Developing themes

GRAHAM FOWELL

Neil Shubin

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Summarize yourself in the form of a title of a paper in Nature.
Mechanisms of merging vocation and avocation.

What was your first experiment as a child (on pets/siblings/dead flies, and so on)?
I was fascinated by the fontanelle on my baby sister's head. Each time that I tried to push it, I was rebuffed by my parents. Being a kid a little over four years old, I remember being both curious and terrified. Curious, because I wasn't allowed to go anywhere near my sister's head, and terrified because I couldn't imagine how something as hard as a head could start out so soft in places.

Who has been the most important mentor in your career?
Actually there are two: Farish Jenkins Jr and David Wake.

What single scientific paper or talk changed your career path?
Doug Melton gave a talk in the mid-1980s at Harvard when I was then a graduate student. His talk revealed the power of molecular approaches to developmental genetics and the way in which these techniques could be used to answer classic questions about the evolution of form. My heart raced, largely because I felt that I was hearing the future.

What's your favourite conference destination, and why?
Bozeman, Montana. It is close to major fossil localities, fly-fishing sites, and far enough away from other population centres to make for an intimate meeting.

What would you have become, if not a scientist?
I would have run a fly-fishing store in Bozeman, Montana.

What was the worst/most memorable comment you ever received from a referee?
I submitted a paper on early frog fossils to *Nature*. The fossils were not particularly well-preserved and my co-author and I struggled over a three-dimensional reconstruction of the beast. A reviewer lamented the fact that we "describe a roadkill only to have its ghost resurrected later in the paper".

You have the audience in your hands, but some smart-alec asks you the killer question you have no idea how to answer. What's your favourite response?
"That's clearly one of our major issues, one that we've struggled with for some time. Let's talk about this after the seminar." I wouldn't back away, and I'd be real up front about the challenges that the question poses. You never know: someone else in the audience may have a way out of the problem.

What book is currently on your bedside table?
John Keegan's *The First World War*.

Assuming the dead can be raised and/or time travel exists, who from the world outside science would you most like to have dinner with?
Friedrich Nietzsche, Fyodor Dostoyevsky and Søren Kierkegaard. I wouldn't even try to keep the conversation light.

You are on a plane behind two students obviously going to the same conference, who start to talk about your work. What do you do?
I would introduce myself to them before things got embarrassing for them or me.

What one thing would you rescue from your burning laboratory?
My first edition of William Bateson's *Materials for the Study of Variation*.

What do you most dislike about having research published?
The artificial sense of completeness that it engenders. Scientific discovery and questions are never-ending.

The Internet is the bane of scientists' lives because…
…it continually reminds us that the pace of discovery is so numbingly fast that none of us can keep up with it.

Apart from the obvious great discoveries (natural selection, DNA and so on), what overlooked or underrated discovery really changed the science in which you work?
The great conservation of regulatory genes. This discovery opened up a whole host of new approaches and new questions for genetics, development and evolution.

Some cultures designate actual people as 'living treasures', for what they and their contributions have meant to their fellow humans. Whom would you choose for this honour and why?
Ernst Mayr. His knowledge and energy have propelled the field for years. The breadth of his knowledge and his passion for evolutionary biology are exemplars for his more 'junior' colleagues (which now includes virtually all of us).

Is there a 'tyranny of reductionism' in how scientists are trained today? That is, are students taught to look more into the workings of things and not enough at the 'big picture'?
I don't see it this way. Students are forced to be reductionist by virtue of the techniques that they must master. The resurgence of comparative and phylogenetic biology, through the fields of genomics and evolutionary development, have really forced a certain level of big-picture thinking on our students.

What's the one thing about science that you wish the public understood better?
That the appearance of design in organisms is the result of evolution. That science is a process of discovery, not a stale body of facts or laws.

If you could direct more government funding into one area of science, where would you put it?
Geomorphology, in particular to understanding how the evolution of climates and landforms are linked. The keys to many ecological, evolutionary and conservation issues may lie here.

Name one extravagance you can now get away with because of your eminence.
I feel that I can ask any seminar question that I like. Even the most stupid or ignorant questions carry a profundity to them. I once asked a question that revealed that I knew little about the background of the speaker's talk. Most of the attendees assumed that I was asking something truly profound. I hope.

Harry Potter or Lord of the Rings?
Harry. ■