China turned to traditional herbal medicine to tackle the challenge of developing novel malaria therapies. From a large-scale screen of herbal remedies in malaria-infected animals, an extract from the plant *Artemisia annua* emerged as an interesting candidate. However, the results were inconsistent, so Tu revisited the ancient literature and

KEY POINTS

- ☞ Three scientists from Japan, China and Ireland have jointly won the Nobel Prize for Medicine
- ☞ One breakthrough drug, called avermectin, has treated hundreds of millions of people with river blindness and elephantiasis
- ☞ Chinese scientist Youyou Tu’s discovery of the drug artemisinin has slashed malaria deaths across the world
- ☞ Artemisinin was discovered from ancient Chinese herbal medicine

discovered clues that guided her in her quest to successfully extract the active component from *Artemisia annua*.

Tu was the first to show that this component, later called Artemisinin, was highly effective against the malaria parasite, both in infected animals and in humans.

Artemisinin represents a new class of anti-malarial agents that rapidly kill the malaria parasites at an early stage of their development, which explains its unprecedented potency in the treatment of severe malaria.

Treatment is so successful that these diseases are on the verge of eradication, which would be a major feat in the medical history of humankind. ✂



A UNIQUE PEEK INTO MEDICAL SCIENCE

The MBRF, in partnership with Nobel Foundation, is organising the second session of the Nobel Exhibition, under the title “Exploring Life: The Nobel Prize in Physiology or Medicine”, from February 21 to March 21, 2016 in Dubai. This is a special enterprise that seeks to elucidate seminal inventions that have served humanity through medicine and physiology. It will also highlight the vital contributions of Nobel Laureates and early Arab medical discoveries. It is the first exhibition in the world by Nobel dedicated to medicine. With weekly workshops under the supervision of an expert panel of scientists, the exhibition will attract a variety of audiences, including specialists from the health care sector and students from the UAE and abroad. The exhibition will serve as a platform to enrich the medical arena discussions through the exchange of knowledge and science. It will also provide the local young generation with an outlook on scientific achievements of their Arab ancestors. The first Nobel Medicine Exhibition, especially designed for MBRF, is part of an annual series of exhibitions building up to the regular museum facility in 2019-2024.



**A FRONTLINE
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AGAINST
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HAS A
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MEDICINE.**



THE CURIOUS MIND OF MR JIHAD KAWAS

Meet the winner of the Thiel Fellowship for creator of online social marketplace, Saily

Eighteen-year-old Jihad Kawas, founder of online social marketplace Saily, is the first Arab to be selected as one of the top 20 young entrepreneurs granted \$100,000 as part of the 2015 Thiel Fellowship.

In its sixth year now, the two-year Thiel Fellowship, launched by Peter Thiel, leading Silicon Valley investor, tech entrepreneur and co-founder of PayPal and the software company Plantir Technologies, promotes a line of thinking that puts learning before schooling and the foundation works to advance technological progress and long-term thinking about the future.

Because of the phenomenal success of startups in this global digital economy, the Thiel Fellowship generates a lot of interest and for the 2015 batch, there were around 2,800 applicants from around the world.

So what is Saily, which was launched in September 2014? The best description is that it is the 'Instagram for Garage Sale!' – the online market place geared to buying and selling used stuff in your neighbourhood. >



> Simple as it sounds, there are lots of bells and whistles to make it sticky enough for a large number of community members to keep using it.

Kawas, who is on a mission to influence the shared economy, believes in unlocking essential misused assets of the daily life through the power of “sharing” among local communities.

On the Entrepreneurs Lebanon website, Jihad Kawas says, “From an early age, I took a keen interest in the prospect of mobile and its future, from the first iPhone, to the complex of smartphones that create limitless possibilities for creators, entrepreneurs and developers.

I believe that technology and entrepreneurship have merged, creating new opportunities and outlets for me that weren’t available before the release of the first truly smart ‘smartphone’ – the iPhone.”

About his role, he says, “I am a developer, although, in actuality, I also serve a role as an entrepreneur and a businessman (or businessteenager... whatever) – two key characteristics of any founder of any startup.

“What’s more, I want to be a programmer, entrepreneur, business owner, public speaker and everything else in-between. Is that difficult? Yes. Is that impossible? Maybe, but I remain optimistic! I’m motivated, and passionate to create the next big thing, even if that big thing has to start out small.”

The two-year Thiel Fellowship, and the resulting mentoring by elite leaders in the tech industry; publicity and the support will surely help realise his dream of scaling up operation from his home country to MENA and subsequently to the US.

If the teenager’s journey from Lebanon to Silicon Valley seems so fantastic, it must

WHAT MAKES THE THIEL FELLOWSHIP DIFFERENT?



GRANT, NOT EQUITY

Your \$100,000 is a grant. So long as you're working, you can use the funds however you want; the Fellowship does not take any ownership stake in your project.



BUILD YOUR TEAM

You can't do it alone. Whether you need programmers or salespeople, our network helps you build your team. And since every new business will face common challenges, we provide in-house expertise in engineering, marketing, and design.



TIGHT-KNIT CLASS

All of our Fellows are 22 or younger. Every one of them has stopped out of college to work on a unique project. You'll be surrounded by peers who understand what you're trying to accomplish.



GET MONEY

It's going to take money. We introduce you to investors from the start, and we help you to communicate with them so you can get the capital you need on terms that work.



NON-EXCLUSIVE

Want to apply to a startup accelerator like Y Combinator or Techstars? No problem. The Fellowship isn't an incubator or accelerator, so it's complementary to any other program that fits your project.



LEARN THINGS

We help you cut through the clutter and learn what you really need — from books, meetings, and guest speakers like Aaron Levie (CEO of Box) and Keith Rabois (Partner at Khosla Ventures).

be remembered that the youngster's passion to create began right from his early school days.

Kawas started his first company at the age of 13 and before graduating from Hussam Eddine Hariri High School in Lebanon in the spring of 2015, he had already taught himself to code and forged a path as a web entrepreneur.

As chief executive, he can now be proud that his brainchild Saily has recorded more than 150,000 users – the current registration rate is 1,000 users per day – and rung up more than \$5 million in sales!

He should also be thankful to his parents, small business owners themselves, who never discouraged their son's passion for entrepreneurship. 



Left-right: Kawas and his co-founder, Dany Arnaout



TECHNO- OPTIMISM

Media artist and TV personality Jason Luis Silva speaks to Flashes on the metaphysics of the imagination in the 21st Century

During the Second Session on Day Three of the Knowledge Summit 2015 on 'Innovation in Brain Games', Jason Luis Silva, American media artist and TV personality, and a specialist in *Brain Games*, created an enthusiastic response among the attendees. Silva is also the host of National Geographic Channel's No 1 rated and Emmy-nominated series *Brain Games*, seen in over 100 countries.

In addition, Silva is also the creator of *Shots of Awe*, a short film series of 'trailers for the mind' that serve as "philosophical espresso shots" exploring innovation, technology, creativity, futurism and the metaphysics of the imagination.

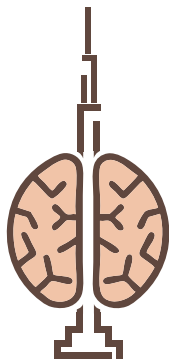
In *Shots of Awe*, Silva chases his inspiration addiction as he explores these topics and more. Every week he looks at the complex systems of society, technology and human existence and discusses the truth and beauty of science in a form of existential jazz.

Shots of Awe, in Silva's own words, is a film where "science, philosophy and inspiration collide."

"To be human is to be trans-human," he says. ➤



Jason Silva creates an enthusiastic response among the attendees at the Knowledge Summit 2015.



THE CITY OF DUBAI ITSELF IS A CONCRETISATION OF THE HUMAN IMAGINATION."

On the main topic of Innovation at the Knowledge Summit, he said Innovation and Technology were embodiments of the human imagination. "The City of Dubai itself is a concretisation of the human imagination."

"We use technology to extend the boundaries of who we are; we build tools, and, in turn, these tools change us as human beings. Technology has always been part of the human journey. The difference now is the exponential technological change in a digitalised world. This has significant implications for human beings, whose brains are linear and local, living in an age of exponential change."

For example, biotechnology with the advances in the field "is our new playground."

"We have biological software with which we can rewrite/reprogramme diseases. The next IT revolution will be in biology, with sensors in our bodies monitoring life in real time. All of this is coming... the overlapping and simultaneous revolution happening in Nanotechnology, Genetics, Artificial Intelligence (AI) and the Internet of Things (IoT) will throw up non-biological props that can extend our reality."

Silva presented some of his award-winning videos like *Future of Us* and *Shots of Awe* to illustrate and reinforce his thesis that there is no duality to Nature and technology. "We have to dream bigger than before, to alleviate suffering and create new forms of imagination. With the lens of human imagination, we have to believe that anything is possible"

Silva says that he wants to spread a message of optimism and hope. There is the shadow of the 'Future' that hovers over the 'Now' – the present as a possibility of the Future. The sense of infinite possibility and the perception of vastness that we can cultivate will leave us as human beings with increased feelings of well-being and compassion, which in itself is anti-inflammatory for our bodies, and will make us healthy and creative."

Silva screened another one of his popular videos, shot on his iPhone, which has reached a million people. "We have the capacity to create a better world. Technology is an extension of ourselves – minds turned inside out," he claims.

Another idea that Silva passionately proposes is that of redefining the concept of

the “Billionaire in the 21st Century” as someone whose ideas can reach out to and influence a billion people in a positive way.

Silva spoke exclusively to *Flashes* following his session at the Knowledge Summit.

Excerpts from the interview:

How do you see the exponential technologies helping us to tackle climate change? Are you optimistic?

Yes, I am extremely optimistic, because these exponential technologies are now falling into the physical world through things like nanotechnology. And the power of solar technology is doubling in capacity every year. These things tend to compound, you know. The Sun sends more energy per day than what we need to power the Earth for a year. If we can grab just one per cent of that, we'll be just fine! So all this talk about fossil fuels etc. Again, it's a case of future blindness, and it's not thinking exponentially. We are only a few doublings away from getting all our energy from solar alone.

There is also the clean nuclear energy. That is what Bill Gates is advocating – he is the chairman of a company called TeraPower, that he helped launch in 2006, that's talking about using a sort of very clean, perfectly safe version of nuclear energy that is very different from the alarmist Chernobyl-like ideas from the past. So there are a lot of things that can be used to replace coal, and that can be used to address climate change. It's a no-brainer. So in my view, investing in these exponential technologies is one of the quickest ways to bankrupt dirty technologies.

You put a lot of faith in technology. But isn't there a lack of spirituality in the polemics that you hold forth so eloquently?

Haven't you seen my videos? They are very spiritual! What is without is within. I think with technology, what we are doing is turning our mind inside out. I cannot think of anything more spiritual than to actualise the human dream of flying through the sky with an airplane; I cannot think of anything more spiritual than two minds to be able to send messages across time and space, through a technologically-mediated wormhole, called Facetime on an iPhone, that allows two people to share their love, passion and poetry across unfathomably vast oceans. To me, that is spirituality.



We are facing a vast information overload. Will exponential technology take on a curatorial role to tackle this?

Yes, it has to! Two things are happening. There is the rise of Anticipatory Design that is creating algorithms that we are offloading decision-making to. Right now we are facing the paralysis of choice. There are a thousand choices to pick from when you open Netflix or YouTube. We are overwhelmed by the choices and we don't have the RAM to process this because there are too many options.

Anticipatory Design will help us to offload decisions to virtual assistants like Siri to make suggestions to us and it will be the equivalent of a curated vacation, where you pay a lot of money to have them create an itinerary for you so that you don't even have to waste time deciding what activities to do. It's the same reason why Steve Jobs wore the same clothing every day. Arbitrary choices are less necessary. I just want the guaranteed experience of novelty, surprise and serendipity. Artificial Intelligence will easily give me that.

Number two, of course, is Information Diet and Curation, which is serendipity – when you are looking for something and end up finding something else and you realise that what you found is more conducive to your needs than what you were looking for. That moment of unexpected surprise, unexpected cross-linking. I think AI will be able to deliver that to us, making our lives feel magical. Because every moment will be flooded by surprise and serendipity. ‡

Jason Silva pits animal against human and unleashes your imagination.

LIFE SCIENCE

Marwan Abdulaziz, executive director of Dubai Science Park, is optimistic of how UAE will foster a Life Science revolution

What is the vision behind the Dubai Science Park and what was the purpose behind combining the two entities – DuBiotech and EnPark – into the new entity?

DuBiotech and EnPark have been successful business communities for many years. However, as they have evolved, we have seen the opportunity to further drive growth and develop greater synergies, and as such, we have combined the entities. The critical mass that the community now offers allows us to facilitate greater innovation that, in turn, will serve the wider business community.

The newly formed Life Science, New Energy and Environment business community, Dubai Science Park is the realisation of a continued commitment to respond to the evolving needs of the industry, allowing for increased collaboration and innovation. >







Marwan Abdulaziz,
Executive Director,
Dubai Science Park



**THE DSP WILL
LOOK TO ACHIEVE
GROWTH AND
CHANGE IN
THE AREAS OF
HUMAN SCIENCE,
PLANT SCIENCE,
MATERIAL SCIENCE,
ENVIRONMENTAL
SCIENCE AND
ENERGY SCIENCE**

➤ **What is the kind of support are you receiving from the Dubai Government in nurturing the Life Sciences industry?**

DSP has a strong relationship with key governmental organisations, with the aim of furthering the Life Science, New Energy and Environment sectors in the region.

DSP has signed a MoU with the Ministry of Health, working as a facilitator to drive conversation between the public and private sector. This allows our business partners in Life Science to engage more regularly with the government bodies, and have a platform to discuss issues, promote collaboration and innovation within the sector.

In the New Energy and Environment sector, we work with DEWA, The Supreme Energy Council, and the Executive Office to drive forward the sustainability agenda. We also work in collaboration with Dubai Green Economy Partnership, the first multi-stakeholder and cross-sector partnership to promote the transition to a green and low-carbon economy in the Middle East. The programmes and initiatives of Dubai Green Economy Partnership and DSP develop,

including the Green Leadership Series, aim to enable the growth of green trade and investment, and accelerate the adoption of green technologies, products and services across regional and global markets.

What role does the Dubai Science Park aim to play in Dubai's Vision 2021?

Dubai Science Park aims to play a significant role in Dubai's Vision 2021 by facilitating a more sustainable and self-sufficient future that maximises the use of indigenous resources and talent. DSP will look to achieve this by fostering innovation, growth and change in the areas of human science, plant science, material science, environmental science and energy science.

How many business partners are there at present at Dubai Science Park and which are the sectors that they broadly represent?

Dubai Science Park supports both SMEs and global firms looking for a regional base for their Middle East operations. With over 280 companies currently located within the community, DSP is committed to the industry's success by bringing together business, regulators and the Government in partnership.

What are the ways in which you are looking at expansion and enhancing operations?

Our immediate plans are an office building complex, which will comprise of two iconic high-rise towers that will provide over half a million square feet of office space – the DSP Headquarters. It is set to be completed in the fourth quarter of this year. We will also be launching a second phase of new warehouse space that has been commissioned.

What are the areas where you see most potential for Dubai Science Park?

We have always been focused on both, the Life Science and Energy sectors through our EnPark and DuBiotech communities. Our evolution into Dubai Science Park at the end

of last year was partly driven by a clear market need to also provide a home for the full value chain of the Science sector including, plant and material science, waste management and health services.

As such, we now welcome organisations working on all areas of Human, Plant, Material, Environmental and Energy science to our community, as we believe that bringing them together enables collaboration and partnership for the benefit of the wider industry.

Looking at the models available globally, what are the strategies that a country like the UAE can adopt to facilitate the development of this sector for the future?

In order to achieve this ambitious goal, we must action the lessons learnt from how the industry operates in other locations, whilst driving our own innovation strategy to create a unique approach to the life science sector that eventually becomes world-class. As such, our team has dedicated a considerable amount of time and effort into answering this question for the UAE.

To further our knowledge, we recently collaborated with The Economist Intelligence Unit to compile a report entitled *Innovation in*

life sciences: An emerging markets perspective, detailing successful international strategies for innovation in the life science industry that goes on to highlight recommendations for adoption in emerging markets. By studying how world-class science industry specialists operate, organisations based in the UAE can choose the elements of the foundations of success seen elsewhere and apply them at home. In our industry, we could consider India, Brazil and China similar to the UAE, as each are emerging markets and centres of excellence for life science products and services. They each benefit from large domestic markets, as we do and have built their industries by focusing on leveraging assets such as location and business confidence to build their medical sector.

The study highlighted that Dubai has the tools to become a global centre of innovation for the life science sector through a unique blend of positive attributes such as close proximity to significant markets such as the Kingdom of Saudi Arabia and Levant, as well as the ability to attract talent from the global life science industry. These elements are core to the UAE's offering as a business hub, and we are ahead of our peers in MENA. †







A NEW LANDMARK IN ARAB CINEMA

Theeb, the first Jordanian film to be nominated in the Best Foreign Film category at the Oscars, is proof that Arab cinema has come into its own

It has been billed as a “Bedouin Western” for its detailed depiction of Bedouin culture. Yet, in a way, *Theeb*, a sprawling hypnotic drama set among a tribe making its life out of the desert, is a lot more than that: it is a film that brings Jordan to international limelight; it is a film that proves that locally-funded films are finally finding a global audience.

Sanad, the development and post-production fund of Abu Dhabi’s twofour54, chose to finance the film based on its promise and the results are showing. The film is the first Jordanian film to make it to the Oscars; if *Theeb* wins the award on February 28, it will be the first Arab film to win the Oscar.

Yet this is not the only international accolade coming its way – at the Abu Dhabi Film Festival in 2014, it bagged two awards: best film from the Arab World and the FIPRESCI Prize for best narrative feature. In addition, its British-Jordanian director Naji ➤



Top: Lead actor Jacir Eid al-Hwietat readies for a take.
Above: Cinematographer Wolfgang Thaler and Director Naji Abu Nowar discuss the framing of cast member Hussein Salameh in the next shot.

Abu Nowar had also been named *Variety's* Arab Filmmaker of the Year.

The Royal Film Commission of Jordan has played an active part in developing authentic, indigenous cinema. Aside from an annual screenwriters' workshop, in collaboration with the Sundance Institute, it has also fostered 25 feature films and documentaries over the past five years.

The local zeitgeist of the feature film, steeped in Bedouin tradition, has indeed found a rather emotional audience: set in 1916, *Theeb* portrays the life of an 11-year-old Bedouin boy Theeb (literally translating to "wolf") who finds himself at the crossroads of a battle between his clan and its dangerous allegiance to the British against Ottoman rulers during the Arab Revolt. Reactions to

the film have been remarkably candid, especially in a culture where showing emotion is often considered a sign of weakness, says its director. "They got a 10-minute standing ovation," said director Naji Abu Nowar, who won the Best Director award in the Horizons category at the Venice Film Festival. "The Bedouins [are] a very macho culture, and you never see anyone cry, even the children ... and to see tears coming out of some of their eyes [at the premiere] was a really powerful moment," he added at the Palm Springs International Film Festival, a final pre-Oscar chance to promote foreign films.

While Hollywood superstars and its divas are already ironing their tuxedos and gowns for the much-touted event, back in the village of Al Shakriyeh, the *Theeb* cast already knows what it will be wearing: tradition Bedouin gear, in black. The film's villain Hassan Maraaiah is the most vocal proponent of why *Theeb* is indeed a watershed in Arab cinematic history: "Jordanian drama series do not truly represent us, because local directors used to tell stories without double-checking with the people in the Badia (an area that is at once arid and gifted with some dazzling flora and fauna), so most of the details presented in their works were inaccurate. We have hundreds of Jordanian series, but we only see the same faces and themes. They have not tackled any real issues, such as how the area's residents

deal with life in the desert,” he told *The Jordan Times*.

The cast and crew of *Theeb* stayed in the Southern Badia’s Shakriyeh for one year to get the nuances of the culture they were aiming to depict. The result is a cinema that seamlessly merges the genres of arthouse and documentary.

“The village’s residents and its elderly people help develop the script and story. We used their real dialect so that they would feel comfortable acting; so I can say that they also took part in making the movie,” said the director.

For Jacir Eid al-Hwietat, 15, who plays the eponymous role of Theeb, the film itself is like coming full circle. Almost 50 years ago, Jacir’s grandfather was part of the local support crew for David Lean’s *Lawrence of Arabia*, an Oscar-winning saga that was incidentally also set during the Arab Revolt.

Coming back to the Abu Dhabi Film Festival, where this promising film finds its seed funding, festival director Ali Al Jabri was always confident of the film’s imminent success, but never expected it to reach this acme.

“We expected the film to go the distance

at other festivals, but we couldn’t have imagined it to go to the Oscars,” he said. That said, he complimented the Abu Dhabi film festival which, he claims, has a “a knack for discovering promising directors”.

“Sanad’s role was significant from the very beginning, during the development stages. Four years later, we supported its director Naji Abu Nowar in the post-production of the film. If we didn’t believe in the strength of the film, and the script, we wouldn’t have backed it from the start.”

Sanad has promoted 120 films; last year alone, it financed 20 films, 11 for seed funding and nine for post-production requirements. “You will be hearing about the success of these films in 2016.”

Sounds like a renaissance is knocking on the doors of Arab cinema. ↑

Below: The Middle Eastern premiere for *Theeb* was held under the stars in Wadi Rum, where the film was shot. The Bedouin-style drive-in was held exclusively for the communities involved in shooting the film. For 99% of the audience, it was the first time they had been to a cinema.

Bottom: Cast from *Theeb* perform a scene in the military zone in Wadi Arabah.



HIGHLIGHTS FROM A CINEMATIC GEM

After the success of *Theeb*, Hussein Suweilheen, who plays the lead’s brother in the film, has become a Bedouin specialist for TV shows

Villagers from Southern Badia district’s Al Shakriyeh were used to develop the script and story of the film so that their real dialect could be reflected in the film

Despite the film’s spectacular international success, the film’s lead star Jacir Eid al-Hwietat, who played the titular role, has chosen to return to his regular life and spend time with his friends in school. All the other actors have also since moved on with their lives in Al Shakriyeh, a small Bedouin village in the valley of Wadi Rum, a protected desert landscape north of the Red Sea and one of Jordan’s main tourist attractions.

Theeb received a 10-minute standing ovation at the Horizons category screening of the Venice Film Festival

Half a century before *Theeb*, David Lean’s Academy Award-winning classic *Lawrence of Arabia* was filmed in Wadi Rum, close to where Jacir and his family live.



ELIAS SANBAR,
ONE OF THE
MOST ACCLAIMED
PALESTINIAN
INTELLECTUALS,
WHO HAS BEEN
AWARDED THE
UNESCO-SHARJAH
PRIZE, TAKES ARAB
INTELLIGENTSIA TO
NEW HEIGHTS ›



➤ In a career spanning literature, history, journalism and political activism, Haifa-born Elias Sanbar is a star in many worlds. It is therefore apt that an international jury of experts has chosen the Arab intellectual to be the recipient of the UNESCO-Sharjah Prize, which will be presented to him by the Director-General of UNESCO in April this year. Initiated in 1998 by the UAE, the UNESCO-Sharjah Prize for Arab Culture, worth \$60,000, rewards two personalities or organisations, one from an Arab country and one from any other country, who have made a significant contribution to the development, dissemination and promotion of Arab culture.

Back in the 1980s, when the world of Arab intelligentsia was still relatively unrecognised by the West, Sanbar co-founded *La Revue d'Études Palestiniennes*, a journal which he helmed for 25 years as editor-in-chief. Not only did he bring to light the poetic brilliance of his fellow countryman Mahmoud Darwish by translating his works into French, but he also co-wrote *Le Rescapé et l'Exilé – The Survivor and the Exiled* with holocaust survivor Stephane Hessel. Both books brought into crucial perspective the life of the Arab intellectual. Since 2012, Elias Sanbar also has served as Palestine's Ambassador and Permanent Delegate to UNESCO.

In 2011, he was invited by Les Amis de L'Humanité for a series of talks titled "Figures of Humanity" based on the theme, "Humanity does not exist as yet or it hardly does". It was a

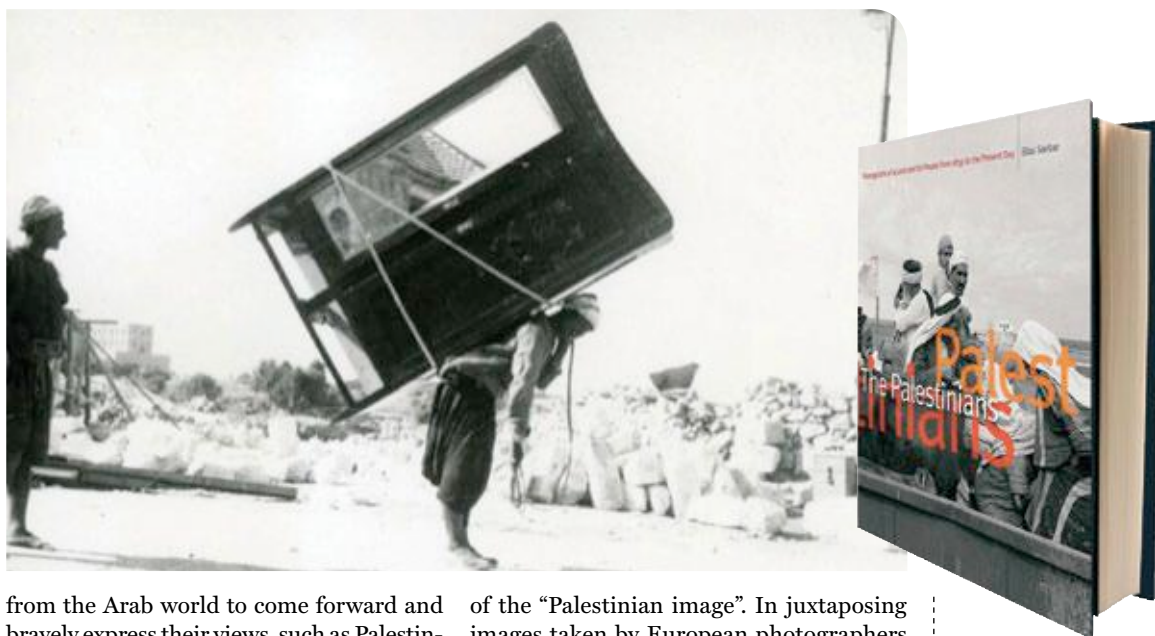
politically fervent time for the Arab world since the so-called Arab Spring had brought global attention to the region. The stage was packed with people eager to listen to the humane and sentient voice of this Palestinian genius as he explained to an audience how the Palestinian plight was, in fact, based on a neo-colonial negotiation of the Middle East, in which Palestinian Arabs were not given a voice. "They [Palestinians] become nameless absentees. I myself have lived through that fabrication of invisibility and absence," Sanbar said at the time.

In explaining his Palestinian identity and why he felt a compelling need to express it, Sanbar, in a 1982 interview with the French philosopher Gilles Deleuze, had once famously said, "Palestine is not only a people but also a land. It is the link between this people and their despoiled land, it is the place where an absence and an immense desire to return are enacted. And this place is unique, it's made up of all the expulsions that our people have lived through since 1948. When one has Palestine in one's eyes, one studies it, scrutinises it, follows the least of its movements, one notes each change which awaits it, one adds up all its old images, in short, one never loses sight of it."

Sanbar's words might seem like a *déjà vu* today, but in the time that they were elocuted almost 35 years ago, they were a revelation to the West and to the international community. His work has not only been seminal in giving a voice to an oppressed quarter of the Arab world, but also paved the path for many intellectuals



Eric Battalion (l) invited Elias Sanbar in RFI Studios to discuss a book, *Jerusalem and Palestine*



from the Arab world to come forward and bravely express their views, such as Palestinian intellectual Edward Said, who taught at Columbia University for many years. In fact, in a prelude to his interview with Sanbar, French philosopher Deleuze aptly noted, “We have waited a long time for an Arab journal in French, but instead of coming from North Africa, it’s being done by the Palestinians. *La Revue d’Études Palestiniennes* has two characteristics, which also concern the entire Arab world. On the one hand, it presents very profound socio-political analyses in a masterful yet calm tone. On the other hand, it mobilises a specifically Arab literary, historical and sociological corpus which is very rich and little known.”

The Palestinian non-violent revolt against Israeli occupation has many pioneers today, but it is luminaries such as Sanbar who showed the way first.

Elias Sanbar’s intellectual rigour is based on the fact that he has actively worked to reclaim the history of his people from what was hitherto a Eurocentric perspective: it is also something that has found him at a very relevant crossroad of art and activism. How does one, as a Palestinian intellectual, represent its people and their zeitgeist when so little of them has been documented from their own lens? To fill this void, Sanbar took to working with photo-historicity itself.

His 2015 book, *The Palestinians: Photographs of a Land and its People from 1839 to the Present Day*, questioned the very idea

of the “Palestinian image”. In juxtaposing images taken by European photographers with the photographs of the same subject taken by Palestinian photographers, he was able to prove that the image is not merely a product; it comes alive when a context is added to it. For example, he placed side-by-side two pictures of Palestinian women, the first taken by French photographer Maison Bonfils and the second taken by Palestinian photographer Khalid Raad. “It’s alive”, says Sanbar of Raad’s image.

“This is a real look of intimacy, absolutely radically different to the others because it is photography from the inside. I’m not saying that to have a real image you have to be from the place, that’s not at all what I’m saying. We have some foreigners who came and gave some really real images of the place. We have some exceptions, and it’s very fortunate that we have some exceptions, otherwise I would be saying we are in two worlds that would never be able to meet. This is absolutely the opposite of what I believe.”

What his book proved is that Elias Sanbar’s intellectualism is an art form in itself: in taking us on a hypnotic ride of images taken over two centuries, he proved that documenting the complex history of Palestine not only asserts its right to statehood, but also the inherent right that Palestinians will always exercise to express themselves, via art and international dialogue. †

Photograph by Khalil Raad (The Institute for Palestine Studies); the photograph of Khalil Raad is something Elias Sanbar used to re-contextualise images of his homeland

BACK TO BLACK

The Ruhr Museum in Essen, Germany is an excellent example of how decommissioned industrial plants can be converted into world-class museums

The last coal was mined here in 1986 and a visit to the terrace provides evidence of just how pivotal coal was to the region's economic prowess: surrounding the industrial complex on which the Ruhr Museum in Essen stands are over 100 man-made hills, carved out from over 150 years of relentless mining. Essen is nowhere close to being as breathtaking as its swankier cousins such as Cologne or Bonn, both less than two hours

away by road. Yet, political and cultural will have transformed this industrial wasteland into a UNESCO World Heritage site. If there is a Godzilla of museums, the Ruhr Museum in Essen is it.

As the wild, wild west of Germany, the Ruhr region's fortunes have wavered based on two factors: the World Wars that blighted Germany and the decrease in demand for German coal in the post-war era. >







Despite this, the Ruhr Museum carries its working-class leanings on its sleeve; aside from a robust curatorial programme, a permanent exhibit at the museum is a celebration of coal itself. Visitors can dig into how coal was extracted from the ground beneath their feet and how it was processed by the impoverished migrant population of the Ruhr region. The rust on the facades here is not the architectural whimsy you chance upon at 'industrial' night-clubs or mills that have morphed into malls. The grunge rings true.

AN INDUSTRIAL PAST

Given its industrial capacity, the Ruhr region functioned as the "armoury of the German Empire". It is a role that has come at a steep price for the people of this region; aside from the thousands of men enlisted for war, women and adolescents were also made to participate on the front. In the permanent collection of the museum, wax mouldages showcasing serious war injuries from the time (the metal helmet was only introduced after many a soldier was injured from bullet wounds above the neck) is further evidence of the unflinching eye with which Germany is looking back at its past.

The 'funnel level' is where visitors can bear witness to the consequences of World War I. The term 'consequences' connotes an ending;



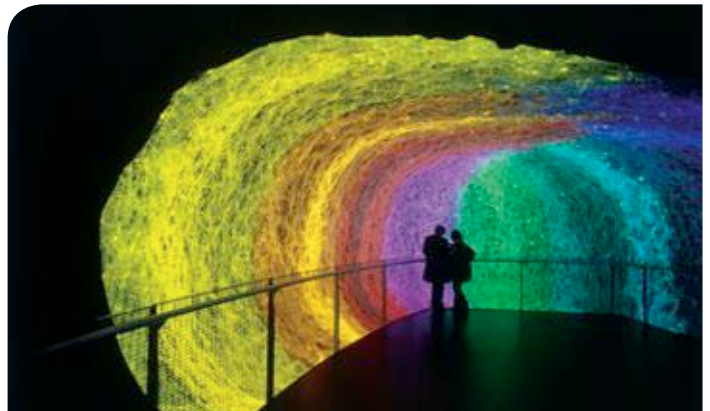
however, the Ruhr-Rhine region faced an extended war of its own. There was a coal miners' strike in 1919 and given that coal was the currency of this region, the effects were catastrophic. In addition, there was a separatist movement in the Rhineland, followed by a Belgian-French occupation in 1923. The exhibition beautifully juxtaposes the poverty and the chaos with other changes in society. For example, the frumpy, tightly laced silk dress from the pre-war era had given way to an Art Deco-inspired Charleston dress embroidered with pearls and sequins – women, it seems, had won more freedom.

REINVENTING THE REGION

In fact, a thrillingly precarious funicular that was once used to transport coal is now used to lug museum visitors. To commemorate 100 years of the start of World War I, Germany's devastating debut into the heart of its own darkness, the museum put together two years ago a show titled 1914 – In the Middle of Europe. That the Ruhr region, defiled by epochs of strife and industrial misuse, has a long way to go is obvious when you see the surrounding area from the terrace of this museum. This is no verdant vista from the Swiss

Alps. Undulating between the 150 man-made hills mentioned earlier is an ecologically ravaged entity, the river Emscher, considered to be the dirtiest river in Europe. Yet Peter Reuter, a Ruhr region loyalist and owner of a curatorial outfit aptly monikered Industrial Evolution, proudly informs us, "We're working towards making the water potable by 2020. People can then have picnics by the banks of our beautiful river."

The optimism is not misplaced. The contagious spirit with which the residents of Essen and the art management folks at the Ruhr Museum are revisiting their haunted past is indeed paying off: the coal mine has been designated a UNESCO World Heritage Site; Essen was chosen as the cultural capital of Europe in 2010; and on December 11, 2013, the Ruhr Museum welcomed its millionth visitor. Life after black, after all, is all about coming back. †



A NEW FRONTIER FOR EMERGING MARKETS

*Tracing the trajectory
of innovation in life
sciences, with a
pointer to strategic
lessons for
countries like
United Arab
Emirates*



While the West is still leading in the life sciences innovation field, emerging markets are carving a crucial niche for themselves in the sector, according to a new report from *The Economist Intelligence Unit*. The report, titled 'Innovation in life sciences: An emerging markets perspective', was commissioned by Dubai Science Park.

Western conglomerates still rule the life sciences sector, which is capital intensive, high risk, and highly regulated. The world's most famous brands of pharmaceuticals and advanced medical technologies still originate from North America and Europe, due to their long history of innovation, robust local markets and impressive talent pool.

The life sciences sector is literally an invisible wall for emerging markets and "newbies", largely due to regulatory barriers and lack of innovation. Yet, the scenario is rapidly changing and countries are taking into account the measures that are necessary to becoming breeding grounds for cutting-edge innovation.

India, China, Brazil, South Korea, Costa Rica and Singapore, all developed a robust life sciences industry in areas such as biology, medical technology and health informatics within a short span. A report by The Economist Intelligence Unit traces the trajectories of these nations "from imitators towards innovators", elucidates the barriers they had to overcome, and highlights strategic lessons for countries seeking to develop their own life sciences sectors.

KEY FINDINGS

Governments are increasingly moving away from intellectual property and instead investing in R&D. India and Brazil became pharmaceutical trailblazers largely due to their dexterity with patents, which allowed national generics firms to build on themselves and eventually become innovators themselves.

With stricter intellectual property (IP) laws, that option is now less viable for these markets at the incipient stage in life sciences growth. Policy might need to stress on basic infrastructure for research and R&D tools.

Although collaboration is a necessary ingredient for innovation, it is not as common as expected in emerging markets. Thus, though Asian firms have a history of collaboration, these tie-ups are, in fact, outsourced partnerships with Western conglomerates. Increased collaboration could lead to fruitful synergies. Two models >



> that are becoming increasingly popular are in-licensing (India) and contract research partnerships (China).

Size does matter, but not always. Three emerging markets life sciences giants — India, Brazil and China — were served well by their large populations. But Singapore and Costa Rica did rather well for themselves by employing alternative models,

showing that countries can become regional leaders in a field by leveraging plus points such as location and business climate.

Medical technology and health informatics are promising sectors for emerging markets. With pharmaceuticals innovation facing a range of obstacles, medical technologies and health informatics (such as DNA sequencing) could pave the way for

AN INNOVATION TYPOLOGY

'Innovation' is all the rage these days. But people increasingly use the term to mean very different things. Based on half a century of 'innovation' research, here is a visual typology of the forms and types on innovation, as found in the life sciences world. From vaccines to robotic surgery, this is our graphic framework showing the ways in which innovation really happens

15

Pd

Product

16

Sr

Service

32

In

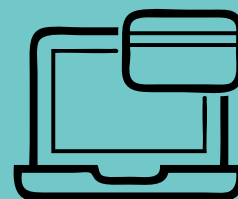
Incremental

Second generation drugs



An incrementally improved version of a medicine. e.g. slow release formula, reduced toxicity or fewer side effects.

Telemedicine



Using telecommunications to help patients wherever they are – sharing electronic files, diagnosing on the web and monitoring patient recovery.

50

Ra

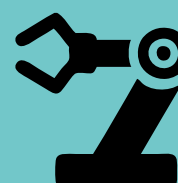
Radical

Vaccines



Probably the most radical innovation in medical history. Vaccines work by giving a disease in very small doses, stimulating the body to produce antibodies that provide future immunity to the disease. Vaccines are the reason that once deadly diseases like polio, measles and tetanus have been eradicated from much of the world.

Robotic Surgery



Surgeons are increasingly using robots to assist them, through tele-manipulators or computer control. Smart instruments have reduced tissue trauma and provide steadiness beyond the capabilities of human hands.

Source: The Economist Intelligence Unit Limited 2015

a more fruitful life sciences sector for newcomers.

Vital and quicker return-on-investment breakthroughs can be seen in this sector (as opposed to pharmaceuticals products) since the entry points to the market are easier.

TWO TYPES OF INNOVATION

In life sciences, these are the two sorts of innovation. Radical innovations are

17

Pr

Process

DNA Sequencing



The process of determining the precise order of nucleotides within a DNA molecule. Since first used in the 1970s, DNA sequencing has gone through incremental improvements in terms of speed and cost

Randomised controlled trial



The RCT transformed the way we test medicines. It works by randomly allocating a medicine to one group and comparing with a control group who do not receive it.

key events in our understanding of life sciences, ie, penicillin and X-rays. Incremental innovations improvise on already existing products, services or processes, such as second generation drugs with lower toxicity and 'super generics'.

The EIU report recommends a matrix-based model of innovation that throws light on how emerging markets have contributed to the life sciences innovation story. It aims to give governments and companies in emerging markets a clearer picture on how to nurture innovation and carve specialty niches in the life sciences sector. Both radical and incremental innovation apply to products, and to processes and services.

THE THREE FACTORS

Over the past 30 years, three factors in key emerging markets have been: government, market framework and talent.

The Indian government did not recognise product patents, but did approve process patents in the 1970s. As long as firms could prove that they created a drug via a different method as compared to the original company, they would apply for a process patent. As a result, India's pharmaceutical industry grew from zero to the fourth largest in the world in 30 years. In recent decades, these companies have also played the role of innovators.

Aside from intellectual property policies, governments' funding of research is also a key player. Biotechnology was highlighted as one of six strategic emerging industries for research and innovation focus in China's 12th five-year plan.

Within just 15 years, Singapore has become a biotechnology giant that is respected across the globe. Besides government support, fiscal incentives for attracting companies can contribute to the R&D profile.

SECOND DRIVER

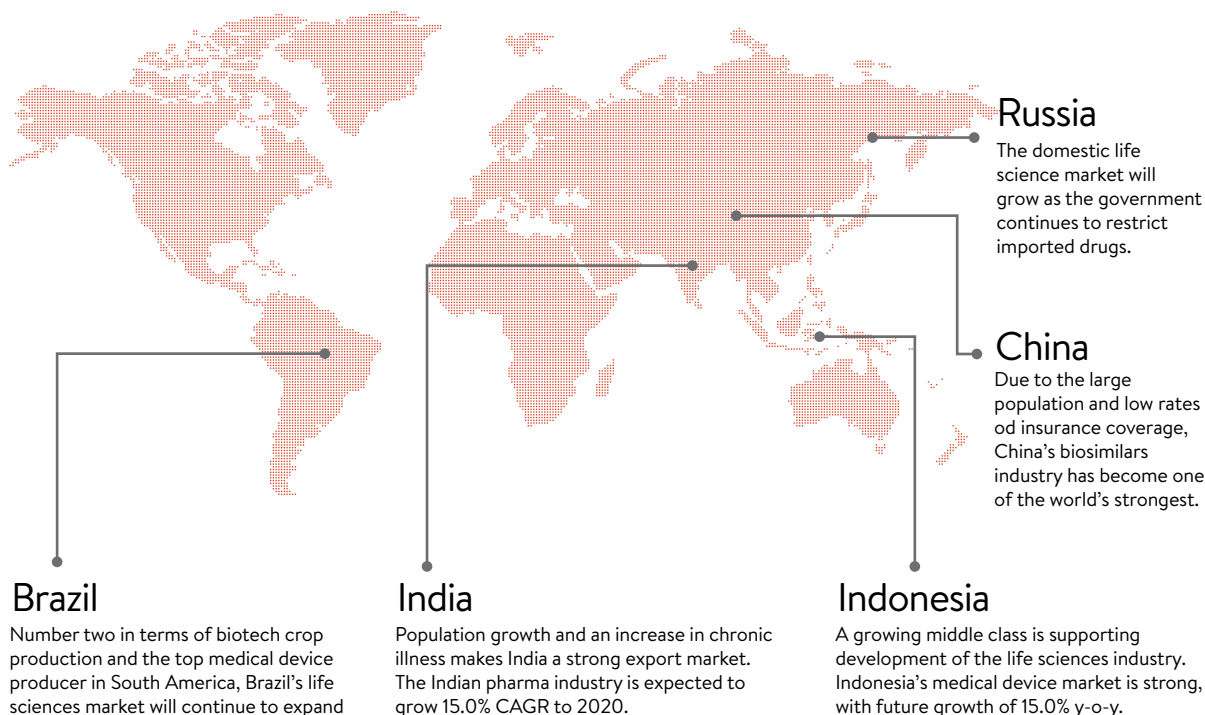
Market dynamics are the second factor for life sciences innovation. Low margins and tough competition have pushed the incremental process innovation, such as finding methods for increasing yields — the amount of product obtained in a chemical reaction — in active pharmaceutical ingredients (APIs).

A second market dynamic boosting innovation is local demand. India, China and Brazil built industries based on the sheer scale of their markets. It is this mix of domestic market size, and the boosting of effective demand through healthcare and insurance coverage, that allows these markets to create profitable firms — a necessary requirement for investment in innovation.



EMERGING MARKETS IN 2015

Source: JLL 2015 Life Science Report



> Costa Rica, on the other hand, proves that innovation dynamism does not necessarily depend on domestic market size alone. Costa Rica's USP has been its proximity to lucrative regions, like the US. Singapore, on the other hand, has cast itself to foreign investors as a hub to the rest of Asia's healthcare markets.

The third factor in supporting life sciences innovation is basic: talent pool. India's base of process chemists, and widespread English language skills, has been significant for its success. China, to reverse brain drain, in which its brightest minds started migrating, strengthened its local academic institutions.

EMULATING THE WEST

Emerging life sciences players are also increasingly looking to ape the radical product innovation of foreign pharmaceutical companies. India's move towards radical product innovation got a much-needed boost in 2005, when the government reintroduced product patents, paving new paths for firms that had mushroomed during the generics era.

According to Nature, the science journal, two forces are driving the product innovation trend in emerging markets: wide-scale adoption of the

TRIPS agreement (which mandates more strenuous levels of patent protection), and better government support for innovation.

China, India and Brazil are all building biologics and bio-similars industries, with India in the forefront. Despite these advances, the life sciences sector has a long way to go in terms of radical product innovation rates. Not all emerging markets have the fiscal might to fund basic research. But such agencies can be built with political will. They also become key drivers of innovation, and importantly, can eventually complement the private sector by providing the crucial know-how on which private sector R&D can build.

COLLABORATION

Another manner to climb the innovation ladder is by foresting better collaboration. While Asian companies do have a history of collaboration, these are by and large via outsourced partnerships. A more fertile strategy with innovation could be in-licensing — companies entering sharing agreements over product licenses, and finding synergies “enabling them to achieve in partnership what neither could achieve alone”.

For nations at the incipient stages of life sciences development, these are indeed important notes to be taken from the last 30 years. ‡



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