



IN-SIGHT

INDEPENDENT INTERVIEW-BASED UNDERGRADUATE JOURNAL

2013 SUMMER

Issue 2.A, Idea: Women in Academia (Part One)

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PEOPLE

Founder, Editor-in-Chief, and Interviewer

Scott Jacobsen studies psychology at Kwantlen Polytechnic University and The University of British Columbia. He conceived of *In-Sight* during the winter of 2010, which culminated in the founding of *In-Sight* on August 1st of 2012. His research work exists in multiple psychology labs working on differing sub-disciplines of psychology. Scott's core interest is in highly gifted ($\geq +3$ -sigma) youth related to those disadvantaged with low income and/or learning deficits.

If you want to contact Scott Douglas Jacobsen, you can send emails with questions, comments, and/or suggestions for subjects, ideas, and/or recommendations for interviewees to:

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Faculty Advisor Listing

Dr. Wayne Podrouzek is an Instructor at University of the Fraser Valley and Chair of the Psychology Department at Kwantlen Polytechnic University. He earned a Bachelor of Arts in Child Studies and a Bachelor of Science with Honours from Mount Saint Vincent University, a Master of Arts from Simon Fraser University, and Ph.D. from Simon Fraser University under Dr. Bruce Whittlesea.

Dr. Daniel Bernstein is the *Canada Research Chair in Lifespan Cognition* for the Department of Psychology at Kwantlen Polytechnic University. Dr. Bernstein earned his Bachelor of Arts at the University of California, Berkeley, Master's at Brock University, PhD at Simon Fraser University, and did Post-Doctoral work at the University of Washington. His research interests lie in “Belief and memory; Developmental metacognition; Hindsight bias; Mild head injury; Sleep and dreams.”

Dr. Betty Rideout works as an instructor for the Psychology Department of Kwantlen Polytechnic University. She earned her Bachelor of Psychology, Masters of Counselling Psychology, and Ph.D. in Psychology from University of British Columbia. Her research interests lie in “historical influences on belief systems.”

Dr. Glen Bodner is an Associate Professor in the Department of Psychology at the University of Calgary. He is a cognitive psychologist who studies factors that affect

memory, including both memory accuracy and the subjective experiences associated with memory. Current research in his lab, supported by an NSERC Discovery Grant, investigates how these aspects of memory are shaped by task and context factors.

Dr. Sven van de Wetering is an Instructor for the Psychology Department at the University of the Fraser Valley. Dr. van de Wetering earned his BSc in Biology at The University of British Columbia, and Bachelors of Arts, Master of Arts, and PhD in Psychology from Simon Fraser University. His research interest lies in “conservation psychology, lay conceptions of evil, relationships between personality variables and political attitudes.”

Dr. Wayne Fenske is an Instructor in the Department of Philosophy at Kwantlen Polytechnic University. His research interests lie in the “nature of practical reason and its relation to moral obligation.”

SUBMISSION GUIDELINES (SECTION 'B')

Material

Contributor status access restricted to undergraduate students, graduate students, instructors, and professors. Each submission considered on appropriateness of grammar and style, comprehensiveness, coherence, and originality of content.

Scope

Depending on the issue, the accepted submissions consist of articles, book reviews, commentaries, poetry, prose, and art.

Submitting

It must not have publication or pending publication elsewhere. For exceptions, sufficient reason should be sent to the Editor-in-Chief along with the material. For written scholarly material, it must be in 12-point font, Times New Roman, double-spaced, and with APA or MLA formatting. Length of material ranges from 2,000 to 7,500 words. Material should be sent to the following:

Scott.D.Jacobsen@Gmail.com

ABOUT IN-SIGHT

'In-sight' exists as an independent undergraduate interview-based journal purposed by an undergraduate student to ask professors, instructors, and graduate students from varieties of fields mostly *open-based* questions about their backgrounds, previous and expected research (if any), philosophical foundations, and examinations of controversial topics in their fields of expertise and inquiry. Additionally, it will include submissions multi- and inter-disciplinarily and about a variety of topics from undergraduate students, graduate students, instructors, and professors. It began on August 1st of 2012.

General Philosophy

In academic settings, integrity exists as the foundation for knowledge, where honesty becomes necessary for integrity, especially honesty of inquiry, and honesty of inquiry goes unfettered by dogma or obfuscation – commonly called ‘academic freedom’. Meaning the ability to question anything and pursue implications of findings despite any reticence, from any harbored biases and fear of backlash, and unabashedly expressing these implications without pre-mature alteration or omission to discover knowledge. In the interviews completed and uploaded to this digital journal, *In-sight*

exists to attain, at a minimum, a modicum of academic freedom through an interview format.

Format and Frequency

Format of the issues of *In-sight* have specified subjects or ideas per issue. Each issue divides into an interview and submission section, described below:

For interview sections of subject issues, one issue contains *only* professors, instructors, or graduate students from *one* field because of emphasis on *a subject*, e.g. Psychology, English, and so on. For submission sections of subject issues, one issue accepts *only* professors, instructors, graduate students, or undergraduate students from *one* field because of emphasis on *a subject*, e.g. Psychology, English, and so on. Some exceptions of non-academic contributions acceptable with sufficient reason sent to the Editor-in-Chief.

For interview sections of ideas issues, one issue contains *many* professors, instructors, and graduate students from *many* fields because of emphasis on *an idea*, e.g.

Epistemology, Crime, and so on. For submission sections of ideas, one issue contains *many* professors, instructors, graduate students, and undergraduate students from *many* fields because of emphasis on *an idea*, e.g. Epistemology, Crime, and so on. Some

exceptions of non-academic contributions acceptable with sufficient reason sent to the Editor-in-Chief.

In this, the format shifts from subject to idea. Titles of issues specify format for issues, e.g. 'Issue 1, Subject: Psychology', 'Issue 2, Idea: Epistemology', *und so weiter*.

Interview and essay sections have tags to provide requisite indication of their part in the issue. Interviews have the mark 'A'; submissions have the mark 'B', e.g. 'Issue 1.A, Subject: Psychology', indicating only psychology interviews, or 'Issue 2.B, Idea: Arts', indicating many Arts-based submissions.

Frequency of the issues come as sufficient interviews amass to create an issue.

Frequency of uploads for individual interviews comes as they finish to the satisfaction of the interviewees.

Interview Editing Process

Editing consists of the interviewees original interview with minimal editing to keep the intended meaning and message of the interviewees intact, even where certain answers may contain controversial or 'politically incorrect' statements, opinions, or information. After initial editing, the interviewer sends the interview back to the interviewee to confirm the originally intended meaning and message seem sustained to the satisfaction of the interviewee. If the interviewee requires any further alterations,

omissions, or edits, the interviewer repeats the cycle of edit to confirmation of accuracy of message and meaning to re-edit until the interviewee evaluates the final version of the interview as sufficiently accurate to their intended meaning and message. Any major editing consists of corrections to grammatical and/or spelling errors. This editing aims to optimize the correspondence between the interview and the interviewees intended message and meaning to the satisfaction of the interviewee.

Funding & Attachments

All monetary funding for *In-Sight* comes from Scott Douglas Jacobsen.

‘Attachments’ of *In-Sight* regards constraints or restraints based on functioning out of institutions or groups. For instance, an institution or group would consist of a university, an agency, a think-tank, and/or an interest-group of some form. *In-Sight* functions autonomously from any institution or group. This provides total freedom of content.

Interviewee Consent and Research Ethics

Interviewees either provide email or verbal consent, or have a written form for consent. The email or verbal consent, and consent form, relate to the interviewee having the power to deny/accept conducting the interview, and for final decision of

publication as a singleton interview on the website and/or in the full issue publication with all other issue-interviews in PDF and on the website.

In this, the nature of the journal does not aim to answer an overarching research question, gives interviewees full control over editing and publication, and provides readers an accurate representation of the interviewee in their own words. Therefore, no ethics board approval is required for the functioning of the journal, especially given the detachment of both funding and constraint of publication from any institution, despite Scott Douglas Jacobsen studying Psychology at The University of British Columbia and Kwantlen Polytechnic University.

Advertising Policy

All advertising for the journal conducted online must first be approved by Scott Douglas Jacobsen.

Open Access

In-sight exists as open -access journal for online contents, where any content of *In-sight* becomes accessible for *reading* to any interested individual.

Website

<http://in-sightjournal.com/>

CONTRIBUTORS



Dr. Elizabeth Loftus

At the time of the interview, Dr. Loftus is #58 on the listing of the most cited psychologists, and the most cited female on the list. Her current position is Distinguished Professor of Social Ecology, and Professor of Law, and Cognitive Science at the University of California, Irvine. Dr. Loftus earned a double major in mathematics and psychology at University of California, Los Angeles, and her MA and Ph.D. in Psychology from Stanford. For research interests, “her experiments reveal how memories can be changed by things that we are told. Facts, ideas, suggestions and other post-event information can modify our memories. The legal field, so reliant on memories, has been a significant application of the memory research. Loftus is also interested in psychology and law, more generally.”

For more information:

<http://socialecology.uci.edu/faculty/eloftus/>

http://www.slate.com/articles/health_and_science/the_memory_doctor/2010/06/the_memory_doctor.htm



Dr. Carla MacLean

At the time of the interview, Dr. MacLean works as a Psychology Instructor at Kwantlen Polytechnic University. She earned a Bachelor of Arts from the University of Victoria, Masters of Science from Saint Mary's University, a Ph.D. from the University of Victoria, and completed a Post-Doc. at Simon Fraser University. Her research interests lie in “social influences on decision making and memory; Confirmation bias/tunnel vision; Correspondence Bias; Investigative interviewing techniques.” Her work is on the “nexus between occupational safety and forensic psychology.” Additionally, her recent research “tests methods to minimize the effect of bias in investigator decision making.”

For more information:

<http://carlamaclean.com/>

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Aislinn Hunter, PhD Candidate

At the time of the interview, Aislinn Hunter works as an Instructor at Kwantlen Polytechnic University, and towards her PhD at the University of Edinburgh. She earned her Bachelor of Fine Arts (History in Art/Creative Writing) from the University of Victoria, Master of Fine Arts (Creative Writing) from The University of British Columbia, and Master of Science (Writing and Cultural Politics_ from The University of Edinburgh. Her research interests are “material culture, ‘thing’ theory, Heidegger, Victorian writers, writers’ museums, books-as-things, cultural phenomenology, Irish literature, poetry, intertextuality and lyric philosophy.”

For more information

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Dr. Cory Pedersen

At the time of the interview, Dr. Pedersen works as an Instructor at Kwantlen Polytechnic University. She works as the Principal Investigator of the ORGASM lab at Kwantlen Polytechnic University. She earned her Bachelor of Arts at the University of Calgary, Masters of Arts at The University of British Columbia, and PhD at The University of British Columbia. Her research interests lie in “Human sexuality; Developmental psychopathology; Child and adolescent social-cognitive development.”

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http://kpu.ca/arts/psychology/faculty_listing/Cory_Pedersen.html



Dr. Azra Raza, M.D.

Dr. Raza is Professor of Medicine and Director of the MDS Center at Columbia University in New York, N.Y. Dr. Raza completed her medical education in Pakistan, training in Internal Medicine at the University of Maryland, Franklin Square Hospital and Georgetown/VA Medical Center in Washington, D.C. and completed her fellowship in Medical Oncology at Roswell Park Cancer Institute in Buffalo, New York. She started her research in Myelodysplastic Syndromes in 1982 and published the results of her laboratory research and clinical trials in prestigious, peer-reviewed journals. She is also the co-author of *GHALIE: Epistemologies of Elegance*, a book on the works of the famous Urdu poet and co-edits the blog: **www.3quarksdaily.com**. Dr. Raza serves on numerous National and International panels as a reviewer, consultant and advisor and is the recipient of a number of awards including *The First Lifetime Achievement Award* from APPNA, *Award in Academic Excellence* twice (2007 and 2010) from Dogana, and *Woman of the Year Award* from Safer e Pakistan, CA and *The Hope Award in Cancer Research 2012*. Dr. Raza has been named as one of the *100 Women Who Matter* by Newsweek Pakistan in March 2012.

For more information:

http://www.cumc.columbia.edu/hematology-oncology/about_us/azra_raza



Dr. Athene Donald

Dr. Donald did her first and second degrees in Physics at the University of Cambridge. She spent 4 years as a postdoc at Cornell University before returning to Cambridge. She became a full professor in 1998 and was elected a Fellow of the Royal Society in 1999. Her research on soft and biological matter, sits at the interface between physics and biology and is inherently interdisciplinary. Beyond her academic research she sits on her University Council and is their Gender Equality Champion ;she is also a Council member of the Royal Society and chairs their Education Committee; and sits on the Scientific Council of the European Research Council. More generally she is active in gender issues and writes a blog <http://occamstypewriter.org/athenedonald/> discussing these and many other academic matters. She has won many academic prizes and was appointed a Dame Commander of the British Empire in 2010.

For more information:

<http://www.bss.phy.cam.ac.uk/~amd3/>



Dr. Zoe Dennison

Dr. Dennison earned her B.Sc. Honours (1986) from the University of Victoria and her M.A. and Ph.D. (1993) from the University of Western Ontario. At present, Dr. Dennison works at the University of the Fraser Valley and teaches courses in drugs and behaviour, psychology of language, psychology of gender, psychology of music, and in psychological assessment and measurement. Dr. Dennison's current research program is in the psychology of music.

For more information:

<http://www.ufv.ca/psychology/faculty-and-staff/faculty-members/>

LETTER OF APPRECIATION

For this second issue of *In-Sight*, I must, out of personal necessity, express further gratitude. Both to the individuals accepting the interview offers and many, many peoples' continued support. Since the inception of the journal, Dr. Podrouzek provided much of the gumption to thrust critical conversation onto my lap, which I find fantastic. To all current faculty advisors, I appreciate the advice, especially the mentorship of Drs. van de Wetering, Podrouzek, Bernstein, and Rideout. To everyone involved in any capacity, I always welcome, enjoy, and feel grateful for what I consider the most valuable resource in general and in continuing to search for ideas, questions, and people for the journal – sympathetic critique of my work.

This issue brought forth women from a wide range of institutions, backgrounds, and fields. From freshly-minted PhDs to well-established careers, I intended this for part one. There seems to me a dearth of focus on women in Academe; despite the unprecedented fact in the 21st century of the majority of those in-training within Academia are women. Many of the women are amazing people, taking on adversity and turning their pain, personal difficulties, and obstacles into resilience and success. From the first interview, I felt humbled, not just as an undergraduate, but myself engaging in research and having my own set of personal difficulties to overcome. It provided a more empathic view of the interviewees. For instance, at point in the

interview with Dr. Elizabeth Loftus, which I excluded in the transcript, we exchanged personal grievances. She laughed and said, “You really can understand.” It makes the enterprise worthwhile for me.

To finish, I appreciate the time, energy, and genuine support of those involved at every level of my undergraduate project. From providing advice to obscure questions to having coffee for no pay with an undergraduate by coming to their hometown, all of it counts. All of it matters and means a tremendous amount to the production of this journal. From the fullness of my heart, I appreciate the love and support.

Sincerely,

Scott D. Jacobsen

Editor-in-Chief

In-Sight Issue 2.A, Idea:
Women in Academia

INDEPENDENT
INTERVIEW-BASED
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JOURNAL

PURPOSE OF 'WOMEN IN ACADEMIA'

Insofar as we inherit the legacy of previous generations' transgressions through implicit biases and explicit reinforcement of these biases, once conscious of them, we own the option to override these assumptions through changes in personal thinking, behavior, organization of groups and collectives, and the legal codes and public policy that function to shape the overarching attitudinal and behavioral trends of the culture. This may sound arrogant or idealistic arising from the mind of an undergraduate, but I see the unprecedented rise in women as such a phenomenon counter to the past, which requires new frameworks for understanding and functioning in contradistinction to older ways. I can assure you in full confidence to any claim of arrogance and idealism with a resounding, "Both." I understand the lack of power in my hands, but I recognize an internal imperative to do my part. In other words, I see the responsibility to contribute my part to progressive ideas in concrete terms within the context and constraints of my current position.

Sincerely,

Scott D. Jacobsen

Editor-in-Chief

DR. ELIZABETH LOFTUS

**PROFESSOR OF SOCIAL ECOLOGY, LAW, AND
COGNITIVE SCIENCE**

UNIVERSITY OF CALIFORNIA, IRVINE

1. What is your current position at the University of California, Irvine?

My title is Distinguished Professor. My main appointments are in a couple departments. One is Psychology and Social Behaviour. Another is Criminology, Law, and Society. Then, I am also Professor of Law.

2. Where did you grow up? What was youth like for you? What effect do you feel this had on your career path?

I grew up in Los Angeles, not very far from UCLA.

I would say it was peppered with tragedies. My mother drowned when I was 14 and my brothers were 12 and 9. A few years later, our house burned down, and we had to live somewhere else while it was being rebuilt. Through all of this, I managed to keep studying and got into college.

Well, I feel a little like it contributed to my workaholic ways. You know, just keep working, working, working, and feeling a sense of accomplishment. Then, distract

yourself from painful thoughts. Since I do not do psycho-therapy, this is just an armchair self-analysis.

3. Where did you acquire your education?

I went to college at UCLA. UCLA was close by to where I lived. UCLA was probably not the greatest idea since I lived about a half-mile away, and I ended up living at home. I graduated from UCLA and then ended up going to Stanford for Graduate School. I got my PhD in Psychology from Stanford.

4. What was your original dream?

At some point because I had a double major in mathematics and psychology, I thought I might teach mathematics. Something like high school or junior high, but that is not what I ended up doing. I don't know if I had a dream. I just kept on with school, until I had a PhD and became an assistant professor.

5. How did you gain an interest in Mathematical Psychology? In Chapter 3 of *Do Justice and Let the Sky Fall*, Dr. Geoffrey Loftus recounts your hemming skirts and keeping familial correspondence up to date during your Graduate School training at Stanford. When did you realize Experimental Psychology was the new dream for you?

I did that because I was bored with mathematical psychology. I later happily discovered memory, ha! It's what ultimately I would get a little more passionate about. I ended up going to Graduate School in mathematical psychology because I thought that combining my two majors in what would be a perfect field. I was not in the end taken by it. I did other things while listening to, in one ear, the talks, or presentations that were being made.

6. You have published 22 books and over 500 articles. You continue to publish new research on an ongoing basis. What have been your major areas of research?

Well, most generally it is human memory. More specifically, I studied eyewitness testimony for a long time. I studied people's memory for crime and accidents, and other complex events that tend to be legally relevant. Even within that area, I studied how memories can change as a result of new information that we are exposed to. I did hundreds of experiments studying everything you would want to know about memory distortion in that kind of context. In the 1990s, when I started to get interested in what would be called 'The Memory Wars,' the debate about psychotherapy and whether some subset of psychotherapists were using highly suggestive procedures that were getting patients to create entirely false memories. I, with my collaborators and students, established a paradigm for studying the

development of what we would later call, in a paper with Bernstein, *Rich False Memories*. Not just changing a detail here and there in memory, but actually applying people with suggestions so that they would develop these complete false memories.

7. Your research did not have immediate acceptance among professionals. In fact, it attracted much anger, which spilt over to you. In particular, what research set the controversy? What became the controversy? How did this come to a resolution?

I would take us back to around 1990, when I was confronted with an opportunity to consult on my very first repressed memory case. A case where someone was claiming repressed memory. It was a murder case where a man named George Franklin was being prosecuted for murdering a little girl twenty years earlier. The only evidence against him was the claim of his adult daughter that she had witnessed the murder when she was 8 years old and had repressed the memory for 20 years, and now the memory was back. It was in the context of that case that I began to scour the literature of what was the evidence for this kind of repression. She was claiming that she had repressed her memory of the murder. That she had repressed her memory for years of sexual abuse that the father had supposedly perpetrated on her. I could really find no credible scientific support for the idea that memory works this way. That you could take years of brutalization, banish it into the unconscious, and

be completely unaware of it by some process that is beyond ordinary forgetting – and that you could remember these experiences completely accurately later on. And so I began to ask, “Well, if these memories aren’t real, (If there is no credible support for the idea that memory works this way) where could these memories have come from?” I began to dig through literature, and examples, ultimately court cases, and would discover that some of these memories were being created by highly suggestive psychotherapy procedures. When I began to speak out about this issue, then people began to get mad, and for those who got mad, this was something for which repression was one of their treasured beliefs. The repressed memory therapists and the patients they influenced.

Early in my interest in memory distortion, I was thinking about legal cases. In fact, my earliest experiments were designed to map onto what happens when a witness sees an accident or a crime, and then is later exposed to some newer information about that experience, e.g. talks to other witnesses, is questioned in a leading or suggestive fashion, or sees media coverage about an event, my research modeled after that real-world situation.

Some things have happened in the law. In the eyewitness cases, because of many, many psychologists’ work, some jurisdictions have revised the way they handle eyewitness evidence in a case. Some courts have suggested that, and recognized the

scientific work by devising new legal standards for handling eyewitness evidence. That's been a change, and a fairly recent change. And then in the repressed memory cases, I think some jurisdictions have recognized now that this whole claim of massive repression is highly controversial at best. Some courts have ruled that it is too controversial for the cases to go forward. You know, one day we may prove that repression exists. It has not been proven. It is my opinion that we should not be throwing people in prison based on an unproven theory.

8. Subsequently, you took the role of expert witness in a number of important, controversial, and intriguing court cases. What are some of the court cases? Can you describe some of the more memorable moments with individuals involved in them?

Many of these cases involve people no one has ever heard of, of course, I have worked, and consulted, on some famous cases involving people like Michael Jackson, Martha Stewart, and Scooter Libby – a politician in the United States. I think some of the more memorable ones are people looked at accused of crimes convicted based on somebody's memory when these people are either definitely innocent or probably innocent.

I think a memorable one was a man named Steve Titus, who was charged with rape based on the testimony of an eyewitness who somehow in the course of being interviewed went from not being particularly certain to being completely certain it was Steve. Steve Titus was convicted. Ultimately, he was able to get a journalist to show that another man committed these crimes. So Titus was freed, but he was very, very bitter. He had lost his job. He lost his fiancé. He lost his reputation. He lost his savings. He filed a lawsuit against the police and just as that case was about to go to trial, he woke up one morning and doubled over in pain and died of a stress related heart attack at 35. That is one of the saddest cases I have ever encountered.

If you want to write about one up in Canada, you might write about the teacher Michael Kliman, who, based on claims of repressed memory, had to go through three trials up in Vancouver before he was freed. I would bet my house the man is innocent.

9. What is your most recent research?

I started a line of work with Dan Bernstein and a couple of Graduate Students. We were looking at the repercussions of having a false memory. If I plant a false memory in your mind, does it have consequences? Does it affect your later thoughts, or intentions, or behaviours?

We started by trying to convince people they had gotten sick as children by eating certain foods. We succeeded in persuading people that they got sick eating hard-boiled eggs and dill pickles, and we did it with a fattening food, namely strawberry ice cream. Then, we showed that it could affect not only what people thought they wanted to eat when they went to a party, but what they actually ate when you put food in front of them. Bernstein has gone on with some other collaborators to do further experiments on how it effects eating behavior. Most recently we have published a paper with collaborators showing these kind of suggestive manipulations work not just with food, but also can work with alcohol. We can plant false memories that you got sick drinking vodka and you don't want to drink vodka as much.

That's one line of continuing work.

For instance, in *Asparagus: A Love Story*, we described a study that showed that you could plant not only a getting sick memory that people then want to avoid. You could also plant a warm, fuzzy memory for a healthy food, and then people want to eat it more.

10. If you had unlimited funding and unrestricted freedom, what research would you conduct?

I am not sure if I want to conduct it, but with unlimited funding and no worry about ethics, ha! You could maybe do the kind of experiment to explore whether massive repression really occurs or it doesn't. Where you could be able to expose people to prolonged brutalization, and really get a chance to study them thoroughly, but ethical concerns would prohibit that kind of study.

11. Currently, you are on the executive council for the Committee for the Scientific Investigation of Claims of the Paranormal – or CSI for short. What role do you play on the executive council? What is the core message of CSI?

I am a fellow of the CSI. Periodically, I give talks at various conferences that the organization holds or I might write something for the Skeptical Inquirer. But I am so busy with so many organizations that I don't play a large role in the executive council. I mean, other people may have been providing more input to what to bring to the conferences or activities that the organization might engage in, but I am on so many committees and boards that I am spread a little too thin to spend too much time at one.

It's an organization of people that are pro-science, against pseudo-science and flimflam. Trying to expose efforts to manipulate people into believing or thinking things that might be dangerous, harmful, or untrue.

12. Since you began studying psychology, what do you consider the controversial topics in Psychology? How do you examine the controversial topics in Psychology?

That is a big question, and I do not get into all of them. I've got my own little area in memory and memory distortion. I know a lot about the science of memory and lay beliefs about memory. I sort of tend to focus my efforts there. There are many controversial areas that one could look at, but you are going to have to find a different expert to talk about some of the other ones. A related one to the one I care about is using facilitated communication with autistic kids. There is controversy about vaccinations. I don't think it is particularly controversial. There is controversy about the human contribution to climate change. I don't think there is much of a controversy. You can find a few people out of the mainstream.

13. How would you describe your philosophical frameworks inside and outside of Psychology? How have your philosophical frameworks evolved?

I would say one of the things, and this is one of the great things about training in psychology, even if you do not go on to teach psychology or even to be a psychologist in your professional life. It teaches you a way of thinking. It teaches you to be thinking about, "What is the evidence for any claim that somebody might try to fob

off on you?” We know not just how to ask, what is the evidence? But really, what exactly is the evidence? What kind of study was done? Was it an experimental study? Where you and say something about causation. It is it just correlational? Was there a control group? How well was it done? Is the sample size sufficient? What were the statistical results? We know how to think about evidence. That is one of the gifts that experimental psychology, the study of psychology, research methods in psychology, has given to people who have taken the time to expose themselves to it.

14. For students looking for fame, fortune, and/or utility (personal and/or social), what advice do you have for undergraduate and graduate students in Psychology?

It certainly helps if you can find some research to get involved in. As an undergraduate or graduate student, find some interesting research to get involved in. If you can feel a little passion about it, it can keep your motivation up to keep working hard. I think it is very helpful for students to try to work with faculty members, where you are working on something the faculty member is interested in, and hopefully with a faculty member is generous about publications with students. Having scientific research under your belt can open doors for you. It can get you into Graduate School. It opens doors to jobs. It can open doors to advancement in your

field. Anything that you can do to beef up that aspect of your experience is bound to be helpful.

Once you get that under your belt, you might want to get something in a magazine or a journal.

15. You have earned numerous awards, but the AAAS award for Scientific Freedom and Responsibility seems most relevant to me. In your acceptance speech you state, “We live in perilous times for science...and in order for scientists to preserve their freedoms they have a responsibility...to bring our science to the public arena and to speak out as forcefully as we can against even the most cherished beliefs that reflect unsubstantiated myths.” I quote this in an interview with Dr. Daniel Bernstein and ask, “How important do you see criticizing ‘unsubstantiated myths’ in ‘perilous times’ for Science?” He says, “*I think that this is excellent advice. Science has a responsibility to “give back” to the communities and cultures that invest in it. Scientists can and should correct myths whenever the opportunity arises.*” Can you expand on this idea of scientific responsibility to society?

You know, I think he put it beautifully. Not everyone has to do everything; I think collectively we can all contribute to giving back to the society that supported the

scientific work. Some people are going to be good at getting the experiments done and published in journals, and they're uncomfortable speaking to the press or speaking in the context of legal cases. Other people are comfortable doing that. Some people are not comfortable writing for lay audiences. They only want to write for concise scientific journals. Collectively, I think there is something of a responsibility in an ideal world for people to want to give back.

16. Whom do you consider your biggest influences? Could you recommend any seminal or important books/articles by them?

Back in Graduate School, I had a professor that I did some research with on semantic memory that really taught me how to be an experimental psychologist. To be able to design a study with him, conduct and gather the data, analyze the data, and write up a publication. That was a great benefit for me. That collaboration was with a social psychologist named Jonathan Freedman. That was an important influence in terms of turning me into an independent experimental psychologist. I would say, in terms of people that I have never met whose work has probably set the stage for the tradition in which I work, Bartlett from England who was famous for his work on reconstructive memory. I see my work in the tradition of reconstructive memory. He was an important forefather.

If people want to read about memory distortion, I think they may want to read something more recent. I have a book by Brainerd and Reyna. It is rather advanced, but it is called *The Science of False Memory*. It is sort of everything you would ever want to know about false memories up to 2005 or whenever that book was published. For your readers, if they wanted something easy and fun for reading, I would recommend *The Memory Doctor* in Slate.com written by Will Saletan. That will give you a small slice of memory research. If you want more, you could probably read *The Science of False Memory*.

17. What do you consider the most important point(s) of Psychology as a discipline? In particular, what do you consider the most important point about cognitive psychology?

I do not think I want to go there. (Laughs) There are just too many. I have just been focused on the study of memory. I think the study memory distortion is an important area because of its practical and theoretical implications. I think some recent work in a completely different area has to do with learning and memory, in a classroom or an educational setting. The work that shows that if you test people, they learn better than if you just ask them to study again. All these findings on *testing effects* are interesting and we will see more work in that area.

This of course has many people interested in memory and neuroscience, and brain imaging. It is not something I do, unless I am collaborating with someone who does, but we will see where that will lead. It is certainly the subject of a lot of current research.

18. Three years ago, I informally asked Dr. Anthony Greenwald, “Where do you see Psychology going?” *He said the frontier lies in cognitive psychology and neuroscience. However, a first generation of researchers, like the first round of soldiers marching out of the trenches, will fall – making all the necessary mistakes. After that point, the next generation of researchers will have learned from those mistakes to make deep progress. In the same stream of thought three years later, “Where do you see Psychology going?”*

That is interesting because he has been quite successful with the implicit association test and all kinds of ramifications in uses of it, but he does not seem to be going in a neuroscience direction. However, he is a smart guy, whose speculation I would invest in.

People are enamored with this neuroimaging stuff. I do see a lot more research. I was about to say progress, but I do not know yet. The neuroscience of cognitive psychology, there has been a lot of discussion in our interdisciplinary teams, people

seem to be enamored with the idea that if you bring together people from all different types of perspectives and fields, then you can come together to tackle problems. Will we see more of that – more funding of those types of enterprises? More research, more publications, involving these large interdisciplinary teams. It is a speculation, but it is an educated one given how enamored people seem to be of this notion.

DR. CARLA MACLEAN

PSYCHOLOGY INSTRUCTOR

KWANTLEN POLYTECHNIC UNIVERSITY

1. What positions have you held in Academe? What position do you currently hold?

I am currently a faculty member at Kwantlen Polytechnic University (KPU). My past positions include typical graduate student work like research and teaching assistantships and also lecturer positions at both the University of Victoria and Simon Fraser University. My position immediately prior to starting at KPU was as a Social Sciences and Humanities Research Council of Canada post-doctoral research fellow at Simon Fraser University.

2. How did you come to this point in your academics?

I arrived at this point in my career by serendipity. It would have been convenient if I always knew what I wanted to do and I simply executed my plan – that is not how my career evolved. Rather, I followed my interests, kept an open mind, and talked with people (all sorts). That process gave me a realistic understanding of what different

career paths looked like and it also opened doors for me. My good luck led me to my career as a psychology faculty member.

3. How did you gain interest in psychology? Where did you acquire your education?

I asked a lot of “whys” and “hows” growing up and being an inherently social person it was very natural for me to apply that curiosity to people. Although I pursued a number of interests in my undergraduate schooling, at a certain point psychology felt more right than the other subjects I was studying. Once I selected psychology I never looked back.

My university education began at the University of Victoria, then to Saint Mary’s University in Halifax to acquire a MSc. in Industrial/Organizational psychology, and then back to the University of Victoria for my Ph.D. in experimental psychology. My education was not as continuous as my brief description above would suggest. I took opportunities during these years to work, travel and ultimately cultivate experiences and a sense of self outside of the institutions I was studying in.

4. What kinds of research have you conducted up to the present? If you currently conduct research, what form does it take?

I enjoy research. My past and present research merges the areas of forensic and occupational health psychology. Although my interests are diverse, the core of my research pursuits is the understanding of how: (i) people assess one another and (ii) we might reduce bias and/or maintain accuracy in people's assessments of situations, information, and individuals. I typically pursue these core interests in the applied areas of eyewitness memory and investigator decision making to an adverse event (industrial incident or forensic).

Historically my research on investigator decision making has explored ways to minimize confirmation bias in industrial investigation. People who investigate industrial events are typically foremen, supervisors or health and safety professionals of the organization in which the accident occurred. The contextual knowledge that comes with familiarity with the work environment can result in biased decision making as investigators may seek information that supports their preconceived notions. The eyewitness to an industrial or criminal event is equally as important a member of the investigative dyad as the investigator. Hundreds of studies tell us that eyewitness memory is fragile, malleable, and susceptible to forgetting, even in optimal conditions. I study factors that may lead to inaccurate witness recall post-event and/or factors that can help maintain the quality and quantity of a witness's information. In collaboration with others, I have researched: the effects of witness

fatigue and misinformation, access to memory of a central instance of a repeated event, post-event information on investigator and witness identification evaluations, and psychologically-based incident report forms.

5. Since you began studying psychology, what do you consider the controversial topics? How do you examine the controversial topics?

There are many areas of controversy in psychology but the areas that directly relate to my research are: how we as researchers try to ensure we are drawing reliable and valid findings from our studies, the role of personal responsibility (i.e., human error) in event causation, and the influence of post-event suggestions on memory (my co-contributor to this In-sight issue, Dr. Elizabeth Loftus, is likely a better candidate to tackle the implications of this last topic).

To address the first issue in the above list, because I am aware of the possibility of spurious results I take small steps to try to minimize error in my reporting of results, e.g., replicate when I can, use large sample sizes when possible, show restraint when talking about the implications of my findings. The other controversial area that I mention above is the role of personal responsibility in event causation. People's views regarding human error can fall on a continuum from "the event was caused by a rogue employee who made an inappropriate decision" all the way to "there is no such thing

as human error; all inappropriate worker action is a result of latent failures within the system.” A great deal of time has been spent discussing the most productive viewpoint to enhance safety. This controversy touches my research because the view of human behaviour taken by the investigating officer/organization may have implications regarding how information is sought and interpreted during an investigation, as well as, what the organization will do with the investigative findings.

Last, one area that I do not study but I follow closely is deception detection. This is a fascinating area that has evolved rapidly over the last few years. Researchers are pursuing different features of deception such as emotion and cognitive load to try and generate effective tools to enhance detection e.g., asking for the narrative in reverse order, asking about unanticipated features of the event, the strategic use of evidence or the emotion based micro expression research. This is a fun area of study that is always interesting to read about.

6. If you had unlimited funding and unrestricted freedom, what would you enjoy researching?

Well if there were really no constraints (and we could ensure no consequences for the people participating) I would move my research into a more externally valid framework. That is, I would expose people to high stakes situations and manipulate

their physiological and psychological state to see how these factors affect their recall and decision making. It is hard to find research done in high resolution environments but a fairly recent collaboration of note is Loftus's and Morgan III who used military recruits in survival school as their participants.

7. For students looking for fame, fortune, and/or utility (personal and/or social), what advice do you have for undergraduate and graduate students in Psychology?

I am hesitant to answer this question as I have neither fame nor fortune and my utility is likely up for debate (just kidding). My personal experience has taught me a few general principles that worked well for me: first, do your homework so you have a good understanding of the scope of what it is you are considering, second, talk with people and find out the pros and cons of any given situation/position, third, be open to feedback – it is rarely intended to insult rather it is usually offered as a means to help you grow, and last, get hands on experience when you can. If you have a career in mind, talk to people who hire for that job and find out exactly what they require as this will enable you to target your education and experiences more effectively.

8. Whom do you consider your biggest influences? Could you recommend any seminal or important books/articles by them?

The people who influenced me the most were the people I worked directly with during my graduate training, Dr.'s Elizabeth Brimacombe, Stephen Lindsay, Don Read, and Veronica Stinson. Each one of these academics modeled a unique approach to study, research, and networking and from each relationship I took valuable lessons. On a purely scholarly note I would say that the most influential author for me over the years has been Daniel Kahneman. His work encouraged me to think in depth about how we synthesize information and this ultimately helped me script my dissertation research. I hear Kahneman's recent book, "Thinking Fast and Slow," is very enjoyable and accessible reading (which I look forward to getting to when my busy first year of teaching is behind me!). The other authors I watch with interest tend to be more applied researchers, to name just a few, Elizabeth Loftus, Saul Kassin, Christian Meissner, Dan Ariely, Itiel Dror, Garry Wells, and Aldert Vrij.

9. You may consider many areas of Psychology important for academics and non-academics. Even so, whether one or many points, what do you consider the most important point(s) of Psychology as a discipline?

Humans are a marvel – we habituate but then adapt with lightning speed. We are frugal with our allocation of resources yet act with close to optimal performance with little (or no) executive effort. In psychology we recognize that the complex nature of people cannot be studied using only one perspective, we use a bio psychosocial

approach and this is our strength. This multifaceted approach not only broadens our understanding of human behaviour from within psychology but facilitates collaboration with researchers from other disciplines (e.g., medicine, cultural anthropology). Being open to fresh perspectives and approaches may ultimately provide us with new and exciting understandings into human behaviour.

DR. AISLINN HUNTER

CREATIVE WRITING INSTRUCTOR

KWANTLEN POLYTECHNIC UNIVERSITY

1. What positions have you held? What position do you currently hold?

I am currently a faculty member in the Creative Writing department at Kwantlen Polytechnic University, but I tend to teach part-time (in one semester) so that I can write more than four months a year. This has allowed me to take on writer-in-residence positions at other universities (Memorial University in St. John's Newfoundland, Lancaster University in England, and Macquarie University in Australia) and to do freelance or contract work that interests me. It's also afforded me time to undertake a PhD. Before coming to Kwantlen I taught creative writing as a sessional instructor at The University of Victoria and before that I worked on a contract-basis as a broadcaster and producer at CBC Radio and as a researcher at the National Film Board of Canada.

2. In brief, how was your youth? How did you come to this point in your academics?

My family was above middle-class economically but I didn't grow up in what I'd now call a 'culturally rich' environment. (My friend's parents owned an art gallery and they used to wake their kids up by blaring classical music – I remember feeling completely envious of their arty world.) My mom, who was a nurse, took a few university classes in psychology and sociology when I was growing up and her excitement and what she brought home from those classes helped cultivate my enthusiasm for learning. When I was old enough to express my leanings she enrolled me in dance classes and supported my interest in theatre. I was an inconsistent high school student (A's in the arts, D's in maths and sciences) but an amazing day-dreamer. At sixteen I dropped out of high school (where I was miserable) and at seventeen I moved on my own to Dublin, Ireland and got a job in a pub. A few crucial years followed: in them I had the freedom to discover what excited me – for example, I remember being obsessed with the material residue of the past which seemed to be everywhere in Ireland. At twenty-one, I was accepted at the University of Victoria as a 'mature' student and I fell in love with art history and creative writing. In second year I unexpectedly received a small bursary, the Patti Barker Award for Writing, and it was a life-changing moment – I'd never been recognized for excellence before. I think that award gave me a new way to identify who I was and what I could do. An MFA in Creative Writing followed and then three book publications and then an MSc in Writing and Cultural Politics, and now I'm almost through my PhD in English Literature at Edinburgh. I've received a

lot of encouragement in the form of academic awards along the way and I've worked hard. Still I think any success I've had has a lot to do with that old adage: do what you love and the rest will follow.

3. How did you gain interest in Creative Writing? Where did you acquire your education?

I was involved in theatre until I was 18 or so and had always been a bit of a scribbler, but I didn't formally arrive at writing until I took an introductory creative writing class at The University of Victoria when I was twenty-one. That year Patrick Lane walked into the classroom, opened a book, read a poem by Gwendolyn MacEwan and made me, in one fell swoop, want to be a poet; made me want to know something the way a poet knows it, and to be able to say that back to others in the same way that MacEwan did. Patrick was around fifty then and a Governor General Award-winning poet with, I believe, a high school education. Still, in one year he taught me more than any other writer or professor about writing and about what it might mean to be a writer in the world. My soon-to-be-husband was like that too: a kind of Renaissance man with no formal post-secondary education, but incredibly, incredibly intelligent. He taught me, mostly by example, how to be a critical thinker. Any success I've had in my formal education (an MFA at The University of British Columbia and an MSc at

The University of Edinburgh) owes something to these two men and the wonderful mentors inside and outside academia who have followed them.

4. You have written five books. What form has your creative expression taken over time?

I work in a variety of genres so generally the topic or the material dictates the form – something will generally ‘feel’ like content for a poem or for an essay or fodder for something more involved like a novel. I am obsessed by the past (as both a construct and as a site of historical events) and by how we engage with it (and it with us) and so that is always at the centre of my creative, and I suppose, my academic work.

5. Most recently, you have worked on your PhD at the University of Edinburgh. What is the basis of it?

I’m looking at resonance and beloved objects in Victorian culture, and asking why certain objects appear again and again in Victorian writers’ museum collections. It’s ‘thing theory’ so to speak (I’m asserting that certain ‘things’ are more fit for the task of acting as remembrancers’ than others) with a narrative through-line in that I am also looking at how, in life-writing and literature, we tend to describe the way an object presences the absent beloved for us. It’s quite a fascinating topic and intersects with some of the themes in my new novel.

6. Since you began in writing, what do you consider the controversial books or poems? Why do you consider them controversial?

I had to think a lot about this question because I don't think I'm considered controversial at all (in relation to my work in the Canadian literary landscape). I am quite an earnest writer, a meliorist, and that effects, I suppose, how much I'm willing to discombobulate or challenge the reader. That said I think that there's a slightly controversial position hovering thematically under a lot of my work (academic and literary) – ideas around how we humans presume too much agency for ourselves when things and events are actively shaping us all the time. I'm also interested in extended mind theory and in how we cognize the world through limiting ontologies (i.e. the depth ontology in Western culture where we forefront the concept of the 'inner being'). The most deliberately provocative work I've done has been in the essay form. I wrote a piece on why writers shouldn't do reviews for *The Quill and Quire* (an unpopular position) and a piece on the impossibility of competition amongst poets for *Arc Magazine*.

7. How do you describe your philosophical understanding of the art of Creative Writing?

I once said to a second-year creative writing class at The University of Victoria that “to be a writer one needs to procure wisdom, knowledge or wonder.” I said it wanting to be challenged but no one so much as raised an eyebrow or a hand.

8. How has it changed?

Well, given that I sort of believed what I said to that class a decade ago (though I remain open to revision) I’d have to say that my understanding of what is required of a writer or ‘writing’ hasn’t changed: I believe you need something of use to say, or an ability to create a sense of wonder in another, and craft in order to do so in a way that locates and dislocates the reader simultaneously, adds to what they had when they entered into the conversation with your work. But the literary landscape has changed significantly in the last few years, in part because what’s valued drives the market. Information is highly valued now (the kind of ‘information’ that’s arguably different from wisdom or knowledge) as is escapism, and so there’s a commerce in that; digestibility matters too, and that means that what gets written and what sells, what is ‘successful’ changes. I still tend to differentiate between classes of literature which is probably an old-fashioned thing to do in the age of the blog-turned-film-turned-novel.

9. What advice do you have for undergraduate and graduate students in Creative Writing?

Fail, fail better. Take risks. Remember that rejection makes you stronger.

10. Whom do you consider your biggest influences? Could you recommend any seminal or important books/poems by them?

I think the first time I felt as a reader that I was in the hands of a master writer was reading the Irish writer Dermot Healy. He's widely considered a writer's writer because you can marvel at his craft even as you're set adrift in his narrative or poetic worlds. I especially love *A Goat's Song* which is a novel and *What The Hammer* (poems) but all of his work has taught me something, and he innovates every time when a lot of writers would be content to repeat their successes. Anne Carson, Jan Zwicky and Carolyn Forché (all poets) make me think 'why bother' – they've already said so much so perfectly – but they also inspire me to keep at it. Alice Munro inspires me on numerous levels. It's not that I want to write like her but I am in awe of her craft and her tenacity. She makes me aspire to be a better writer, to try to be great at it.

11. What poem has most influenced you?

TS Eliot's *Four Quartets*. I don't actually have an academic's handling of it, but it sends me off in a new direction with every reading and I think his thinking about time in it

is perfectly complex: 'Time present and time past / Are both perhaps present in time future, / And time future contained in time past...'. It's directly influenced a lot of my work.

DR. CORY PEDERSEN

PSYCHOLOGY INSTRUCTOR

KWANTLEN POLYTECHNIC UNIVERSITY

1. Where did you acquire your education?

At the undergraduate level, at the University of Calgary. At the graduate level, at the University of British Columbia, from where I earned a Masters and PhD degree in Developmental Psychology.

2. What originally interested you in psychology? In particular, what interested you about human sexuality?

Well, I acquired my degree from the department of educational psychology and special education. I applied there because I particularly wanted to work with one of the faculty, Dr. Kim Schonert-Reichl. She was doing research in socioemotional learning and competence, and how it relates to things like psychopathology and peer relationships. That's what I was initially interested in. In particular, I wanted to study those variables as they related to mental illness and various childhood mental disorders, and I especially wanted to work with Kim. However, well into my academic career, after many years teaching adolescent development, it came to my

attention that textbook coverage of sexual development was lacking in many respects, and outright wrong (I hypothesized), in others. So I developed my first lab at Kwantlen (tentatively called a “Development Lab”) and conducted two large scale studies on sexual development among adolescents. From there, I developed an entire human sexuality course and changed the focus of my research to human sexuality.

3. What topics have you researched in your career?

As a graduate student, I was in two different research labs at UBC. One was the Socioemotional Development Lab run by Kim. We investigated things like moral reasoning, moral development, peer relationships, bullying, conduct disorder, empathy, and pro-social moral reasoning.. My masters work came out of that lab. The other lab I worked in was the Self-Regulated Learning Lab, which involved work on the self-regulated learning components of learning disabilities among children and adults. Kids and adults with learning disabilities tend to lack self-regulated learning. They tend to be unaware of their own learning difficulties. We developed some self-regulated learning strategies to help them monitor their own cognition, and their own learning styles. I was in that lab, and we did a number of studies in the local schools.

For my Doctoral Dissertation, I looked at children's conceptions of mental illness, 'how do children come to understand mental illness in their peers?' They do see it – unfortunately. How do they understand its cause, its prognosis, its severity? How do they perceive these individuals in terms of friendship quality? Whether they would be good friends or bad friends, whether they would like them or not. And since leaving graduate school, and coming to Kwantlen, I have done several studies; most recently on human sexuality among adolescents and emerging adults. Things like the developmental progression of sexual events in life of adolescents and emerging adults. What do they do in their developmental progression? In other words, what they do first, what do they do next, and so on, and whether these series of events predict their level of promiscuity and level of unusual sexual activities. I also did another study on the predictors – I do a lot of regression research – of infidelity as measured by the big five personality variables.

4. What areas are you currently researching?

I have a couple of things on the go. Right now in my human sexuality lab we are looking at changes to current trends in exotic dance. We have two directions in which we are going. If you look at the popular media, you have lately seen a lot of exotic dance put out there as normative behavior. A person can take poll dancing classes. A person can learn how to lap dance, provide a lap dance. Popular culture is trending

towards putting lap dancing and pole dancing out as a good means for aerobic exercise. Some researchers have coined the term `stripper chic`, which is the new culture of empowerment for exotic dancers. Given that, we hypothesize that there has been a shift. Traditionally, exotic dance has been stigmatized in the literature. Much literature has come out of the field of sociology, which results in a tendency towards female liberalism. Female exotic dancers have been viewed largely as victims. But we have a different take on that. While admittedly many exotic dancers have been victimized, we are putting forth the argument that exotic dancing can actually be sexually liberating. Those exotic dancers are earning legitimate capital gain. They are providing a legitimate service, and with the general trend toward what is called `stripper chic`, it may be changing not just societal views, but the views among exotic dancers too. The view of their own stigma; that their personal identity is viewed more positively. Also, we are going to look at predictors (regression is my thing!) of things like psychopathology, self-esteem, and standard measures of restrictive or permissive sexuality. We hypothesize that there will be no difference between the average population – Kwantlen students – and exotic dancers.

The other study that we are looking at is the enmeshment of gender identity with sexual orientation. There is considerable anecdote, even research, that people confuse sexual orientation with gender identity. For instance, there is a perception that if

someone is gay, this person must not be gender normed; the perception that gay men are feminine and that lesbian women are masculine. We plan to tease this enmeshment apart by having participants evaluate the degree to which they think a gay person would be suitable for a job description that is exceptionally masculine or feminine. Of course, we think gay men will be viewed as less competent and that lesbian women will be viewed as more competent in a traditionally masculine job and vice versa.

5. What epistemologies, methodologies, and tools do you use for your research?

Almost all of my research is cross-sectional. I have not conducted any longitudinal designs, as many trained in developmental psychology do. Most of my research is quasi-experimental in nature that does not involve any manipulation of variables for the most part, but only to examine variables as they exist in cross-sections of the population. Two exceptions to this general trend; the study recently done in my lab on the confounding of gender and sexual orientation, and work with my honours student on sexual paraphilia. These were both experimental designs.

6. With your expertise, what do you consider the most controversial findings in psychology? What do you consider some of the implications of these findings?

Well, I cannot speak to the whole field, of course. However, if I were to speak generally I would look back at my introductory psychology classes and cover a broad range of topics. Generally, I would say, probably, in issues to this day of consciousness. How to know what consciousness is? How to measure it? These are still problematic for psychologists and philosophers. I would say, in my particular field, some of the big issues are things like causes of sexual orientation, and at a deeper level whether we should be even asking such questions. Such questions are biased, as we do not ask about the causes of heterosexual orientation. Being straight is presumed status quo. I would say, in my field, this area counts as one of the biggest of controversy.

There is also controversy around certain sexual disorders. In particular, hypersexuality and gender identity disorder as disorder. Both of these are in considerable debate as to whether they should be included or not in the DSM. I do not believe that either of those should be included, personally, from the research that I have read. I think they simply represent variations in human sexuality, which is exceptionally varied. I have difficulty reconciling many sexual disorders in the DSM, because they suggest there is a normative amount of desire; that there is a normative amount and that anything more or less than that is pathological. I consider human behavior much too varied, especially human sexual behaviour, to say, "Oh, this is the

appropriate amount of sex, and any more than this, or less than this, is pathological.” I have some difficulty with that.

In the developmental field, again there is controversy relating to the DSM, particularly, what constitutes developmental psychopathology? What is considered appropriate behavior for children? Determining whether a children’s behavior is pathological hinges on the adult’s perception of the behavior, and so it is the parents or teachers that go to a psychologist or physician and say, “My child is ill.” The child rarely goes into the doctor and says, “I think there’s something wrong with me.” You don’t see that, right? There are disorders in the DSM for children that are debatable. Take for example, a new one that was under consideration, I think it was to be called temper-tantrum reaction disorder or something like that, being proposed for the DSM-5. It is based on parent’s reports of children having unreasonable and excessive temper tantrums; in other words, more than the norm! I am not suggesting that there are no mental illnesses among kids. I simply mean that the DSM has expanded to the point where much “normative” behaviour is designated pathological if the parameters are not exactly right. I think those are the biggest debates in the field of psychology that are of most interest to me.

7. If you restructure, or at least reframe, the study of sexuality, how would you do it?

Well, that is a tough question. I think this links somewhat to my earlier comments about pathology. I am teaching human sexuality now. The last several chapters are about things wrong in sexuality. Commercial sex, prostitution, exotic dance are wrong. Selling sex is wrong. Then, there are the sections of sexual dysfunction, like hyper-sexuality and hypo-sexuality, and how these are ‘disorder’. And then next week it is paraphilia; exhibitionism, fetishism, BDSM, etc. And it is all so structured like, “Wow, look how wacky everyone is...” Even the chapter on gender identity that I did last week was all about why would people want to transition from male to female? What is with these people? Look how these people are different? The science is set around pointing out what is presumed to be “normal”. Some textbooks are grey because they call these topics ‘sexual variations,’ but the implication is the same; that there is something somewhat wrong about it all. I do not like that. I do not teach my class that way. I am very liberal in my class encourage tolerance of these differences. There is nothing wrong with these differences. So, I would re-structure our science in how we pathologize everything, make everything seem like it is abnormal. I do not like that. While I appreciate that there IS pathology, I often believe much of the stress and stigma associated with pathology comes from the fact that we pathologize!

8. If you had unlimited funding, what would you research?

Unlimited funding? If I had unlimited funding, I would get two different pieces of equipment. One, I would get a penile plethysmograph, which measures tumescence of the genital organs for males. Two, I would get a vaginal photoplethysmograph, which is a measure of vasocongestion. They are both measures of physiological arousal. In sexuality research, the field is burdened by the social-desirability bias. People are going to say what they believe other people want to hear. Take for example the standard question, this is just an example, but take the standard question, “How many sexual partners have you had?” Men tend to overestimate their number of sexual partners and women tend to underestimate their number of sexual partners. The truth is somewhere in between. It is hard to measure things like sexual arousal based on self-report. And that is all the kind of data that I have been primarily working with; questionnaires, self-reports, survey data. If I had unlimited funding, I would buy those pieces of equipment and hidden camera equipment to conduct observational research in labs.

If I had unlimited funds, I would also want an fMRI machine. It would be amazing to see what happens in the brain during orgasm. Is it diffuse or localized? I would put technology on my side if I had unlimited funding. Although I have asked the university for a vaginal photoplethysmograph and a penile plethysmograph, there is so far no such luck in getting this equipment.

9. When you entered academia, you likely had a certain philosophical framework for understanding the world. How have your philosophical views changed over time to the present?

Well, there is no single salient point, right. I mean, as a professor, the only thing I want my students to take away from my class is – if you forget everything about theories, facts, and numbers – the most important thing that every student should take away is how to think critically – how to be a critical consumer of information. That is the most relevant thing in psychology. The knowledge we have about the brain, its desire to explain cause and to do that via making connections that are probably superfluous, they are not real – and I want students to be *critical consumers of information* because psychological information is everywhere. It is in the news, on the radio, on the television. If you cannot be a critical consumer of information, you are in trouble. Not everyone has a critical thinking style, which is why I consider it extremely important for people to be critical consumers.

10. What advice would you give to undergraduate psychology students aiming for a work, career, and general interest in psychology?

Good grades are important, but they will only get you so far. If you want a career in psychology, you need more than an undergraduate degree. That is my advice. Grades

will help you get into graduate school, absolutely. But, back to my regression models, there are many predictors of success in graduate school. Grades are only one path – grades will put you into the competitive pool of graduate school. Yet, you will have more chances of getting into graduate school with strong letters of reference. Grades will provide your letter writer with something solid to comment on about you. However, that is where it stops. My advice for people in psychology is A) apply to graduate school and B) get in good with faculty. Join a committee. Join their lab. Participate in research. Do something in some way to make yourself known to them because that is the only way they will be able to write you a letter of reference that says something besides, “This is a good student in class and they have a good grade point average.” That is all that most professors could say with only grades to recommend you. Letters of reference go a long, long way.

11. Who have been the biggest influences on you? What books or articles characterize their viewpoint well?

God, I do not even know. This is a tough one. I do not even know, honestly. I would put my supervisor Dr. Kim Schonert-Reichl right up there. She is exceptionally well-published and a fabulous speaker. And she knows how to conduct research. She really taught me how to be a researcher and a critical thinker. I remember once that she told me about a study she was designing. She had developed

a program evaluation for a well-known socioemotional development program called “Roots of Empathy”. The initial results were promising. Data suggested that kids exposed to the program had less classroom problem behavior, participated less in bullying, and displayed greater social competence and prosocial behavior. I remember Kim saying to me one day, “Look, the data indicates that bullying is decreasing and social competence is increasing. This is fabulous, but so flawed.” I wasn’t sure what she meant. She said, “Well, the bullying behaviors are decreasing and the social competencies are increasing, but compared to what? How do we know whether the behavior of all kids becomes better as the year progresses?” Now, it seems obvious. There was no control group! No baseline! Kim incorporated a control group into her subsequent evaluations of the program. It seems so obvious, but you have to be a sharp researcher to be able to recognize that flaw. That is critical thinking. That is just one of the many intelligent things that Kim has said since I have known her. She is just a solid researcher and really knows her stuff. She is well published and just recently made full professor. I feel like she has influenced many of my ways of doing and thinking about things. Even outside of being her student, when I first designed the human sexuality course – and I had not been her student for years, though we speak regularly – I told her about it and she suggested that I include some statement in my course outline about the topics discussed in the course bringing up difficult issues for some people. She is always thinking ahead. She said, “You may

want to tell people that if they have difficulty with the material than they should be referred to see someone.” She is very thoughtful. She is always trying to help me be more thoughtful that way too. Some of the fundamentals of conducting research with kids she has introduced to me. Some basic stuff – this is how to treat your participants. This is how you ensure your participants are going to be willing to participate in your study. That the participants understand anonymity and confidentiality, and that they understand their contribution and why it is important. That is what I do with all of my studies now. That is how I relay the importance of my studies to all of my participants. I think she has been profoundly impactful on the way I conduct research, as well as how I run my class. She always made her classes relevant; she always brought the material around, emphasized how should we be studying this particular topic. Why we should be studying this particular topic. She took it away from the theoretical and brought it down into the relevant, the practical applications. And thanks to her, I have always tried to be that way too. That is my style with my own students. Even the way I write articles have been influenced by her writing style, the way that I mark papers, the way I make suggestions in comments These are just some examples of someone who has been immensely influential.

DR. AZRA RAZA

PROFESSOR AND DIRECTOR OF MDS CENTER

COLUMBIA UNIVERSITY

1. What is your current position?

My position is Professor of Medicine and Director of Myelodysplastic Syndrome (MDS) Center at Columbia University.

2. What positions have you held in your academic career?

I earned the appointment of Full Professor at Rush University in Chicago (Age 39). Subsequently, the University of Chicago appointed me the *Charles Arthur Weaver Professor of Cancer Research*. The Department of Medicine created a Division of Myeloid Diseases, where I was first Director. I moved in 2004 to the University of Massachusetts as Director of Hematology and Oncology. They gave me the *Gladys Smith Martin Chair* in Oncology. I have been in New York since 2007. Presently, I direct the MDS Center at Columbia University.

3. Where did you grow up? How do you think this influenced your career direction?

I grew up in Pakistan. This greatly influenced my career and life. Post-graduate work in Science was non-existent. I entered medical school as a tangential way of becoming involved in Molecular Biology. However, once I began seeing patients, I knew that I would never give that up. This led me to the idea of doing translational research. When I felt ready to graduate medical school, it had become abundantly clear to me, even after those three years of clinical work, that if I stayed back in Pakistan, I would not be practicing translational research, but would have no choice other than to become an activist. The conditions under which an impoverished population faces disease are such that one has few other options. I felt that way. Here, I came to understand my primary duty - sincerity to my passion: Science. In a way, I took to heart the advice of Polonius to Laertes:

“This above all: to thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man.

(Shakespeare, HAMLET, Act I, Scene III).

4. Where did you acquire your education?

Pakistan.

5. What was your original dream?

I became obsessed with ants at a very young age, maybe 4 years old. I used to lie for hours and watch them zip in and out of their little holes in long hot summer afternoons in Karachi and imagine their lives. I constructed imaginary homes for them and social lives complete with romance and all. As I grew and read about biology, I obsessed over Darwin and Freud. In fact, I obtained the **first** position in my pre-medical examination by scoring high during the viva part of the test, when I engaged the external examiners in a heated debate over Darwinian versus Lamarckian theories of evolution and showing why I was a diehard Darwinian at the ripe old age of 16. If I had grown up in the West, I feel confident I would be a scientist, and not a physician, but I had no way of following my dreams there. Medical School was the only option to study Biology. So I went to Medical School.

6. What have been your major areas of research?

I have focused extremely on studying the biology and pathology of myeloid malignancies since the start of my career, even before I started my Residency. This happened because I had come to the US soon after graduation from Medical School and had six months before the start of my Fellowship. I started working at Roswell Park Cancer Institute (RCPI) in Buffalo New York, where I started working with

Acute Myeloid Leukemia patients. On completion of my Residency, I returned to RPCI for my Fellowship and stayed on as a faculty member for another 6 years. During this period, I had an experience with a patient who had acute myeloid leukemia (AML) which had evolved from a prior MDS or a pre-leukemia. This made me interested in MDS. As a Fellow and young Faculty member, I defined the Cell Cycle Kinetics of Myeloid Leukemia cells *in vivo* in both MDS and AML by developing a novel technique of studying cellular proliferation directly in patients. These studies led to a startling revelation that the low blood counts in MDS patients were not because of bone marrow failure. Rather paradoxically, the marrow was in a hyper-proliferative state. This led to the logical examination of rate of cell death and we were able to resolve the paradox by showing that the majority of hematopoietic cells in the marrow were undergoing a suicidal self-destruction by apoptosis. Further, this cell death appeared mediated by pro-inflammatory cytokines, especially tumor necrosis factor (TNF). Next, we treated MDS patients with the anti-TNF drug thalidomide, which produced complete responses in 20% patients. Thus, over a course of 10 years, we were able to develop biologic insights into the disease that translated into a novel treatment strategy.

7. What is your most recent research?

I remain completely focused on understanding the Etiology and Biology of MDS and now use the latest genomic technology to interrogate the pathology of these diseases. With the enabling technology, this whole field has become extremely productive and exciting. We are using exome sequencing, RNA Sequence and global methylation studies to carefully study large numbers of patients to identify new drug targets in MDS cells, and hopefully develop novel non-toxic therapies for these malignant diseases of the elderly.

8. If you had unlimited funding and unrestricted freedom, what research would you conduct?

My commitment is to therapy driven research. How can basic molecular research improve the outcome for my patients? I feel strongly that many effective drugs already exist to treat common cancers, but we do not know how to use them intelligently. Instead of tailoring therapy for individual patients, we blindly treat many with the same drug with the result that 20-30% patients respond. Usually, we do not know the responders.

The goal would be to match the right drug to the right patient. A goal for which we need detailed cellular signalling and molecular information. Basic concept: it seems that while multiple signalling pathways that start proliferation in normal cells, cancer

cells become addicted to a particular pathway. These pathways of addiction differ between patients. It is critical to identify which pathway a particular patient's cells are addicted to and then devise ways of interrupting it. If I had unrestricted funding, I would start a dedicated program to perform detailed genomic and methylation studies described above on every patient at diagnosis. Hopefully, this would eventually help identify the vital signalling pathways in individual patients. With this information available, the elegant concept of Synthetic Lethality can be applied where drugs or natural compounds are identified that can interrupt the particular pathway to which the cell is addicted and cause it to stop proliferating. So my dream research revolves around individualized targeted translational research. I would like to give one example here. In a recent patient, we identified a mutation that leads to over activity of the b-catenin pathway of proliferation. I was planning to treat the patient with a monoclonal antibody against TGFb, which is in trial at the MDS Center. However, it turns out that one of the checks on the b-catenin pathway is TGFb. In other words, if I had not performed whole exome sequencing on the genome, I would have treated the patient with an agent that would likely have worsened the disease by allowing the b-catenin to run amok with no checks at all. This information alone, which is the direct result of using genomics is probably life saving for the patient. In addition, we found that one possible way of interrupting the b-catenin may come from using small molecules that interrupt this pathway. Several of them being in trials in humans already, and also that

Vitamin A (all trans-retinoic acid or ATRA) could do the same. In short, we saved the patient from getting a potentially harmful agent. Additionally, we may have found a perfect treatment for individualized therapy, which is a vitamin! This is my dream research if I have all the resources at my disposal.

As a second dream project requiring unlimited resources, I want to describe the Virome or viral make up of every MDS patient. The goal is to identify all endogenous and exogenous viruses that have become part of each patient's genome and see whether any of these could have the label of causative. After all, cats regularly get MDS. In their case, the disease is because of the Feline Leukemia Virus. Practically every cat is infected with this virus, but only a handful get MDS. There must be other co-factors involved in MDS causation. Defining the Virome would help all of this research.

9. What is your philosophical foundation? How did it change over time?

Humanism dictates the foundation of my philosophy. However, the practice and ultimate goals have undergone subtle changes over time. In my formative years, I felt more interest in dedicating myself to grander themes. For example, believing that the thinking and work of a few can change the lives of millions (penicillin is a prime example), I became consumed with a desire to find the cause and cure of cancer.

Whether I would ultimately achieve it or not, at least I was ready to dedicate my life to the pursuit of this goal. With age, and one hopes, some level of maturity, the issues for me have transformed to more immediate and individual goals. Human conduct is connected by a series of incidents where one act is the result of another. This necessitated a philosophy that requires a dynamic accounting of one's knowledge, desires, and deeds, and then to harness these in the service of humanity with humility and forbearance. In other words, instead of the grand designs of curing cancer for many, each individual patient has acquired a special place in my life and caring for their every physical, emotional, and psychosocial need has become far more important. This by no means indicates that my obsession to find the cure for cancer has lessened, but it means my focus shifted from many to one, from cancer patients to Mrs. X, Y, or Z. It is similar to Salman Rushdie saying in *Midnight's Children*: "To understand one human, one has to swallow the world." For me, the road to understanding and treating the disease is through grasping individual variations at the clinical level and caring for each patient as a special case. Of all the philosophical ideologies, humanism remains mine, but with an altered vision over time about how best to conduct myself in a manner that would be faithful to its basic principles.

10. What do you consider the controversial topics in your field? How do you examine the controversial topics? What do some in opposition to you argue? How do you respond?

In the current atmosphere of cancer research, researchers study the evolution of a cancer cell rather than its Etiology. In at least a subset of patients, I have hypothesized for about two decades that MDS may begin as a viral disease. I committed a form of professional suicide by presenting very early work related to this hypothesis at an MDS Foundation meeting held 19 years ago in Prague. They have not invited me back to that meeting in the last two decades. I learnt a tremendous amount from this experience. For one thing, I became more self-critical and stringent in examining our own data. For another, I started collaboration with the top virologists in the country (Drs. Robert Gallo, Don Ganem, and Joe DeRisi). Finally, it made me more committed to finding the proof for my hypothesis. In that, instead of throwing up my arms in frustration, by persisting in our search for a virus, we are taking full advantage of next generation sequencing to identify non-human elements in the human genome and re-construct viruses from these pieces. The technology has reached a point where we are poised to unravel possible new retroviral sequences from the RNA Sequence data we have generated. This will still be only half the battle. The important study will be to prove the etiologic relationship of the pathogen to the MDS under study. This is

where all the controversy creeps in again because the pathogens are often known organisms and no one is ready to believe they are the agency for causing the malignancy. Remember that to prove that *helicobacter pylori* was the cause of gastric ulcers, Barry Marshall had to swallow the pathogen and nurse ulcers in his own stomach before anyone would believe him! (Eventually, he got the Nobel Prize). Now we know that this bacterium is the cause of many stomach cancers. So, in my opinion, the etiologic studies remain extremely controversial and many a career has been sacrificed on the altar of virologic basis of malignancy. I nearly lost my career, but have been able to survive - thankfully. I continue my studies in the area, always trying for that moment:

“Chance will strike a prepared mind”

11. What advice do you have for young MDs?

A life without work is a life without worth, and this work should be done for the good of mankind as well as for one's own good. Last year, I was fortunate to win the Hope Award for Cancer Research and in my acceptance speech; I gave advice to my 18 year old daughter which I wish to quote for the young MDs:

“At the risk of being a spendthrift of my own celebrity, I want to address my teenage daughter who is a sophomore at Columbia University and like her

parents, plans on a career in science and medicine. You might be wondering why I have to use the 3 minutes allotted to me to do so in this room...well, as Nora Ephron once said, "When your children are teenagers, it's important to have a dog so that someone in the house is happy to see you." Actually, it is for two reasons...first because she is a captive audience and second because of the presence of all of you in this room and what this moment means and how indelibly what I say today may be etched on her brain. Sheherzad, as a result of several decades of experience and observation, I have narrowed down the formula for personal success to three cardinal rules: find your passion, find a mentor and then give it everything you've got. However, there is a different kind of success, one which many in this room epitomize. As living beings, we know that death will come inevitably, but thankfully, we do not know the hour of our death. What goes through the hearts and minds of souls who have received a diagnosis of cancer and hear the footsteps of death approaching closer every day? Theirs are the heroic stories of hardiness, ingenuity and resourcefulness. Some of us have the privilege of witnessing on a daily basis, the remarkable dignity with which they face their ongoing ordeals. You have decided to join the ranks of these privileged caregivers. As a little girl from age 3 to 8 years, you have already witnessed your father go through a losing battle with cancer. When faced with such human suffering, your qualifications, your

CV or your degrees do not help. What helps is your heart, your sensitivity to feel the pain of others. On this special day, realize that you are fortunate to be in a room full of such compassionate and deeply committed individuals, realize that you will not need magic or miracles to help your patients but you will need serious scientific research and deep sensitivity to their anguish and suffering. Today, I use the honour bestowed upon me through this award to urge you to pledge that even as you will strive for excellence and follow the three rules to guarantee success in your personal life, you will never forget the dues you owe to the patients you will be caring for very soon.”

14. Whom do you consider your biggest influences? Could you recommend any seminal or important books/articles by them?

As far as my personal life is concerned, I am a reader of classics where the themes are grand, the language is noble, and the message is startlingly fresh for all times. When my husband Harvey Preisler died after a five year long battle with cancer, the way I dealt with the loss was to read (and re-read in most cases) the 100 Great Books of the Western Literary Tradition starting with Euripides and Aeschylus and working my way to Rushdie and Morrison. In this, my biggest influences have been the great authors. I feel deeply moved by poetry. My favorite poets are Shakespeare, Dante, Milton and Ghalib. I come from an oral tradition and committing poetry to memory

was a given for as long as I can remember. Currently, I am memorizing the entire 33rd canto from Dante's *Paradiso* during my morning runs. I feel profoundly affected by the thinking of these poets and have translated and interpreted (with my co-author Sara Goodyear) Ghalib's Urdu poetry for our English speakers in a book, *Ghalib: Epistemologies of Elegance*. Among the American writers, the books of fiction I admire most are Melville's *Moby Dick* and Morrison's *Beloved*. Among the Europeans, it would have to be Cervantes's *Don Quixote* and Dostoyevsky's *The Brother Karamazov*. Finally, in non-fiction, my two favorite books are both autobiographies called *The Confessions* written 1000 years apart by Augustine and by Rousseau.

As far as my professional life is concerned, the biggest influence comes from patients. In particular, I had an encounter starting me on the path to dedicate my life to MDS, when I was barely 30. Here is a short accounting of that episode:

I had just finished my Fellowship in Medical Oncology at Roswell Park Cancer Institute in Buffalo, New York. A beautiful, young 32 years old woman was admitted with a diagnosis of acute myeloid leukemia (AML). The story she gave was rather peculiar. She had become pregnant almost two years before this admission with twins. During the pregnancy, she developed a fetish to smell gasoline. Most days of those nine months, she would go to the corner gas station, buy a dime's worth of gasoline and smell it all day. At the end of nine

months, she delivered a healthy set of twin daughters, but six months later, she was found to have low blood counts. Over time, a diagnosis of MDS was made. This was probably in some part at least, related to the toxic exposure she had experienced from smelling gasoline. In any case, there was no treatment for MDS at the time, and she only received supportive care with blood transfusions. Six months later, the disease progressed to AML and that is when she came to see us at Roswell Park.

We gave her high dose induction chemotherapy, to which she responded well and after a rather stormy course, entered a complete remission six weeks later.

How sweet it was to see her going home with her lovely daughters at the end of this therapy! We then gave her three courses of standard consolidation therapy.

She did well. During these repeated hospitalizations, and interim outpatient clinic visits, we became very close to each other. During each encounter, we talked to our hearts' content, and JC shared many of her personal anxieties with me. I learned to appreciate the challenges of a schizophrenic life torn between fighting a potentially lethal illness at the ripe age of 32 while pretending to be a normal mother to 3-year old girls. At times, it felt heart breaking. At other times, the sheer force of her courage and sublimity of human spirit was brought home with incredibly graphic detail.

Courage takes many forms. There is physical courage, there is moral courage. Then there is still a higher type of courage; the courage to brave pain, to live with it, to never let others know of it and to still find joy in life; to wake up in the morning with an enthusiasm for the day ahead.

After stopping the final round of chemotherapy, JC returned to her normal life. She got caught with the daily routine of raising 3-year old twin daughters. Unfortunately, after a year and a half of remission, her leukemia relapsed, and this time around, none of our therapeutic approaches seemed to make much of a difference to her resistant leukemia. She developed a fungal infection of the lungs too. We were not able to give her any chemotherapy for fear of making the fungus spread faster. At this time, she made a wish to be admitted to the Hospital for her terminal illness as she did not want her daughters to be frightened unnecessarily. With a heavy heart, I took her in. It was instructive and astonishing to watch her face almost certain death with such unparalleled grace and equanimity. I noticed on my daily rounds was that she would be writing furiously. Finally, I mustered enough courage to ask her one day, “JC, what are you writing?” The answer she gave me changed my life forever. She said, “I am writing letters that I want my twin daughters to open on their birthdays. I have reached their twelfth. Keep me alive till I reach their twenty-first”.

Alas, we could not keep her alive for the few days she had asked for. I went home that day. I told my husband that I should study MDSs because this stage precedes the development of acute leukemia in a number of patients. Maybe, I could have saved

JC, if I had treated her at the MDS stage of her disease. My idea was that the molecular and genetic lesions in frankly leukemic cell are too complicated. Perhaps, it would be better to start studying the biology of these cells at an earlier stage of the disease, say as in JC's case when it was still MDS. If we follow the course of the disease and study serial samples, it may become possible to identify the sequence of events that convert a normal cell into a leukemic one. Another advantage of studying MDS would be that if we could effectively treat the patient at this earlier stage of the disease, then the patient would never evolve into the potentially lethal acute leukemic phase. Finally, I felt that at the MDS stage, the drugs required for treatment may not be as toxic as those needed for the acute leukemia stage. For all these reasons, back in 1984, I decided to dedicate myself to the study and treatment of MDS along with my continuing research in acute leukemias.

DR. ATHENE DONALD

PROFESSOR OF EXPERIMENTAL PHYSICS

UNIVERSITY OF CAMBRIDGE

1. What is your current position at the University of Cambridge?

Professor of Experimental Physics. I am also the University's Gender Equality Champion and a Deputy Vice Chancellor (mainly an honorary title which permits me to confer degrees)

2. Where did you grow up? What was youth like for you? What effect do you feel this had on your career path?

I was born in London. Neither of my parents had been to University, although my Grandfather had, and there was always an expectation that I would. I attended a single sex school which, probably unusually for a girls' school of its day, had an excellent Physics teacher, something I am sure was very significant.

I had an older sister and we all lived with my maternal grandparents. My parents' marriage broke up when I was 10 so I lived in a household of 4 women and 1 man (my grandfather). I think the most significant thing was the fact that I was always

surrounded by books and with this expectation that if I wanted to go to university that I should. It was just taken for granted, particularly since I did well at school.

I was jumped up a year at school. My birthday is in May and during my secondary schooling (which is normally from 11-18) I was nearly 2 years younger than the oldest child in my year. I am sure this was significant as I didn't fit in well with my 'contemporaries', probably because during adolescent such a big age gap can make a big difference. Probably this encouraged me to keep my head down and work hard, because I wasn't going to fit in anyhow.

No one in my family were particularly interested in science, nor was it a subject I remember being discussed in a serious way. I did get taken to the Science Museum (in London) but I didn't really connect that with my lessons at school or with any idea of a future career.

The hobbies I had were ornithology - which perhaps reflects an interest in 'systematising' but again, it was just what I did for fun and I didn't connect it with anything I did at school - and music. There was a lot of music during my growing-up and as a teenager I was very involved both with singing in choirs and playing in orchestras. I played the viola and, since not many children do play this instrument, I had lots of opportunities to play with seriously musical peers. It was a major source of

relaxation and also a way for me to socialise with other girls - both older and younger - given the trouble I had with fitting in with my ordinary classmates.

2. Where did you acquire your education? How did you come to the University of Cambridge?

My mother says I declared at 7 I was going to go to Cambridge University to read maths. This is probably an apocryphal story, but I think somehow I always fixed on the idea of going to Cambridge. It was where my grandfather had been after all (he read Classics there before the 1st World War), so there must have been some sense of connection. I first had Physics lessons when about 13 and seem to have known almost at once that this was what I wanted to study.

Cambridge University back then was overwhelmingly male, as none of the colleges was yet mixed. I am not sure I really thought very hard about that. One had to do a special entrance exam. I was very badly prepared for this as my school had been participating in a pilot course of study in Physics, with only about 7 schools pursuing this exam at A level. So I knew little of what others knew but lots of other stuff, particularly 'modern' physics. As well as an entrance exam for Cambridge, the colleges interviewed prospective students. Probably then I came across as much stronger for exactly the same reasons: I knew stuff they weren't expecting interviewees to know.

For whatever reason I was accepted by 2 colleges (there were only 3 that admitted women), and I chose to go to Girton, the college I had always had set my mind on.

3. Was Physics always ‘in the cards’ for you? Were you mathematically precocious in childhood and adolescence?

I always was highly competent at maths, but I don't think I was precocious in the sense that I didn't pursue it beyond the classroom in any way that I remember. I just got on with it. But physics was just something that clicked with me. I did then start reading around the subject, certainly by the time I was 16 or so, but I had no clear idea of what it might mean as the start of a career. In my day, and in my school, I got no careers advice and I simply didn't think seriously about life beyond university. All I knew was that I wanted to study physics at university; it just seemed the logical thing to do.

4. Did you have a childhood hero?

No, I don't think I thought in those terms at all. I had neither heroes nor heroines. Nor did I really think of gender as an issue either. I am sure that was in large part because I just didn't really know any teenage boys - other than beyond the orchestra I played in and we simply got on with our music. When I met a bunch just before I started at university who asked me what I was going to study, their reaction for the first time told me it was odd for a girl to want to do physics. I don't think, having

been at an all-girls school, that had really crossed my mind before. There was no one to discourage me.

5. What was your original dream? If it changed, how did it change?

I also didn't have a dream. I didn't look ahead. If I thought about the future I just assumed that I would marry, perhaps a few years after college, and have a family.

There was no expectation of a career as such. Having a career in academia was just something that happened; I never looked more than a year or two ahead. I was

probably well into my 20s before I even started thinking about this. By then I was

married (I got married to a mathematician during my PhD - and we're still married!)

and the complications of trying to sort out two lives to the satisfaction of both reared their heads. It is never easy.

6. What have been your major areas of research?

My field of research has constantly evolved. That is how I like it. I started off studying

metals, using electron microscopy to study their internal structure. The technique of

electron microscopy has remained a constant during my research career. After my

first, and very unsuccessful postdoc in the USA (Cornell University) I switched to

apply electron microscopy to plastics. It wasn't till that point, after 5 years of research,

that I really fell in love with it. I had an incredibly productive 2 further years in the

USA and then returned to Cambridge. Over the years I have moved from the study of

largely synthetic polymers to naturally occurring biopolymers including those relevant to food. I researched the internal structure of starch granules for many years, during that time building up collaborations both with industry and with plant geneticists. Then I moved on to study protein aggregation, a subject relevant both to food and to those studying many neurodegenerative diseases. I have continued to do electron microscopy, developing a technique which allows one to study samples without the dehydration usually necessary; this approach is known as environmental scanning electron microscopy and we did a lot of development work on it, analysing how to interpret images and seeing just how far we could push the technique. We also applied it to a wide variety of biological samples from bacteria to plants. This move into biological problems was also reflected in a modest research activity in cellular biophysics.

Overall the sorts of physics I do can be summed up as soft matter physics moving into biological physics. When I started working on starch, physicists doing this sort of work were regarded as very unusual. Now it is much more main-stream physics.

7. What is your most recent research?

As I say, I have moved systematically towards biological problems. The work we do on protein aggregation has implications for various neurodegenerative diseases, although I am always very careful to spell out we won't be curing any diseases

ourselves, we simply hope to provide some basic underpinning knowledge. But, as a physicist, I try to look for generalities of behaviour, particularly since we are interested in what happens when biological control is lost. In our case we typically use heat to study the response when proteins are denatured, which of course is totally non-physiological, but in the diseases of old age proteins also lose their native structures due to loss of biological control, so the parallels are fairly close.

8. If you had unlimited funding and unrestricted freedom, what research would you conduct?

I would like to be able to get much closer to biology and work in truly interdisciplinary teams on the subjects of neurodegenerative diseases such as Alzheimer's and Parkinson's Diseases.

9. There exist many cases of silence, even denigration, about the lack of women in science, especially young women. In fact, a case of speculation comes to mind on the part of an ex-President of Harvard – no less, Dr. Larry Summers, about innate average differences between men and women potentially explaining the difference of the sexes' scientific prominence. To me, it seems silence on debating these issues exacerbates the problem. Given your involvement in advocacy for women in science, does silence exacerbate

the problem? What things need doing? What message backed by data needs more advertising?

In the UK at least I don't think silence is the issue any longer. I think many leaders appreciate the problems and are actively trying to overcome the under-representation and the lack of voice some women feel. Within UK universities we have a benchmarking scheme, the Athena Swan awards, for STEM departments which are very effective at making universities and individual departments look at both their statistics and practices, and come up with appropriate action plans. Indeed, some funders make such awards a condition. This has really changed the climate. However, there is no doubt there are still pockets of resistance, the unconsciously held views that all of us hold which stereotype people (and not just women in science) in all kinds of ways without stepping back and being objective.

We do need statistics, but we also need to recognize how much social conditioning affects every child from birth. I get fed up with being told that the statistics 'prove' girls don't want to do physics, when we cannot tell much more than that boys and girls are encouraged to do different things as children, are treated differently and cultural messages are different.

10. In line with the previous question, what can people in society, without the influence of the Academy, do to help bring a new generation of women into science?

Avoid stereotyping any individual, boy or girl. Make sure that they appreciate any field is wide open to them. Encourage girls to explore their world - be it putting new washers into taps or climbing trees. Let them be brave and not be put off by being 'nice' or pretty. Give them solid aspirations and not just aiming at domestic virtues.

11. As an addendum to the previous two questions, can you describe the *Matilda Effect* to our readers?

The Matilda effect describes how women's contributions to research are systematically undervalued and under-described. One specific example would correspond to the role Rosalind Franklin played in the discovery of the double helical structure of DNA, with Jim Watson never giving her contributions the credit they deserved. More generally, women working as part of a team may find that their names aren't mentioned and their deeds can be attributed to others. Even when women are quite senior and leading teams you find comments being made implying such collaboration is a weakness not a strength, as it would be for a man.

12. How would you describe your philosophical frameworks inside and outside of Experimental Physics? How have your philosophical frameworks evolved?

I don't think in these terms! What I do know is that I enjoy constantly exploring new areas, evolving from one area of research to another. A lot of the work I do is interdisciplinary. To succeed at such work one needs to be prepared to put the time into learning the language of someone else's discipline, at least sufficiently far that you can explore the shared problem together. This can be challenging, but ultimately it is very rewarding. I am not the kind of person who likes to know everything about a small area, I prefer to take a more broad brush approach, look for connections between different areas and forge new connections. This means all the work I've done forms a sort of connected web, even though there may appear to be many different threads.

13. For students looking for fame, fortune, and/or utility (personal and/or social), what advice do you have for undergraduate and graduate students in Experimental Physics?

Work out what it is that you enjoy about physics. Is it simply the ability to problem solve, or getting stuck into some experimental technique or another? What motivates you - curiosity, solving some specific problem or contributing to a team effort? There can be so many reasons for pursuing physics and you have to work out what it is that you particularly enjoy. If you are seeking a fortune, then you will probably either want to do something more entrepreneurial or quantitative (eg in the financial sector), but if

it is simply that you are curiosity-driven, there are many directions to head in. Physics is often described as a 'difficult' subject. If you are struggling it may simply be that your motivation isn't high enough and you should choose some other path that excites you more.

14. Many assume a need for a genius level-intellect or above-average levels of mathematical facility (even in childhood) to think of a career in science. How much of this seems true? How much of this assumption seems like a myth?

You undoubtedly need to be competent at maths, but genius level is an overstatement for many parts of the field. I think it is probably more the case you need to be very logical in how you approach problems, able to think things through by breaking down a tough challenge into its component parts. You also need to be able to think in abstract terms. Physics isn't just a case of memory work; you need to be able to understand underlying mechanisms and be able to see how to apply the mathematics and models you have learned in one situation to another, perhaps less familiar one.

15. Whom do you consider your biggest influences? Could you recommend any seminal or important books/articles by them?

Having a teacher at my school who was on top of the subject and able to answer my questions without anxiety was a great start. At university, having a 'director of studies'

who was very supportive when I was struggling and encouraged me not to give up was also crucial. After I'd moved into research my supervisor at Cornell (Professor Ed Kramer, now of UCSB) and my head of department after I'd returned to Cambridge (Sir Sam Edwards) were also great influences on me, inspirational in the way they tackled their own research. They believed in me, believed I could follow a research career and gave me many opportunities early on that enabled me to lay down a firm foundation for my subsequent research. Finally the Nobel Prize winner Pierre-Gilles de Gennes, who was a friend of Sir Sam's and whom I met fairly often in Cambridge, also was immensely supportive and inspirational. De Gennes wrote a number of books, of which 'Scaling Concepts in Polymer Physics' was probably the most important for me, even though at the time I found it very hard to understand!

16. What do you consider the most important point(s) about your line of research and work?

My research has moved from being fairly traditional for a physicist, working on conventional synthetic polymers, to working on natural materials such as starch and proteins. Initially some of my colleagues were very critical of me working on such materials, thinking they were far too messily complex to be able to do physics on them. But I persisted, applying standard physical tools and approaches to them. Ultimately I think others understood better that this was perfectly good physics.

However, now much of my time is focussed on issues around gender and I read a lot of sociology papers. This work is obviously not research-based. Some of it is experiential and it seems that, because I have a successful academic pedigree, people are more willing to listen to what I have to say. There are still many issues for women in science, so I am keen to use my voice to encourage others to think about their local practices and possibly prejudices.

DR. ZOE DENNISON

HEAD OF PSYCHOLOGY

UNIVERSITY OF THE FRASER VALLEY

1. What positions have you held? What position do you currently hold?

Currently, I am the head of the psychology department at University of the Fraser Valley (UFV). For many years, I was the chair of the academic appeals process and also for a few years the manager of the online campus. In academe, I have been a faculty member, a sessional instructor, a graduate student, and an undergraduate student.

2. How was your youth? How did you come to this point in your academics?

That's a hard question to answer. My 'youth' was quite varied, good and bad, often weird and woolly....certainly I had no plan to become a professor!

When I was in high school, I skipped out as much as I could. My parents didn't think much of the school system, so they were always willing to write me whatever notes were required. In my immediate family, reading and thinking were important but going to school or following the 'rules' were not. However, my father always said I should go to university. His description of what university would be like was quite

romantic as it turned out. Few people in my family went to university or college, so my aunties looked at me with great suspicion when I did finally go.

After high school, I got a job in a bank. All the staff were women, many who had been there for 30 years or more, but all the managers were men (it was the '80s).

After I'd worked for a few months, I looked around and thought, "I can't do this for thirty years, it'll kill me." I quit my job, travelled a bit, and eventually applied to the University of Victoria. Again, no real plan, but I had some friends there and I was too timid to go where I knew nobody. I'd moved many times before that, so when I got to Victoria, I looked around and thought, "Yea, I could stay here for a year."

I decided to take a Computer Science major. It was quite different then compared to computers today. There were no 'personal' computers, we all worked on individual terminals that accessed a very large computer called the 'mainframe'. We learned programming languages like Pascal, and usually first year students got the midnight shift down in the basement. I lasted about a year and a half. I used to ask a lot of questions in class, for example, 'what are the programs for?', 'how will people be able to use them?', 'can we make computers easier to use?' The instructors and my fellow students came to hate my interruptions and questions, and I felt like the target of the Orwellian '2 minute hate'. Of course, I wasn't too fond of those folks either, so it seemed like a good idea to move on.

Now I had ruled out banking, waitressing, and computer science. I was taking a number of other courses, so I decided to interview my professors about their professions. Dr. Frank Spellacy, who taught brain and behaviour, was helpful and interesting (and he and his wife took me to lunch). The study of the brain fascinated me, so I decided to try psychology. I was behind a bit, so I had to take a lot of psychology courses at once (I never did take introductory psychology). I caught up and entered the honours program, mostly because the honours seminar was led one of my favourite professors, Dr. Gordon Hobson. In turn, he found me an excellent advisor, Dr. Otfried Spreen, in clinical neuropsychology. I had no idea how lucky I was.

A few months into my honours, Dr. Hobson asked me, “You’re applying to grad school, right?” “Sure I am”, I replied, and then had to ask around to find out what ‘grad school’ was. I was convinced none of the schools would take me, so I applied to quite a few across Canada. Pretty much all of them accepted me, I got an NSERC scholarship, and decided on UWO, again with no well thought out planning and because of some bad advice!

Frankly, I was just doing what was interesting at the time and taking opportunities as they arose. I was certainly a poor student in my first two years of university, skipping any classes I found boring and spending most of my evenings dancing at blues clubs. I

recognize papers written the day before the due date easily, as I wrote many papers that way myself. I have a firsthand appreciation for the possibility that students who are doing badly in classes simply have more interesting things they prefer to do and, most importantly, that it could change. Over the years, I've seen more than one student who has done just that, turned things around to find something they love, and watching those students graduate and go on is particularly thrilling to me.

3. How did you gain interest in psychology? Where did you acquire your education?

My father (influenced by Hemingway and Postman) used to encourage my brother and me to develop a 'Bullshit Detector'. Psychology is built around exactly that kind of tool, which I realized once I started taking research methods and statistics courses. I felt right at home.

4. What kinds of research have you conducted up to the present?

My main graduate research at UWO was studying learning and plasticity in rats with a model not used much now called 'kindling' (it is still used a bit as a model for epilepsy). I also did some research on anti-epileptic drugs that block excitatory amino acid receptors and also on neural grafting. At Mount Allison University, I worked on studying memory using a water maze.

My animal research ended when I moved back to B.C. to work at the University College of the Fraser Valley in 1993. The focus at UCFV (now UFV) was on teaching, so I had little time to do research.

A few years ago I took a short sabbatical to work on changing first year psychology instruction to increase success in some groups of first year students such as mature students, students from applied areas such as social work, and First Nations students. I used what I learned in developing my own teaching of introductory psychology and in creating a peer tutor program.

My current interests are in the area of the psychology of music, specifically health related outcomes for hand drumming and singing. However, I have not made much progress since I became department head and further work will likely have to wait until I am finished!

5. If you currently conduct research, what form does it take?

Not much right now, being head of psychology uses all my available neurons.

6. Since you began studying psychology, what do you consider the controversial topics? How do you examine the controversial topics?

What do you mean by controversial?...

7. ...*Self-Defined* controversy in your field...

Psychology is by its nature controversial.

Any subfield of psychology challenges what ‘everybody knows’, from research methods (“Correlation is not causation”) to memory to development to social psychology and so on.

If you learn to think using the tools of psychology, you will be often on the other side of marketing in all its forms, including governments, newspapers, parents, teachers...

There are many classic studies, which we go through in introductory psychology, that illustrate this point over and over.

8. ...In hindsight, do they seem controversial?

My guess is that at the time, they knew they were doing something controversial, challenging ‘what everybody knows’.

9. How would you describe your philosophical frameworks inside and outside of Psychology?

Well, that ‘Bullshit Detector’ has come in handy.

I wouldn’t say I have a specific philosophical framework anymore, but I do believe in personal responsibility and in fair processes.

10. How have your philosophical frameworks evolved?

My parents raised us as Objectivists, which is based on the writing of Ayn Rand. I sometimes call myself a 'Recovered Objectivist'. If you look at the basic principles of reasoning in Objectivism, critical thinking and personal responsibility stand out, and I have retained those. I also retain a preference for minimal government. However, I do also believe in collective actions, like taxes to pay for education and health care, which would have me thrown out of Objectivist meeting. If they had meetings...

Until I moved to the Fraser Valley, I didn't realize how significant being raised without religion was to my philosophy and reasoning abilities. Now that I live amongst many folks raised with religious points of view, it is strange to have to declare myself an 'atheist', as other places I lived that was the dominant perspective.

11. If you had unlimited funding and unrestricted freedom, what would you enjoy researching?

I don't want unrestricted freedom to research any question, it's a nasty idea! Ethics boards sometimes seem a bit overly restrictive but as acting ethically isn't intuitive, you need others to look at your ideas and question your methods. Ethics are foundational to psychology research.

12. For students looking for fame, fortune, and/or utility (personal and/or social), what advice do you have for undergraduate and graduate students in Psychology?

Tolerate ambiguity.

13. Whom do you consider your biggest influences? Could you recommend any seminal or important books/articles by them?

In my early years, I was influenced by Ayn Rand, Isaac Asimov and Oscar Wilde. At grad school, I was influenced by Doreen Kimura. Her approach to thinking about function and brain structures was exceptionally instructive to me. She made a number of important observations about the quality of the data and what could be drawn from it given the limitations of the methodology of that time.

Case Vanderwolf was also a greatly influential professor in grad school. If you asked Case a question about neurophysiology or brain and behaviour, his answer was usually, “Hmmm, I don’t know.” Then he’d pause, and then tell you all the relevant research that had been done, and how it was done, and he’d demonstrate how you went about thinking about the question, and what kind of questions still needed to be asked. After this, he’d still conclude, “I don’t know”.

I recommend to all my assessment students that they read Paul Meehl’s ‘Why I don’t attend case conferences’. It’s fairly old and somewhat acerbic, but it’s a good example that you can be trained in psychology and cognitive biases, but still fail to employ them. It’s a cautionary tale, useful reading.

I also recommend Janet Shibley Hyde's 'The Gender Similarities Hypotheses' and Deborah Cameron's 'The Myth of Mars and Venus', both are excellent demonstrations of critical thinking.

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