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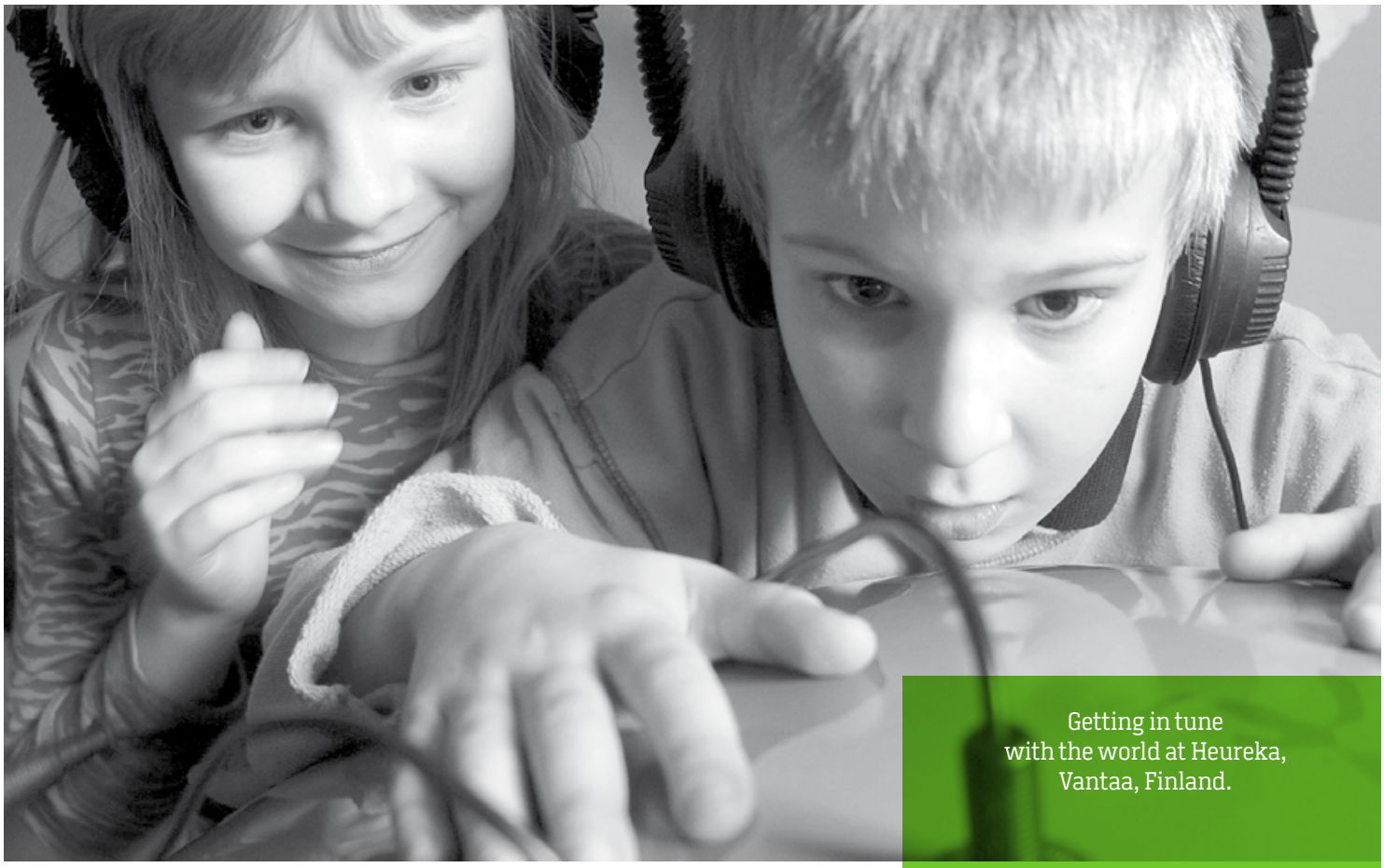

Getting in tune
with the world at Heureka,
Vantaa, Finland.

Evidence of Impact: Results from the International Science Centre Impact Study

BY
JOHN H. FALK, LYNN D. DIERKING,
MARK NEEDHAM,
OREGON STATE UNIVERSITY, USA
AND LISA PRENDERGAST

Hundreds of millions of children and adults visit science centres across Europe, Asia, North America, Latin America, Australia, and other regions yearly. Their programming is diverse; visitors of all ages engage in science through short-term school and family excursion experiences, as well as intensive long-term programs and partnerships. Although science centres have asserted they play a critical role in supporting public science learning, and there is evidence demonstrating their contribution (e.g., ASDC, 2008; ASTC, ND; Bell et al., 2009; Falk & Needham, 2011; McCreedy & Dierking, 2013; Salmi, 2002), comprehensive data supporting these claims are limited. Most investigations have involved single institutions and/or self-selected populations with limited generalizability. Robust evidence is sparse and little comprehensive international data exists.

The International Science Centre Impact Study (ISCIS), a self-funded collaboration of 17 science centres from 13 countries was designed to remedy this situation. (See Table). The goal of the research was to determine if, how, and under what circumstances science centre experiences contribute to the publics':

1. **knowledge and understanding of science and technology;**
2. **interest in science and technology;**
3. **engagement with science and technology both in and outside of formal education and the workplace;**
4. **creativity and problem solving abilities; and,**
5. **adoption of science and technology-related vocations and avocations.**

Methodology

Given the complex and cumulative nature of science learning, we utilized an "epidemiological" research approach rather than a randomized control trial (RCT) approach. RCT designs involve randomly assigning subjects to a "treatment" and a "control" group. Learning in and from science centres does not lend itself well to this approach, particularly if the goal is to understand a wide range of outcomes over long periods of time. In the real and messy world of science centre learning, it is nearly impossible to appropriately define or delimit the possible "effect" of learning sufficiently to ensure that resulting outcomes are solely the result of using a science centre. All users arrive, most often in social groups, with pre-existing interests, knowledge, opinions, and motivations, all which directly influence learning (Falk & Dierking, 2013). Likewise, learners build their understanding and appreciation for science and technology over time using multiple resources (Falk & Needham, 2013).

Epidemiological research designs deal with just such complexities by utilizing large samples and sophisticated correlational statistics to analyze and distinguish between competing factors and relationships (Rothman, 2002). The results from an epidemiological study do not support causal statements such as, "As a result of a science centre experience, this individual youth became more interested in science." Instead such an approach enables an investigator to state with specific statistical certainty that certain factors do or do not contribute to an outcome: "Individual youth who used science centres were significantly more likely to be science and technology literate and engaged people."

INSTITUTIONS AND SAMPLE SIZES

Institution	Country	Adult	Youth	Total
Canada Science and Technology Museum	Canada	250	250	500
Heureka	Finland	379	336	715
International Centre for Life	UK	424	384	808
Maloka	Colombia	406	469	875
Patricia and Phillip Frost Museum of Science	USA	256	253	509
Museo Interactivo de Economía (MIDE)	Mexico	384	384	768
National Museum of Natural Science	Taiwan	521	590	1111
National Museum of Science and Technology	Sweden	287	319	606
Ontario Science Centre	Canada	250	250	500
Pavilion of Knowledge–Ciência Viva	Portugal	321	319	640
Questacon	Australia	381	278	659
Science Centre Singapore	Singapore	412	333	745
Science North	Canada	385	322	707
Technopolis, the Flemish Science Centre	Belgium	388	382	770
TELUS Spark	Canada	392	253	645
Universeum	Sweden	258	308	566
VilVite–Bergen Science Centre	Norway	395	362	757
Total		6,089	5,792	11,881

Project researchers, working in collaboration with cooperating science centres developed, pilot tested and administered a questionnaire in each of the 17 communities to a large sample representative of each community – children ages 14–15 and adults ages 18 and over (Table). The research team used local census data (percentages of people of particular ages, gender, race-ethnicities, annual incomes, etc. living in the country/region/city) to determine the percentages of "types" of people to be included in the sample.[1] Roughly half of the 14- to 15-year-old children (47%) and less than half of all adults (44%) in the combined sample had visited one of the science centres at least once during their lifetime. All instruments, entry and analysis forms, training and data analysis were implemented by the research team. All data were collected and entered by institution staff, volunteers or contractors. Data were collected over the first six months of 2013; during analysis all data were weighted by age and income census data from each of the 17 communities to ensure as close an approximation to a random sample as possible.

Findings

Results strongly support the contention that individuals who use science centres are significantly more likely to be science and technology literate and engaged citizens.

Specifically:

- For both children and adults, using science centres significantly correlated with increased: Science and technology knowledge and understanding; Science and technology interest and curiosity; Engagement with and interest in science as a school subject (children); Engagement with science and technology-related activities out-of-school; and personal identity and confidence in science and technology. In other words, individuals who used science centres had a greater likelihood than those with no or limited science centre experience to understand and be interested in science and technology, have an enhanced science and technology identity, and be more likely to engage in scientific behaviors.
- Although results were strong for both youth ages 14-15 and adults 18 and above, the effect sizes were almost universally stronger for adults, suggesting that the magnitude of the difference in these measures between science centre users and those who do not use them or do so infrequently, was most pronounced for adults.
- The more frequent, the longer, and the more recent the science centre experience, the greater the likelihood of these outcomes.
- For adults in general and children relative to interest and curiosity, there was a threshold effect with the strongest correlations seen when individuals engaged between two and four times a year, but not more. Similarly, correlations were relatively flat for experiences up to four hours, but then increased markedly after five hours.
- In general, using a science centre increased the likelihood of significant effects regardless of the specifics of the experience. The major exception was adults whose typical science centre experience was a school field trip; they reported minimal impacts.

Like any research, this study raises as many questions as it answers. Probably the major question, given that there were strong correlations between science and technology interest and the other key outcome variables is whether self-selection was a factor – did positive science and technology outcomes emerge because of science centre experiences or did they merely arise because people predisposed to these outcomes disproportionately visit science centres? Although we suspect that both explanations are likely true (and equally valuable), as stated earlier, epidemiological research designs do not answer these types of causal questions.

What the study does provide however is strong evidence, based on a large representative international sample that the presence of one or more healthy and active science centres within a community, region, or country represents a vital mechanism for creating and/or maintaining a scientifically and technologically informed, engaged and literate public. These institutions do make a difference.

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1 The study also included a smaller "best case" scenario of frequent users. Those data will be reported elsewhere.

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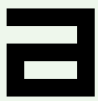
MOVING SCIENCE **INTO THE HEART** OF PEOPLE



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MATTEO MERZAGORA
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Nottingham, UK:
Students sharpen their science skills at 3-2-1-Ignition*, a science pop up shop located in a mall.
The shop was a Pilot Activity within the PLACES project.

All visitors are equal, but some visitors are more equal than others

MATTEO MERZAGORA
TRACES-ESPGG, PARIS, FRANCE

Science is not the same everywhere.
Science is not the same for everyone.
What is not universal
nor objective is the meaning of science
for the people who encounter it.
And at the hearth of the science centres'
activity there is not science, but the
encounter of visitors with what they
perceive as science.

Science is a noble form of knowledge and can be a wonderful way to produce changes in the world and in people's lives, but we should not forget that for a lot of people 'science' is essentially the main instrument by which they were defined as bad students during their school years, thus determining their progression in higher education, thus determining their social status, unless other socially determined factors (family, cultural environment) help correct the trajectory. Of course this is not a good definition of science. But it is not a misperception either. It is a reality. And the problem is that differences in the perception of science are not equally distributed socially. In high socioeconomic environments, 'science' is mainly an opportunity of success; in low socioeconomic environments, 'science' is mainly an instrument of differentiation and selection (warning of simplification: socioeconomic statuses are extremely complex and articulated, and we should always be careful not to trivialize them...). Are science centres capable of playing a role in counteracting this tendency? Are we successful in democratizing the access to scientific knowledge and its impacts?

According to Emily Dawson, who studies social inclusion in science centres at King's College London, "The challenges of social exclusion/inclusion are not new. Yet to date, despite many thousands of 'interventions', science centres and museums are still visited by a socially narrow 'public'. We must think critically about why and how social exclusion happens and why it is so resilient."

Her conclusion is somewhat pessimistic. But there is a positive element: today we are thinking critically. Good signs are, for example, the choice to devote to "Science communication for social inclusion and political engagement" the 2014 conference of the Public Communication of Science and Technology (PCST) network, the attention to social inclusion in the PLACES Local Action Plans (www.openplaces.eu) or the founding within FP7 of projects spanning science in society and the social inclusion agendas, such as SiS-Catalyst. Looking back at programmes of past Ecsite Annual Conferences gives a clear feeling of an emerging trend: social inclusion was an absent topic in 2007, but starting from 2012 - equity & inclusion (EI) becomes a keyword category in the sessions. In 2014 at least seven sessions are directly devoted to social inclusion.

The annual conference is an excellent observable, so let's give it a closer look.

In the past, social inclusion was mainly focusing on visitors with disabilities, or on gender issues. Inclusion of people from low socioeconomic backgrounds usually comes through specific programmes such as "bringing science to risky audiences", to quote the title of the 2010 Ecsite session on science activities with prisoners and small crimes committers, chaired by Giulia de Martini and involving Guglielmo Maglio, Barbara Streicher, Demitra Lelingu.

In 2009, together with Paola Rodari, Sally Duensing and Melissa Gilmore, we organised a session on the role of explainers in facing social diversities ("Face(s) to face diversities"). In 2010, Justin Dillon and Emily Dawson presented a session entitled, "Science to all: bringing in 'hard to reach' communities" (with Sue Cavell and Flora Paparou). One element begins to emerge: Reflections on inclusion should not just concern special programmes, but also our day-to-day activities. This becomes the focus of another interactive session in 2012 - "Challenges and

The challenges of social exclusion/ inclusion are not new. Yet to date, despite many thousands of 'interventions', science centres and museums are still visited by a socially narrow 'public'.
We must think critically about why and how social exclusion happens and why it is so resilient.

opportunities of social inclusion", with Andrea Bandelli, Emily Dawson and Holly Hasted.
Framing social inclusion not only as a problem, but also as an opportunity is another important step forward. Asked to comment on the outcome of the 2012 session, Holly stresses that "an important first step is to reflect on moments in our own lives where we enjoyed privileges - either by virtue of personal attributes (such as gender or intellectual aptitude) or circumstance (such as social class at birth) - that were completely beyond our control. Only then can we acknowledge the randomness of exclusion and the urgency of inclusion."

This element of self-reflection was also at the core of a session that Jan Riise, Claire Ribrault and myself presented in 2013: "Science centres and social inclusion: are we really on the right track?", in which we stimulated a reflection on the fact that if science centres are undoubtedly part of the solution, it does not mean they are not also part of the problem by unintentionally reinforcing mechanisms of exclusion through the way they define science, by the design of their exhibitions, by the nature of their programmes, etc. The need of "Searching for innovative paths in social inclusion" was confirmed in another 2013 session with Gérard Cobut, Nathalie Caplet, and Katherin Unterleitner, who introduced the wonderful project of pop-up "knowledge rooms" in abandoned shops in the underprivileged areas of Vienna.

"an important first step is to reflect on moments in our own lives where we enjoyed privileges - either by virtue of personal attributes (such as gender or intellectual aptitude) or circumstance (such as social class at birth) - that were completely beyond our control. Only then can we acknowledge the randomness of exclusion and the urgency of inclusion."

One element seems to accompany those reflections: misrepresenting the visitors and not allowing them a voice are among the main factors that generate unintentional exclusion mechanisms. A simple, personal story can illustrate this. At Espace des sciences, Pierre-Gilles de Gennes hosted a few sessions of the INPROFOOD project, in which teenagers discussed food and health issues through a PlayDecide activity (for more on this, read "Digesting big issues with serious games" by Maria Zolotonosa, also in this issue of *Spokes*). We ran some sessions with groups drawn from underprivileged areas in the northern suburbs of Paris. At one moment, two groups of teenagers got upset: One of the cards suggested obesity affects particular teenagers from underprivileged milieux. That is: them. But none of them, and very few of the people living in their community, were overweight: A temporary loss of trust resulted, as the teens perceived that the knowledge presented by science did not match their direct knowledge (the youth were mainly of south-Mediterranean origin, observing a quite healthy food tradition). Luckily, a discussion-based activity such as PlayDecide allowed them to express their feelings, and we agreed to suggest that the game's authors revise that particular card. But how would they have felt if, as in an exhibition, no space was available to express their opinions and nobody was there to listen? That presentation of science, by misrepresenting and not listening to their objections, would have reinforced the mechanisms of exclusion from knowledge-based activities and careers of which they are already victims. Together with specific programmes devoted to reaching difficult audiences, removing unintentional exclusion mechanisms from our offer appears to be a key challenge in the evolution of science centres.
Looking at this year's Ecsite Annual Conference programme, the feeling is that — thanks to the people mentioned above, and many more — we are indeed on the right track. Social inclusion will be treated in THE Group (training explainers to facilitate social inclusion) Pre-Conference Workshop at the Ecsite Annual Conference 2014 in The Hague, Netherlands, and in at least six other sessions:

- Explainers and social inclusion
- Science centres and museums: Inclusiveness for social change
- From liquid nitrogen to social inclusion: The evolving identity of science events
- Towards a 'competent rebellion': Social inclusion and innovation in science communication
- Science centres unplugged: The pop-up experience
- Unusual suspects: Bringing science engagement to marginalized groups.

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Teenagers debate
during a PlayDecide discussion
game in Paris, France.

Visitors and architects design
the city of the future,
The Hague, the netherlands.

JOHN H. FALK,
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THE NETWORK

In deep deliberation over European food issues at a PlayDecide game in Paris, France.

The young generation is very focused on technology and social media, they are not so keen on talking to each other anymore, especially on topics such as food and health. Discussion games can be seen as a great tool for improving their communication skills.

Digesting big issues with serious games

BY

MARIA ZOLOTONOSA
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"Offer healthy options in vending machines and equip them with fingerprint scanners to make sure people don't only choose unhealthy foods" – this is one of the suggestions to fight obesity that came out of the new PlayDecide on Healthy diet and lifestyle. Seventeen science centres in 11 countries evenly spread throughout Europe engaged with young people in a uniformly designed PlayDecide game developed by Ecsite as part of the INPROFOOD project.

The discussion game addressed tough food issues such as eating disorders, education, food waste and personal accountability for food choices. The overarching question posed was: who is responsible for rising obesity in Europe and who must correct the problem - Government or consumer? Almost 3,000 young Europeans played. The majority of them believe that decisions and choices related to lifestyles should be left to the citizens and it is their own responsibility to be healthy. However, governments also play a major role and should help citizens by regulating certain areas. Young people strongly believe in the need to invest in food education from an early age and urge the inclusion of nutrition-based subjects in school curricula.

Usually the only outcome of PlayDecides is a vote on four suggested policy positions. However, for the purposes of INPROFOOD organisers were also asked to report on additional aspects such as descriptions of discussions and any proposed solutions to problems. All of this information has been compiled and will be fed back to EU policymaking.

In light of the EU shift toward Responsible Research and Innovation, will dialogue activities such as PlayDecide become even more popular and more widely used by policymakers to engage citizens, or is there a need for a new format? I caught up with three institutions that ran PlayDecide to gauge their views on the subject.

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Here in Croatia we don't have a feeling that our opinion matters. If we had these kinds of public discussions, in much broader settings, such perceptions could be changed. We would start caring about what's going on around us.

What are the benefits of serious games for your institution?

MASSIMILIANO: I can see a big benefit for the schools and the teachers. They were amazed to see some students, who usually don't take active roles in class, engage and interact. The benefit for our institution was to have the opportunity to better understand the PlayDecide game. We were familiar with the format, but never dealt with it on a continuous basis. This time having the same topic over and over again, gave us the opportunity to get deeper into the format. We were able to find out what worked best for each group.

BECKY: The fact that the activity was funded allowed us to offer free experience to schools and offer something different to what we usually offer. Another benefit was working with other centres for example the Centre for Life. For us being in the UK, we often feel a bit separated from the rest of Europe and we appreciate being part of the bigger network and project.

JELENA: Croatia is quite young in the field of science communication. The INPROFOOD activity made schools and universities see us as a quality partner in science communication. We have not worked with them before, so it enabled us to form partnerships and connections. The game made a very good impression on teachers because they found it innovative and they recognised its value in facilitating the exchange of ideas among young people. The young generation is very focused on technology and social media, they are not so keen on talking to each other anymore, especially on topics such as food and health. Discussion games can be seen as a great tool for improving their communication skills.

How did your visitors respond to the INPROFOOD PlayDecide games?

M: My first impression was that youth really enjoyed playing the games and we need more of this kind of activities in schools. We are not a museum, so we ran all the activities in schools. From the point of view of the explainer going into a classroom, I can say that students really need activities about society. I felt like we were a bridge between scientific topics and real life. We were discussing things that they experiment with in private life, but not in schools.

B: Everyone enjoyed it a lot. Being able to really say what they think was important. It caught them by surprise to be able to say what they wanted. Sometime students didn't seem to know

To download the game or check out the results, visit: www.playdecide.eu

what they thought, so PlayDecide enabled them to start exploring what they actually think. Students responded very well to the idea of feeding EU policy. We don't often feel part of Europe. Students don't ever get heard on that level.

J: Students were surprised that someone cares about their opinion. They are not used to being part of public discussions; it is very rare in Croatia. They definitely liked discussing and they would like to do it more often, also on other topics. We didn't present the activity as a "game" we said it's a public discussion, not a game.

Would you use this kind of game on a different topic? If so, which topic do you think could be relevant/ interesting?

M: Yes, I think so. I personally like the topic of Public transportation. In Perugia we have some issues with transport, so it could be appreciated to have a discussion on this topic. Perhaps PlayDecide could engage mixed groups: young people and adults; those who drive and those who don't.

B: I would use the format again. What I like about the format is that it enables people to discuss without having any previous knowledge on the topic. It's a nice way of making participants relaxed, it works great. Any controversial topic is quite good.

J: Certainly. Some of the hot topics in Croatia, especially among youth, are gender equality and homosexuality. We had a referendum about homosexuality and it was very interesting to see how this topic divided the society. Young people become more and more conservative. The question is why? Discussion games could help us better understand their point of view.

What were the logistics? Was it easy to organise?

B: Yes, it was easy to organise. We have links with secondary schools, they know us well. It was a matter of getting in touch and asking them if they wanted to get involved. They were really keen.

Which demographic group respond best to these kinds of activities? Why?

M: I think this topic is very important for immigrants. They don't have the parental connection, many of them have lost the tradition, so they have bigger risk factors. In the sessions we organised about 1/3 of the participants were second generation immigrants. They were very involved and they often brought up examples of eating junk food on a regular basis, etc.

B: I think it can be used with all sort of groups– our group was mostly 14-15 years old, they spoke a lot about the transition from primary to secondary school. 'We used to be in primary school and we couldn't choose what to eat, and now we are 'grown-ups' and we can choose." In general I think the format would work for anybody. I used it with adults and elderly. Some of them had well-formed opinions but they could look into exploring new areas .

J: The game is suitable for all kinds of people even children. Primary school children like to discuss. With some adaptations, these types of activities could be very popular.

What would you do differently?

M: Sometimes I felt that the target group we chose (13-14 years old) was maybe too young to understand the complexity of the topic. I had the impression some of them didn't grasp the importance of the project. So I would have chosen a slightly older target group.

B: Teachers thought that timing was difficult due to set school hours. So I would work on a way to extend the timing. Some vocabulary was a little too technical, so I would adapt that more.

What should be done with the data collected from the games? Can it be applied somehow?

M: It would be really nice to organise a final event explaining the data and showing the results at schools for example. There is not enough data to do a scientific publication, as one needs to be trained in the interpretation of the data.

B: I think the idea of gathering peoples' opinion and feeding into policy really excited both the students and myself. If this is to be a method where you can gather opinions and feed into high-level policy, what format would we use? How should we collect and summarise the data? The voting at the end works quite well, but how do you summarise the rest?

J: The data can definitely be used for social research, presented to governments, health institutions, NGOs related to topics. In Croatia we thought it would be good to approach the ministry of education as these kinds of activities should be included in curricula, as it's very important that students share their opinions about different topics. Especially when it comes to topics related to education or democracy. Here in Croatia we don't have a feeling that our opinion matters. If we had these kinds of public discussions, in much broader settings, such perceptions could be changed. We would start caring about what's going on around us. ¶

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Ecsite member services & opportunities

AN UNFORGETTABLE CONFERENCE

For over two decades, the world's most renowned science communication professionals have gathered at the Ecsite Annual Conference and set the precedent for Europe's leading science communication event. The event tells a story of exponential growth in the science engagement field. In 2000, the conference attracted 300 people; by 2013 attendance had increased to 1,050 attendees from 50 different countries. A sophisticated programme, diverse delegates, and unparalleled networking potential make the conference a cornerstone of the science communication field in Europe and the rest of the world. Members benefit from a reduced fee.

PAN-EUROPEAN COLLABORATIONS

Ecsite leads diverse European Commission-funded collaborative projects that give members the chance to empower themselves and become players on the European stage. More than 100 Ecsite members are currently taking on over 160 opportunities in Ecsite's projects. Members are offered special opportunities to engage in Ecsite's EU projects where they get the chance to shine on the international stage and acquire lasting skills and contacts. Ecsite's Project Managers offer a wealth of support to members from a project's start to finish.

CONNECTING LEADERS

The Ecsite Directors Forum is Ecsite's high-level intimate networking and inspirational learning event exclusive to Full Member directors and senior management. The occasion gathers about 50 professionals from across Europe which offers inspirational keynote speakers and strategy sessions on the future of the network. It's a good reason to become a Full Member of Ecsite.

THEMATIC COOPERATION

Thematic Groups develop organically from within our membership, fuelled by the energy and professional interests of members. The Space Group, supported by the European Space Agency (ESA), cross-fertilizes Space communication between science centres, museums, national space agencies, research institutions, universities, and industrial companies. THE Group works to professionalize the science explainer's role, The Nature Group tackles issues related to protecting the biosphere, and the REV Group works to refine the self-reflexivity of the science communication field using research and evaluation.

STATISTICAL INSIGHT

The Ecsite Stats tool on the Ecsite website gathers several pieces of data per year regarding the amount of space, numbers of visitors and finances of each member institution. Having reliable and professionally-rendered statistics adds credibility to our network and professionalizes our advocacy for public engagement with science on regional, national and European levels, and allows members to compare themselves with others. The statistical information is for members-only access and allows Ecsite institutions to benchmark their growth and activities.
Log in to your Ecsite account to find out how you can add your statistics to Ecsite Stats!
www.ecsite.eu/networkstatistics.

DRIVEN BY MEMBERS

Full Members of Ecsite enjoy voting rights in our Annual General Meetings, held during each Ecsite Annual Conference. Members influence the governance and policy decisions that mark Ecsite's path. Ecsite's member opportunities span many themes and dimensions. This is your resource hub, your network and your chance to engage in science communication at the European level. The possibilities are endless.

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Every active member of Ecsite has an institutional account on the **Ecsite website**, www.ecsite.eu. This is the online portal from where members promote their activities, access resources and stay in the know about the science engagement field in Europe. Log on to the site and step in to your European network:

- **The Ecsite Annual Conference website** features a session proposal forum which is active prior to the closing of the Call for Proposals each year.
- **Spokes magazine** Ecsite's quarterly publication, launched in 2013, is a fresh and timely resource in the European science engagement field. Members are invited to share their events, exhibitions and resources in the "Happenings" section. Members are also welcome to suggest feature-length story ideas to communications@ecsite.eu.
- The **Ecsite e-newsletter** is broadcast monthly across the network and beyond. Members can use the e-news as a platform to showcase their news, events, exhibitions, jobs, competitions, reading recommendations and any other interesting items to communications@ecsite.eu. The e-news goes out the 15th of each month.
- Members are invited to display the Ecsite logo on their own websites and publications. Access the logo and user guidelines here: www.ecsite.eu/visual-identity
- **Ecsite's social media channels**:

Add your voice to the conversation.

Twitter: @Ecsite, #ecsite2014 (for the Annual Conference)

Facebook: Find us by searching "Ecsite, the European network of science centres and museums" and then "like" our page. Members are encouraged to post their thoughts and links.

LinkedIn: Ecsite's official group is called "Science centres and museums in Europe." Anyone can join.

2

5

4

HAPPENINGS

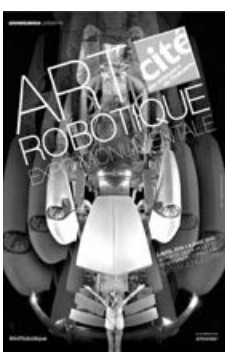
EXHIBITIONS & FESTIVALS

Soundscapes
The new special exhibition features the world of sounds and tones, how they originate and how we perceive them. Amazing sound spaces, over 40 new exhibits, sound sculptures and a vast array of hands-on experiments all render the phenomena of acoustics not only audible, but also tangible and visible. From April 2014, Swiss Science Center Technorama, Winterthur, Switzerland. www.technorama.ch

One thousand billion ants
Fascinating yet familiar, what are they really? Come and see living ant farms, with leafcutter, colony-building and fungus-growing ants. Wonder at the extraordinary way they organise themselves and the adaptability of the insect colonies that populate our environment from the soil to the treetops. 10 December 2013 to 28 September, universcience, Paris, France. www.universcience.fr

Robotic Art [1]
Watch a DS car transform into an 18-metre-high totem! This is no science fiction – it's robotic art! An exhibition that strikes a balance between art and technology and presents around a dozen spectacular works that are both enormous and, of course, robotic. 8 April 2014 - 4 January 2015, universcience, Paris, France
www.universcience.fr

1



AAAAAIR – light as a feather and heavy as a ton [2]
Air is so much more than just plain "nothing". This exhibition is focusing on the physical properties of air: What's the air resistance of different objects? How strong is air pressure? Is air capable of lifting heavy objects? These are just a few of the questions that will be answered. phæno, Wolfsburg, Germany, 23 March 2014 – 8 February 2015. www.phaeno.com
© phæno/Matthias Leitzke

Robots Festival [3]
Robots will take the reigns at phæno in Wolfsburg for three days in May 2014. They will show tasks they might fulfil in the future as well as entertain the visitor with their surprising skills. phæno, Wolfsburg, Germany, 16-18 May 2014, www.phaeno.com
© robotlab

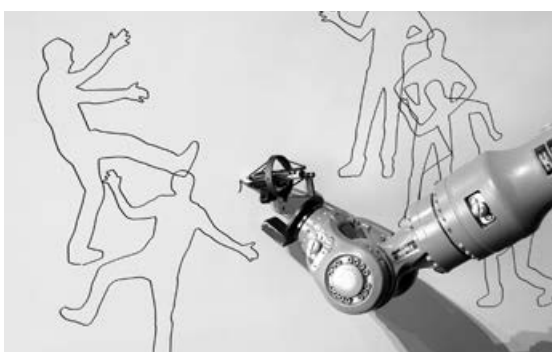
'Under Construction!' Festival [4]
Visitors are offered new building and engineering challenges: 'The Sand BricksBox' where you can try various engineering techniques and Imagination Playground – an area with huge lightweight foam bricks. Along with these we will offer a building workshop of the Engineer's museum unit, developed by the Danish team, of an Insulated Shoe Soles for walking in the desert, as well as the science demonstration, 'Why Buildings Don't Fall?' and many more fun building activities. 7-22 April 2014 The Bloomfield Science Museum Jerusalem, Israel, www.mada.org.il
© PR – Imagination Playground

Mini Maker Faire in Technopolis
This is the first Mini Maker Faire in Belgium. Makers will show visitors how to build a dancing robot or a robot snake, how to create art from rubbish, what you can do with 3D printers, how to make your very own lace and much more. Technopolis, the Flemish science center. April 26 - 27. http://mechelenmakerfaire.be/

Puro Swing [5]
The pendulum, as simple as it may look, has had a profound impact on the history of science. It was key for the invention of modern time, provided the first proof of Earth´s rotation and helped to clarify the evolution of reasoning in young kids. Puro Swing explores the secrets of pendular motion and includes spectacular exhibits like an harmonograph built with bowling balls or a coupled swing from which you wouldn't dare jump off. Casa de las Ciencias, Coruna, Spain. http://es.mc2coruna.org/2013/12/puro-swing.html
© Museos Científicos Coruñeses

Dóing
This workshop experience combines the philosophy of tinkering, marble machines and wind tubes with that of a makers lab with 3D printers, sewing machines and electronic devices. It's all part of the maker culture at the Pavilion of Knowledge – Ciência Viva, Lisbon, Portugal.
www.pavconhecimento.pt

3



JOHN H. FALK,
LYNN D. DIERKING,
MARK NEEDHAM &
LISA PRENDERGAST

MATTEO MERZAGORA
MARIA ZOLOTONOSA
THE NETWORK

1.
Wladimiro Boccali, Mayor of Perugia, Italy, is one of many local policymakers to sign the PLACES Declaration.

HAPPENINGS

EVENTS

25th Ecsite Annual Conference: People, Planet, Peace, 22-24 May 2014, The Hague, Netherlands
Innovation, problem-solving, progress, adaptation, inclusion and resilience are terms associated with scientific inquiry, but they are also necessities for life in the 21st century. Science centres and museums channel the power and rationality of science to solidify their roles as socially inclusive and inspirational forums for learning. All speakers and conveners must register for the conference. Save 20% between 8 April and 7 May 2014. Ecsite members who have paid their 2014 membership fees are eligible for discount rates. See you in The Hague.
www.ecsite.eu/annual_conference

International School of Science Journalism 5th Course - The Digital World: Computing, networks and us, Erice, Italy, 9-14 June 2014
The Erice International School of Science Journalism is aimed at science journalists, science communicators and students in science journalism and communication. In recent years, scientists and science journalists are more and more paying a critical attention to the way media cover science and innovation.
http://ericescijc.wordpress.com/

Euroscience Open Forum: Science Building Bridges, Copenhagen, Denmark, 21-26 June 2014
Grab this unique opportunity for leading scientists, young researchers, students, entrepreneurs, policymakers, journalists and the general public to discuss new discoveries and debate the direction that research is taking in all the sciences. http://esof2014.org/

Developing successful museums, exhibitions and programmes: Four training courses - Ecsite members get a 20% fee reduction
JCOM Masterclasses are international courses in different areas of the science communication field that will be held in Trieste, Italy, in Fall 2014. The four five-day courses can be attended independently and address the training needs of museum middle and senior staff, explainers, scientists and curators, but also serve interests of designers, architects, managers of cultural institutions and governmental offices, and other professionals involved in science communication projects.

- Facilitating the debate on the scientific and technological progress: 1-5 September 2014
- Developing successful exhibitions: 15-19 September 2014
- Developing successful museums and science centres: 27-31 October 2014
- Communicating current research to different audiences: 10-14 November 2014.

The course fee is 750 euro. This sum is reduced by 20% (600 euro) for Ecsite members.
http://jcom.sissa.it/masterclasses/

Sixth International Conference on Science in Society, Vancouver, Canada, 10-11 October, 2014
Vancouver is the perfect place for the 2014 Science in Society Conference. Science encompasses every aspect of our lives, from what we eat, what products we use, and the medicines we take, to how we communicate to each other. The study of this intersection between science and society is ideally suited for Vancouver whose academic institutions are models of collaborative work across scientific disciplines.
http://science-society.com/

Ecsite Directors Forum 2014: Downloading the Future, Tartu, Estonia, 12-14 November 2014
Ecsite will be welcoming Directors, CEOs and upper management of full member institutions at Science Centre AHHAA for this year's Directors Forum. Under the headline "Downloading the future" we will be discussing technology and leadership, creativity and innovation, uploading and downloading. Everything you want to know – and should know – about the future! Discover the small and mysterious (but thoroughly futuristic) Estonia and its scientific capital, Tartu.
www.ecsite.eu

RESOURCES

Connections: Inside the final year of the PLACES project [1]
What happened when more than 60 cities collaborated to shape the European city of scientific culture? All Ecsite members have been mailed a copy of this new publication which looks at the main outcomes and achievements of PLACES – a four-year European project coordinated by Ecsite. The infographics alone convey the sheer magnitude and diversity of this pan-European endeavor. Does your institution support local science communication policymaking? Then make sure your city joins the more than 40 signatories of the PLACES Declaration:
www.openplaces.eu/resources/places/81712

Pop science
The I Fucking Love Science Facebook page (based on a blog of the same name) has 11 million followers and will soon have even more – the concept is soon to make its TV debut on the Science Channel as a 60-minute show hosted by Craig Ferguson. The blog's originator, Elise Andrew, will serve as one of the show's associate producers. www.iflscience.com

TechnoFunding
This is a "Crowd Funding" website for Technological Projects and Inventions. "Crowd Funding" is the term used when people from all around the world decide to fund a certain project, idea or invention in order to bring it to life. People can fund as little as €1, $1 or £1 or as much as they like. Collectively this all adds up, so the Project Creator may have the possibility to realize the Project or Invention. There is a 5% commission charged to projects that meet 100% or more of their funding goals.
www.technofunding.com/index.php

JOHN H. FALK,
LYNN D. DIERKING,
MARK NEEDHAM &
LISA PRENDERGAST

MATTEO MERZAGORA
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THE NETWORK

3.
Signing the Mechelen Declaration at the Science Centre World Summit 2014
© Technopolis

2.
Quentin Cooper: Science journalist Quentin Cooper animates a plenary session at PLACES of Scientific Culture.
© PLACES project

LIFE OF ECSITE

TOGETHER, WE ARE GOING PLACES [2]

European mayors expressed commitment to scientific culture by signing the PLACES Declaration – a document based on the four years of dynamic work emerging from the PLACES project (coordinated by Ecsite) at the PLACES of Scientific Culture conference hosted by Universum Science Center in Bremen, Germany this March.
Mayors and local officials from over 40 cities signed the Declaration on the occasion of an official signing ceremony.

The current, and growing, list of signatory cities are:

Aberdeen, United Kingdom
Belgrade, Serbia
Birmingham, United Kingdom
Bochum, Germany
Bremerhaven, Germany
Brussels, Belgium
Burgas, Bulgaria
Cologne, Germany
Cork, Ireland
Dortmund, Germany
Dublin, Ireland
Essen, Germany
Estremoz, Portugal
Florence, Italy
Genk, Belgium
Glasgow, United Kingdom
Granada, Spain
Grenoble, France
Groningen, Netherlands
Jerusalem, Israel
Kiel, Germany
Klagenfurt, Austria
Lagos, Portugal
Luleå,Sweden
Magdeburg, Germany
Naples, Italy
Oliveira do Bairro, Portugal
Perugia, Italy
Proenca-a-Nova, Portugal
Riga, Latvia
Rovaniemi, Finland
Seville, Spain
Sønderborg, Denmark
Sofia, Bulgaria
Teruel, Spain
Torino, Italy
Toulouse, France
Trento, Italy
Tromso, Norway
Utrecht, Netherlands
Valencia, Spain
Vienna, Austria
Wroclaw, Poland
Zagreb, Croatia

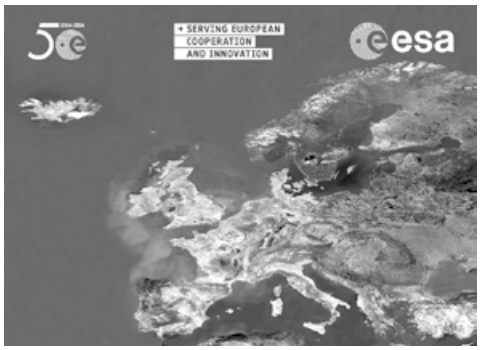
There is lasting impact for PLACES project participants – here's what three City Partnership administrators commented at the final conference:
Leonardo Alfonsi, President, European Science Events Association (Eusea), representing Perugia, Italy: *Through PLACES, Perugia has created the first Italian regional network for scientific culture – Umbriascienza. We have also developed the PLACES Local Action Plan with our eye on becoming the European Capital of Culture in 2019.*
Jon Rea, Strategic Lead for Engagement and Participation, Nottingham City Council, Nottingham, UK: *PLACES made science communication an essential and integral part of our strategic plan for economic growth, innovation, and enterprise and job creation. Young citizens are at the heart of our City Partnership. We launched the world's first pop-up science shop to engage the public at street level – this gave us the opportunity to try out a new concept in science communication. As a result, we have a sustainable and scalable model that is being applied by partners across Europe.*
Tracey Howe, Deputy Chair, Glasgow City of Science, Glasgow, UK: *Our City Partnership aimed to connect people and organizations with an interest in science to add value and improve the lives of the citizens of Glasgow. Our Glasgow City partnership has over 50 stakeholder organizations. Glasgow excels in a wide range of science including; renewable energy, laser physics, and cancer detection and treatment. Acting as a coordinating organization for our partners, Glasgow City of Science has developed a portfolio of high profile projects that demonstrate our vision.*
www.openplaces.eu

ENTRANCES AND EXITS

Didier Laval, Ecsite Project Manager, who helped propel the Space Group to success and worked on projects including KiiCS and DESIRE, will be moving on from Ecsite at the end of April. Taking his place beginning 1 May will be **Audrey Korczyńska** (akorczynska@ecsite.eu) who brings a wealth of science communication and on-the-floor science centre experience to the Project Manager role.
Emma Wadland, Communications Manager, who developed Ecsite's annual report and Spokes magazine, also bids farewell at the end of March to pursue a new opportunity in Rome, Italy.
Julie Becker (communications@ecsite.eu) will bring her communications expertise and knowledge of exhibitions and museums to the role starting 1 April.
Mid-April will see the arrival of a Business Development Manager at Ecsite, **Pedro Albuquerque**, who comes via UNICEF in Lisbon, Portugal, where he honed experience and skill in financial development.

SCIENCE CENTRE WORLD SUMMIT 2014 [3]

The outcomes of the summit result in the Mechelen Declaration – an action plan for the international science centre field and their strategic partners to commit to concrete actions to enhance public engagement for a better world. This action plan also builds on the Declarations issued at the Toronto (2008) and Cape Town (2011) Science Centre World Congresses. The summit, to which Ecsite was a partner, was hosted by Technopolis, the Flemish Science Centre, with cooperation from the Royal Belgian Institute of Natural Sciences. You can find the complete Mechelen Declaration, and photos of the entire summit, on the SCWS website: www.scws2014.org/



1.
English projection backdrop marking 50 years of European Space exploration. © ESA

THE SCENE

ARE TRAVELLING EXHIBITIONS PROFITABLE?

In our science center and museums community, the idea of valorizing in-house production by selling or renting exhibitions is still seen as a risky activity. But while public subsidies melt as snow under the sun, it's time for science centres and museums to adopt a stronger commercial attitude toward productions and exploit the EU internal market to tour them. However, by doing so, they will have to compete with private companies who have the ambition to compete with science centres and museums to attract the general public to their "special exhibition", most of which deal with science.
Their main leaders met recently for a conference in Berlin, Germany, called TEM 2013 – Traveling Exhibition Meeting, www.touringexhibitions.org – which drew around 150 producers and promoters of exhibitions. They will meet again in Munich in September 2014.
According to these Producers who tour big shows around popular themes (Titanic; Tutankhamen; Star Wars; Dinosaurs, Sharks, etc.), there is a growing demand for science-based travelling exhibitions and the sector is said to be profitable.
Driven by the dream to have "the blockbuster of the year", these professionals offer an alternative to the standard science centre and museum fare by bringing their exhibitions to any part of a city where they put on an "exceptional show" with very little publicity. Curators and pure scientists smile because in these "special exhibitions" most of the objects are casts or reproductions. But science centre and museum managers have to admit that if traveling exhibitions have become a good source of income for show-business professionals, then there's no reason why science communication institutions shouldn't also get a piece of the pie.

Olivier Retout
CEO, Lascaux international exhibition, Dordogne, France

Post exhibitions or find one to rent on Extra, Europe's source for scientific travelling exhibitions, www.extrascience.eu

FIFTY YEARS OF EUROPEAN COOPERATION IN SPACE [1]

In 1964, the conventions of the European Launcher Development Organisation (ELDO) and the European Space Research Organisation (ESRO) entered into force. A little more than a decade later, the European Space Agency (ESA) was established, taking over from these two organizations.
2014 will be dedicated to addressing the future in the light of these 50 years of unique achievements in Space, which have put ESA among the leading space agencies of the world.
ESA, together with the national delegations from its 20 Member States, the Space industry and the scientific community has made a difference for Europe and its citizens. Fifty years of European cooperation in space is an anniversary for the whole Space sector in Europe, which can be proud of its results and achievements. It is a testimony that when Member States share the same challenging objectives and join forces, Europe is at the leading edge of progress, innovation and growth, for the benefit of all citizens.

Science centres and museums can mark these 50 years of achievement by downloading a promotional projection screen of a stunning satellite image of Europe.
Go to the ESA website: www.esa.int/About_Us/Exhibitions/Highlights/Europe_in_Space

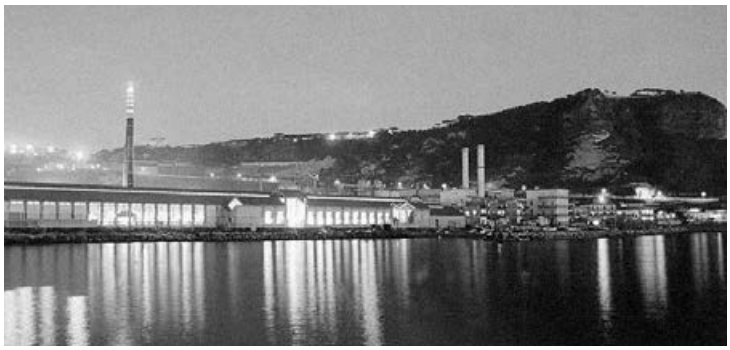
Maria Menendez
Head of Corporate Exhibitions and Events Office,
ESA, Paris France

FROM FLAMES TO LIGHTS IN NAPLES [2]

The Science Centre of Città della Scienza in Naples went up in flames on 4 March 2013. About 8,000 square meters of exhibitions and facilities were devastated in few hours. This criminal attack was unacceptable for the entire community, because when you destroy a book, a picture, or a museum you destroy also the soul of a people.
Founders of Città della Scienza, all Neapolitan and Italian citizens, are still firmly asking that the people responsible for this criminal act face justice. The science centre was the cultural hearth of Città della Scienza, a place visited by 350,000 people each year to discover and debate science and technology.

It's important to recall that, in the early hours of the fire, while we watched astonished at the burning in the night, the first messages of solidarity flowed from the rest of Europe and the world.

On 10 March 2013, the first Sunday after the fire, a flash mob gathered 15,000 people at Città della Scienza in a joyful demonstration to denounce this criminal act and to give evidence of the value of Città della Scienza.
Italian Members of European Parliament organized a special event at the European Parliament on 9 April 2013, promoted among others by Antonio Tajani, Vice President of the European Commission, to a crowded room in the Altiero Spinelli building.
Hundreds of events (concerts, TV programs, conferences and debates, theatres and shows) have been held in Italy and in Europe during these twelve months as a sign of moral support and to collect funds.
More than 1.5 million euros have been collected until now, of which 0.5 million came from small donations from citizens (through text messages and crowd funding); 0.4 million from associations, cultural organizations, schools and universities; and the rest from larger private enterprises such as the Naples Soccer Club.



2.
4 March 2014 : One year later: A new project for Città della Scienza is emerging from an agreement among the Ministry for Territorial Cohesion, the Regional Government, the City of Naples and Fondazione Idis-Città della Scienza.

2.
The majestic Citta della Scienza before 4 March 2013.
© Città della Scienza.

THE SCENE

Spontaneous initiatives have also come from the public sector such as sponsorship by the Assembly of Regions for the realization of a 500 square meter outdoor facility where hands-on exhibits, coming from the Exploratorium in San Francisco, have been installed; or the funding by the European Commission of an exhibition on Responsible Research and Innovation related to oceans and marine issues, which will be the centre of the next edition of Futuro Remoto at the end of October 2014.
Thanks to this wave of solidarity, and support from Ecsite institutions all over Europe, Città della Scienza has mustered the energy to build pillars for reconstruction in the next years and resume some public programmes in the undamaged buildings – first, through exhibitions in April, summer camps in July, and exhibitions on neurosciences and dinosaurs in November. More than 50,000 people visited these new exhibitions in the first three months of re-opening.
Significant projects have launched with the Italian Ministry of Research and Education: the implementation of the National initiative "Logicamente" to raise science, technology, engineering and math skills in Italian schools and development an exhibit fab lab.
The new science centre will be built where the previous one was located, in a modern and sustainable building and within the urban planning programme of the City of Naples for the requalification of the coastline.
The intermediate step will be the launch of Corporea, the thematic building on health issues and the human body which will open to the public at the end of 2015.
Exciting challenges are on the horizon for our new science centre which will overlook the bay of Pozzuoli, in the Phlegrean Fields. The term "phlegrean" means "burning" – from the Greek "flego" – because of its volcanic origin, where once upon a time Greeks and Romans chose to live because of the beauty and the fertility of these lands.

Vincenzo Lipardi
CEO, Città della Scienza, Naples, Italy

GOOD READS

The Internet of Vegetables: How Cyborg Plants Can Monitor Our World, Klint Finley, *WIRED*, 30 January 2014
"In the not too distant future, we could see cyborg plants that tell us when they need more water, what chemicals they've been exposed to, and what parasites are eating their roots. These part-organic, part-electronic creations may even tell us how much pollution is in the air. And yes, they'll plug into the network." www.wired.com/wiredenterprise/2014/01/internet-plants/

Palestinian and Israeli chemists meet in Malta, Science Blogs, Weizmann Science Writer, 3 February 2014
"Billions of dollars are being spent on weapons of mass destruction. A small fraction of that could go so far to engage more Israeli and Arab scientists in collaborative projects in order to create a critical mass that will bring about peace." The speaker is Dr. Zafra Lerman, President of the Malta Conferences Foundation, which organizes conferences in nonaligned Malta for Israeli, Palestinian and Middle Eastern scientists. These bi-annual conferences, attended by researchers from Egypt to Saudi Arabia, focus such neutral topics as materials science, as well as common interests like water and environmental issues." scienceblogs.com/weizmann/2014/02/03/palestinian-and-israeli-chemists-meet-in-malta/

Design museums pay homage to digital revolution, Alice Rawsthorn, *The New York Times*, 4 February 2014
"People are now much more sensitive and literate about design, and have realized that it concerns and represents them as citizens, not mere consumers," said Paola Antonelli, the senior curator of architecture and design at the Museum of Modern Art in New York. "Museums need to reflect that." www.nytimes.com/2014/02/04/arts/design/04iht-Design-Museums-Pay-Homage-to-Digital-Revolution.html?_r=0

One of London's oldest museums will offer 'After Dark' tours via robot, Emily Price, *engadget*, 6 February 2014
"We've seen telepresence robots used by everyone from doctors to check on remote patients to a student who needs to attend class. Now a robot is being used for a new purpose: museum tours. Soon you'll able to stage your own Night at the Museum, after hours at London's Tate Britain through a new project called After Dark." www.engadget.com/2014/02/06/tate-museum-robots/

Assessing scientific citizenship through science centre visitor studies, Andrea Bandelli, Journal of Science Communication, 13 March 2014
As science museums and centres (SMC) broaden their practices to include the development of scientific citizenship, evaluation needs also to take account of this dimension of their practices. It requires complex methods to understand better the impacts of public participation in activities mediated by SMC, including their impacts on the governance of the SMC themselves. http://jcom.sissa.it/archive/13/01/JCOM_1301_2014_C05/

Impacts of science communication on publics, cities and actors, Gema Revuelta, Journal of Science Communication, 13 March 2014
An evaluation toolkit developed as part of the EU-funded PLACES project was applied in 26 case studies across Europe. Results show, among other things, the contribution of science communication initiatives to public curiosity, professional networking and perception of cities where these initiatives are stronger. http://jcom.sissa.it/archive/13/01/JCOM_1301_2014_C01/

© RBINS

ANNUAL CONFERENCE

Camille Pisani, Director of the Royal Belgian Institute of Natural Sciences (RBINS) in Brussels, Belgium, brought leadership and expertise to the tough role of Annual Conference Programme Committee Chair for the past four years. The ACPC is crucial to the life of the Ecsite network – and the broader science communication field – because it dictates the content of Europe's largest science communication gathering. Camille passes the Chairpersonship torch to Mikko Myllykoski, Experience Director at Heureka, The Finnish Science Centre, Vantaa, Finland, after this year's conference.

Here, she reflects on her experience.

The ACPC is THE place to be if you want a) to be provided with a broad sample/overview of what happens in our field, the projects made, the experiences gathered, the lessons learned, the questions raised, and b) to have lively discussions with experienced colleagues, linking proposals, ideas, or people together, crossing their views, linking their networks and connections. I never stopped learning there.

It's great to still uncover surprises after working in this field for over 30 years.

The best part of chairing the ACPC is the incredible pleasure of discovering ideas or initiatives you've never heard of and would never have found by yourself, the incredible pleasure of giving them a voice and a stage, the incredible pleasure of being surprised, whatever your experience may be.

Of course there are also forgettable proposals, too - just "show and tell" or "business as usual" styles, but the complete novelty of some proposals is what remains in my memory. Memorable proposals always offer new ways to engage people, new views on old things, new fields to explore. I'm thinking of the Nerd café. Soft-toy-ology. Exhibition in water. The Grand Bazaar and Maker's Space. The wonderful fundraising movie from Croatia (by the way, countries and regions we could hardly even reach when I started, or in which the sole idea of a science centre was quite new - the Middle East, North Africa, former East-European countries. People from these places are now colleagues as well as friends. Our world has grown and has become smaller at the same time. Strange feeling.)

It's great to still uncover surprises after working in this field for over 30 years.

None of us on the ACPC would dare to say it, but I'm sure it happened to each of us at least once to find ourselves feeling like The Great Tailor of the Ecsite Annual Conference, designing in the background what our field will share at centre stage. But exactly as it happens in The secret life of Walter Mitty, the reality reminds you that serving on the ACPC is first and foremost a responsibility – a realization that always prevents us from succumbing to the Dark side of the Force.

My experience on the ACPC has also brought me important and valuable input to operate in my home institution and country. I step down because it is quite heavy to carry it together with the direction of a large institution in troubled times, with too many meetings and travels, too much work. But I still know I will miss an important source of information (and pleasure), I will dearly miss my friends from this group.

© Ciência Viva

COMMENT

THE EVIDENCE IS IN: SCIENCE CENTRES MATTER

Now that the Ecsite Annual Conference is on everybody's agenda, John Falk and his team just came out with exciting news for the science centre community (for an in-depth look, read "Evidence of Impact" by John Falk, et al., on page two). The most recent large scale empirical study in our field, the International Science Centre Impact Study, a consortium of 17 science centres in 13 countries, provides impressive evidence that museum and science centre experiences positively correlate with increased indicators of science and technology literacy.

Of course we all feel deep in our hearts that it cannot be otherwise. We see it every day in the eyes of our visitors, in the active engagement of the communities we serve. The difference now is that we have a deeper understanding of the extent to which it happens, in which dimensions of science and technology literacy, what kind of visitor experience works better, and with whom. Furthermore, we have now fresh tools in our advocacy programmes, new and stronger evidence that science centres matter for their communities, regions or countries.

This study provided unprecedented feedback to the entire world of museums and science centres. We have learned that the more frequent, the longer, and the more recent the science centre experience, the stronger its correlation with knowledge, interest and engagement with science in and outside school. This is a cumulative effect that has direct implications for practice, particularly regarding adults who have visited our centres as part of an out-of-school experience. Indeed, the findings suggest that these kinds of visits, when lasting for more than five hours, show the strongest correlation with a science and technology literate and engaged citizenry.

Having participated in this international effort, I would also like to bear witness to the extraordinary learning opportunity provided by a collaborative process that has joined so many science centres worldwide. Again, another evidence of how far science centres and museums can reach when they work together for a common purpose. The Ecsite Annual Conference is another telling example of the power of cooperative work. The presentation of this study will make it even more interesting.

Rosalia Vargas
President of Ecsite,
and Ciência Viva - Pavilion of Knowledge,
Lisbon, Portugal

Join the panel session, Inside the International Science Centre Impact Study, from 9:00h to 10:15h, Friday 23 May, at the Ecsite Annual Conference 2014.

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