

**The renewed science: bridging the gap
between museum scientists, museum
practitioners and volunteers**

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Overview

- How may natural history museums drive renewed community engagement with scientific endeavour?
- Considering current funding issues, how can science museums and research projects increase their resources?
- Is there an opportunity to reunite amateur science with professional science?

Barry, Andrew & Jen

○ Barry

- Now retired as a Technical Officer from the University of Queensland proudly shows off his new business card
- Barry is a 'Volunteer Seismologist' at UQ

○ Andrew

- Currently works in the Macquarie University Library
- Andrew's grand passion is blacksmithing and steam engines
- He spends most weekends doing restoration work with the Sydney Heritage Fleet

○ Jen

- Is raising six children
- In her 'spare time' Jen volunteers as a lace specialist in the Lace Study Centre at Sydney's Powerhouse Museum researching and restoring lacework from the 1500s to the present day
- Jen is also doing an undergraduate degree in Museum Studies

'Scientific collaborators'

- Barry, Andrew and Jen are living models of Meyer's (2010) thesis
 - Case study: **Natural History Museum of Luxembourg**
 - **'Scientific collaborators'** or enthusiasts:
 - Contribute in a meaningful way to **advancing the collective knowledge of the sciences**
 - Help to **bridge the gap** between professional scientists and amateurs in the field
 - **Nurture community ties**
 - Positively contributing to **social health and community wellbeing** (Putnam 1993, 2000)

Guy and Laurent

- Meyer (2010) tells the story of
 - Guy, a locomotive driver in Luxembourg
 - Laurent, a passenger on a public train
- Guy, the driver, uses the public train loudspeaker to announce a badger site to Laurent, a passenger on the train
- **What was happening on this train?**
- Guy and Laurent were both amateur scientists at the Luxembourg Natural History Museum
 - Guy's interest was mycology, or fungi
 - Laurent was interested in researching badgers

Meyer's research

- Despite their research interests lying in quite different fields and their day jobs worlds apart, **Guy and Laurent**, like other **'scientific collaborators'** in the Museum were colleagues
 - **They both attended conferences to present papers and posters**
 - **They both researched and wrote journal articles**
- Meyer (2010) reveals that many of the 'scientific collaborators' in his study were people whose **day job did not 'bear a direct link with their active scientific interests'**
- Scientific collaborators in his study included:
 - A **bank employee** interested in **astrophysics** and collaborating with NASA
 - A **school teacher** fascinated with **beetles**
 - A **young student** interested in and publishing about **fossils**

Meyer's research

○ Meyer (2010) found:

- Leveraging this **shared passion** for science benefits the professional scientist, the amateur scientist and the Museum
- It also **progresses collective scientific knowledge** at an exciting rate

○ Supports:

- Granovetter's notion of the importance of '**weak ties**' to community building
- Putnam's research around '**social capital**' and **community wellbeing**

Collaborative programs

- Other outstanding examples of scientific collaboration:
 - University of Portsmouth's Institute of Cosmology and Gravitation and the 'Galaxy Zoo' project
 - Great Barrier Reef Marine Park Authority Bleach Watch
 - University of Melbourne bat survey
 - Earthwatch Institute international scientific collaboration program developed by scientists from the Smithsonian Institute

Galaxy Zoo project

- University of Portsmouth's Institute of Cosmology and Gravitation set up the Galaxy Zoo project
 - Scientists asked people, via a dedicated and interactive website, to help them **categorise** over **one million extraordinary images**
 - Images had been taken by a 2.5 metre telescope in New Mexico as part of the **Sloan Digital Sky Survey**
 - **Within the first month over 85,000 people had signed up for the project with the final tally of 140,000 participants**

Engaging with the scientists

- Professor of Astrophysics Bob Nichol (2008) commented on The Science Show (ABC)
 - “We really, I would say, didn't really give much thought to the people. What I mean by that was that we wanted their help, we didn't really fully I think originally understand how interested they were in these problems. So I think there's been actually a **wonderful psychological evolution** in this project in that we started out by having a science question and we wanted to ask that science question, but then what's happened is **a whole community's grown up**. The users want to talk to themselves, they want to ask us questions, they want to exchange information between themselves, they want to discuss it and **we never really envisaged that would happen**”

Queensland's Bleach Watch

- Bleach Watch

- Run by the Great Barrier Reef Marine Park Authority
- Has recruited more than **200 people** including **tourism operations, fishermen and researchers** to help detect early signs of coral bleaching
- Dr Paul Marshall on ABC News:
 - **'It was the Bleach Watch volunteers that helped us realise that it was really starting to kick in that we were going to see a bleaching event'**

UoM's Bat Survey

- Dr Rodney van der Ree from the University of Melbourne recruited 'amateur scientists' to be part of the world's biggest survey of its type
- To find and identify which species of bats are still living within a 40 kilometre radius of the centre of the city
- Recruitment was managed via the Earthwatch Institute's website
- The Bat project is one of many short '**expeditions**' that invite students, adults and family groups to join professional scientists in field research activities

Earthwatch Institute

- Founded in 1971 by **four scientists** from the **Smithsonian Institute** who formed **four scientific teams** from the first thirty nine volunteers
- The program came out of,
 - ‘A need to invent a **new funding model** for **scientific research** became apparent, as dwindling government funding was combined with an increased urgency in the need for scientific information and action’
- Last year Earthwatch sponsored
 - over **140 projects**
 - in over **fifty countries**
 - collaborated with over **3500 volunteers**
- The amateurs are **well briefed** and **well co-ordinated** by the professionals and get to engage in some very exciting, groundbreaking scientific work

Science was founded on passion

- Science, and indeed museums and galleries, were founded on the principles of **altruism and grand passions**
- Passionate collectors of natural history specimens who had '**day jobs**' or **wealthy benefactors** to fund their expeditions
 - Sir Hans Sloane (1660-1753)
 - Joseph Banks (1743-1820)
 - Mary Anning (1799-1847)
 - Charles Darwin (1809-1882)

'Professionalising' science

- Amateurs have since been discouraged by professional scientists who **'have sought to demarcate themselves from amateurs'** (Meyer 2010: 2.5)
- Meyer (2010:2.5) reports:
 - 'Historically, the development of the research natural history museum was an important stage in the professionalization of natural history work and an example of the changing relationship between amateurs and professionals'
- Early 20th century attempts were made in America **'to expulse' amateur science from professional science'** (Gieryn 1995:415 cited in Meyer)
- **Zoologists** in particular used the walls of the museum to 'establish their authority and autonomy through the construction of **various boundaries around themselves'** (Fournier 1999:282 cited in Meyer)

The renewed science

- Meyer found:

- Amateur scientists have become ever **more peripheral** in the natural history museum environment
- **Structural disincentives** for 'amateur experts' to exercise their passions.
- The amateur and the professional spaces are '**two separate yet interconnected, antagonistic, yet mutually respectful worlds**'.

- BUT

- Scientific collaboration between amateurs and professionals **can be managed effectively**
- **Significant benefits** for both the scientific community and the community at large

Creating a *warm* world of people

- Meyer's findings demonstrated that **the ties** between professional scientists and amateur scientists tend to be **'partial and fragile'**
- Meyer (2010:3.8) finds:
 - In the early 19th century, those who practised natural history were, to the eyes of professionals, a rather **'undisciplined crowd'** difficult to keep under control
 - This attitude continues in the contemporary environment
- **Fostering the relationship**
 - The ties must be **'nurtured and cultivated with care'**
 - Museum professionals **cannot continue to control** or to use **technical and 'cold' devices**
 - Instead need to care for their amateur scientists by fostering a **'warm' world of people** rather than continue the drive for governance and control over the amateur

How *not* to 'tame the wild bunch'

- Rather than attempting to **tame the 'wild bunch' of amateurs**, Meyer (2010) advocates professionals use
 - 'Rather delicate methods' designed to **encourage and motivate**, as distinct from management techniques designed to **control and discipline**
- Practical ways of nurturing the relationship:
 - Officially **'naming'** these individuals on an honour roll
 - **Calling them something more scientific than 'volunteer'** which has a tendency to undermine their expertise and to add an economically pejorative level of meaning to their role

How *not* to 'tame the wild bunch'

- Respecting their **scientific contributions** and **rewarding** them frequently with meaningful events and awards in conjunction with the **professional scientists**
- Welcoming them to participate in **professional conferences** or at the very minimum hold conferences dedicated to the amateur scientist
- Facilitating amateur **journal publishing** opportunities
- Providing a **physical place** of their own to meet and work, perhaps in a common room space
- Offering **interactive online facilities** for meeting, sharing and contributing to the knowledge base

How *not* to 'tame the wild bunch'

○ Important social benefits:

- Serious leisure pursuits may tell us a lot about the nature of '**work**' and indicate how best to frame ideas of 'work' in the general community
- Models how to **engage and motivate** individuals to achieve greater outcomes and **higher levels of satisfaction**
- As communities of location become more dispersed:
 - Communities of interest may help provide the framework for rebuilding high levels of **social cohesion** and **social capital**
- Amateurs feed in to the museum from disparate social, economic and ethnic environments:
 - May fortify the benefits of **diversity and social inclusion** within the community

How not to 'tame the wild bunch'

○ Scientific benefits:

- **More hands and feet** in the field, or the sky, or the sea can contribute enormously to scientific knowledge
- Amateurs are led by **passion** rather than institutional, national or international agendas
- Have the freedom **of creativity, invention, exploration and discovery** that may not be quite so available to the professional scientist
- **Fresh, creative perspectives** may be uncovered that may spark new scientific ideas or directions **for professional scientists** to explore and enhance

The professional scientist

○ Producing the 'professional' scientist

- The vast majority of the new tertiary education programs in **Museum Studies** are taught from an **arts history** or **cultural heritage** perspective
- Almost all programs are grounded in an **Arts or Humanities Faculty**
- Undergraduate **science students** are not exposed to museums or amateur science at this early stage
- This is a **critical issue for natural history museums** where the majority of museum scientists have **discipline-specific training**
- Scientific specialisations focus on the most recent **didactic content** rather than the **developmental history** of that particular intellectual endeavour
- Museum scientists feel **more aligned to their scientific speciality** rather than their professional or vocational orientation

Developing positive relationships

- Universities too, can make strong contributions to the development of **positive relationships** between professional and amateur science
- How?
- By exposing professional scientists to a **museum environment** through
 - Museum studies programs
 - Internships in museums
 - The teaching of natural history

Moving forward

- Innovative approaches in **tertiary training** in museum studies may facilitate the **cooperative enthusiasm** that once pervaded the study of natural history
- Amateur scientists and museum volunteers offer **enthusiastic service**; it is up to museum professionals to recognise this and **direct it** for mutual benefit
- The current global climatic concerns offer excellent opportunities for a **critical focus** on issues pertinent to natural history

Moving forward

- We also have a generation of scientifically literate people who are **personally concerned** with the future of the natural world
- Museums need to position themselves to properly **respond to and harness this groundswell** of potential support
- In general there is **little research** on the interplay between **professional and amateur science** in the museum
- While examples of the interconnections exist, they are largely **driven by distinct agencies**, such as Friends groups (**institutional focus**) and National Science Week (**government focus**), rather than one derived from the **collective passion of individuals**

Moving forward

- We believe the time is right to undertake a sector wide analysis...

