INVERNESS RESEARCH

REPORTS FROM THE FIELD

SCIENCE FOR MONKS

Science for Monks:

Reflections On Interviews With Program Faculty

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Reports from the Field:

Inverness Research supports the Science For Monks program through a process of "groundtruthing" where we help the program articulate its theory and intentions, and then make site visits to the field to check the congruence of theory and field realities. This report is part of a series of Reports from the Field where we ask senior researchers to write about their site visits sharing what they learn from their in-depth interviews, observations and discussions with monks and faculty. The reports are intended to maintain an informal tone and reflect the researcher's impressions as well as the data they have gathered.

Background on this report

In these observations and reflections, Scott Stambach draws on interviews with Western faculty conducted in 2016 and 2017. These faculty taught in many different monasteries across India in a range of institutes and workshop settings. In this report they reflect on their experience teaching the monks and nuns, and Scott captures the recurrent themes that emerge from his discussions with the faculty. They describe the most interesting aspects of teaching the monks, note the differences with their students in the West, and describe how the monks comprise a kind of "ideal" teaching audience. Scott also identifies the multiple benefits and contributions that participation in the workshop offers Western faculty.

Background on Western Faculty in the Science for Monks Programs

SFM faculty travel to Tibetan settlements in rural India where they immerse themselves in the local community, teach and lead programs with monastics, and undertake a rigorous intellectual reflection on how to communicate and reach common understanding. Faculty in the program take on a variety of roles, teaching science content, coaching community exhibitions and written publications, and collaborating with the monastics on research investigations. Faculty include university research scientists, museum professionals, designers and builders, and professional writers. Many of the faculty were former classroom teachers and most have extensive experience in training leaders who then are responsible for training others.

A Summary of Findings from Science for Monks Faculty Interviews

The Broad Strokes

Before getting into specific findings, I thought it might be helpful to paint the general impressions of the faculty post-workshop. With few exceptions, the overwhelming consensus is that working with the monks was powerful and transformative. Typical adjectives used to describe their experiences/interactions included *enlightening, humbling, fun, partnership, astounding, insightful, inspirational, motivational, amazing, and memorable.* Adjectives used to describe the monks themselves included *curious, witty, thoughtful, intellectual, deep, open, funny, and characters.* Across the board, the interviewed faculty reported that they would highly recommend the experience to their colleagues (though most make a point of saying that only open-minded and patient scientists or educators could appreciate and benefit from the experience). The only less-than-glowing description of their interactions with monks came from one researcher who found the monks to be lovely but less open minded and more dogmatic in their belief structures than he had expected.

As for program improvement, the interviewed faculty seemed to struggle to find substantive ideas for growth in the program. When pressed there were roughly two thoughts that emerged. One was a general sense that the workshops were longer. The other had to do with faculty desiring more preparation time before the workshops. With the exception of these two considerations, the faculty universally praised the program and reported that they grew immensely as educators, researchers, and human beings as a result of their experiences in India and Bhutan.

Major Findings

1. **The Faculty saw the Tibetan monks as voracious learners who are warm, open, and receptive to the scientific method and new science content.**

A lot was said by the faculty about the qualities the monks possessed as learners. These qualities included being deep thinkers, putting truth before dogma, and holding the belief that science can help actualize compassionate values and service in the world. According to my own experience of working with the monks, these qualities were on full display (especially an openness to truth, even if it conflicted with Buddhist teachings). The faculty also seemed

intrigued and delighted by the interesting dichotomy of the monks being scientific novices on the one hand, yet so intellectually advanced on the other.

In spite of the relatively short length of the workshops and minimal scientific background of the monks, the faculty collectively felt like the monks learned and internalized the spirit of the scientific method and the scientific content they sought to share. If they did not fully grasp or understand something, the monks were comfortably with the lingering uncertainty and ambiguity. In terms of teaching methods, many of the monks were palpably excited to take the new lessons and techniques they learned back to their science centers. The faculty also noted that the monks' training in debate seemed to help facilitate their growth since argumentation is a fundamental component of the scientific process.

> *Their understanding of scientific design and research is growing at an exponential rate compared to when I have taught scientific design and research design here in the West. It takes a while for individuals to grasp, but their desire to grasp the material allows them to pick it up so much faster and their understanding of scientific design and how to go about it and the statistical analysis… is just growing immensely. Their desire to truly investigate these things is growing as well.*
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> *They are just fine students who love to ask questions, which is great… We realized that it works really well to allow them to argue because they like to argue... They are so willing to think deeply and it is something that I am trying to train my students to do... my gut tells me that they walked away with a new picture of what it means to be alive. I think they learned to look at their environment critically and to think about the interconnectedness of different parts of life.*
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> *I will say I was pleasantly surprised by the speed at which they assimilate and then apply the science we are talking about… the thing that I learned from them is that no amount of content or skill as a teacher or structure of curriculum can make up for the skill of the learners in front of you.*

2. **Tibetan monks provide faculty with a unique opportunity to explore new lessons and teaching methods under ideal conditions.**

Almost every teacher and scientist I interviewed described the mind of the monk as virtually new to science, yet, at the same time, highly trained learners and deep thinkers. This provided a unique opportunity for faculty to explore new lessons and teaching techniques in the context of a workshop. It was almost as if the monks were ground zero for exploring new lessons because, if the lessons fail to achieve their learning goal on the monks, they most certainly would not work on other more challenging audiences (i.e. college and high school students). This allowed faculty to take risks, explore new teaching ideas, refine old techniques, and see what their lessons could look like with an audience that is both new to science but also intellectually curious and refined.

*Obviously these guys are really good at questioning and really good at thinking and that is **their** training. Our students are trained to answer questions on tests.*

To see the raw curiosity and genuine, almost childlike inquiry of the world around them is refreshing.

There was a nuance and skill to it that I was not prepared for. These monks were skilled at evaluating a premise or evaluating a model and they could take it apart.

They are the best students, maybe not the most educated or trained students that I have ever had, but in terms of just student persona in the sense of debate, the wanting to learn, the desire to learn. I have never experienced anything like it.

3. **Science for Monks faculty find that from their experience with the monks their own attitudes towards western science tended to "soften" in comparison to the Western scientific community, which can often be "combative" and "competitive."**

This might be the most universal sentiment expressed by the faculty we interviewed. Across the board, the scientists and teachers who participated in these interviews described the scientific world that they come from as cold, competitive, arrogant, and uninterested in shades of gray. But, when presented with a group of monastics who did not view science through this lens, and who valued a spirit of curiosity and cooperation in discovery, the faculty couldn't help but return to their practices with a more humble attitude towards science. They didn't take the hardline scientific approach quite as seriously. They understood that while competition and "hard-assery" were still the name of the game in western science, they could continue to play the game without being consumed by it.

It is pretty competitive and you don't get too far if you are too willing to say you are wrong or your ideas aren't perfect. You don't tend to go around admitting that in public…[after working with the monks] you emphasize more what science doesn't know or questions that it can answer and not pretend like it is all this powerful edifice that is just going to move inextricably towards truth, whatever that means.

I think I would say that there are two important things. One is a more humble way of doing science or learning to do science and the other thing is, maybe learning about a different academic system that will sort of include contemplation.

We experience a very individualistic society where everybody is out for themselves and when you go to these monasteries, they would do anything to help you and just the amount of respect they pay to one another and the amount of respect that they pay to us…

I think I also have a renewed appreciation of the role of curiosity in science and that curiosity also has a value.

4. **Science for Monks faculty return to their careers with a deeper appreciation for how values and ethics can and should play a part in Western Science.**

The faculty described the monks as *here to learn science in order to serve humanity*. Most of the them expressed that there is no way that one can work closely with these monks without that spirit and intention seeping into one's own career. For some of the faculty, working with the monks was a reminder of why they ultimately entered science in first place—to help people and contribute to the world. In some cases, there was a sense that some of that pure motivation was lost in the rat race of the western academia, but through working with monks that intention was reclaimed. Quite universally, the faculty expressed that western science stands to gain a lot from this spirit of searching for truth while holding onto the values of service and contribution.

The hardest thing for me initially was trying to separate what I think of as the practice of science from what they think of as the Western technological culture. So they would wonder why in the West you have so much science but you pollute the air.

What [the monks] have to offer is the recognition that science should be about values as well as about knowledge. Science has to have an ethical basis and that science should not be so omnivorous or think that all of the answers are there if we just had enough money in our research funding.

I think more about these things now in the context of my work and try to pay more attention to my motivation and be more about how it can be presented to others, rather than for the benefit of myself. I guess those kinds of things really make the work have a spiritual factor and I feel like this project is very well suited to that and so it can help bring that quality more into my life as well.

I think there are a lot of aspects of humanness that are exemplified in practitioners with Buddhism that are worth studying that are not readily part of the Western experience.

I think where Buddhism can contribute is this background question of… 'why is it important to know that truth? If you do know that truth, what is that going to let you do?' This is something that I think about as a philosopher and I try to contribute to Western science as well is… 'why are you asking the questions in the first place and what is that doing for society and for you personally?'

It goes back to some of Feynman's later writings after he helped create the bomb and [then said] 'oh crap… what did I just do?'

5. **There is a deeper human restorative component to working with Science For Monks that faculty did not typically get from their scientific careers.**

This sentiment was expressed less explicitly than some of the other findings, but reading between the lines there was definitely an understanding that somehow the work they are doing is contributing to healing wounds, rebuilding a community, and preserving a culture. The monks are a refugee community and have suffered under the tranny of the Chinese. I got the sense that there is a quality of goodness and contribution that the faculty felt grateful to be a part of. Relatedly, some faculty saw teaching the monks as an opportunity serving a truly underserved population. There was also this feeling that by helping a community who is committed to using science to serve humanity, they are contributing to the engine of that service.

> *I think for the most part I learned a lot about the refugee experience for Tibetan people. I read a little bit about it, but I didn't have a real clear idea of what that was like and it sounds very difficult and extremely challenging going forward.*
>
> *The other thing it has made me think about from a social justice standpoint is that sometimes we are missing the boat when we talk about giving people opportunities that wouldn't otherwise happen. We narrowly confine it to underserved populations in the United States and going to college… working with these brilliant people made me reflect on the undercapitalization of human brain power.*

6. **Science for Monks faculty feel enriched by being immersed in Indian culture and monastic traditions.**

The faculty reported that Science for Monks gave them the opportunity to explore a millennia-old monastic tradition in the intense, vibrant, and complicated setting of modern day India. They got exposed to new educational systems in a different country with a different political and economic context. They had the opportunity to engage in conversations on education with teachers and students with radically different educational mindsets. They seem thrilled to have the opportunity to see and explore novel forms of education such as monastic debate and meditation and get more intimately acquainted with the history and practice of Buddhism.

> *The chance to interact with people who have such different worldviews and ways of learning—you question your own teaching and your own learning.*
>
> *Part of it is just going to India and the whole experience of being completely out of comfort zone and being in somebody else's house and you are a guest and so all of the stigma of being a teacher and the cultural norms that surrounded that went out the door.*

It is an eye-opening experience. I am not even talking about all of the stuff that I learned just by going to India, that is a whole different topic, but it is an amazing place and completely really mind-blowing is not even adequate for me. It is just totally nuts.

7. **Science For Monks faculty are able to explore fundamental questions in science more deeply with Tibetan monks because of their training in debate, concentrated reflection, and taking novel perspectives.**

Because of the rigorous nature of Tibetan monastic training (analyzing texts, meditation training, debate, etc.), the faculty described the monks as able to explore questions in science, education, and philosophy much more deeply than most western audiences. Moreover, the monks relate these concepts to their own context and philosophical beliefs within Buddhism. Some good examples were the incredibly rich conversations I had with monks about the connections between quantum mechanics and Buddhist teachings. These conversations resulted in a shift in my perspective from being skeptical of such connections to seeing the potential value they add to both traditions. The faculty also seemed grateful to be able to discuss topics that were hot-button political issues in American and not have the conversation turn "two-sided" and "us vs. them."

I think that because they have argumentation as part of their learning and a positive part of learning, it helped me think about how to take different perspectives as a way of learning.

It is an opportunity to take a step back and reflect on your assumptions about teaching and learning and your own culture and other people's cultures and your assumptions about the nature of science and knowledge.

They think about things in a way that is quite fundamentally different than we do and a lot of that is due to their tradition or whether it is due to their debate training. We are trying to figure that out because at the end of the day, they can think of things from 8 different ways and I am thinking of things from a very linear perspective while they are coming at it more from a 3-dimensional perspective.

8. **Since the monks come into workshops with such little scientific background, the faculty are challenged to think deeply through the fundamentals of their fields and concepts in order to communicate them in the most fundamental and simple way possible.**

Many of the faculty enjoyed the challenge of breaking down the concepts in their fields into their most basic first principles in order to give access to a group of monastics who had little or no scientific background. The sense is that faculty were pushed to understand their own subjects more deeply, and in the process refined their skills as educators.

With this audience it helps you refine your skills as an educator because you are always going into a situation assuming some things that you may or may not be entitled to, something about your learners and in this case, they have such diverse backgrounds and low levels of preparation and you have to drop back to the fundamentals and explain simple things clearly and that is not easy. So, it forces you to go by the first principles in a sense and bring them along because if you go too fast or jump into a difficult concept too quickly, then you are losing them and wasting your time and wasting their time. It keeps you honest as an educator.

You can't assume that they have had this or that, you have to break it down to what are the nuts and bolts. I think it forces me as a teacher to deconstruct my own worldview and question the purpose of what I am doing and why I am doing it.

9. **The faculty found that there is something restorative about stepping outside of the fast-paced western world and into a slower meditative world.**

Unsurprisingly, the scientists and teachers who were interviewed found these workshops to be welcome retreats from their fast-paced lives, which allowed them to take time to meditate and contemplate. There was a sense that the faculty did not feel the same space and inspiration to take a daily step back in their own culture.

It is very restorative to go to a place like Bhutan because it is not off the grid, but definitely out of the main flow of the crazy western world. It is not sleepy but it is quieter and it is more meditative, it is more contemplative, less raucous, less intense pace. They have more time to talk... I can feel the interesting texture of life there and the fact that people... they are not tapped into the culture and politics and context that seems to occupy all of the waking hours.

It is almost like you are dealing with a child, but in the good aspects of a child, like the calmness and the wonder almost, like not getting caught up in kind of all of the bullshit that is around otherwise. I am a little bit socially anxious myself, but I didn't feel that was that, because it was just they are super nice and easy to be around.

It is absolutely wonderful. I keep saying every time I go, it is surprising every time. It is so peaceful.

10. **The unique perspectives taken by the monks provides faculty with opportunities to grow and view their own beliefs from different angles.**

This finding is related to several others in this summary, but I felt it was unique enough to warrant its own mention. The faculty seemed to be grateful for the opportunity to step inside

of the extremely different perspectives of the monastic mind in order to view their own concepts and beliefs from a new angle. The experience highly supported introspection and self-reflection. It seemed as though taking on the new perspectives they encountered while interacting with the monks sparked new ideas and inspirations for the faculty. This was especially true for the faculty who were career educators. They reported coming back with insights into their own classrooms and limitations of their own systems of education.

> *One of the big things Jim and I talked a lot about is that we are so damn focused on content and not learning*!
>
> *The chance to interact with people who have such different world views and ways of knowing—you question your own teaching and your own learning.*
>
> *That is one of the reasons that this culture exchange is so beneficial to both of us—we have all learned. There are some perspectives that they have taken, but I would never have really even thought about, but the fact that they rate them and this understanding allows them to see the truth from a profoundly different perspective.*

11. **Participating in a Science for Monks workshop may not be for everyone. It requires a very specific mindset and intent—one that is open-minded, flexible, and service-oriented.**

Another very consistent sentiment was that while Science for Monks workshops could benefit any scientist, they are really most appropriate for scientists and educators who already have an open mind. They explain that the best candidates for faculty are those that expect to learn as much from the monks as the monks learn from them. They also mentioned that they believe Bryce has an intuition for selecting and vetting out the right people for the experience.

> *Absolutely. I would recommend it to anybody that is available to go, if it is something that they are interested in, but at the same time, I would say that it takes a special person, right? You have to go into it with the right mindset. I think it would be beneficial, but if you are going into it with the mindset of 'how is this going to benefit me?' that is not the right mindset to take. The right mindset to take is 'I want to work with these individuals and how can this benefit all of us?'*

12. **Faculty learned just as much from monks during informal conversation and dinner discussions as they did during class periods.**

The faculty deeply valued the opportunity to have informal conversations with the monastics where the traditional power dynamic of teacher-pupil was not as present. It was in these conversations that genuine and spontaneous conversations and learnings came through. Many of the faculty felt that these interactions were the heart of the cultural exchange.

"Every meal was great because I would get into these philosophical discussions about things like consciousness and obligations to other people. Yeah, that was wonderful... being able to see the same group of students every single day, like 3 meals a day and 2 classes, it gives you a level of focus on what you are doing that I really don't get a lot.

I think it is like individual conversations with the monks, during non-class time and during meals, that was the most valuable, getting to know who they are and talk off the cuff and have a little less formal conversation.

Potential Areas of Improvement

1. **There could be more outreach to alert other scientists and educators of the opportunity to work with Science for Monks.**

   I had never even heard about this particular program. Now, after I experienced it, I truly am astounded at the amount of information learning that I have benefited from and the only thing that I can really think of is making it, maybe not more readily available, but more open for communicating with everybody, these available options….

2. **The pre-workshop preparation for the faculty could be more thorough and timely.**

   There might be a little better preparation in terms of giving information to the scientists who are going to attend the conference because it did come eventually, like it was finally it came to us, but it didn't come in a timely manner.

   I was a little bit uncomfortable with the amount of freedom that I had to decide what the week was about and what content was talked about because no one involved had ever worked with me before… Some additional structure around the scientific discourse that we should be talking about [would be helpful].

3. **Science for Monks faculty want workshops to be longer.**

   I think it would be a few days longer. It was still compressed and there were some hands-on activities that were just excluded because we couldn't do them and have time to do them or we didn't have the equipment.

   As every teacher wants, I wanted more time.

Appendix: List of Interview Questions

1. How many workshops/trips you participated in? (What was your role working with the monks?) Could you describe the work you did during your trips or workshops?
2. Tell me what it's like to work with the monks? What is it like to be there in the monastery, to be there, talking to them, listening to them? What surprised you about the monks? What did you most notice about the monks? What are your main memories of working with the monks?
3. What adjectives would you put on your experience?
4. What do you think the monks were learning? What do you think the faculty were learning? What did you learn by being there?
5. What did you learn about educators, what did you notice about yourself as an educator?
6. How do you feel you've changed as an educator as a result of your work with science for monks?
7. What was it like trying to tell the monks what science is, and our relationship to it? How science relates to the world. Is there a kind of softening-up, humbling, a change in motivation of future work?
8. How have you changed as a scientist as a result of your work with Science for Monks?
9. Do you think you learned something about Buddhism?
10. Have you noticed any non-academic/spiritual benefits to your work with Science for Monks?
11. Do you think this is a good thing to do? Would you recommend this to a friend? Why or why not?
12. As a whole, what benefits do you see the program offering Western scientists and educators who participate?
13. In what ways is teaching monks unique from teaching western audiences?
14. What does the Buddhist perspective have to add or contribute to the Western scientific worldview?
15. Is there anything you can think to add to the Science for Monks program that would make it more beneficial to western educators or monks?

Appendix: List of interviewees

The following is a list of all interviewed faculty organized by disciplines.

High School Teachers

Jim Lane
Biology Teacher
Mahtomedi High School
Mahtomedi, Minnesota

Rachel Sanders
Biology Teacher/Administrator
Rivendell Academy
Orford, New Hampshire

Stephen Traphagen
Biology Teacher
Rolling Meadows High School
Rolling Meadows, Illinois

University Professors/Researchers

Chris Impey
Distinguished Professor and Deputy Head of the Department of Astronomy
University of Arizona
Tucson, Arizona

Marieke Van Gugt
Assistant Professor, Cognitive Modelling Group
University of Groningen
Groningen, Netherlands

Joshua Pollack
Director of Electrophysiological Neuroscience Laboratory of Kent (ENLoK)
Kent State University
Kent, Ohio

Researchers and Clinicians

Matthew Boden
Research Health Science Specialist and Clinician
VA Palo Alto Health Care System
Palo Alto, CA

Laura Specker Sullivan
Bioethicist and Philosopher
Harvard Medical School's Center for Bioethics
Cambridge, MA