spokes

spokes, noun, plural of spoke
1. One of the rods or braces connecting the hub and rim of a wheel.
2. *Nautical* One of the handles projecting from the rim of a ship's steering wheel.

The Heat & the Hate
of Temperature
of Year

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José Mariano Gago is the Minister for Science, Technology & Higher Education of Portugal in Lisbon.

The criminal destruction on 4 March 2013 of La Città della Scienza, the Science Center of Naples, was not only a farcical, old fashioned vendetta-style action, but a clear sign of the shape of things to come - if we do not act collectively, bravely and quickly.
"Hegel remarks somewhere that all great world-historic facts and personages appear, so to speak, twice. He forgot to add: the first time as tragedy, the second time as farce."
(K.Marx, Der 18te Brumaire des Louis Napoleon, 1852).
However, reality seems even worse than predicted: tragedy repeats itself endlessly. And yes, there is a kind of horrible farce in those repetitions.
How often have we seen books, paintings, science papers publicly burned?
How often were their authors, or readers, or those who simply tried to think freely, burned alive?

Many young people of my generation have been deeply moved by Bradbury's Fahrenheit 451 or by Truffaut's film and were democratically educated to abhor censorship. However, are we acting accordingly? Not many of today's readers have been struck by Antonio Tabucchi's recent plea for action.

I am quoting Antonio Tabucchi, the famous Italian and Portuguese novelist, a friend I mourn and miss, because of Italy, his country that he loved as much as he despised its rampant fascist modern tendencies. As one reviewer of his extraordinary novel "Sostiene Pereira" (in English: "Pereira Maintains") rightly stated: "The novel might be read as a gloss on the dictum that 'all that is necessary for evil to triumph is for good men to do nothing'".

The burning of the Città della Scienza brings back the old battlefield for freedom into our own lives. Science has always been about doubt and truth – therefore about freedom – and nothing else. I am afraid that we will have to fight for science and for freedom, as if for life itself.

National stereotyping as the oldest precursor of hate and war is emerging everywhere. In many parts of the world, fanaticism is converting universities into battlefields. Some may risk being burned down. Are we doing enough to prevent war? Are we doing all we can to save science, curiosity and freedom?

451 F, the supposed temperature of the auto-ignition of paper, was rightly used as a banner for freedom. We should be reminded that burning down scientific curiosity is infinitely easier: it just takes the heat of hate, and the temperature of fear.

To those friends and colleagues who invented, created and managed La Città della Scienza,
And to the children and families who brought it life,
In friendship and solidarity,
José Mariano Gago, Lisbon, March-April 2013

AFTER THE FIRE: HELPING CITTÀ DELLA SCIENZA REBUILD

One of Europe's largest and pioneering science engagement institutions, Città della Scienza, was destroyed by fire due to arson on 4 March 2013 in Naples, Italy. The event marks a significant loss to Europe's science communication field.

"Città della Scienza is a European icon in the promotion of scientific culture and public engagement with science and its institutional essence cannot be destroyed. The Ecsite network offers its Europe-wide support." said Robert Firmhofer, President of Ecsite and Executive Director of Copernicus Science Centre in Warsaw, Poland.

The morning after the disaster, an emotional statement was issued from Città della Scienza: "Yesterday evening a large fire has totally destroyed our Science Centre in Naples. Our dreams, 20 years of work, everything we put in this project caught fire in a few hours during the night. We need the support of everybody, wherever you are, to believe in a new start."

You can help Città della Scienza believe in a new start by donating an exhibit. Contact:
Olivier Retout for step-by-step instructions for how you can lend an exhibit to Città using Extra - Ecsite's traveling exhibitions database: extrascience.eu.

Olivier Retout, Coordinator of Exhibit Donations in the Ecsite Solidarity Campaign for Città della Scienza:
retout.olivier@skynet.be

Also look for information on the Ecsite website: ecsite.eu/news_and_events/news/help-citta-della-scienza-lend-exhibit-through-extra.

Representatives from Città della Scienza will answer your questions and accept exhibit donations from their Business Bistro booth at the Ecsite Annual Conference in Gothenburg, Sweden, 6-8 June 2013.

The Heat of Hate & the Temperature of Fear

WRITER
José Mariano Gago

01 Young people build a wall of drawings in tribute to Città della Scienza.
02 Citizens of Naples show up in the thousands to support Città della Scienza in the form of a flash mob, 10 March 2013.

MANY YOUNG PEOPLE OF MY GENERATION HAVE BEEN DEEPLY MOVED BY BRADBURY'S FAHRENHEIT 451 OR BY TRUFFAUT'S FILM AND WERE DEMOCRATICALLY EDUCATED TO ABHOR CENSORSHIP.

01

I AM AFRAID THAT WE WILL HAVE TO FIGHT FOR SCIENCE AND FOR FREEDOM, AS IF FOR LIFE ITSELF.

02

ECSITE IN THE NEWS

Ecsite was mentioned in several major newspapers concerning the arson of Città della Scienza. Here are a few examples:

"Napoli: Ecsite, solidarieta' a Città della Scienza" (Naples: Ecsite in solidarity with Città della Scienza), *La Repubblica*, Italy, 11 March 2013

"Kopernik pomoże spalonemu centrum nauki w Neapolu" (Copernicus Science Centre will send exhibits to Naples), *Gazeta Warszawska*, Poland, 7 April 2013

"Un musée presque brûlé" (A museum almost burnt), Philip Ridet, *Le Monde*, France, 9 April, 2013

"Les flammes qui ont réveillé Naples," (The flames that awoke Naples), Dino di Meo, *Libération*, France, 11 April 2013

Maker Culture in the Science Centre

WRITER
Andy Lloyd

Andy Lloyd is Head of Special Projects at the Centre for Life, Newcastle upon Tyne, UK. He is a current fellow of the Noyce Leadership Institute, for which he is exploring how a science centre can stimulate and sustain maker culture in its community.

ISSUE
0

SPRING
2013

The explosion of new technologies during the second half of the twentieth century has seen the Western world evolve into a set of mature, consumerist economies. Although the current financial situation raises uncertainties, for most of this time the majority of the population has been content to consume products of an ever more remote industrial system. For many people, the inner workings of most technology they own is a complete mystery. However, there is a growing chorus of disapproval which considers this to be a poor state of affairs. This is the voice of "maker culture", and the next few years will determine whether it is a fad, a movement, or social change.

Over the last couple of years maker culture has prompted discussed at gatherings of science centre professionals. At the Ecsite Conference in Gothenburg, Sweden in June 2013, it will be a major topic of discussion. Where did all of this originate?

Traditional crafts

Making as an activity is as ancient as Homo sapiens. Traditional crafts – woodwork, metalwork, ceramics, and textiles – have survived industrial and technological revolutions in part because of the value placed on the processes. Although very few of us commission hand-made items for everyday use, there remains something special about seeing a master craftsperson at work. David Gauntlett, Professor of Media and Communications at Wesminster University, has argued that the act of making things has always served a strong social purpose, strengthening the individual's sense of self-worth and ability to build social connections. We are moving from a 'sit-back-and-be-told culture' to more of a 'making-and-doing culture', says Gauntlett in his book, Making is Connecting. This isn't necessarily new, but our growing capacity to connect is accelerating the process by which we engage with the world.

Open Source and the IT Revolution

The information technology (IT) revolution began much like previous industrial revolutions - with enthusiastic experimentation. While early innovation was borne from government and academia, it was in amateur computer clubs that the seeds of modern industry were sown. Major figures like Steve Jobs, Steve Wozniak and Bill Gates were members of such clubs as teenagers when computers were expensive machines and the preserve of large businesses, universities and government departments.

These communities shared their skills and expertise, resulting in much of the software that makes up the Internet. However, as software became a commercial profession as well as an academic study or a hobby, divisions started to show. Bill Gates wrote an infamous "Open Letter to Hobbyists" in 1974 complaining that unofficial copies of his software were circulating freely and arguing that people who create software deserve to be paid for their efforts. Subsequent history shows that while the "paid for" model has been hugely successful, it never quite killed off free sharing.

In the late 1970's a technical writing consultancy, O'Reilly and associates, established a business producing documentation for companies selling packaged versions of the open-source Unix operating system. From 1984 they held copyright of their manuals and became a fully-fledged publishing company. As active participants in the technology world they grew alongside Silicon Valley and in 1998 brought the benefits of these open technologies to the attention of the wider business community by hosting the "Open Source Summit". This role, as a "chronicler and catalyst of leading-edge development" positioned O'Reilly in the perfect position of emerging trends watcher as the twenty-first century began.

Make Magazine and Maker Faires

In 2005 Dale Dougherty of O'Reilly Media launched a new venture. MAKE magazine set out to capture the do-it-yourself (DIY) mind-set that Hacker spaces were recapturing from the early days of the IT revolution. The publication quickly found an eager audience of DIY enthusiasts who were busy with technology projects in garages and sheds and it coincided with the birth of social media channels commonplace today (for example Facebook in 2004, YouTube in 2005). These are the platforms through which a new generation of makers were beginning to connect and share projects.

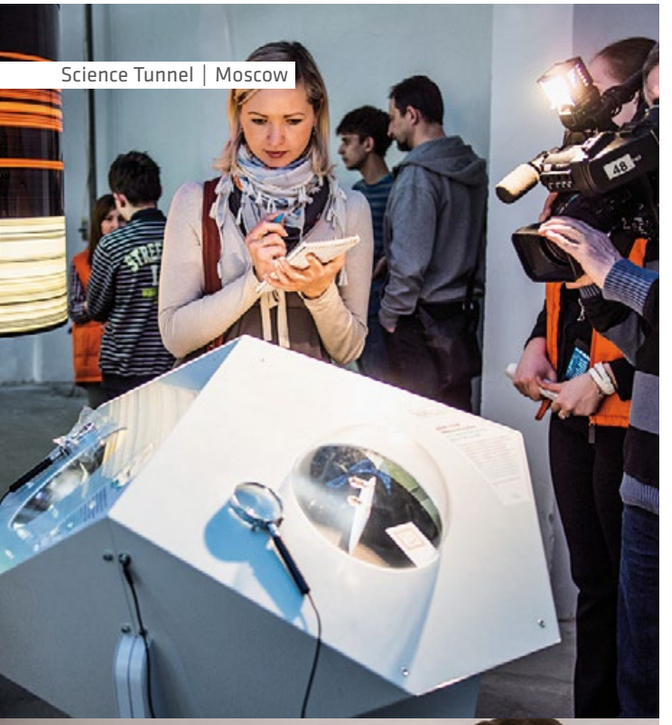
Seeing these projects online and in a magazine is all very well, but in 2006 the publication hosted its first Maker Faire - a large gathering of enthusiasts who show off and celebrate the diversity of things being made. This first event was held in the outdoor showground in San Mateo, California, and attracted 20,000 visitors. The same event welcomed over 110,000 visitors over two days in 2012.

Maker Faires and Science Centres

The Maker Faire phenomenon did not go unnoticed by science centres and museums. Several people around the world recognised the overlap in the interests and missions of these two communities. In the UK, the Centre for Life worked with O'Reilly Media to launch Maker Faire UK in 2009 while in the United States the Henry Ford Museum hosted the Detroit Maker Faire beginning in 2010. The largest partnership to date has been with the New York Hall of Science, host of the World Maker Faire since 2010, which welcomed 55,000 visitors in September 2012. In their home state of California, Make have collaborated extensively with the Exploratorium in San Francisco, with events in the centre and a regular Tinker Studio presence at the annual San Mateo event.

It has been possible for community organisations, including science centres, to host their own one-day "mini Maker Faire" by applying for a license to use the name, branding and online promotion through the Maker Faire site since 2010. Many centres are grasping this opportunity, and we expect to see more in the coming years.

Max Planck Science Gallery | Berlin



Science Tunnel | Moscow

Liaoning Science and Technology Museum | Exploration and Discovery | Shenyang

Copernicus Science Centre | Re: generation | Warsaw

ISSUE 0

SPRING 2013

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Maker Faire in Newcastle

So what was it like for us in the UK, starting out for the first time? The Centre for Life had already created Newcastle's Science Festival and had successfully increased the funding available for the programme in 2009. Newcastle has a history of innovation being one of the birthplaces of the Industrial Revolution in the nineteenth century and still boasts expertise in specialist manufacturing from electric cars to underwater robots. The city was already thinking about ways engineering and technology could figure more prominently in the Centre for Life's programme alongside pure science, so the Maker Faire fit perfectly in a city of makers.

The first year's event saw 4500 people visiting about 50 makers - all enthusiasts who spent the weekend showing off their projects. We were pleasantly surprised by how many makers showed up and how far they travelled to attend. The next year, the event was held in the Centre for Life's temporary exhibition gallery which accommodated more makers and nearly 8,000 visitors.

The 2013 Maker Faire is taking place as the author writes this. This year, we are hosting over 100 maker displays accompanied by several hundred makers and over 10,000 visitors will pass through. Makers and visitors travelled from across the UK, Germany, the Netherlands, Italy and even the United States. The event took over every square metre of the science centre, including spaces usually reserved for corporate conferences and school workshops. Even our science show theatre was transformed into a venue for talks from speakers like Dale Dougherty, the founder of Make and Maker Faire, and author and internet activist Cory Doctorow.

Impact on Centre for Life culture

This is a massively disruptive event to host, so why do we do it? The energy derived from the experience of Maker Faire is difficult to describe in words. It's the only Centre for Life event that attracts a core audience of families along with young, technically aware adults, business people, teachers and academics, artists and arts professionals and political figures all at the same time. Even as a technology event, it is remarkably gender neutral, with boys and girls participating equally in sewing, pottery, 3D printing and soldering. At its busiest time, Maker Faire retains a disarming sense of gentleness in its interactions, no doubt due to the genuine pleasure taken by makers from the experience of sharing the fruits of their labour.

As science, technology, engineering and math (STEM) communicators we have taken note of some of Maker Faire's key characteristics. Compared to most of the things we do in our sector, this is not a top-down, strictly curated activity. It is a genuine grassroots movement - the antidote to "worthiness" – and embodies the spirit behind Frank Oppenheimer's words, "Nobody ever flunked a science center".

© The Centre for Life

DIY directions

This year we introduced a DIY Biology strand, with the support of the Wellcome Trust, tying the Faire back to Centre for Life's life science origins. We had support for new start-up businesses including an advice surgery with Kickstarter. We also held our first Maker Pre-school day, giving toddlers a taste of DIY. But now we need to move beyond an annual event to a year-round programme. As our Chief Executive, Linda Conlon, said:

"Events like Maker Faire offer part of the solution. They're exciting and inspirational. This event only lasts two days but we want to ensure that it is the start of something much bigger. We want to partner with business to create a permanent space at the Centre for Life where young people can design, create and build things, where they can meet with industry experts to test their ideas and pitch their prototypes."

So we may look to the lessons of some of our peers, notably the Exploratorium and the Children's Museum of Pittsburgh, and establish a permanent "Maker Space" in place of one of our exhibitions. We may also find a way to channel Newcastle's appetite for clubs and holiday activities to stimulate the maker ethos. Even our core exhibitions have been makeified; our new Curiosity Zone promotes experimentation and creativity as processes with no predetermined outcomes or content. We probably wouldn't have had the confidence to try this without the experience of seeing large crowds engrossed in relatively complex, practical activities. David Gauntlett describes this "everyday creativity" as:

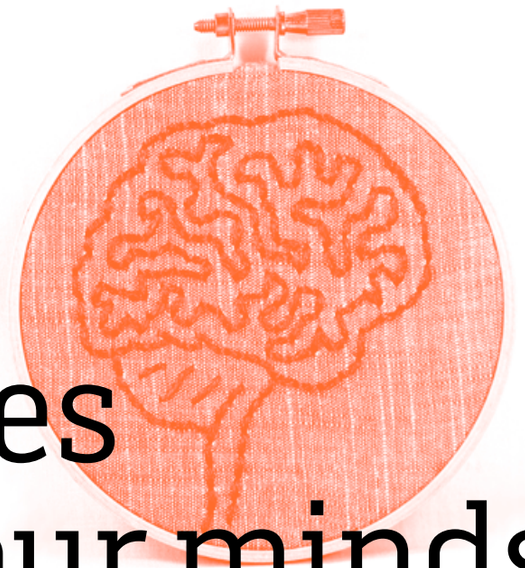
"…a process which brings together at least one active human mind, and the material or digital world, in the activity of making something which is novel in that context, and is a process which evokes a feeling of joy."

We believe this isn't a fad. We think maker culture and its empowerment of participants, is an indication of where science centres are heading. Particularly for institutions like ours, who are not tied to a historic collection, supporting and sustaining the maker movement can give us a renewed sense of purpose. As Linda Conlon says:

"It's essential that we create opportunities for those young people who have been inspired by Maker Faire and want to explore further"

We won't do this on our own. Maker culture is a product of networked communities, and science centres can participate in these networks too. Our local hackerspace, Makerspace Newcastle, is only two years old but is the product of conversations and connections established at meetings and groups over the previous five years, some of which the Centre for Life had a hand in creating. One of the Makerspace founders, Dr Brian Degger, listed some of these: "Supermondays (a local software developers group), Thursday Fizz (a monthly meeting of media people), Social Media coffee mornings at the Settledown cafe, the Howduino event at Life, Barcamp North East , Hack Days, Dorkbot meetings…". Ours is a forward-looking, well-networked city, but I am sure that your home town is equally talented.

In the twenty-first century, science centres should look to their fundamental attributes to refocus their social purpose. Science centres are a social experience, where people come to take part in enjoyable activities together, develop new skills, extend existing talents, and develop their self confidence and sense of identity around science and technology. Many of our founders, such as Frank Oppenheimer and Richard Gregory, understood this implicitly and the earliest science centres were the product of their joy, enthusiasm and practical talents. In fact, most of them would have felt perfectly at home within the maker movement and it would not be a massive leap to argue that we (science centres) originated with makers. — [April 2013]



Are digital technologies changing our minds?

ISSUE
0

We humans occupy more ecological niches than any other species on the planet. This is because our brains are superlatively evolved to adapt to our own particular environment: a process known as neuroplasticity. Thanks to their plasticity, the connections between our brain cells will be shaped, strengthened and constantly refined by our individual experiences. It is this personalisation of the physical brain, driven by unique interactions with the external world, that arguably constitutes the biological basis of each individual mind, so what will happen to that mind if the external world changes in unprecedented ways, for example with an all-pervasive digital technology?

WRITER
Susan Greenfield

A recent survey in the US showed that over half of teenagers aged 13 to 17 spend more than 30 hours a week, outside school, using computers and other web-connected devices. It follows that if the environment is being transformed for so much of the time into a fast paced and highly interactive two-dimensional space that is unprecedented, the brain will adapt accordingly, be it for good or ill, in unprecedented ways. Professor Michael Merzenich, from the University of California, San Francisco, gives a typical neuroscientific perspective. He states:
"There is a massive and unprecedented difference in how their (the digital natives') brains are plastically engaged in life compared with those of average individuals from earlier generations, and there is little question that the operational characteristics of the average modern brain substantially differ".

The implications of such a sweeping change in mind set, -let us call it 'Mind Change' -must surely extend deep and wide into future education policy. Most obviously, time spent in front of a screen is time not spent doing other things. Indeed, several studies have already documented a link between the recreational use of computers and a decline in school performance. More basic still, though, is to understand in the first place why a screen environment using only sight and sound out-competes three-dimensional activities with all five senses stimulated. Perhaps most important of all, we need to understand the full impact of the current cyber culture on the emotional and cognitive profile of the 21st century mind. Inevitably, there is no single catch-all sound-bite but rather a variety of diverse issues. Let us look at just three.

First, what is the impact of social networking sites on interpersonal skills and personal identity? Eye contact is a pivotal and sophisticated component of human interaction, as is subconscious monitoring of body language and, most powerful of all, physical contact, yet none of these experiences is available on social networking sites. It follows that if a young brain with the evolutionary mandate to adapt to the environment is establishing relationships through the more sanitised medium of a screen, the skills that are so essential for empathy may not be acquired as naturally, as well or as quickly as in the past. In line with this prediction, a recent study from Michigan University of 14,000 college students has reported a decline in empathy over the past 30 years, which was particularly marked over the past decade.

Such data in themselves do not, of course, prove a causal link, but just as with smoking and cancer some 50 years ago, epidemiologists could investigate any possible connection. Similarly, the factors should be explored that account for the appeal of the cyberworld for those with already recognised impairments in empathy, typifying autistic spectrum disorders. What about exploring other coincidental trends for a causal link, such as the obsession with the solipsistic read-out of unremarkable moment-by-moment daily routines, for example through Twitter? The psychologist Sherry Turkle, from MIT, has argued persuasively in her recent book Alone Together that the more continuously connected people are in cyberspace, paradoxically the more isolated they actually feel. More worrying still is the tendency to define oneself by the amount of attention garnered online, particularly when excessive bullying, spitefulness and plain cruelty are used to enhance such attention, as with the pernicious trend of "trolling". Might these phenomena, based as they are on the reassurance

of incessant feedback, indicate a less robust sense of identity?

Secondly, on video games, neuropsychological studies suggest that frequent and continued playing might lead to enhanced recklessness. Perhaps this is not surprising as it is surely a dangerous lesson to learn that actions do not have consequences and that victims of a shooting can become "undead" the next time around. In addition, data indicate reduced attention spans and even possible addiction. In line with this, significant chemical and even structural changes are being reported in the brains of obsessional gamers that require at the very least wider discussion beyond the scientific community.

No single paper is ever likely to be accepted unanimously as conclusive, but a survey of 136 reports using 381 independent tests and conducted on more than 130,000 participants concluded that video games led to significant increases in desensitisation, physiological arousal, aggression and a decrease in prosocial behaviour. Needless to say this "meta-analysis" has itself been criticised, but then such is the iterative nature of evaluating research. It is outside the scope of this paper to give an exhaustive review of the literature, but there should be a means for all these burgeoning scientific findings to be translated on a rolling basis into simple, jargon-free summaries which the non-specialist can readily access, evaluate, and, most importantly, question.

Thirdly, on search engines, can the internet actually improve cognitive skills and learning, as has been argued? The problem here is that efficient information processing is not synonymous with knowledge or understanding-a point well-argued and supported by empirical evidence and summarised in, for example, Nicholas Carr's book The Shallows. Even the chairman of Google, Eric Schmidt, has claimed: "I worry that the level of interrupt, the sort of overwhelming rapidity of information-and especially of stressful information-is in fact affecting cognition. It is in fact affecting deeper thinking. I still believe that sitting down and reading a book is the best way to really learn something. And I worry that we're losing that". We need to understand much more about the impact of search engines on comprehension skills. I suggest that the difference between processing and isolated fact, and understanding it, is the ability to place that fact into a wider conceptual framework that indeed gives it a meaning. Hence, the famous line from "Macbeth"-"Out, out, brief candle"-is powerful, not because of the literal image of a flickering flame but because the extinction of that flame can be linked to the extinction of life. Conceptual frameworks can also have a time dimension: hence the meaning of an object or a person can be derived from how that object or person has connected to events and relationships in the past. This is why perhaps the characters in novels are compellingly meaningful in a way that an icon in a computer game is not. When you play a game to rescue the princess, you probably do not care much about her as a person.

Given the plasticity of the human brain, it is not surprising that adaption to a cyber-environment will also lead to various positives-for example, enhanced performance in a variety of skills that are continuously rehearsed, such as a mental agility similar to that needed in IQ tests or in visuo-motor co-ordination. However, we need urgently to gain a much fuller picture.

I would like to suggest a 'Mind Change' initiative, that would involve the commissioning of epidemiological studies exploring the significance of various societal and medical trends in relation to a screen-based lifestyle, as well as ring-fencing funds for basic brain research into, for example, the neural mechanisms of addiction and attention, the long-term effects of various screen-based activities on brain structure and function, and the neural processes perhaps underlying deep understanding and creative insight.

The design of truly innovative software that attempted to offset some of the perceived or agreed deficiencies arising from the current digital culture would also be enormously valuable. Most immediately we need more detailed profiles and breakdowns of computer use, along with surveys of the views and insights of various relevant sectors such as parents, teachers and employers, who until now have had no voice. Then finally, in the light of all this input, this hypothetical initiative would make recommendations for proactively planning the most effective environment. It might well include a root and branch, paradigm-shifting re-examination of education and subsequent training that best equips the citizen of the 21st century to be personally fulfilled and useful to society.

Science and technology is having an unprecedented impact on the length and quality of our lives. We have an extended life span and extended leisure time. Like climate change, this transformational scenario of Mind Change is complex, unprecedented and controversial. However, unlike climate change, the end point is not one of just damage limitation but rather of ensuring that we deliver to the next generation an environment that can for the first time enable the realisation en masse of each individual's full potential.—

Susan Greenfield, CBE, is a British scientist, writer, broadcaster, and member of the House of Lords. She is a keynote speaker at this year's Ecsite Annual Conference.

"I worry that the level of interrupt, the sort of overwhelming rapidity of information-and especially of stressful information-is in fact affecting cognition. It is in fact affecting deeper thinking. I still believe that sitting down and reading a book is the best way to really learn something. And I worry that we're losing that"

Eric Schmidt
Chairman of Google

the network

ISSUE
0

SPRING
2013

COMMENT

The Making of Spokes

Spokes is an open space for creative discussion - a physical and virtual meeting place where ideas are shared. *Spokes* starts dialogues.
Spokes is looking forward, more focused on where the science communication world is going than on what happened yesterday, moving from analysis of the facts to a new understanding of future developments.
Spokes makes an independent selection of relevant issues, happenings and carefully checked features. *Spokes* is a reliable beacon of information in a sea of news and quasi-news.
Spokes tells the story behind the story, providing meaningful context, empowering individuals and institutions.
Spokes supports a concrete action perspective by publishing "news and information you can use."
Spokes links the different media Ecsite is currently using by creating a platform for inspiring content which connects you, the members of Ecsite, so *Spokes* needs your input.
Spokes Issue # 0 is the starting point for the changes that will make Ecsite communications even more flexible and meaningful.

Maarten Okkersen,
Chair, Spokes *Editorial Committee*

Tell us what you think of your new magazine and share your ideas:
communications@ecsite.eu

NEW GROUND

Citizens raise their VOICES for the EU research agenda

Ecsite members are becoming places where real participatory democracy in science, research and innovation can happen.
The ground breaking EU-funded VOICES project, led by Ecsite, is a big step forward in this direction. One thousand European citizens in all 27 EU countries have joined VOICES focus group discussions on innovative uses and solutions for urban waste. Twenty-seven Ecsite members have been involved in real citizen consultation processes used to define a component of the European research agenda. Ecsite institutions have not only been part of this process, but have also acquired valuable insight on methods to engage citizens, generating capacity building practices for future projects and activities.
voicesforinnovation.eu

01

02

01 Citizens talk urban waste innovations and solutions at a VOICES focus group at Parque de las Ciencias in Granada, Spain.
02 In the heat of discussion at the Ecsite Annual Conference 2011, Warsaw, Poland

THE SCENE

A leader in science communication completes an illustrious career

Per-Edvin "Pelle" Persson
Director of Heureka
Finnish Science Centre
Vantaa, Finland,
retires on 1 September 2013.

Persson is a limnologist (a practitioner of freshwater science) who moved to the science centre field in 1987 as Heureka's director of science and served as the centre's director from 1991. He earned the title of Professor from the President of Finland on May 20, 2011 – a rare national honour in Finland. At the ceremony, Persson said: "I see the science centre as a voice of rationality in a partly insane world. If there is anything we try to say, it is that our perception of the world should be based on facts and our decisions on realities. Heureka is here to ascertain that this country will never be led from horoscopes. That is a great goal and it is a privilege to work with it."

PER-EDVIN PERSSON VITAL STATS

- HE BEGAN THE TRADITION OF SCIENCE CENTRE WORLD CONGRESSES
- DIRECTOR OF HEUREKA, THE FINNISH SCIENCE CENTRE, SINCE 1991
- CHAIR OF THE BOARD OF THE FINNISH GAME AND FISHERIES RESEARCH INSTITUTE 2012-2014
- PRESIDENT OF THE NORDIC SCIENCE CENTRE ASSOCIATION IN 1987-1991
- PRESIDENT OF ECSITE 1997-1998
- PRESIDENT OF THE ASSOCIATION OF SCIENCE-TECHNOLOGY CENTERS (ASTC) IN 2004-2005
- KNIGHT (1ST DEGREE) OF THE ORDER OF THE WHITE ROSE OF FINLAND AND KNIGHT OF THE FRENCH ORDER ORDRE NATIONAL DU MÉRITE.

Trento's newest MUSE

Architect Renzo Piano's MUSE building captures the essence of Italian Alpine beauty. Photo: Alessandro Gadotti, Archivio TrentoFutura

The eagerly-awaited MUSE – Museo delle Scienze opens its doors on 27 July 2013 in Trento, Italy. "Active, attractive and memorable are the three words that will best define the new science museum," says Antonia Caola, MUSE's Head of International and Public Affairs.

Visitors to MUSE will learn about science and technology from an environmental sustainability perspective; they will see how science, technology and innovation can contribute to finding effective solutions for the future of our planet.

MUSE will also tap in to the growing maker movement with its personal digital fabrication laboratory – a FabLab – encouraging young professionals and sci-tech enthusiasts to tinker their way to innovation heaven.

MUSE will host the Ecsite Annual Conference in spring 2015.

ALL ABOUT ECSITE

Ecsite, the European network of science centres and museums, has linked over 400 science communication institutions in 50 countries for over 20 years. Ecsite facilitates cooperation and collaboration among institutions in science communication, whether they are science centres or museums, science festivals, zoo, aquaria, local authorities, university groups or companies. We are the European focal point for institutions who wish take action in the field of science communication. Our network is an intellectual hub connecting culturally and institutionally diverse professionals and networks in science communication; together, we are the definitive European voice in public science engagement.

The Ecsite added value

Professional events: For over two decades, the world's most renowned science communication professionals have gathered at the Ecsite Conference and set the precedent for Europe's leading science communication event.
The event gathers about 1,000 delegates from 50 countries.
Communication: Once a newsletter but now reinvented as *Spokes* magazine, Ecsite's quarterly publication reaches all its members with each issue addressing essential themes in the field. Ecsite institutions are encouraged to help fill the pages of *Spokes* with their news and views. Information is also broadcast across the field via a monthly e-newsletter, www.ecsite.eu and social media channels.
Analysis: Ecsite Stats is a tailor-made online tool to gather and compare data about the exhibition space, visitors and operations of Ecsite member institutions, allowing science centres and museums to facilitate advocacy by benchmarking their activities against other institutions across Europe, see the trends, and compare national and European issues among institutions in the field.
Opportunities to engage: Ecsite coordinates and partners in projects where its members are funded to play a key role. Ecsite members are at the core of projects like PLACES, VOICES and KiiCS, European projects allow members to work together, forge new links, share ideas and access European funding for their work.
Exploration: When Ecsite members choose to work together on a specific topic, a Thematic Group can be set up. These groups are learning communities made up of experts from Ecsite institutions and are driven by their will to share experience and knowledge.
Leadership: Ecsite works closely with the institutions of the European Union in Brussels, persuading policymakers of the crucial role of science centres and museums in European society. As a network, we also represent Europe alongside regional networks of science centres and museums worldwide.
Be part of Ecsite: If your institution deals with science communication, Ecsite is your professional network. Find out more:
www.ecsite.eu/members/join-*network*

HAPPENINGS

EXHIBITIONS

01 How will Saudi Arabia power its energy future? Young adults can discover innovations, explore the issues and have their say with scientists and opinion formers at a series of dialogue events set in Mishkat's unique interactive Cafe. Mishkat.org.sa
Mishkat, Riyadh, Kingdom of Saudi Arabia

02 Exhibition designed within the EU FP7 Project BIOPROM Mission Possible is a European Travelling Exhibition to promote the knowledge-based bioeconomy and is made by the BIOPROM project consortium.
bioprom-net.eu, facebook.com/biopromnet
RTD Services, Innsbruck, Austria

03 "ANIMALARIUM", By Miquel Aparci, A Challenge for the Imagination:
Animal sculptures made of objects found in abandoned factories and at flea markets.
http://ves.cat/fjRr
Museu Blau (Museu de Ciències Naturals de Barcelona), Barcelona, Spain

04 Test drive an electric car at AHHAA : One electric car is available for test driving by visitors and the other one will be turned into an interactive exhibit to show people the working principles and benefits of electric cars. ahhaa.ee
Science Center AHHAA, Tartu, Estonia

05 Once Upon a Time... Science for those who like Fairy Tales: Can science be found in the enchanted world of haunted castles, in the evil queen's Magic Mirror, in Hansel and Gretel's chocolate house, or even on a magic beanstalk that grows above the clouds? The exhibition is set around ten classic stories of children's literature that have been told by countless generations. September 2013 to August 2014.
pavconhecimento.pt
Pavilion of Knowledge-Ciência Viva, Lisbon, Portugal

06 Myths & Monsters in Scotland: explores popular myths and legends from ancient history, Greek mythology and storytelling using astonishing animatronics models, specimens and photography – discover a dragon, marvel at sea creatures and come face-to-face with a unicorn! Monday 1 July – Sunday 29 September 2013
dundeesciencecentre.org.uk
Dundee Science Centre, Dundee, Scotland

07 Pollination – all's fair in love and war: If plants could talk, they would have some incredible stories to tell. This macro photographic exhibition explores the wondrous relationship between plants and their greatest fan: their pollinators. Showing until 31 August 2013.
www.scitech.org.au
Scitech, West Perth, Western Australia

08 Durch Nacht zum Licht? TECHNOSEUM now featuring a new exhibition, Through Night towards light? History of labour movement 1863-2013. technoseum.de
TECHNOSEUM, Mannheim, Germany

09 The Invention Factory will take you along the best, the funniest but also useless and failed inventions. But you can get down to work, too, by building your own invention, testing how inventions work and getting your Inventor's Diploma! Technology can help you give shape to the world and find solutions to problems you consider important. What will you invent? 20 June - 1 September 2013. e-NEMO.nl
NEMO, Amsterdam, The Netherlands

10 Neurons at play: Pieces of human intelligence is a new interactive exhibition on intelligence featuring a colourful neural network elaborated with more than 700 neurons created by schoolchildren. http://es.mc2coruna.org/2013/03/juego-de-neuronas.html
Domus – Museos Científicos Coruñeses-Coruna, Spain

05 Once Upon a Time... exhibit runs from September 2013 to August 2014, at the Pavilion of Knowledge-Ciência Viva, Lisbon, Portugal
06 A Chimera monster showing at the Myths & Monsters exhibition.
07 A bumblebee lands on a flower and contracts her flight muscles rapidly to create a "buzz" effect. This buzzing, or sonication, shakes the pollen free from its tubes. Photo: Professor Boris Baer, Plant Energy Biology.
11 A visitor explores videos and graphics that highlight the biodiversity of life in the first section of the Extinction exhibition at Natural History Museum, London.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11 Extinction: Not the End of the World? Telling the compelling story of extinction, this new exhibition from the NHM combines iconic specimens from our world-renowned collections together with an engaging combination of high-definition videos, stunning photography, entertaining interactives and captivating audio to create a thought provoking and inspiring exhibition.
nhm.ac.uk
Natural History Museum, London, UK

12 Age of the Dinosaur exhibition: Transporting visitors back to the Jurassic and Cretaceous periods, *Age of the Dinosaur* gives visitors a glimpse of life as it was 65 million years ago. Featuring full-scale animatronics and stunning film footage, the exhibition paints an evocative picture and tells a compelling scientific story of a vital period in Earth's history. 25 May to 3 November 2013. Life.org.uk
Life Science Centre, NYC, USA

TRAINING

MSc course in Public Engagement with Science: Designed to equip students for a career as public engagement professionals, this course will have a particular emphasis on doing so through the medium of science centres and related approaches to engagement.
Contact: ian.simmons@life.org.uk
The Centre for Life in partnership with Northumbria University in Newcastle Upon Tyne, UK

The first Euro-Mediterranean and Middle East (EMME) Summer School: EMME aims to set-up a Euro-Mediterranean program for science centres and any other organisation working for the public engagement in science, in order to reinforce their capacities, strengthen dialogue and exchange, and increase the community of players in the region. Apply by 20 June: +34 958 131 900, emme@parqueciencias.com
Parque de las Ciencias, Granada, Spain, 22-27 September 2013

The FEAST International Training Course: This is a five-day interactive course including workshops, debates and presentations from experienced European trainers. The course is organized through the EU-funded project FEAST(Facilitating the Engagement of Adults in Science and Technology, feastportal.eu/partners). Contact: Rooske Franse, franse@e-nemo.nl.
Science Center NEMO, Amsterdam, The Netherlands, 9-13 September 2013

EVENTS

Ecsite Annual Conference: People, Planet, Peace, 22-24 May 2014, The Hague, Netherlands
Modeling Cities of Scientific Culture, 20-21 June 2013, Torino, Italy, openplaces.eu/conference
Science Center World Summit 2014: Public Engagement for a Better World, 17-19 March, 2014, Mechelen and Brussels, Belgium, scws2014.org


05

ECSITE T-GROUPS

Focus on Rosetta

The European Space Agency will support Ecsite's Space Group in developing events, educational activities and exhibits for science centres and museums related to the Rosetta mission. A "Rosetta kit" will enable Ecsite members to take part in a European campaign about this exciting on-going space mission which is poised to retrieve crucial information on the origins of the solar system.
Want to get in on the action?
Contact Didier Laval, Ecsite Project Manager: dlaval@ecsite.eu

Rosetta set to demystify the Solar System
Rosetta is the first-ever Space mission aimed at orbiting and landing on a comet. Its orbiter component is carrying 11 science experiments and its lander – or 'Philae' – is carrying 10 more tools which will complete the most in-depth study of a comet ever attempted.

Rosetta is named after the well-known Rosetta stone which was used about 200 years ago to demystify Egyptian hieroglyphics. Scientists are hoping that this modern-day Rosetta mission will answer questions about how the Solar System developed.

The Rosetta mission will end in December 2015. Check out the back cover of *Spokes* for a stunning image of the mission.
(Source: European Space Agency, www.esa.eu)

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An artists's rendering of the Rosetta spacecraft orbiting comet 67P/ Churyumov-Gerasimenko.
Image courtesy of the European Space Agency.

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EUROPEAN NETWORK
SCIENCE CENTRES & MUSEUMS

89/7 AVENUE LOUISE
LOUIZALAAN
B-1050 BRUSSELS, BELGIUM
T +32 (0)2 649 73 83
WWW.ECSITE.EU

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