

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

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Introduction

In 'The Age of Enlightenment', at the inception of those institutions we have come to know as the great 'Museums of Natural History', the distinctions between museum scientists, museum practitioners and museum volunteers were slight indeed. Modernity, in this (and many other regards) has resulted in the fragmentation of disciplines with resultant barriers to effective communication and cooperation between these segments. It is timely for us to examine how renewing some old connections may result in new synergies in the museum sector. This paper considers historical and contemporary relationships between scientists, amateur scientists and volunteers and proposes some new ways of reinvigorating these important bonds.

Taming the 'wild bunch'...

We met up with Barry (not his real name!) on a recent field trip to the University of Queensland where he had been employed for most of his working life as a Technical Officer in the Faculty of Science. Barry's real passion however is seismology and in retirement has secured himself a tenured role as a 'Volunteer Seismologist' and proudly shows off his UQ business card. And then there's young Andrew who works in the Macquarie University Library by day and by night practices the ancient black art of smithing. On the weekends he can be found exercising his craft as a blacksmith with the Sydney Heritage Fleet. Jen is raising six children – you would think she was busy enough – nonetheless in her 'spare time' Jen is a 'lace enthusiast' at the Powerhouse Museum's Lace Study Centre in Sydney where she researches and repairs fine handmade lace from the late 1500s to more recent machine-made pieces. Barry, Andrew and Jen are just three of many, many living models of Meyer's (2010) theory

founded on empirical research with the Natural History Museum of Luxembourg. Meyer (2010) discovered that 'scientific collaborators' such as these three enthusiasts not only contribute in a meaningful way to advancing the collective knowledge of the sciences, they help to bridge the gap between professional scientists and amateurs in the field, nurturing community ties and arguably contributing to social health and community wellbeing (Putnam 1993, 2000). Meyer (2010) tells the story of Guy, a locomotive driver in Luxembourg and Laurent, a passenger on a public train. On this occasion, Guy was driving the train and Laurent and Meyer were on board. As the train hurtled to its destination, Meyer suddenly heard the disembodied voice of Guy over the loudspeaker; in his announcement, train driver Guy suggested that passenger Laurent look out the window because a badger had been sighted in that very spot on previous occasions. What had triggered this curious event on a public train in Luxembourg?

It seems that Guy and Laurent were both amateur scientists at the Luxembourg Natural History Museum. Guy's interest was mycology, or fungi, and Laurent of course was interested in badgers, but 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 knew each other and were colleagues, attending conferences, presenting posters, giving talks and writing journal articles. Indeed Meyer himself met Guy at a Mycology Conference at the University of Oslo some time later when Guy was presenting a poster.

Meyer 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' and 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 2010:1.4). Leveraging this shared passion for science benefits the professional scientist, the amateur scientist and the Museum, and certainly progresses collective scientific knowledge at an exciting rate; it seems that many people are very keen, given the opportunity, to volunteer their time in pursuit of great science.

In an outstanding example of community collaboration, scientists at the University of Portsmouth's Institute of Cosmology and Gravitation set up the Galaxy Zoo project and were inundated with offers of international public support. These scientists asked people, via a dedicated and interactive website, to help them categorise over one million extraordinary images that 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 (Fowler ABC 2008). Professor of Astrophysics Bob Nichol (2008) commented on The Science Show,

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 (Nichol 2008).

In Australia scientists are harnessing the power of 'scientific collaborators' to help them to understand coral bleaching on the Great Barrier Reef and to research micro bats in Melbourne. Bleach Watch, run by the Great Barrier Reef Marine Park Authority has recruited more than 200 people including tourism operators, fishermen and researchers to help detect early signs of coral bleaching. Dr Paul Marshall speaking on ABC News said that, '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' (Marshall 2009). The University of Melbourne's Dr Rodney van der Ree is recruiting amateur scientists to be part of the world's biggest survey of its type that is, to find and identify which species of bats are still living within a 40 kilometre radius of the centre of the

city. Van der Ree says that, 'there's been one study that showed that one bat could eat 600 mosquitoes within an hour. So potentially they're really, really valuable and they play important roles in the ecosystem' (van der Ree 2009). Managed via the Earthwatch Institute's website, the project is one of many short 'expeditions' that invite students, adults and family groups to join professional scientists in field research activities.

Earthwatch was founded in 1971 with just four scientists from the Smithsonian Institute who formed four scientific teams from the first thirty nine volunteers who put up their hands. 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' (Earthwatch 2010). Last year Earthwatch sponsored over 140 projects in over fifty countries and collaborated with over 3500 volunteers. A look at the Earthwatch website shows that many amateur scientists are keen to support professional scientists in a range of interesting and meaningful projects. The amateurs are well briefed and well coordinated by the professionals and get to engage in some very exciting, groundbreaking scientific work.

We think that sometimes people forget that science, and particularly natural history, was founded on the principles of altruism and grand passions. Scientific luminaries such as Sir Hans Sloane (1660-1753), Joseph Banks (1743-1820), Mary Anning (1799-1847) and of course Charles Darwin (1809-1882), were passionate collectors of natural history specimens who had 'day jobs' or wealthy benefactors to fund their expeditions. Indeed Sir Hans Sloane whose collection formed the basis of the early British Museum and then the first Natural History Museum was a wealthy doctor and enthusiastic collector who gathered specimens from all over Jamaica in his spare time. So important was his collection that the British Government put in place a national lottery (now there's an idea) to fund its purchase, at well below its market value, for posterity. Joseph Banks, a colleague of Carl Linnaeus and an early trustee of the British Museum, was independently wealthy and used his fortune to fund his adventures

around the world. Mary Anning, whose fossil collections were critical to the establishment of palaeontology as a science, was the daughter of a poor working class family. She sold her fossil discoveries as curiosities and souvenirs in order to make a living. While she was never accepted by the scientific community, never published anything and died an outsider and a pauper; scores of scientists made their reputations on her discoveries. Charles Darwin, who was given a state funeral for his extraordinary contributions to science, tried other careers including medical doctor and Anglican parson (of all things) before his father, a wealthy society doctor, in frustration at Charles' lack of direction, financially sponsored him aboard the HMAS Beagle. The rest, of course, is history.

Notwithstanding their crucial contributions to the early sciences, amateurs have since been discouraged by professional scientists who 'have sought to demarcate themselves from amateurs' (Meyer 2010: 2.5) and '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' (Meyer 2010:2.5). In America, too, in the early 20th century attempts were made 'to 'expulse' amateur science from professional science' (Gieryn 1995:415 cited in Meyer) and 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 fallout from this historical pique between amateurs and professionals has been the ever more peripheral status of the amateur in the natural history museum, resulting in structural disincentives for these 'amateur experts' (Ellis and Waterton 2004 cited in Meyer) who have also been coined 'lay experts' (Epstein 1995 cited in Meyer) who indulge in 'serious leisure' (Stebbins 1992 cited in Meyer) pursuits and 'partial scientists' (Meyer 2005) to exercise their passions. According to Ellis and Waterton (2004, cited in Meyer 2010:2.12) the amateur and the professional spaces are 'two separate yet interconnected, antagonistic, yet mutually respectful worlds'. Yet, despite these sometimes fraught environments,

Meyer (2010) has shown us in his work with the Luxembourg Natural History Museum, that collaboration between amateurs and professionals can be managed very effectively, producing significant benefits for both the scientific community and the community at large.

These collaborations can provide important social benefits; such as the notion that 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 in order to engage and motivate individuals to achieve greater outcomes and higher levels of engagement and 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 which may then lead to improved social and economic rewards; amateurs feed in to the museum from disparate social, economic and ethnic environments and thus may fortify the benefits of diversity and social inclusion within the scientific community. Certainly from a specifically scientific viewpoint, more hands and feet in the field, or the sky, or the sea can contribute enormously to scientific knowledge; amateurs too, are led by passion rather than institutional, national or international agendas, thus offering the freedom of creativity, invention, exploration and discovery that may not be quite so available to the professional scientist. The fresh, creative perspectives that may be uncovered by the amateur may well spark new scientific ideas or directions that the professional scientists may care to explore and enhance and thus contribute to the greater scientific knowledge. These findings suggest that care must be taken to encourage and foster the fragile bonds between the amateur and the professional scientists if we are to take full advantage of this potentially beneficial relationship.

Meyer's findings demonstrated that the ties between professional scientists and amateur scientists tend to be 'partial and fragile, they have to be nurtured and cultivated with care'; museum professionals 'cannot continue to control – to use technical and 'cold' devices...but have to care by fostering a 'warm' world of people (Meyer 2010:1.2,abstract). The main disjunction between

the relatively liberated world of the amateur and the institutional environment of the professional is the drive for governance and control over the amateur. Meyer (2010:3.8) elaborates,

Bringing individualistic goals in resonance with institutional goals is an ambition that runs through the development of natural history. Already 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 (Drouin and Bensuade-Vincent 1996:419).

Rather than attempting to tame the 'wild bunch' of amateurs, Meyer (2010) advocates professionals caring for the fragile relationship by using 'rather delicate methods' designed to encourage and motivate, as distinct from management techniques designed to control and discipline. Meyer (2010) indicates that some methods are more effective than others and suggests that 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 (Hicks 2008); respecting their scientific contributions and rewarding them frequently with meaningful events and awards in conjunction with the professional scientists; to welcome them to participate in professional conferences or at the very minimum hold conferences dedicated to the amateur scientist; and to facilitate amateur journal publishing opportunities. We also suggest that providing a physical place of their own to meet and work, perhaps in a common room space; and interactive online facilities for meeting, sharing and contributing to the knowledge base. Universities too, can make strong contributions to the development of positive relationships.

In a previous paper Simpson (2006) discussed in general terms the history of the museum workforce in relation to tertiary training opportunities. He noted that there have been three methods of becoming a museum worker; firstly this involved, gaining a degree in an academic speciality and then undertaking on-the-job training within the museum; secondly, undertaking short courses and training options

offered by professional associations and thirdly gaining a tertiary qualification in museum studies or a closely allied field of study. In recent years there has been an extraordinary growth in the number of tertiary education programs offered internationally and there is anecdotal evidence that suggests an increasing professionalization of the sector. These shifts are perhaps due to a massification of tertiary education in general and a flow-on to the workplace.

Simpson (2006) also demonstrated that the vast majority of the new tertiary education programs in museum studies are taught from an arts history or cultural heritage perspective and almost all are grounded in an Arts or Humanities Faculty. This is therefore a critical issue for natural history museums, where the majority of museum scientists would have entered the profession as a result of their discipline-specific training rather than through any exposure to tertiary education museological programs. Scientific specialisations in tertiary education programs focus, by necessity, on the most recent didactic content rather than the developmental history of that particular intellectual endeavour. As a result museum scientists feel more aligned to their scientific speciality rather than their professional or vocational orientation. Therefore, facilitating the interface between trained professional museum scientist and passionate amateur investigators in a mutually beneficial context in the natural history museum is crucial. Moreover, internships in real life museum environments and the teaching of natural history as a branch of learning in universities may also contribute to breaking down the barriers and nurturing the fragile bonds between professional scientists and amateurs in natural history museums rather than attempting to tame the 'wild bunch' that are amateur scientists. Certainly we are committed to researching and developing new pathways, tools and opportunities that will contribute to this important endeavour.

Conclusion

Innovative approaches in tertiary training in museum studies may afford increased opportunities to facilitate that 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.

In the context of current global climatic concerns there has not been a period since those heady days of the establishment of systematic science that has offered a more critical focus to issues pertinent to natural history. 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. We believe the time is right to undertake a sector wide analysis. 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.

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