THAD KOUSSER: TRUISMS and the 2016 U.S. ELECTION

FANTASTIC WATER BEASTS [and where to find them]
TIM BERRA ON HIS 47-YEAR FULBRIGHT CAREER

BEES & BIONICS: How honey bee research can teach us more about our own brains
The Fulbright Program is the flagship foreign exchange scholarship program of the United States of America, aimed at increasing binational collaboration, cultural understanding, and the exchange of ideas.

Born in the aftermath of WWII, the program was established by Senator J. William Fulbright in 1946 with the ethos of turning ‘swords into ploughshares’, whereby credits from the sale of surplus U.S. war materials were used to fund academic exchanges between host countries and the U.S.

Since its establishment, the Fulbright Program has grown to become the largest educational exchange program in the world, operating in over 160 countries. In its seventy-year history, more than 370,000 students, academics, and professionals have received Fulbright Scholarships to study, teach, or conduct research, and promote bilateral collaboration and cultural empathy.

Since its inception in Australia in 1949, the Fulbright Commission has awarded over 5,000 scholarships, creating a vibrant, dynamic, and interconnected network of Alumni.

"Our future is not in the stars but in our own minds and hearts.

Creative leadership and liberal education, which in fact go together, are the first requirements for a hopeful future for humankind.

Fostering these—leadership, learning, and empathy between cultures—was and remains the purpose of the international scholarship program that I was privileged to sponsor in the U.S. Senate over forty years ago."

Senator J. William Fulbright
The Price of Empire
A note from the Chairman

Peter de Cure

As the newly elected Chair of the Australian-American Fulbright Commission Board of Directors, I am very pleased to introduce Minds and Hearts - a new concept publication.

Minds and Hearts illustrates the success of our Fulbright scholars and alumni. Their stories form the pieces of a binational mosaic that has fostered cultural empathy for nearly seventy years. We strive to harness this collective energy to create new opportunities for knowledge-exchange, facilitate a more engaged alumni network, connect the Commission with like-minded institutions, and inspire a new generation of Fulbright Scholars.

The Commission will continue to strengthen and broaden our catalogue of scholarship opportunities in 2017 with the help of our partners. Monash University and Deakin University have both recently joined our family of Fulbright scholarship sponsors and will be working with us this year to develop new programs for binational exchange.

As you read the stories within these pages, I encourage you to reflect on the impact the Fulbright experience has had on our scholars and the impact our scholars have had on their individual disciplines. The Commission remains committed to the ideals of mutual understanding between Australia and the United States.

Peter J. de Cure
Chairman, Australian-American Fulbright Commission

A note from the Executive Director

Thomas Dougherty

Often I’ve been asked how the Fulbright Program stands out from other international exchange programs. There are many reasons, but the most significant difference in my opinion is the Fulbright Journey.

Fulbright scholars embark upon a journey across a lifetime of profound, career-transforming connections and experiences. We don’t just sponsor, we foster, encouraging lifelong learning and cooperation. In a sense, the scholars’ journeys truly begin once the scholarship ends, and the seeds of collaboration begin to bear fruit.

Within this publication you will discover the impact of our investment in academic, creative, and professional excellence, and the breadth and diversity of disciplines that have flourished under Fulbright’s auspices. We have curated a collection of ideas, aspirations, stories and creative works from our scholars and alumni, providing a glimpse at the minds and hearts of the Fulbright program.

The best way to tell the Fulbright story is to enable Fulbrighters to tell their individual stories. We hope you enjoy reading those stories in this inaugural issue of Minds and Hearts.

Thomas Dougherty
Executive Director
Australian-American Fulbright Commission

A note from the Editor

Alex Maclaurin

Over the past eighteen months, my role at the Commission has brought me into contact with some of the most fascinating, talented, and inspirational individuals that I’ve ever had the privilege of meeting.

Australian and American Fulbright alumni have built an exceptionally rich and diverse network over 68 years of binational exchange, and even a brief exploration reveals countless stories of success, collaboration, achievement, friendship, generosity, serendipity, leadership, interconnectedness and cooperation.

While I wish I could share all of their stories, this publication and a lifetime of subsequent editions could only ever tell but a chapter of the epic that Fulbrighters have written, and will continue to write, long into the future.

I hope that by providing this platform to showcase select scholar and alumni stories, we can inspire others to follow in their footsteps, and embark upon their own Fulbright journeys.

After all, as Senator Fulbright said, the future is not in the stars, but in our own minds and hearts.

Alex Maclaurin
Communications Officer/Commissioning Editor
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**David Hobbs**,
(2008, Flinders University to Shriners Hospital for Children in Philadelphia) featured his award-winning accessible gaming system at the 3rd European Conference on Design4Health at Sheffield Hallam University in July 2016. Developed by a team of cross-institutional researchers and designers, ‘OrbIT’ was designed specifically for people with limited hand function, such as children with cerebral palsy. David’s device was also shortlisted for a 2016 National Disability Award.

**Sophia Lifschitz**,
(1992, Juniata College to Queensland Conservatorium of Music) debuted her new venture, The Emerson Trio, dedicated to the music of American composers, at the Los Angeles County Museum of Art which was held in September 2016.

**Stuart Cunningham**,
(2014, Queensland University of Technology to University of California) led a panel discussion at the CreateX Festival held for the public opening of QUT’s expansion of its Creative Industries Precinct in August 2016.

**Marvin Brown**,
(1977, Brown University to University of Melbourne) exhibited some of his recent works at Chromatic Space in the Shirley Fiterman Art Center, New York from September to November 2016.

**Donna Coleman**,
(2001, Queensland Conservatorium of Music to Johns Hopkins University) directed and performed at Cosmic Mechanics; a celebration of fellow Fulbrighter George Crumb’s Makrokosmos at the Australian National Academy of Music in October 2016.

**Krysten Keches**,
(2010, Harvard University to Australian National University) hosted a harp master class and featured in the Berkshire Symphony in Chapin Hall on the Williams College campus in November 2016.

**Stephanie Shepherd**,
(2015, Swinburne University to University of Nebraska-Lincoln and UCLA) presented a lecture on his Fulbright research titled *Assessing the Needs of Indigenous People in Custody: looking beyond law and order* at the University of Sydney, November 2016.

**Sarah Holland-Batt**,
(2010, University of Queensland to New York University) won the Council of Humanities, Arts and Social Sciences 2016 Australia Future Leader Prize, and the Prime Minister’s Literary Award for poetry for her recent publication, *The Hazards*.

**Michelle Deshong**,
(2015, James Cook University to University of Arizona) was appointed as CEO of the new Australian Indigenous Governance Institute at the Australian National University in December 2016.
I’ve come to the Monash University Department of Gastroenterology in Melbourne, Australia from Columbia University in New York, New York to research the neurological and behavioural effects associated with gluten intolerance and explore the brain-gut connection.

As part of my Fulbright experience, it has been very fulfilling to continue research that I started in my MS program at Columbia University and gain new perspectives from my current mentors and colleagues here in Australia.

At one point in my path as a medical researcher, I’ve been in the situation of attempting to leave STEM because of what I thought was a bleak future, especially when it came to perceived work-life balance with a future family as well as job security.

I thought I was only being realistic with my decision, but I eventually realized that it was mainly based on anxiety and fear, and was barring me from a promising future of utilizing my skills and talents. I am very grateful to say that all roads eventually led back to the one that I am currently on.

I realized that fear or anxiety is never a good reason to quit. Even though the road would likely be paved with challenge and sacrifice, I knew that returning to STEM was the right one for me to take.

In this respect, I believe that women should not be deterred from entering and progressing in STEM if they know that it is the path for them. Limiting beliefs about themselves or their futures should not influence their decision.

The reality is that there’s a lot to work on from an institutional and individual level to support women in STEM, though positive change cannot occur if women cease to be involved.

It was a great leap of faith to continue my work in STEM, especially in a country where I did not have any close connections upon arrival. However, my time here in Australia has been one of my best experiences to date.

Each step of the way, my current mentors as well as the Australian-American Fulbright Commission have been unendingly supportive of my research and professional development.

As part of my Fulbright experience, I’ve found a phenomenal community of supportive mentors, colleagues, and friends, and for this I am truly grateful.

Even though the road would likely be paved with challenge and sacrifice, I knew that returning to STEM was the right one for me to take.
Groundwater often has multiple, conflicting uses, for example, until recently groundwater was the main water source for drinking water, industry, and agriculture for Perth, but the system also supports groundwater-dependent ecosystems in a region known to be a global biodiversity hotspot. A drying climate is also contributing to dropping water tables.

Numerical models are typically used for managing groundwater resources, however model predictions are often uncertain, due to factors such as the need to estimate the properties of large, inaccessible aquifers (e.g., >100km wide, >4km deep).

Isotopes such as radiocarbon (C14) act as “clocks” that provide information on the age of the groundwater, which helps reduce some of the inherent uncertainty. In an earlier project, I developed a method to incorporate C14 into models, which allows direct comparison with field measurements.

For the Fulbright project, I will incorporate a second isotope (Helium 4) to make the models more reliable. As groundwater recharge depends on climate, the same models may give us new insights into past climate variability.

My Fulbright project is about using naturally occurring isotopes to improve groundwater models, in the interests of sustainable resource management.

My Fulbright host, Prof. Steven Gorelick at Stanford, was himself a Fulbright scholar; he invited me to his lab to continue the work, and suggested I apply for the scholarship.

I always knew I wanted to work with solving environmental problems; as “Engineers make things happen”, studying (bio)chemical engineering and taking the environmental major seemed like a good start. The undergraduate classes were around 50% girls. I can’t remember ever feeling that being a girl was a disadvantage; I respect people who work hard and are good at what they do, and certainly among people of my generation and younger, I have never felt I couldn’t receive that same respect. However even with no external barriers put in our way, one challenge girls have is ourselves. In my experience, we are often much more cautious than our male counterparts, and less likely to “have a go” if unsure. If you haven’t tried, you aren’t even in the running to succeed.

There’s no question that our approach also results in good science, or even better work in some cases, as we are good at listening and incorporating new information, and our caution often makes us very thorough.

Going into research also cured my tendency to automatically give the benefit of the doubt to people speaking with confidence.

Hearing “experts” talk with great certainty, when I was sure they had their facts wrong or were bluffing (or in some cases, both!) helped open my eyes to how the world works. This insight has relevance well beyond the sphere of environmental engineering.

I hope that this Fulbright opportunity to tell people about my work will help anyone who is similarly motivated to step up to the plate for environmental engineering. We’re faced with a lot of environmental and resource challenges, and need all the good brains we can get.

Even just one year ago, I would never have imagined myself living and working in Australia. And never in my wildest dreams did I think that I would be traveling to Melbourne as a Fulbright Scholar studying antibiotic drug resistance.

During my Fulbright grant year, I am using a bioinformatic approach to understand the mechanisms of resistance in Klebsiella pneumoniae; the bacteria most implicated in deadly hospital-acquired infections. A circulating theory suggests that K. pneumoniae have adapted novel resistance mechanisms through the sharing of bacterial DNA between strains, even without environmental pressures (e.g. antibiotics). As a result, my research focuses on the physical structures bacteria can take, called biofilms, as well as their effects on their hosts in a hospital setting. By counteracting the bacteria’s ability to take its most deadly form as biofilm, myself and other researchers hope to make such illnesses easier to treat.

Moreover, I have had the opportunity to learn more about Australian culture through my volunteer position at the Indigenous Hospitality House. Here, I’ve met people with ties to the Australian Indigenous culture, as well as people who know about the strife that the aboriginal population has had to endure.

My brief introduction to Australian life and culture has often caused me to reflect on my own place within American culture. As a scientist, I was fortunate enough to go to an incredibly STEM-oriented undergraduate institution, train with experienced researchers, and learn from highly educated professors. However, there has always been a dissonance with my feelings as a scientist of my gender. Within this field, I used to only see men in roles of supervision during my time as a student, with very few women scattered among them. Because I saw so few women in these roles, I believe that a sense of competition with my female peers for these coveted spots was inculcated within me. However, as I continued my education, I saw more and more brilliant women in roles as deans, department chairs, and primary investigators. Women recognized for their talent, and not to fill a quota. Furthermore, my Fulbright grant has connected me with both STEM and non-STEM women all over Melbourne.

As I continue my path to medicine, I remind myself that it is not women I should be competing with, but a system that had historically preferred one gender over another. However, time and education is causing a shift towards a more equal balance. Through organizations like Fulbright, women scientists are better able to learn and adapt within an ever changing global community, and become leaders worldwide.

Through organizations like Fulbright, women scientists are better able to learn and adapt within an ever changing global community, and become leaders worldwide.
I’ve made a 47-year career out of studying weird Australian fishes, and this was made possible by the Fulbright program.

I’m a bit peculiar myself in that I have had three Fulbrights, each of a different category.

It all began in 1969 when I finished my Ph.D. in Biology at Tulane University in New Orleans and then received a Fulbright Postdoctoral Scholar award to the Australian National University (ANU) in Canberra.

During this postdoc I covered over 160,000 km on field trips throughout the Murray-Darling River system of eastern Australia.

I studied the differences between Murray cod and trout cod, established that they were two separate species, and sorted out their scientific names within the genus Maccullochella (Fig. 1 A & B).

From ANU I accepted a position at the newly created University of Papua New Guinea in 1971 where I worked on fishes of a jungle river system and taught genetics and evolution to students newly emerged from a Stone Age culture (Fig. 2 A & B).

In 1979 I was awarded a Fulbright Senior Research Fellowship to Monash University in Melbourne where I worked out the life history of the Australian grayling, Prototroctes maraena, in the Tambo River of Gippsland, Victoria.

By repeated collecting throughout the year, I figured out that this species spawns in fresh water, the young are swept downstream by the current to brackish water, and juveniles then return to fresh water after a 6-month growth period in brackish water. I also identified the substance in their skin that causes them to smell like cucumbers. It is, in fact, the same molecule that is in cucumbers.

While netting for grayling, I also caught and released 29 platypus including one with a CSIRO tag. (Fig. 3 A & B).

At various times in 1986 through 1989 I was Research Associate at the Western Australian Museum in Perth working out the life cycle of the salamanderfish, Lepidogalaxias salamandroides, whose scientific name is larger than the fish.

This small fish lives in room-size pools in the SW corner of WA. During the heat of the summer, the pools evaporate. Where are the fish? By bringing a fire truck into the field and releasing 2,700 liters of water into a dry pool, I was able to bring them to the surface. Instant fish, just add water! I also dug them up with a shovel as they retreated to the groundwater table and lay below the surface on the saturated sand until rains come. In the lab I learned that they can bend their neck (Fig. 4).

This is remarkable because fish do not have “necks”, however their vertebrae are widely spaced which allows a great deal of flexibility, hence the name salamanderfish for the way they wiggle.

While in WA I became involved in the recovery and preservation of the third known specimen of megamouth shark, Megachasma pelagios.

This 5-metre, 690 kilogram beast was unknown until 1976. A specimen washed up at Mandurah, WA in 1988 (Fig. 5).

How do you pickle something this big? We ended up digging a hole in sand, lining it with swimming pool liner, fabricating a 1m long syringe from a pipe and garden sprayer, injecting the shark with concentrated formalin and filling the hole with formalin and water. The specimen is perfectly preserved and viewable today at the WA Museum. At least 104 specimens are now known, but ours was Number three.

During my WA Museum days, I also had my one and only experience as a male model (Fig. 6). Hollywood never called.

All of this field work in Australia enabled me to write a book with 200 of my color photographs entitled A Natural History of Australia, which was co-published by the University of NSW Press and Academic Press. My modeling career ended up as the author photo on the back cover.

I became involved in the recovery of the third known specimen of megamouth shark...This five-metre, 690 kilogram beast was unknown until 1976.
In between trips to Australia, I, of course, work on stream fishes in Ohio. I’ve been at The Ohio State University since 1972 and continue there today as Academy Professor. I’ve compared the fish populations of pristine and heavy metal polluted headwater streams of the Ohio River system. The unpolluted stream has 44 species of fishes; the polluted stream has eight pollution-tolerant species. I’ve also carried out a 28-year-long study of the same 300 m stretch of headwater stream on my property. It has remained healthy and species composition is unchanged (Fig. 7).

Field work in Australia has led to visiting professorships in Chile (University of Concepcion 1992) and New Zealand (University of Otago 1996) because these areas share the Southern Hemisphere fish family, Galaxiidae, with Australia.

By collecting Galaxias maculatus [Fig. 8 A & B] throughout the Southern Hemisphere I was able to show gene flow among the disjunct populations. This is due to salt-tolerant larvae drifting on ocean currents which provides enough gene flow to prevent speciation.

This also explains that their distribution in western and eastern Australia, New Zealand, and South America is due to dispersal rather than vicariance (continental drift).

In 2001 I began a study of nurseryfish, Kurtus gulliveri, in the Adelaide River of the Northern Territory [Fig. 9 A, B, C]. The males of this bizarre species carry the eggs on a hook on their head like a bunch of grapes.

We have learned that nurseryfish are euryhaline, live up to four years of age, eat prawns, insects and fishes, have very little genetic variation, spawn June-January in salinity 14-0.5 ppt, and much more. However, a lifetime of study remains to be done on this species before we can answer all the questions about its biology.

Such as, what does it do in the Wet season?

In 2009 Charles Darwin University sponsored the Darwin Symposium to celebrate the 200th anniversary of the birth of Charles Darwin. I was invited as keynote speaker because I had just published a book, Charles Darwin: The Concise Story of an Extraordinary Man.

A Fulbright Senior Specialist Award made this visit possible. It also lead to me being appointed University Professorial Fellow at CDU and enabled me to do more nurseryfish field work.

The Darwin book stimulated my interest in Darwin’s family and resulted in a second book, Darwin & His Children: His Other Legacy [Fig. 10 A & B].

This led to several scientific papers on a genetic analysis of the Darwin/Wedgwood consanguineous marriage. The Darwin’s Children book was dedicated to the Fulbright Program for its influence on my career.

As a three-time Fulbrighter, I was invited to the Australian Embassy in Washington, DC in 2014 for the 65th anniversary of the Australian-American Fulbright Commission. A quote from me was used in the poster for this commemoration (Fig. 11).

I was able to present the Australian Ambassador, the Honorable Kim Beazley, with two of my publications (Fig. 12). He replied,

“Fulbright functions are the only event where I leave with a library. Now if you will excuse me, I must go eat for Australia.”

It’s been a hell of a ride. As you can see, one thing leads to another, and it all began and was nourished by the Fulbright program.

“So long, and thanks for all the fish.”

I owe my career to the Fulbright program. The exchange absolutely fosters mutual understanding between the U.S. and Australia. It shows that the way things are done in the U.S. is not the only way of doing things. It makes one realize that different is not inferior, and sometimes, different is superior. “
Jeremy Hearder: Diplomat, Author, and Fulbright Scholar (1960)

In spite of the image of ambassadors living an elegant and easy lifestyle, the majority of ambassadors whom the author has met have been typically modest and unpretentious to the extent that the old grandiose image is no longer true - if it ever were.

One example is Jeremy Hearder, Fulbright Traveling Scholar (and Rotary Foundation Fellow) during 1959-60. Afterwards in the course of 38 years’ service up to 1996 as an Australian diplomat, he was assigned to missions abroad in Laos, Tanzania, Thailand, Kenya, Belgium and New Zealand. He was also Head of Mission (i.e. Ambassador) in Zimbabwe, and then in Fiji, and Consul-General in Chicago.

Understated and unassuming, Hearder’s mild demeanour and enigmatic smile belied a razor-sharp analytical mind, honed by decades of service to Australian foreign relations.

We asked Jeremy to reflect on his time as a Fulbright Scholar, a diplomat, and an author.

What first prompted you to apply for a Fulbright Scholarship?

“I studied American history in my final year at Melbourne University, became fascinated with it, and applied when the opportunity came, hoping to learn more.

“A fundamental benefit for me at age 22, after graduating, was to learn at first hand about the United States, which at that time few Australians had the opportunity to do.

“This later proved invaluable, given Australia’s close bilateral relationship, and the numerous Americans whom I came across, while serving abroad as a diplomat.

“That year in America also brought home to me the value of getting to know a people in their own surroundings, being better able to understand their outlook, and their great qualities. And it was a further benefit to be able to view the U.S. from the campus of one of the greatest universities, Stanford.”

What was your experience of Stanford University?

“There was so much opportunity of all sorts. For example a dazzling list of visiting speakers included both Vice President Nixon and then Senator J.F. Kennedy, later the endorsed candidates for the presidential elections in 1960.

“The library resources for historical study were fantastic. I was encouraged to do my thesis on the aviator Charles Lindbergh and his role among isolationists attempting to keep the U.S. out of the Second World War.

“This subject was instructive on several levels, not least on the attitude at the time of so many Americans towards Europe, wanting to avoid involvement in problems of the Old World.”

What were some standout experiences from your time in the U.S.?

“I was lucky to have the experience of living on campus, simply because at the start of the year one fraternity house still lacked a resident adviser, a post which I was happy to fill. This enabled me to get to know well about 60 young American men from all parts of the U.S.

“Right from my first arrival I was treated with great kindness by many people, notably some Stanford alumni.

“I also received some extraordinary hospitality. One special example occurred when I embarked on 6 weeks of travel around the States, before returning home. I started at a foreign students’ conference at Williamsburg, Virginia, which was sponsored by one of America’s wealthiest families, the Rockefellers, with Winthrop Rockefeller in attendance.

“At one point in the proceedings I responded to a comment about the level of interest shown by American students in their politics. I cannot remember what I said, but soon afterwards I was tapped on the shoulder by the personal assistant of Mrs Jeanette Rockefeller, who invited me to lunch with her.

“She was very nice, and at the end of the lunch she wrote down for me the telephone number and address of their home near Little Rock, Arkansas, and invited me to visit if I was in the area.

“A few weeks later I called the number, and who should answer the phone but Winthrop Rockefeller himself. He gallantly claimed to remember who I was, and when I told him that his wife had invited me to visit, and that I would be arriving by train the following day, he said he would send one of his pilots to meet me and fly me up to his ranch.

“His house was beautiful, with a 180 degree view of Arkansas. It was a special time, approaching the Republican National Convention. Winthrop Rockefeller was waiting to hear whether his brother Nelson planned to run against Nixon for the Republican candidacy. After a few days there, I told my host that I should move on to Oklahoma. He replied that it would probably be simplest if he flew me there.

“I took off next day in a Beechcraft, with two pilots, but we had to land soon after takeoff as the radio was not working. The pilots called back to Little Rock, and another plane with two more pilots was sent out. This one was a ten seater, with four engines.

“The first two pilots came along for the ride, and my friend at Cherokee, Oklahoma, was very impressed by my mode of arrival.”

What does it mean to be an Ambassador?

“The main functions for an Australian diplomatic mission in another country are to represent Australia, to protect our interests and our nationals there, to conduct negotiations, to report on the local scene to Canberra, and to promote friendly relations.

“In brief the role of an ambassador is to encourage and help the Mission staff in doing all this, and to be personally involved in all the more important aspects, especially those at high level.

“An ambassador takes ultimate responsibility for the mission, its work and its welfare.

“Over the years the importance for ambassadors of public speaking has vastly increased and I found that the speaking opportunities that I had in my year in the U.S. were invaluable preparation. Similarly important is getting the feel of a country, and I think I did begin to get some feel for the U.S.”

“Of the nine postings that we had, Zimbabwe stands out for a number of reasons. Being there in the first four years of independence was a time when, for a new country, things went well, and it was only years after we had left that sadly, things went so badly.

“Somehow the Hearder family frequently had very short notice of a move, and so it was with Zimbabwe. I had three quick weeks briefing in Canberra, then left, leaving Kay to pack, sell the car, and leave our two older children in boarding schools.

“There was a special newness: the foreign diplomats were new of course, but so were so many locals who came back after years spent overseas, often with higher degrees from the best universities abroad. We shared the process of settling in, for example we lent our vacuum cleaner to the Minister of Finance!

“Australia had a special standing with the new Government because of the role Prime Minister Malcolm Fraser had played in helping the country achieve a cease-fire, elections and independence.

“Our aid programme was small compared with many others, but it made an impact, for example by having over 200 Australian secondary school teachers working in schools throughout the country.”
In your opinion, what does Australia need in the next generation of diplomats?

“Over the years there have been vast improvements in communications and technology. But the work remains just as fascinating as ever, and the essentials of being a diplomat have changed little.

“The next generation of diplomats will need to bring to bear much the same qualities and talents as predecessors like Plimsoll. Working effectively with people will remain central, while being calm under pressure, adaptable, and maintaining a good work-life balance will be just as important as they have always been.

“There is a much greater expectation that diplomats learn the local language of a country: this is much easier to do if there is time for language training before arrival.”
I have known these estuaries —
the channels and canals, the backwaters
that flush and eddy to the Pacific,

I have skimmed that muddied slurry,
felt the nip in the throat
where the salt in the air is the salt of the coast,

I have tacked where the tide is incomplete:
no rollers and breakers, only an ebb that rocks the wayfarers —
a rush of silver, the gavel-smack of mullet
in the night, mud crabs elbowing
denwards under concrete slabs of boat ramps —

I have stalked where herons stilts and spear
baitfish in green afternoons,

I have watched the black sonar spread,
tracked prawn trawlers on the broadwater
crawling back in the lavender dawn

then sat at the jetty’s edge
and shucked those tiger shells,
cast sucked heads back into the dark,

crushed mussel shell underfoot
for the burn of sharpened chitin,
stepped where stingrays wallow and idle,

shuffling their barbs, waiting to strike.
I have spent half my life in low tide —
nights where I have not known

if I am contracting or dragging out again,
where the movement of the water
is the movement of my mind —

unending comings and goings
of sounds and narrows, those entry points
to my two continents — and my history

is the history of currents: a canal small enough
to catch a childhood in its net,
water vast enough to divide a life.

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2016 U.S. Distinguished Chairs

2016 Fulbright Distinguished Chair in Science, Technology and Innovation
(Sponsored by CSIRO)
Benny Freeman, PhD | University of Texas at Austin  
→  CSIRO  
Manufacturing in Membrane Materials

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→  ANU  
International Affairs in Foreign Policy, Women, Peace, and Security

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Yolanda Moses, PhD | UC Riverside  
→  NCCC  
Anthropology

2016 Fulbright Distinguished Chair in Advanced Science and Technology
(Sponsored by the Australian Government, Defence Science and Technology Group)
Angus Rupert MD, PhD | U.S. Army Aeromedical Research Laboratory  
→  DST Group  
Tactile Cuing Technologies

2016 Fulbright Distinguished Chair in Applied Public Policy
(Sponsored by Flinders University and Carnegie Mellon University Australia)
David Stoesz, PhD | Kean University  
→  Flinders University  
Social Policy

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Sophie Hollingsworth | New York University  
→  The University of Sydney  
Public Health in Health Security
2017 Fulbright Distinguished Chair in Agriculture and Life Sciences
(Sponsored by Kansas State University)
Dr Brett Summerell | Royal Botanic Gardens/Domain Trust Sydney ➔ Kansas State University | Agriculture

2017 Australian Distinguished Chair

Professor Margaret Barrett | The University of Queensland ➔ University of Washington | Music Education

2017 Fulbright Northern Territory Senior Scholar
Professor Tim Carey | Flinders University / Charles Darwin University ➔ Antioch University | Allied Health

2017 Fulbright Tasmania Senior Scholar
Dr Menna Jones | University of Tasmania ➔ Oregon State University | Environmental Sciences

2017 Fulbright Senior Scholar (Sponsored by Kansas State University)
Dr Patrick Kilby | Australian National University ➔ Kansas State University | Political Science

Professor Timothy Mehigan | The University of Queensland ➔ University of Chicago | Humanities / Literature

Dr Todd Oliynyk | Monash University ➔ Princeton University | Mathematics

2017 Australian Senior Scholars

2017 Fulbright RMIT Postdoctoral Scholar
(Sponsored by RMIT University)
Dr Louise Byrne | Central Queensland University ➔ Yale University | Public Health

2017 Fulbright Victoria Postdoctoral Scholar
Dr Gwilym Croucher | The University of Melbourne ➔ University of California, Berkeley | Public Policy

2017 Fulbright New South Wales Postdoctoral Scholar
Flavia Di Pietro | The University of Sydney ➔ Cincinnati Children’s Hospital | Neuroscience

2017 Fulbright Indigenous Postdoctoral Scholar
(Sponsored by the Australian Government, Department of the Prime Minister and Cabinet)
Dr Stephanie Gilbert | The University of Newcastle ➔ University of California Santa Cruz | History

Dr Claire Higgins | The University of New South Wales ➔ Georgetown University | History

Dr Simon O’Rourke | Western Australia Police ➔ Harvard University | Public Administration

Andrew Pomeroy | The University of Western Australia ➔ U.S. Geological Survey | Oceanography

2017 Australian Postdoctoral Scholars

2017 Fulbright Queensland Postgraduate Student
Jessa Rogers | Bond University ➔ Harvard University (TBC) | Law

2017 Fulbright Australian Capital Territory Postgraduate Student
Marryum Kahloon | Bond University ➔ Harvard University (TBC) | Law

2017 Fulbright RMIT Postdoctoral Scholar
(Sponsored by RMIT University)
Dr Louise Byrne | Central Queensland University ➔ Yale University | Public Health

2017 Fulbright Victoria Postdoctoral Scholar
Dr Gwilym Croucher | The University of Melbourne ➔ University of California, Berkeley | Public Policy

2017 Fulbright New South Wales Postdoctoral Scholar
Flavia Di Pietro | The University of Sydney ➔ Cincinnati Children’s Hospital | Neuroscience

2017 Fulbright Indigenous Postdoctoral Scholar
(Sponsored by the Australian Government, Department of the Prime Minister and Cabinet)
Dr Stephanie Gilbert | The University of Newcastle ➔ University of California Santa Cruz | History

Dr Claire Higgins | The University of New South Wales ➔ Georgetown University | History

Dr Simon O’Rourke | Western Australia Police ➔ Harvard University | Public Administration

Andrew Pomeroy | The University of Western Australia ➔ U.S. Geological Survey | Oceanography

2017 Australian Postgraduate Students

2017 Fulbright Anne Wexler Scholar in Public Policy
(Sponsored by the Australian Government, Department of Foreign Affairs and Trade)
Arjun Bisen | University of Technology Sydney ➔ Harvard University (TBC) | Public Administration

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2017 Fulbright Anne Wexler Scholar in Public Policy
(Sponsored by the Australian Government, Department of Education and Training)
Arjun Bisen | University of Technology Sydney ➔ Harvard University (TBC) | Public Administration

James Riggall | Bitlink ➔ Bellevue College | Information Technology

2017 Australian Postdoctoral Scholars

2017 Fulbright Distinguished Chair in Agriculture and Life Sciences
(Sponsored by Kansas State University)
Dr Brett Summerell | Royal Botanic Gardens/Domain Trust Sydney ➔ Kansas State University | Agriculture

2017 Australian Distinguished Chair

Professor Margaret Barrett | The University of Queensland ➔ University of Washington | Music Education

2017 Fulbright Northern Territory Senior Scholar
Professor Tim Carey | Flinders University / Charles Darwin University ➔ Antioch University | Allied Health

2017 Fulbright Tasmania Senior Scholar
Dr Menna Jones | University of Tasmania ➔ Oregon State University | Environmental Sciences

2017 Fulbright Senior Scholar (Sponsored by Kansas State University)
Dr Patrick Kilby | Australian National University ➔ Kansas State University | Political Science

Professor Timothy Mehigan | The University of Queensland ➔ University of Chicago | Humanities / Literature

Dr Todd Oliynyk | Monash University ➔ Princeton University | Mathematics

2017 Australian Senior Scholars

2017 Australian Postgraduate Students

2017 Fulbright Anne Wexler Scholar in Public Policy
(Sponsored by the Australian Government, Department of Foreign Affairs and Trade)
Arjun Bisen | University of Technology Sydney ➔ Harvard University (TBC) | Public Administration

James Riggall | Bitlink ➔ Bellevue College | Information Technology
What advice would you give to any prospective applicants?

“Before applying, try to identify organisations or individuals that are world-leaders in the field that you are most passionate about.

“Make contact with that individual to introduce yourself and explain a little about your desire to work with them; your ability to reciprocate; and whether they would be willing to invite you if you were successful in your Fulbright application.

“If you have someone who extends an invitation, then identify what would be your ideal professional development program and write your Fulbright proposal to reflect this.”

What has the Fulbright experience meant to you?

“The Fulbright name opened the door to be able to work at Yale University, and consequently to learn from world-renowned researchers in OCD.

“This in turn provided me with the opportunity to enhance my research skills, and combine my clinical expertise with the more biological/psychiatric knowledge at Yale clinic.

“The scholarship enabled me to tailor-make an ideal program to suit my professional development needs at this mid-stage point in my career.

“I was able to experience working at a prestigious Ivy League university; reciprocate by sharing my clinical experience with the research team; and also receive specialized training that is not available in Australia from dedicated OCD organisations.”

How has the Fulbright Scholarship impacted upon your life?

“The Fulbright scholarship has impacted upon my life by facilitating an opportunity to open a dedicated private OCD clinic that will provide a much-needed service to the Western Australian community.

“It has also enhanced my career opportunities by being appointed to an Assistant Clinical Professor in the department of Psychiatry at Yale, which will hopefully create opportunities for longer-term collaborations to assist OCD sufferers.

“The experience has also highlighted many cultural differences and similarities between the U.S. and Australia in a way that only living in another country could afford and has enhanced my gratitude in kind.”
For those around the world who watched America’s 2016 presidential election, it was clear that this historic, continually shocking race was contested by extraordinary candidates.

But perhaps the biggest surprise is that, sifting through that data underlying Donald Trump’s come-from-behind victory, it turned out to be quite an ordinary election.

Throughout Trump’s journey from reality TV star to fringe candidate to primary front-runner to general election underdog, he upended much of the conventional wisdom about American politics. Yet his route to victory turned out to be quite conventional. Decades of research on presidential elections have taught us two clear lessons.

First, in the words of Bill Clinton’s 1992 campaign advisors, it’s the economy, stupid. One of the strongest predictors of presidential election results in November is the American economy’s growth rate in the spring.

Second, we know, from history, how tremendously difficult it is for one party to stay in power for more than eight years. Just as Americans voted for Barack Obama’s hope and change after two terms of Republican rule under George W. Bush, fatigue with Democratic Party leadership stacked the deck against Obama’s chosen heir.

Many statistical models published by political scientists well in advance of the election predicted, based on these two factors, a Trump victory.

Most political scientists refused to believe our own models, because the image of a President Trump seemed so far from plausibility, but the models turned out to be right.

Another truism of presidential elections was confirmed this year.

Democrats win when they cobble together strong supermajorities of minority voters; Republicans triumph when they consolidate the white vote.

The Obama coalition brought together so many African-American, Latino, and Asian-American voters that he could afford to perform more poorly among white voters, in 2012, than any candidate since Michael Dukakis, winning only 39% of this group.

But, according to exit polls, Hillary Clinton polled one percentage point worse among white voters, and five to eight points worse among the major racial and ethnic groups. This was a traditional recipe for a Republican victory, even one by the least traditional Republican in modern history.

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In 2013, Kansas State University became the first U.S. university to partner with the Australian-American Fulbright Commission, beginning a series of ongoing collaborative programs that have had significant and wide-ranging impacts in various disciplines.

The Fulbright/Kansas State partnership consists of three primary programs for Australian candidates, including a Distinguished Chair in Agriculture and Life Sciences; a Senior Scholarship in any academic discipline; and a program of engagement known as Oz to Oz, enabling Australian Fulbright scholars already in the U.S. to travel to Kansas State.

Through this partnership, the visibility of Kansas State in the Australian academic and business landscape has been greatly enhanced. More Australian Fulbrighters now pass through Kansas State annually than through any other U.S. university, shining a spotlight on the excellent research culture the university offers and clearly demonstrating a mutual commitment to international outreach.

The programs also demonstrate significant potential for future commercial and academic collaborations offering mutually beneficial research outcomes.

Incoming Kansas State President Richard Myers is looking forward to continuing and broadening the university’s Australian activities, which were initiated by his predecessor, Kirk Schulz.

To find out more about this symbiotic relationship, we spoke with Professor John Leslie, university distinguished professor, Fulbright alum, and one of the key driving forces behind the Fulbright/Kansas State initiative.

Kansas State was the first U.S. university to partner with the Australian-American Fulbright Commission. What motivated your decision to establish this connection back in 2013?

“An important goal of K-State’s 2025 strategic plan was to strengthen our institutional level international activities, and to do so in a novel manner. Australia was selected as a target country for interaction because of many similarities in climate and economic interests, and the large number of diverse, high quality academic and research institutions with whom we could potentially interact.

“We wanted a way to get Australian scholars to Kansas that could stimulate and broaden our endeavours and to both broaden and strengthen our collaborative networks.

“The Fulbright Distinguished Chair at K-State is in an area of the university’s strength — Agriculture and Life Sciences — where we are highly ranked both in the U.S. and internationally. We need to feed 9 billion people globally by 2050. If that is going to happen, then Australia and the United States will be providing much of the food and the technology required to do so.

“Former U.S. ambassador Jeffrey Bleich agreed strongly with that sentiment and was instrumental in supporting the proposal that led to the partnership. As a university though, we did not want to limit Fulbright visitors to a single, albeit quite broad, area of study.

“Thus we established a Senior Scholar as well, to ensure that any K-State faculty member had the opportunity to host a leading Australian scholar as a Fulbrighter.

“The Oz to Oz program arose when we began contemplating a program to encourage recognized Australian scholars to visit our campus. We wanted people from diverse academic areas, and we wanted the best people we could find to participate in the program.”

In three short years, these programs have had a significant impact on the careers of numerous scholars across a range of disciplines. How have the various collaborations benefited Kansas State?

“The collaborations are just beginning to benefit K-State. The interaction with Dr. Zdenko Rengel (2014 Fulbright Distinguished Chair in Agriculture and Life Sciences) is leading to a re-evaluation of some methods for selecting new wheat lines released to Kansas farmers.

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“We have identified groups at several universities with whom we may work to establish joint distance education courses and programs.

“We have benefited from the visits of a number of diverse academics enriching our department seminar series and developing new approaches to problems. K-State faculty are now quite excited when they get the chance to host a Fulbright Oz to Oz participant.

“Some collaborations are beginning to pick up steam. For example, [2014 Playwright Scholar] Lachlan Philpott’s Oz to Oz host Jennifer Vallenga will work with him to co-author a new play. She also is planning to travel to Australia to direct a play with him and to have one of her plays performed there.

“You travelled to Australia as a Fulbright senior scholar in 2002. What was the focus of your research?

“Curiously, many of the species from grasses in tropical northern Australia are closely related to Fusarium species we recovered from grasses native to the U.S. Great Plains.

“Both the fungi and the compounds they produce are the subject of many national and international regulations that are designed to limit the spread of these organisms, usually in commercial food products.

“A major goal of my Fulbright was to begin studies of Fusarium strains isolated from native plants.

“We had done some of this kind of work with strains from the native tallgrass prairies in the U.S. and wanted to expand our work to include grasses from a different climatic region. We found a number of new species that were very different from many previously seen.

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“If work with a group of fungi that cause diseases on a great number of plants, some of which also produce compounds that are toxic to humans and domesticated animals.
Lachlan Philpott | 2014 Fulbright Professional Playwright Scholar

For his 2014 Fulbright Professional Playwright Scholarship, Lachlan Philpott undertook a writing residency at Kansas State University. One of the highlights of Lachlan’s trip was his visit to Kansas State, where he held the U.S. debut of his play, “Bustown” — a vibrant depiction of small town life, exploring the impact of rural urban migration on the people and places left behind.

You decided to hold the American debut of your play, Bustown at Kansas State. Why did you choose this production in particular?

“I sent Jennifer a bunch of my plays and she chose Bustown mainly because it had a big cast and she felt it was an interesting challenge for the students. It’s a bit of a messy play — a bit of a puzzle. I suggested we do a bit of work on the script before it went into rehearsals and Jennifer was very receptive to that. I guess that’s how it began.”

Some of the rewrites for Bustown required “translating” the Australian slang for American audiences. How did you find this experience, creating a new cultural adaptation of your work?

“The play is actually written in a kind of post-apocalyptic language — English, broken down over time by people isolated from the wider world. We spent a good deal of time playing with the way this language worked and looking at terms which still seemed to be very Australian, adapting these words to enable an American audience access. It is a fun process because it sparks a whole range of intimate conversations — it’s the essence of cultural exchange.”

What were the impacts of the Oz to Oz on your Fulbright project, and your career in the long term?

“Kansas State’s stunning production of Bustown was the first production of my work in the U.S. This was a very exciting milestone in my career and I was thrilled with the production and the audiences reception of the work. Most significant is that theatre is about connections between teams who make theatre and ultimately between actor and audience when the work is on stage.”

The play only lasts a moment in production, but what lasts longer are the connections you make with people while you are making theatre.”

“I was also working on two large writing projects, including a book on diseases of sorghum and millets, and a collaborative work with one of my Australian hosts — Brett Summerell of the Royal Botanic Gardens in Sydney. This second book, focussed on the various species of Fusarium, became the best selling book offered by Blackwell in the Plant Sciences for several years.

“Dr. Summerell plans to reciprocate my 2002 visit with one of his own to the U.S. as the Fulbright Distinguished Chair in the 2017-2018 academic year. We will use his visit to begin working on a revised version of the 2006 book, and could increase its size by as much as 50%. We will also take samples of grasses from different parts of the U.S. to determine the species that are naturally present in areas with quite different climates.

“We are working on a hypothesis that many of these fungi are “pre-adapted” for climate change and that they grow when the weather is warm enough and simply slow their metabolism to nearly nothing when it is cold. If so we should find the same fungi in plants from the Northern Great Plains, e.g. North Dakota, as we find in the Southern Great Plains e.g. Texas or New Mexico.

“Having a pair of related reciprocal Fulbright visits seems an unusual development and demonstrates how lasting relationships can be built through the program.”

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This ongoing collaboration?

“It’s very exciting. Jennifer and I will collaborate with young artists at HotHouse Theatre in Albury/Wodonga on the border of New South Wales and Victoria. We plan to make a piece that can link young actors and artists here with those at Kansas State. But maybe the rest best be kept under wraps for the moment.”

Applications for the 2018 round of Fulbright/ Kansas State scholarships will open in March 2017. The Oz to Oz Program is open to all Australian Senior and Professional Fulbright scholars during their stay in the U.S.

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The play only lasts a moment in production, but what lasts longer are the connections you make with people while you are making theatre.”
They are back, and this time they are here to stay.

It’s Tuesday and I am running predictably behind. I click ACCEPT, paying 3000 credits as I shift into the express skyway.

It’s then that I first hear it, that sickening low drone that slowly overtakes the cacophony of the Sydney rush hour. Traffic slows, then stops. The 50-degree morning air rushes in as I release the top hatch, squinting skyward toward the trapezoidal silhouettes.

As the nine shadows spread across the metropolis, my pupils dilate to take in the crafts and their implications. Reassembling into a single tessellation, they settle into an inlet just south of the city.

Never had there been so many.

The first contacts were brief and shrouded in mystery. For hundreds of years there have been glimpses of the Snaeporue, who most people referred to simply as the “Blues.” Early rumors of vague shapes on the horizon.

Stories over the years accumulated in the north, of spacecraft, cyan skin, and strange weapons: 2206 in Cape York, again in 2223. Whispers from the west at the end of the 23rd century.

I was a child when their first spaceship visited Sydney, 18 short years ago. We approached with hope. It ended badly. Their quickness to anger, the bright flashes, the carnage. They took our weapons and as quickly as they arrived, they were gone.

My parents said that they wouldn’t return and not to worry. I tried not to, until the blue skin sickness overcame them.

My fingernails dig into my palm as the memories come rushing back, the cocktail of scarlet and salt trickling from mom’s pale eyes over cerulean-spotted cheeks.

She was wrong.

They are back, and this time they are here to stay.
The human brain is a complex thing. Comprising nearly 90 billion cells (neurons) transmitting chemical or electrical information in fractions of a second through a network of around 100 trillion junctions (synapses), this one-and-a-half kilo lump of grey matter is capable of driving the most intricate of tasks, from building a rocket engine to composing a symphony.

Much like the Human Genome Project of the 1990’s was seen as a crowning achievement in biology and medicine, mapping the human brain has long been considered a holy grail in the neuroscience field, with numerous multi-billion dollar projects currently seeking to crack the code and deliver a functional cheat-sheet for the mind.

The EU-funded Human Brain Project in Switzerland seeks to understand how neural circuit organisation gives rise to behaviour and cognition using powerful supercomputers, while the U.S.-led BRAIN Initiative (Brain Research through Advancing Innovative Neurotechnologies) attempts to map the neuron activity of mice and other small mammals to achieve a ‘functional connectome’, or wiring diagram of neural connections in the brain.

While Australia doesn’t have the resources to commit billions of dollars to such large-scale projects, scientists here have adopted strategic interdisciplinary approaches to the study of the brain, involving research from healthcare, medicine, neuroscience, psychology, informatics, and broad international collaboration.

Brian Entler, American Fulbright Scholar from the University of Scranton, is currently being hosted by Macquarie University in Sydney, collaborating with like-minded researchers there. His team is led by Dr Andrew Barron, Associate Professor in the Department of Biological Sciences and Fulbright Alum (2001), and their innovative approach to brain-mapping involves the study of an unlikely character – the humble honey bee.

We spoke to Brian to get some insight into this intriguing project.

"The main issue is scale – it’s much easier to map something on a smaller scale and apply the concepts to a bigger picture. Take the Human Genome Project for example; in the 70s and 80s, mapping the human genome was considered an informatic impossibility—we’re talking nearly a terabyte of information at a time when supercomputers would struggle to process even a fraction of that—so they started with a very simple organism with a very simple genome: the fruit-fly.

Dr Barron credits his current research trajectory to the mentorship he received during his 2001 Fulbright Postdoctoral scholarship to the University of Illinois under Prof. Gene Robinson, a world-leading researcher in behavioural genomics, and himself a Fulbright Alum (1995).

"The experience was foundational to my career, and now the opportunity has come full circle as I have the chance to mentor another Fulbright scholar (Brian Entler), who has been a tremendous asset to my team here.”

"The Fulbright scholarship gives people with passion and commitment the mobility to share ideas with thought-leaders around the world.”
“Fruit-flies share nearly 60% of human genes, share the same wake-sleep cycles and have many similar biochemical pathways, hence were an ideal subject. Scientists successfully mapped the fruit fly genome within a decade, and it became the ‘gold standard’ for genomic research, eventually leading to a fully-mapped human genome within three years.

“Now [Dr Barron] and his collaborators had the same idea – why not start with something simple? Humans have about 86 billion neurons, whereas honeybees have around 960,000. What we’re doing here is putting together pieces, and then modelling these pieces into the larger connective map.”

Is there any reason why you’re studying honey bees in particular?

“Bees exhibit a social complexity that is far more relatable to humans than rats or mice. They also engage in complicated behaviours that demonstrate cognition and decision-making – I’m going to use the term ‘consciousness’. While we have some idea of the different areas, structures and functions of the brain, we still have only a vague understanding of how these interact to enable cognition. When we study bee interactions and behaviours, monitoring the connectivity of neurons, we begin to understand how these properties of a ‘consciousness’ emerge from such a simple brain.

“If you start basing models on behaviour, you can make things more complex; you can add in more cells, more layers of connection, and this can subsequently be applied to larger models in the overarching understanding of how the brain works.”

What is your role in this project?

“I’m working on visual learning in the honey bee, mapping the functions of three different structures that deal with vision and olfaction: the mushroom bodies, ventral lobes and the central complex.

“At the moment we are micro-injecting procaine, a temporary local anaesthetic, into specific regions within the head capsule, then monitoring the bee within an automated learning chamber to measure things such as escape speed and avoidance behaviour. We can then determine exactly how these areas of the brain are involved in visual learning.”

How does this research relate to your work back at the University of Scranton?

“I’m looking to transition into the clinical realm; my dream has always been to conduct clinical addiction research. Everything I’ve learned here can be applied to larger organisms, and to model species such as rats, mice, and zebrafish. The techniques I’ve learned and refined through this work will be invaluable with future projects.”

Your research was recently picked up by various high-profile publications including the New York Times, Nature, and the Smithsonian Magazine. Can you elaborate on this research and how it relates to your current work?

“We were looking at the neurochemical effects of opiates on ants to see if we could prove addiction, with aims to eventually analyse what kind of social impact this has on the colony. Through my research into other invertebrate models of addiction, I heard about [Dr Barron’s] work on the social implications of honey bee addiction.

“Ants, like bees, are very social creatures, forming a complex, interdependent hierarchy, so there were many parallels between our research projects and methodology. My advisor at Scranton had actually met Andrew during his own Fulbright Scholarship, and he suggested we look into a collaboration.

Certainly there are ethical and philosophical implications with such in-depth dissection of the brain. With a comprehensive knowledge of the human mind comes incredible power – the ability to alter specific areas of the brain with precision, control behaviours, even manipulate thoughts and memories; concepts that were, until only recently considered science fiction.

With understanding also comes the ability to create and synthesise. Once the brain has been mapped, it is theoretically possible to create a bionic brain and simulate human, and even post-human, intelligence. Popular culture has often delved into hypothetical futures where artificial intelligence has transcended that of its creator. Terminator’s Skynet and 2001: A Space Odyssey’s HAL showed us the horrors of calculating, malevolent machine thinking; OS1 from Spike Jonze’s Her provided a haunting glimpse at the infinite potential of A.I. that has the capacity to learn and evolve autonomously. Despite these profound implications and fictional dramatisations, humans are characterised by our eternal hunger for knowledge, our drive to understand everything about ourselves and the world around us.

“Your research was the first of its kind to demonstrate a drug dependency in invertebrates without a caloric reward, in other words, the ants were self-administering the opiate without the incentive of sugar.

“Through this kind of study, we can discover the areas of the brain that are affected by a drug dependency, and learn how to develop localised treatments or medications. I believe that within our lifetimes, we will see a vaccination for certain types of addiction.

“Of course, this raises ethical and philosophical questions about self-determination and nature versus nurture, but these are discussions for another day.”

Implications

Concepts of mapping the brain, simulating intelligence, and creating new entities in our likeness are not questions of if but when.

The responsibility associated with this is colossal, but the possibilities are endless – the ability to treat cognitive disorders, addiction, Alzheimer’s Disease with pinpoint accuracy; the capability to restore or redirect neurons that have been affected by brain damage; the capacity for your laptop to think and learn; the potential for Apple’s Siri to do more than just Google-search a series of misheard phrases.

The prospects are truly thought-provoking. The human brain is, indeed, a complex thing, but with scientists like Andrew Barron and Brian Entler putting the pieces together, the puzzle may soon be solved.
Research has shown that bees have been known to experience the effects of inebriation in a similar way to humans. Honeybees searching for nectar may be exposed to intoxicating substances including ethanol from fermented fruit/nectar, defensive toxic biochemicals produced by plants, and even synthetic chemicals such as insecticides and fertilizers.

The ‘drunk’ bees begin to display abnormal behaviour - loss of balance and mobility, disorientation, high likelihood of ‘flying accidents’, belligerence, and a heightened attraction to Turkish kebabs.*

Dr Andrew Barron has also demonstrated that exposure to cocaine results in humanlike reactions in bees, provoking unusually enthusiastic dance routines, an intense compulsion to ‘chat’ with their hive-mates, and a dangerously elevated sense of self-worth.*

Past research has revealed advanced hierarchies in certain social insect communities, including specialised roles such as ‘guards’ who monitor the entrances to a colony and bar entry to any objectionable characters. Undesirables may include members of the community exhibiting any abnormal behaviour or smell.

Honeybee ‘bouncers’ will go as far as attacking colleagues who appear intoxicated or are carrying any odd-smelling substances, and are even known to kill repeat offenders. Carpenter ants living in the rainforests of Thailand and Brazil have also developed their own in-house security systems.

Their colonies are vulnerable to a particular type of entomopathogen (A.K.A ‘zombie-fungus’) that will attach itself to a host individual, infecting its mind and causing unnatural behaviours. Once inside a host, the Cordyceps produces compounds that manipulate an ant’s behavioural patterns, driving it to mindlessly attach itself to a plant near the hive where the fungus will grow, subsequently sprouting out of the exoskeleton to drop more infectious spores.

This deadly cycle has been known to devastate entire ant colonies. The specialised ant ‘customs officers’ work to prevent this kind of epidemic by forcibly removing and quarantining any individual exhibiting uncharacteristic behaviour.

No news from Hollywood yet as to whether this will become the basis for another tedious high-budget crossover starring Brad Pitt and the team from A Bug’s Life.

A 2013 study by Dr Andrew Barron and his colleague Dr Clint Perry put honeybees through a series of increasingly complex risk/reward trials to determine whether they experience ‘uncertainty’, and whether this factored into their problem-solving and decision-making capabilities. They did this by including the option to ‘opt out’ of some of the more difficult trials.

The results were fascinating – when given the opportunity to opt out, a significant proportion of bees did indeed throw in the towel rather than face difficult tests where they weren’t confident of the answer, raising the possibility that they are able to monitor uncertainty and selectively make or avoid decisions based on the amount of information they have at hand.

Further research is needed to prove this with certitude, and also determine whether bees experience other humanlike emotions such as stress-eating and buyer’s remorse.

Can toxic flowers cause alcoholism in bees? Science says sure, why not?

Can toxic flowers cause alcoholism in bees? Science says sure, why not?

“Whatevs. I’m out.”
Science tells us that bees, like humans, may occasionally just give up when it’s all too hard.

Complete the crossword to win!

The respect and adoration of your peers*

**Respect not guaranteed, has no monetary value
In Memoriam

The Commission was deeply saddened by the loss of the following friends in 2016. They will all be dearly missed, but their spirits live on in the minds and hearts of the Fulbright Community.

Emeritus Professor Russell Trood, Australian-American Fulbright Commission Board of Directors 1948 - 2017
Russell was elected to the Senate for Queensland in 2004 where he represented the Liberal Party until 2010. During this term he served as Deputy Chair of the Senate Committee on Foreign Affairs, Defence and Trade. In 2011, he was appointed to a senior post in the Department of Foreign Affairs and Trade. Russell served on the Australian-American Fulbright Commission Board of Directors for two years, and will be remembered as a strong leader, and dear friend.

Dr Ken Levy, 1995 Postdoctoral Scholar 1949 - 2016
Ken’s 48-year distinguished career included numerous high-level appointments including Director of the Attorney General’s and Justice Department, President of CPA Australia, Professor of Law at Bond University, and Acting Chairman of the QLD Crime and Corruption Commission.

Mrs Elizabeth Brown, 1957 Teaching Exchange Scholar 1921 - 2016
Elizabeth’s ceiling-breaking 40 year career as an education professional included numerous leadership roles at secondary institutions across Melbourne including Williamstown Girls, Moorabbin High, MacKinnon High and Buckley Park High.

Professor John Furedy, 1965 Postdoctoral Fellow 1940 - 2016
John was born in Hungary and came to Australia in 1949 with his parents as a refugee and Holocaust survivor. He was a stalwart for freedom of speech, described himself as an ‘Andersonian realist’, and achieved great things with his major research on lie-detection.

Dr Edward Radoslovich, 1950 Senior Scholar 1928 - 2016
As early as 1950 Ted was already outstanding in his area, developing an XRF spectrograph to carry out quantitative analysis of certain major elements in soil colloids and to use as a complementary technique to optical spectroscopy for the analysis of heavier non-metals. Ted made a name as an internationally renowned crystallographer and has been quoted extensively on academic publications in the field.

Mrs Merrilees Salter, 1961 Teaching Exchange Scholar 1919 - 2016
One of the very first WA Fulbright Scholars, Merrilees devoted her life to teaching, education and to her family and friends. Her determination, pursuit of knowledge and embracing of life’s opportunities were an inspiration to all who had the privilege of meeting her.

Dr Mervyn Hegarty AM, 1956 Senior Scholar 1927 - 2016
Mervyn worked in the U.S. and visited England and Scotland for a time, to set up future contacts for his new job with CSIRO as a research biochemist. The Fulbright award was a highlight of his career and greatly added to his scientific capacity and network of colleagues, all of which helped his career through his working life.

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