

## Of pilots, astronauts and robots

Ian Florance talks to **Iya Whiteley**, a Human Factors Consultant at SEA Group Ltd

To suggest that Iya Whiteley set out to become a psychologist would be misleading, though at an early age she watched a Hollywood film about scientists experimenting on people's minds and told her mother 'I want to do that'. She studied psychology to help answer questions she had first asked herself at school.

Iya's training in psychology led into sky-diving, studying space travel, flying, scuba-diving, sports, computer science and, most recently, robotics. Her talk is

filled with a dizzying variety of references, including Star Trek!

So, where has Iya boldly gone? And where has psychology helped in the journey?

### To begin at the end

Iya's present jobs illustrate her interest in human-computer interaction. She is Human Factors Consultant at SEA Group Ltd, a company that focuses on defence and aerospace; she is also Visiting Research Fellow at the Department of Computer Science, University of Bath.

'At SEA I'm leading a European Space Agency funded project to develop psychological support tools and a technical problem-solving tool for astronauts voyaging to Mars. How can you provide the crew with the information, techniques and skills to solve unanticipated problems – in a highly technical and alien environment? The crew will not be able to speak live to mission control, due to the enormous distance between the crew and the Earth.

I also explore the questions posed by the development of humanoid robots. My husband Graham works at Elumotion Ltd, a company specialising in the development of robotic hardware that aims to replicate human and biological motion. He was appalled to find the lack of realistic prosthetic hands, and his PhD concentrated on designing one. This experience contributed to the design of a prosthetic hand that is now fitted to many

people. Elumotion have since built a full-size upper body of a humanoid robot, and I'm investigating how people interact with it. Human beings are very good at deciding that something is not quite right with another person. So, how do people react to a robot, especially if we make it as human-looking as possible? What are the cues – gestures, slight changes in facial expressions, tilts of the head, ways of speaking – that we pick up? Graham and I are both concerned about how robots will grow in their ability to replicate our movements and develop their interaction style. As they start to learn, how will we view them? What questions will they pose about our image of ourselves? Trust will be a big issue in the growing field of robotics. Not to put too fine point on it, robots that can imitate us creep people out. How can we overcome this? What causes it?'

### Returning to the beginning

Iya is a naturalised UK citizen. She was born in the USSR, brought up in Latvia and has worked and studied around the world.

'I was fascinated by school education but I saw a battle between learning something new and exciting about the world through scientific investigation, and education as "memorising and regurgitating facts". Since I tended to use the former strategy in exams and tests I didn't do very well! Education should teach you discovery skills and equip you to explore your own questions and learn from what you encounter.

'I became interested in how people get the information and answers they need when they need them. It still seems miraculous to me that human beings can do this – to successfully complete complex or dangerous tasks, especially when at first glance the circumstances are not familiar. I did lots of sports at school and they provide examples of this phenomenon. Later on I grew interested in extreme sports and took up sky-diving to try to understand how someone thinks



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and perceives time in such situations.’

Iya referred to newspaper articles about the pilot who landed his plane on the Hudson River and saved all his passengers. ‘It’s a perfect example of cognitive grace under pressure. I want to know the key to this ability and then to be able to offer this key to everyone who is willing to open their mind to new possibilities.’

Iya’s mother is a teacher of literature. ‘She made me read two hours a day, and I became fascinated with heroes – people who optimised their abilities. This is an abiding interest – I study real-life heroes like Shackleton, their character, their motivation, their aspirations and life path. I was fortunate to meet Alexey Leonov, the first person to walk in space. Alexey said that he became a pilot just to see the clouds a little closer so that he can draw them better. He used his art skills to scientifically code and document the colour of our planet’s atmosphere from orbit.’

There wasn’t even a psychology course in the school, so Iya had no real understanding of the subject. A Lyceum opened up nearby, offering a wider curriculum and Iya took the entrance exams. After an interview in which she related Bulgakov’s classic Russian novel *The Master and Margarita* to martial arts philosophy (which she’d studied), Iya was accepted.

‘Psychology and teaching were taught as arts but, to me, psychology is a science. I developed a very specific view of how you learn. You can use any activity to observe and learn – talking or sitting opposite someone, walking down a street or surfing the waves. We make many discoveries while in the process of searching for other answers. That is the exciting part of science! Retaining a child-like curiosity and an open mind are huge benefits to anyone studying psychology.’

‘People used to say to me that psychologists were “mind-readers” or therapists. Everyone is a natural psychologist. The key difference is that professional psychologists keep a distance between themselves and the phenomena they deal with. They ask more specific questions about what they observe, then develop and test theories about it.’

### ‘Thinking gets interesting when you know about two disciplines’

After a certificate in psychology and teaching, Iya took a bachelor’s in psychology at the Institute for Social Technology. ‘Before I took my master’s, I had a choice about what to do. I worked part-time for a forensic and clinical

## FEATURED JOB

**Job Title:** Educational Psychologist  
**Employer:** Denbigh School

**A**t first sight it looks like an ordinary job title. It quickly becomes apparent that this isn’t a standard job. ‘We want someone who is prepared to be innovative, who’ll put their neck on the line,’ says Lori Ferguson, Senior Educational Psychologist at the school, whose website suggests it also isn’t run-of-the-mill: **1450 students aged 11–19; 176 staff; it’s a Foundation School and a Specialist Technology College. Most relevantly it has its own educational psychology service. Lori explains how this came about.**

‘Sarah Parker, the head teacher, is very innovative. She was unhappy with local LEA psychology provision. I was working in a local young offenders’ prison and she asked me to come and work in the school. At first I was there 10 hours a week; now it’s four days a week. Educational psychology is part of the learning support unit.’

Why do you need another educational psychologist? ‘Changes in provision by the local LEA meant that some local schools were running out of educational psychology hours in the first term of each school year. We have seven feeder schools on the western flank of Milton Keynes, so we developed a proposal. We said that if the feeder schools pooled their money they could buy our educational psychology service and have a psychologist in school every week, not just every month or every year. They’ve just renewed the contract, so we’re looking for someone who’s based at Denbigh, may do some work here but will be primarily responsible for the feeder schools.’

“psychologists are much more integrated into the life of a school”

So, is the work largely about statementing? ‘No, we write reports which are used in evidence for a submission, but the LEA still handles the statementing process. Our work largely involves children who will never be statemented. I’ve been covering the job for some time. It includes examination concessions work and self-referrals from children – we get these every day.’

We create informal, close relationships with parents. Small-group and one-to-one coaching, sitting in and advising on lessons, observing children, writing genuinely in-depth reports are all involved. We work in areas such as emotional and behavioural difficulties, among many others. And staff have problems too – if they’ve been bereaved or are having a bad time at home, for instance. So we offer them help and support. That’s just a flavour of the range of work. But we’re looking for someone who’s going to extend the role, come up with new useful services. This is not a role focused on SEN assessment; it’s incredibly varied.’

On the other hand, Lori stresses that relationships with everyone involved – children, parents and colleagues – are deep and long-standing. ‘The person will be working with the same children, parents, teachers and schools for long periods. They get to know them very well. This is good for the children since we have a much finer-grained understanding of what’s going on. It’s also good for the schools. We have a lot of information gathered on the children from Year 2 to Year 6. So when they join us from the feeder schools, we don’t have to learn about them from scratch. We pick up things a lot quicker and fewer children fall through the cracks.’

Training and support reflect the job. ‘If you have a good idea or have met a new challenge and want some training we’ll try to make it available.’ Lori’s New York accent suggests one of the sources of this model. ‘Yes, it’s based on the US model in which psychologists are much more integrated into the life of a school. I’ve wanted to try out the model here for some time. We’re the only school in Milton Keynes doing this, perhaps one of the only schools in the UK.’

She returns again to the role’s variety. ‘This is an opportunity for someone who wants to build up long-standing, deep relationships, who cares deeply about children and is prepared to think out of the box – not just follow a standard job description.’

**You can find this job on p.359, and with many others on [www.psychapp.co.uk](http://www.psychapp.co.uk).**

psychologist. My employer, who ran a private clinical practice, advised me not to restrict myself too early to a particular field of psychology. I believe this is good advice for psychologists. The breadth and interdisciplinary nature of the subject gives it its richness. At important points in my life I've made decisions based on the advice of a mentor. Mentors are very important. This was particularly true when I chose a PhD topic. My advice is to find a subject that excites you and a person who you really want to make this journey with.'

Iya applied to become a military pilot, but the Latvian air force wouldn't recruit women or Russian nationals at the time.

'Clinical psychology seemed a good choice. I was interested in the maximisation of abilities in extreme situations – clinical psychology gave me a deeper, more scientific understanding of how things work, how they can be studied and how they go wrong. It was also a way of keeping doors open to other areas. Thinking gets really interesting

when you know about two disciplines and put them together. So I did an MCLinPsy with the University of Indianapolis.'

During study breaks, she was a tour guide in the United Arab Emirates (she claims she earned more in a week than her mother could earn in two months as a teacher in Latvia). She then got a job selecting air crew for Emirates Airlines. 'I'd soaked myself all over with hot, sweet, milky tea (commonly offered on arrival in that part of the world) whilst waiting for the interview. I thought I should treat this interview as a chance to learn to ignore non-important dress issues – after all, they are more interested in my skills.'

The job involved using psychometrics in a multicultural workforce. It also involved sitting in the cockpit of big airliners. It wasn't long before Iya was bouncing along in a tiny plane on a desert runway trying to make



Elumotion Ltd Robot interacting at the Science Museum

her first solo landing. 'I learnt about the use of peripheral vision in psychology and that's exactly what you do when you level off before touch down to land a plane on "the piano keys".'

Her PhD was in computer science, undertaken at Swinburne University in Australia, and then at the University of Bath. Why computer science? 'I'd started reading the *International Aviation*

## On being open to ideas from anywhere

Ian Florance talks to **Peter Spencer** about yoga, chronic fatigue and more

Read Dr Peter Spencer's profile on the Leeds Trinity University website and you'll notice a huge range of interests – from gifted children and utopias to chronic fatigue syndrome, league tables, marathon running and personal construct theory. He also holds a British Wheel of Yoga teacher's diploma. His conversation relates all kinds of disciplines and people to his practice as a health psychologist.

When asked why he trained in psychology, Peter answers, 'It was in the air in the late sixties. People read Penguin psychology paperbacks on the train. Popular culture took states of consciousness seriously. Movements like transcendental meditation addressed it directly.'

He'd enjoyed sciences at school but didn't go straight on to university. 'I took a couple of years out. I enjoyed working as

a gardener, and my love of exercise and the open air is still a huge influence.'

Ultimately Peter took a PhD in experimental psychology, but he was 'interested in working with people, particularly with people who had suffered brain damage. I started work in rehabilitation and became interested in working with children. A teacher training qualification led to work in special educational needs. When I moved into higher education this was part of my remit. It reinforced what I already thought – labels we use don't apply to the complex range of problems an individual patient experiences. We might say a back injury has *caused* depression but this causality may be the other way round or an earlier life event, for instance, might be involved. We have to approach psychological practice from many angles

including the social, philosophical and physical.'

This is the key to the rest of the interview. Although Peter followed a reasonably conventional psychologist training route (he is now a qualified health psychologist and an Associate Fellow of the Society), our discussion became less about a 'planned career' and more about an intellectual and personal journey.

Peter had become interested in yoga in the early '70s under the influence of the transcendental meditation movement of Maharishi Mahesh Yogi (a famous late-'60s figure and the Beatles' guru). In the '80s and '90s this transmuted into a commitment to exercise, fitness and marathon running. 'Too much exercise caused me physical damage. I took up yoga again so that I could run better. But for reasons I'll explain this came to a dead stop in 1994.

'Early in my career, I was fortunate enough to meet and work with Don Bannister, who

pioneered personal construct theory in the 1970s – he wrote *The Inquiring Man*, one of those iconic Penguin paperbacks. I was interested in whether psychology could produce a better world, and that's where my interest in utopias came from. Utopias can be personal as well as social and political. Given those times – the growth of cults and communes for instance – there were many examples of utopias going wrong. Erich Fromm's work on the rise of socialism and fascism also provided insights. They all impose a strong individual's personal blueprint for life on other people. Therapy and treatment can be viewed as an attempt at a personal utopia. People often look for a prescription for living from their therapist.'

The onset of chronic fatigue syndrome in 1994 marked a turning point in Peter's life. 'I'd loved exercise and I couldn't understand what was happening. It was a dark time. I'd just

*Psychology Journal*. It's the journal of the Association of Aviation Psychologists founded in 1964. Aviation brings psychology, computer science, engineers and many other disciplines together. I was interested in how pilots make decisions. Increasingly they work in a "glass cockpit" which is all computer screens. They use an electronic flight information system that has elements of autonomy and authority. Watching Emirates' pilots and the crew work, I'd also grown aware that planes are private, self-organising universes. My PhD was on how you could construct a glass cockpit that can be fitted to the person and how they think, rather than one which insisted the person adapt to the system – something which we're rather good at.'

Didn't she need a high degree of computer expertise to take on this area of study? 'You don't have to be a programmer to study human-computer interaction. You interpret between engineers, mathematicians, software designers and users. You mediate a

number of different languages, and cognitive styles. Pilots, for instance, are fascinating people who constantly calculate "What ifs...?", what would happen next and how to react in the most efficient and safest way.'

### Developing the right hook

At the end of our meeting Iya summed up her work succinctly. 'It's like I'm continually developing the right hook to catch the right fish in people's heads to understand how they manage to do the amazing things they do. And, in a hugely technologically defined environment, I've increasingly become interested in how the information and technical systems around us affect us. Most specifically, how can we adapt technology to enhance human abilities, to the way we work and think rather than vice versa.'

Any advice for people seeking to study the area? 'It takes a lot of time to study it so find something exciting that will give you momentum.'

started working at a hospital, treating people with chronic pain. One key to my ultimate recovery was a wonderful GP who used cognitive behaviour therapy without realising that was what she was doing. She also provided a key by saying "you should treat it as chronic pain".'

Peter's article in *The Psychologist* of May 1998 (see [www.bps.org.uk/spen](http://www.bps.org.uk/spen)) records his own approaches and other sufferers' diverse treatments. 'People identified 39 different beneficial interventions. They recovered in their own way. I used many approaches in what amounted to a study of one patient seen from the inside and the outside. I changed my diet, had acupuncture, aromatherapy and spiritual healing. I started gentle yoga again. I began to recover 18 months later, and, without being overly dramatic, it changed my life. I never was particularly ambitious but I became less so. Relationships became more important. The barrier between me and outside work became completely permeable. I decided to become a yoga teacher and to

investigate how it could help different conditions.'

The article elicited a number of critical responses as well as sympathetic ones. One of the latter, from an eminent psychologist, was supportive and suggested 'the best treatment is often no treatment'. 'Which is an interesting thought,' says Peter. But the whole experience confirmed in a very personal way, views of psychology Peter had been developing throughout his life.

'First, the mind-body split makes no sense to me and that's a key to how I approach psychology now. There aren't two things that need to be linked. Asking if an illness is psychological or physical is – not quite, but nearly – a useless question. One of the things yoga teaches you is not to see thought, muscular movement and breathing as separate things. Yoga means stillness, reaching a place where words aren't

important. It teaches that the way to go round a problem is to go inside not outside. Some of these ideas link back to the work of William James and Abraham Maslow, and to new thinking like Oliver James's *Affluenza*.

'This is an example of drawing ideas from anywhere useful. I got ideas on hysteria – which led to my interest in witch crazes – from Arthur Miller's play *The Crucible* and also from the 1970s D.M. Thomas novel *The White Hotel*. Psychology

needs to be open to ideas from different areas, even those which we might initially distrust. If

there's a report that aromatherapy or acupuncture helps a syndrome we should take the reports seriously and research them.

'My son is an experimental physicist and his discipline draws influences very widely, since its practitioners are international and use many non-Western intellectual traditions. Imagination and flights of fancy

are techniques of modern hard sciences. My son looks at psychology text books and papers and shakes his head. Psychology can sometimes appear as if it is imitating 19th-century Victorian experimental science rather than an open 21st-century one. I think health psychology has taken the lead in being more open in this way.'

Peter's recent work reflects these views. 'I run yoga classes with patients suffering from multiple sclerosis, depression and Parkinson's. I teach health psychology to undergraduates and also serve as external examiner on an MSc on learning disabilities and a BSc in counselling psychology. Then I have some research going on into the use of yoga in chronic pain and fatigue.'

Can you see progress in the area? 'There's an article in a recent *Health Psychology Update* reporting research into the effects of yoga treatment of cancer patients. So, yes, some of these areas are being looked at. But there are some fundamental questions to be asked about what psychology is, how we train and how we do it.'

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