IN CONVERSATION WITH

Ophthalmic mentors: Professor Harminder Dua

In the first of a series of interviews with key figures in the world of ophthalmology, *Eye News* speaks to **Prof Harminder Dua** about the future of clinical academia, his recent College presidency and Dua's Layer.

Who were / are your own ophthalmic mentors?

My mentor and Guru in India was Professor Ishwarchandra, who sadly passed away in July 2014. In the UK it was Professor John V Forrester in Aberdeen and Professors Larry A Donoso (Head of Research) and Peter R Laibson (Head of Cornea service) at the Wills Eye Hospital, Philadelphia, USA. My research laboratory at the University of Nottingham is named the Larry A Donoso Laboratory for Eye Research.

What would be your advice to trainees aspiring to enter a clinical academic career?

Go for it! Academic training requires commitment, hard work, passion and a strong will to succeed. It requires twice the work for 'unknown' reward. Academic trainees have to perform and deliver on all that is expected of any trainee and then top it with the academic expectations of teaching, undertaking research, applying for grants, disseminating research output through publishing and presentations at scientific meetings and much else. Combining clinical training with academic training puts great pressure on time, but as they say, if you enjoy what you are doing you don't have to work for a single day in your life.

What do you think the future holds for academic ophthalmology in the UK?

Academics has always prevailed. Most academicians in the UK are high achievers and have achieved great things. Many discoveries and innovations in ophthalmology have come from the UK, equally from full time academicians and NHS consultants with an academic interest. There are always ups and downs with the greatest pressure coming from diminishing funding. This combined with the pressures on work life balance may put off many young doctors aspiring for an academic career. Nevertheless there is a steady stream of committed individuals who take on the challenge and go on to become academic leaders. This trend will continue. Fortunately the training for clinical academicians is still possible within the same time frame though with double the work as explained above. If this is changed and the training period is prolonged it will make it more difficult to recruit future generations of bright academicians.

How did you manage the attention and expectations that followed your papers on Dua's Layer?

Ha! The inevitable question! The recognition of the distinctness of the posterior most part of the corneal stroma from the rest of the cornea came to pass a few years ago. Increasing experience with deep anterior lamellar keratoplasty on patients revealed clues to its existence as an important part of the surgical anatomy of the cornea. The original title of the paper 'Human corneal anatomy re-defined: a novel pre-Descemets layer…' reflected our excitement and enthusiasm. The addition of '(Dua's Layer)' was an afterthought that was insisted upon by a couple of the co-authors. The extraordinary media interest especially on the internet, with hundreds of posts with thousands of comments centred on the discovery and the name with a mix of acclaim and scepticism, the former far outweighing the latter. The paper became the most downloaded ophthalmology paper in the three months following publication and the eleventh most downloaded paper among all medical and dentistry papers over the same period (Science Direct).

Many reporters wanted interviews and images, so we wrote down different versions of the substance of the discovery and its implications addressing the lay reader, the informed reader and the scientific media. We also generated images and video clips that could be released without violating the copyright of the journal where the paper was published. We responded to some criticism in the scientific press with appropriate letters (also published) addressing the issues. Importantly we continued to work on the numerous avenues of research that this opened for us and published our second paper demonstrating that this layer contributes to the trabecular meshwork, with as yet unascertained implications and a book chapter entitled 'Dua's Layer: its discovery, characteristics and clinical applications' where the whole story is narrated (in *Biomechanica y arquitetura corneal [corneal architecture and biomechanics]*, Elsevier 2014). Together with Amar Agarwal of Chennai (who performed the surgery in India) I published a direct clinical application of the layer in the operation of pre-Descemet's endothelial keratoplasty in the *British Journal of Ophthalmology*. This week our next paper entitled 'Deep anterior lamellar keratoplasty – Triple procedure: A useful clinical application of the pre-Descemet's layer (Dua's layer)' has been accepted for publication in EYE. While the debate on the

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anatomical definition of what constitutes a layer is ongoing, the discovery continues to inform surgeons across the world and has improved our understanding of lamellar corneal surgery enormously.
A very rewarding and gratifying experience has been the countless emails that I have received from colleagues known and unknown, from across the globe who have described their experience with the layer and provided further information that adds to the evidence base that the layer is without doubt of great importance as part of the surgical anatomy of the cornea. This has led to fruitful ongoing collaborations with a lot more yet to come. In the true spirit of scientific endeavour further criticism is also expected but we continue to build and gather clinical and laboratory evidence to support the credentials of the layer.

Another major demonstration of interest and attention has been the invitations from numerous organisations to participate in symposia or deliver keynote talks and a few eponymous lectures on the subject. I have tried to accept as many of these as possible to avail the opportunity to explain the evidence and the clinical applications and implications. I am surprised at the limited understanding much of the audience has before my lecture (despite the publications) and the acceptance after listening to me. Of note was the invitation to speak at the annual congress of the European College of Veterinary Ophthalmology and deliver the State of the Art Lecture (SOTAL). This opened a collaboration with a very enthusiastic and committed veterinary surgeon, Christiane, and together we have made an exciting discovery re presence of the layer in animals. Watch this space.

There was one significant misrepresentation of the facts. The statement "anatomy texts will have to be re-written" has been erroneously attributed to me. It was made by a very distinguished ophthalmologist from Singapore, Dr Donald Tan after hearing my very first public presentation on the subject as the EuCornea Medal Lecture in Milan in 2012. Many acknowledged opinion leaders in the field of lamellar corneal surgery including Dr Donald Tan (Singapore), Drs Sadeer Hannush, Mark Terry and Dimitri Azar (USA), Drs Massimo Busin, Leonardo Mastropasqua, Mario Nubile (Italy), Dr Gerrit Melles (Netherlands), Dr Jose Guell (Spain), Drs Tarek Katamish and Dr Ahmed Atef (Egypt), Drs Rajesh Fogla, Amar Agarwal and Parveen Krishna (India), Dr Saleh Saif (Abu Dhabi) and Professor Mohamed Anwar, the inventor of the big bubble technique; have acknowledged that the knowledge of the layer has improved our understanding of lamellar surgery and made the deep anterior lamellar keratoplasty safer.

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The story is far from over and my team and I continue to manage the attention and expectations in the best way we can – continuing research, gaining insight and publishing the results.

As someone who has worked in ophthalmology in India, the US and the UK, what would you say are the key differences between the countries?

In India there is a wide range of pathology and a huge number of patients. The experience and training both clinical and surgical is extensive and unparalleled. The biggest limitation is the variation. There are many examples of best practice and equally many examples of not so good practice. Sometimes it is difficult for patients to tell which is which. The private sector has advanced much further than the major government / public hospitals. In the USA training is much shorter than in the UK, usually three years. Standards are generally very good and the average is high. Subspecialisation is extreme which is both good and bad. My view is that not all patients need to be put through a subspecialist's microscope. This leads to greater dependence on sophisticated tests with blunting of clinical skills in some instances. The working hours are far too long. The UK is a happy medium, where we have the NHS, which blends general ophthalmology with subspecialists interests. Our trainees have the best training in the world. Our patients get a very good deal. Unfortunately defensive medicine, spurred by litigation is catching on in India and the UK. An emerging trend is the emphasis on sub or super-specialisation. Every trainee wants to do an advanced Fellowship in a particular specialty or pursue the same goal through trainee selected components in the last months of their training. The 'Shape of training review' has highlighted the need for swinging the pendulum towards 'generalism'. General ophthalmologists working in the community on par with specialists in hospitals is what we need to meet the demands of an ageing population and their eye problems.

And from your perspective as a clinical academic, what were the main differences in work / opportunities between India, US and UK?

In India the demand for clinical services is immense. The volume of work keeps most clinicians busy. There is a lot of enthusiasm to perform procedures but not much 'time' to deal with complications. There is a widening gap between the private and public sectors, with excellent healthcare available to those who can afford it. Public hospitals are struggling to catch up with advances in technology although there are some very good examples of hospitals that work on a model that combines charitable service with paying patients. Few people have private healthcare insurance though this market is growing. In the UK the NHS provides state of the art healthcare, free at the point of delivery, regardless of cost. In practice, for some treatments, this principle is being stretched such that breaking point is not far away. Rationing has crept in, in various guises. Generally speaking, access to newer treatments is lagging behind the USA as it takes longer to work its way through approval processes. In the USA subspecialisation is the norm. The phrase "knowing more and more about less and less" comes to mind. On a personal note, in India the emphasis of my work was service delivery, research was a hobby. In the USA, though on the faculty of Thomas Jefferson University as associate professor, I was undergoing fellowship training in research and then cornea, with plenty of opportunity to indulge in research and clinical activity. In the UK, the same opportunities were available and I was and am able to fulfil my role as a clinical academic to my satisfaction.

Over the years spent in the profession in the UK I have noted that for several years there were many doors open for overseas doctors to train and work. These opportunities have dwindled but not equally for all nationalities. Some enjoy greater privilege than others. Work opportunities are determined not by merit but nationality. I do not think this is the best way to foster excellence in the work force. Despite professional management at several levels bureaucracy and priority of paper over

practice is stifling clinical work. 'Targets are being met' and 'boxes are being ticked' but I am not sure if the patients are getting a better deal or ophthalmologists a balanced professional life. The NHS has had too many changes. It now needs a period of stability and consolidation.

As the outgoing President of the Royal College of Ophthalmologists, can you share the highs and lows of your time 'in office'?

To answer this, please see the following edited version of a short piece entitled 'Reflections' that I wrote for *College News*: When I started as President in May 2011, the shadow of the untimely death of my predecessor loomed large. Staff were still in mourning. I felt like an intruder in their grief. Psychologists say about death that after the initial shock and sadness survivors experience anger and apportion blame. I wasn't to blame, I kept reminding myself; nevertheless the excitement and enthusiasm of assuming the highest office in the profession were dampened.

Prioritisation, time-management and support, plenty of it, from colleagues, family and friends are key ingredients to do and keep doing what it takes and of course, enjoying what you do. When you wake up, earlier than usual, and want to take that train to London and when you get back you want to open the laptop and do the letters and emails, you know you are enjoying it. Too much of a good thing is not good, so sometimes you don't want to open the laptop. Weekends had a routine. BJO work was done only on a Saturday but every Saturday; relentless. Exercise, five miles on the treadmill, some weights and sit-ups, every Saturday and Sunday when I was home, which I often wasn't. I had to keep the old ticker ticking. I always timed my treading-the-mill to a sporting event on television; who says that a man can't multitask? My only regret is the price that the family paid. Rita held the fort, A-levels happened, older son graduated, children learnt to drive, new cars appeared in the porch as I watched passively. My younger son was taken ill in the middle of it all, a long stressful illness but we coped.

The job carries with it certain occupational 'hazards'. Invitations to speak at various meetings to diverse groups of individuals were a regular feature. Giving clinical talks in the area of your expertise with power point images and animations is one thing, making speeches without slides on non-clinical issues, mixing sense with humour, is another. Attending black-tie dinners was a pleasant responsibility. The food was always good but the speeches varied.

Leaving something you cherished and enjoyed is bound to bring up mixed feelings. The sadness of leaving is more than balanced by the satisfaction of having done the job well (I hope).

What do you feel have been the most significant changes at the College during your time as President?

There were many significant events. Change does not always equate to progress and change is not always necessary or desirable, though some change is inevitable. The significant events were the Health and Social Care Reform Bill which became an Act and the implications for ophthalmology that arose therefrom; the fallout from the Francis report; the Shape of Training Review; revalidation; national recruitment of trainees, to name a few, exercised the College as we responded to these events and took our membership along, holding our ground to ensure that we were able to secure what is in the best interest of our patients and members. We improved our collaboration with others in the eye care sector which culminated in the establishment of the Clinical Council for Eye Health Commissioning, of which I remain as chairman.

Internally we revamped some of our governance procedures, celebrated our 25th anniversary, extended out interface with the public at large by appointing a communications officer and acquired and started work on our new home to be, again to name a few of the significant ones. In keeping with our Charter, we worked with our colleagues overseas to develop their examination and assessment systems and significantly were able to contribute to establishing the College of Ophthalmology of Eastern, Central and Southern Africa (COECSA). Our flagship annual congress and other scientific events continued with ever increasing quality, reflecting progress in ophthalmology.

The credit for all of this goes individually and collectively to the members of the College Council and the various other committees and especially to the staff of the College working under the leadership of the chief executive officer.

In your capacity as editor of the British Journal of Ophthalmology, how do you feel about the amount of new information available to ophthalmologists these days?

The pace of progress is faster than it has ever been. This prompted me to write "Today is the yesterday of tomorrow, what is today state of the art, will tomorrow be relegated to the dustbin of history." Ophthalmologists can expect new diagnostics, treatments and interventions to be introduced and become obsolete within the span of their professional careers. The drive to publish combined with the commercial pressure to promote products generates many papers. Journals are inundated with submissions, which creates pressures of different kinds. To the reader, problems with accessibility to relevant published work and sifting the wheat from the chaff; to the profession the huge unremunerated and uncompensated call upon their time to 'peer review' papers, which often do the rounds of several journals before finding a home; to the authors, the unfair competition related to the widely varying personal views, opinions and rivalries of the reviewers and an imperfect peer review system, and to the trainee ophthalmologists 'a sinking feeling' of not knowing where to turn and how to keep pace.

And this is even before you begin to talk about the internet, where there is a plethora of sites offering information and online journals proliferating faster than rabbits and 'predatory publications' adding to the confusion.

Is there anything you would have done differently in either your role as editor of BJO or College President?

Perhaps done one at a time.

What impact, if any, do you think a 'yes' vote from Scotland in the referendum could have had on ophthalmology in the UK and Scotland?

I do not think it would have had any significant impact. The Royal College of Ophthalmologists is the overarching body that looks after ophthalmology training, education, professional standards and scientific matters for the whole of UK inclusive. It has representation from all four countries and is also often consulted by colleagues from the Republic of Ireland. This has huge benefits for all ophthalmologists and trainees across the UK and should not change. Service delivery is a different matter. With devolution, shift in emphasis on delivery of ophthalmic care has changed, determined by local needs and workforce considerations. Such adaptations will continue regardless of what is decided following the 'no' vote.