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# THE SCHOLAR

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IN THIS ISSUE

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GREEN  
**TECHNOLOGY**

FRONTIERS  
**IN HEALTH**

THE NEW  
**SYRIA**



UNIVERSITY OF  
CAMBRIDGE

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# EDITORS' NOTE

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*The Scholar* is the publication of the Gates Cambridge Community. Articles that offer a window into the lives and work of current or former Gates Cambridge Scholars or articles that tackle large interpretive questions relevant to the Gates Cambridge mission are particularly encouraged. Highly focused contributions are welcome, but preference will be given to submissions that are of interest to a diverse cross-section of readership in more than one discipline of study. Contributions are subject to editorial approval. Ideas expressed are those of the authors alone.

Gates Cambridge works to foster a global community of students and leaders at the top of their fields. Yet Gates Cambridge Scholars and Alumni excel not only in the library and laboratory: they are also out in the field, working to make a difference in other people's lives. This edition of *The Scholar* shows how Scholars and Alumni are making a positive impact through their research on both their local communities and the world at large. The current issue has several strong themes tying its pieces together, from sustainable development to global health and education.

In our first feature article, Phillip Geheb '05 discusses the shift in the American real-estate industry towards 'green' building designs. Vaibhav Bhardwaj '12 further explores the case for investment in sustainable resources in his article on the potential of renewable energy. With US President Barack Obama's recent proposal to use \$2 billion in federal oil and gas royalties to fund research into alternative fuels, this theme is particularly well-timed.

Our next subject centres on global health initiatives. Lucinda Lai '12 illustrates how she has worked to improve the mental health of Burmese refugees living on the border with Thailand through Muay Thai kickboxing. North of the 49th parallel, Katie Hammond '11 looks at regulations surrounding payment for egg donors in Canada. And here in Cambridge, Said Saab '12 highlights the work he and his fellow researchers are performing to reduce maternal mortality. Continuing on the theme of medicine, Nicole Basta '04 describes the obstacles that political instability in Mali poses to improving public health outcomes.

Moving from health to education, Antonia Ruppel '01 opens the topic with her discussion of the importance of studying Classics for understanding the contemporary world. Timothy Kotin '12 writes of the growing emphasis on Information and Communications Technology, which start-ups such as the one he founded are using to revolutionise classrooms in Africa and around the world. Another pioneer in the field of education, Alexandra Kamins '09, gives us a window into a non-profit that she and Andra Adams '10 have formed to foster such skills as wise risk-taking and entrepreneurship in students.

Next, our authors tackle the challenging and timely issue of the new Syria. Raphaël Lefevre '12 presents a succinct overview of the threats of extremism to Syria's minorities. Shlomo Bolts '10, Paula Long '10 and Mathew Madhavacheril '10 then convey a more personal account of the humanitarian tragedy befalling the country. In New York, the three Gates Cambridge Alumni came together for an interfaith peace rally on Syria, the first time they had reunited since leaving England.

In our second feature article, Todd Tucker '12 argues for tougher financial protections to combat smoking, a difficult task given the propensity of the tobacco lobby to challenge national regulations against smoking in the World Trade Organization.

In closing, two Gates Cambridge Scholars look at community-based attempts to improve people's livelihoods. Writing in light of the recent rape and death of a young female student in Delhi, Anjali Bhardwaj Datta '09 calls for a new definition of masculinity that incorporates an improved sense of respect for women. Closer to home, Victoria Tobolsky '12 paints a picture of how Gates Cambridge Scholars are getting together for local community days, bridging the town and gown divide.

As the magazine showcases, Gates Cambridge Scholars and Alumni have had an ever-increasing international impact, spearheading social and educational initiatives throughout the world. With over 1,000 Scholars from almost 100 countries, the program continues to expand. As it grows, so does the geographic reach and impact of Scholars and Alumni alike. Already, they have gone on to make a difference in their communities thanks to networks first forged in the halls, colleges and playing fields of Cambridge.

**Editor-in-Chief**  
Mia Bennett '12

**Alumni Editor**  
Rose Spear '06



Cooper Vineyards, a LEED Platinum development, in Louisa, VA.

# SUSTAINABLE BUILDING IN THE US

## How the real estate-industry started saving the planet

Phillip Geheb (USA, 2005) – MPhil Modern Society and Global Transitions

Over the last decade, real-estate industry professionals in the US have become increasingly aware that construction and operation practices for buildings need to be re-imagined to reduce the impact of the built environment on the natural world.

Thorough scientific research around the world has confirmed that climate change is occurring and greenhouse gases emitted by human activities are the primary driver. Buildings account for approximately 70% of the electricity consumed in the US, and they could be made up to 50% more energy-efficient with currently available technologies. This represents not only a challenge, but also a significant opportunity for the US real-estate industry to be a part of the solution to a global problem.

The concept of a 'sustainable' or 'green' building is not new, but has taken several decades to emerge as an industry norm. A sustainable building

incorporates improvements related to energy efficiency, renewable energy and storm water management as well as design principles associated with location siting, material sourcing and green operational practices. A green building's design encourages users to adopt habits aimed at reducing its environmental impact. While many buildings are partially designed with green principles like day-lighting, which orients the building to increase sun exposure, several rating systems have been developed to benchmark the performance of a sustainable building as a whole. Rating systems such as the Leadership in Energy and Environmental Design (LEED), Energy Star and Green Globes have been critical to the growth of the sustainable building movement in the US.

Building green has several advantages. First, sustainable buildings save property owners money through lower utility and maintenance costs

and, in the case of on-site renewable energy installations, can even generate additional sources of revenue. Second, green buildings create healthier working environments for building users, thereby decreasing absenteeism and increasing productivity. Third, more building end-users, particularly Fortune 1000 companies, are adopting company-wide sustainability policies that have increased the demand for work space in sustainable buildings. Thanks to these benefits, green buildings are beginning to enjoy higher market values than similarly situated non-green buildings.

### The built environment does need not be at odds with the natural world

The sustainable building movement, however, has historically faced a



© EPA

*Vegetative roof of EPA Region 8 Building, Denver, CO.*

significant hurdle: the perceived premium of going green. The common perception is that green design adds approximately 2% in construction costs and \$150,000 in additional soft costs related to applying for and receiving a green building certification. What's more, for existing buildings, in a typical triple-net lease, where the tenant pays for a building's energy usage plus a portion of its common-area usage, landlords have little incentive to make improvements that save energy usage costs for the tenant but generate little return on investment to the landlord. These concerns illustrate short-term thinking for a long-term problem.

Perceptions in the US real-estate industry have dramatically changed. As a result of public education programs, successful green investments and building policies adopted by federal, state and local governments, sustainable building practices are becoming the industry norm rather than the exception. The following are some notable examples:

The US federal government, one of the country's largest property owners, has been an early leader of the sustainable building movement, and President Obama has launched the 'Better Buildings Initiative' to effect a 20% reduction in energy usage of federal buildings by 2020.

Major US cities such as San Francisco, Seattle and Washington, DC, have adopted energy benchmarking programs that require property owners to track and publicly report building

energy and water usage annually, thus creating an accountability system that encourages green investments.

The City of New York has promoted the 'energy-aligned lease clause,' which allows both the tenant and landlord to share the costs and benefits of energy retrofits. Since its introduction in April 2011, the clause has become a model for tackling the split-incentive problem for triple-net leases.

Since the City of Dallas, Texas, adopted one of the nation's first green building ordinances in 2008, over 95 LEED-certified buildings have been constructed, with dozens more slated for completion within the next five years.

Sustainable building makes environmental and economic sense. The built environment does need not be at odds with the natural world. From new buildings with vegetative roofs and on-site photovoltaic systems to high-efficiency heating, ventilation and air-conditioning system upgrades to existing buildings, the real-estate industry is learning how to save costs, benchmark progress and incentivize others to contribute to a more sustainable planet – one building at a time.

Phillip Geheb is a real-estate attorney in Dallas, Texas, representing commercial real-estate developers and investors in creating sustainable urban developments throughout the US.



*Tesoro Corporation Headquarters, San Antonio, TX.*

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# A RENEWABLE FUTURE?

## The era of everlasting energy

Vaibhav Bhardwaj (Zimbabwe, 2012) – PhD Plant Sciences

The global energy demand is increasing, with growing markets in Asia and Africa a driving factor. The challenge ahead is how to meet future energy needs. While fossil fuels still dominate the energy market, it is essential to begin diversifying our energy sources by investing in solar, wind and biofuel. This will improve the prospects for long-term economic prosperity and a cleaner, healthier environment. In a recent essay in *Foreign Affairs*, Amory Lovins predicts that the era of everlasting energy is upon us. The question is: what type of energy will it be?

Conventional thinking suggests that fossil fuels will continue to retain a large market share for decades to come despite rising costs of extraction. The reasoning used is that growing economies will be willing to foot the bill as no cheaper alternatives are present. Meanwhile, there is even

speculation that prices may fall thanks to the discovery of shale oil that can be extracted by fracturing shale rock ('fracking'). Last year a number of reliable sources such as *The Economist* heralded an American oil bonanza, but recent reports from the American Geophysical Union indicate that confidence regarding the abundance of shale oil is misplaced. According to them, only a small fraction of shale oil is extractable. The majority is stored in a waxy form that would have to be heated to 500°C in order to be extracted. The industry has yet to find an economically viable way to do this. Furthermore, although shale gas is cannibalising the American coal market, this only displaces one short-term resource with another, as both types of fossil fuels are finite.

So, with depleting amounts of easily accessible fossil fuels and rather costly extraction processes, what is the source

of Lovins' optimism? He observed that epochal shifts from one energy source to another have happened before: the 1850s saw almost every household in the US using whale-oil lamps. As whale populations declined, however, the cost of whale oil increased until innovators discovered fossil fuels, ending the whale oil industry. Like whale oil once did, easily accessible fossil fuels are decreasing, resulting in increased cost of these fossil fuels. At the same time, investments in alternative energies are starting to pay off. According to IBISWorld, large investments in solar technology have made it one of the fastest growing industries, with revenue growth of 32.3% since 2002. Combined with investments in sustainable energy sources and innovations improving the efficiency of cars, trucks, buildings and electricity grids, we could indeed be on the precipice of everlasting energy.

Confidence regarding the abundance of shale oil is misplaced



# FRONTIERS IN MENTAL HEALTH

## Fighting for mental health at the Thai-Burma border

Lucinda Lai (USA, 2012) – MPhil Sociology

Out in the fields at the edge of town is a gym where I go to learn Muay Thai kickboxing. I am in Thailand on a twelve-month public service fellowship to improve mental health services for Burmese refugees. But, just for now, jack-knifing my knee high up into the gut of my opponent, I am filled with a sense of certainty and accomplishment that has been hard for me to come by in the work of mental health.

Of the world's 50 million refugees, the World Health Organization estimates that more than 50% present mental health problems that range from chronic to acute, such as anxiety, depression and trauma. These are our invisible enemies. We know them by the pain they cause; but, because these diseases are not wholly physical in nature, they remain unmoved by our usual repertoire of medical aid. Rather, it is the refugees' psychological suffering that is the most

enduring consequence of war and violations of their human rights.

**To say that a task is difficult and complicated is not to say that it is hopeless**

'With intention!' My kickboxing trainer calls my focus to complete a rapid-fire succession of kicks against a raised target. Targeted interventions in mental health, however, make little sense in the Burmese refugee context, where anxiety and depression are tied up with lack of certainty about the future, inability to provide for one's family's basic material needs, an overwhelming sense of loss and the constant fear of retaliation by the Burmese government on one side and exploitation by Thai authorities on the other.

But, to say that a task is difficult and complicated is not to say that it is hopeless. As part of my fellowship, I am helping to write an academic book about global mental health. Using my organization's experiences at the Thai-Burma border, we hope to provide a foundation of knowledge and best practices for future work addressing mental health problems.

The Thai-Burma border has become a platform for those refugees and international volunteers who share the steadfast determination to change the circumstances of the Burmese people, not because they assume that these things will come to fruition in their lifetimes, but because the alternative – doing nothing – is simply unthinkable. The refusal to give up hope is already our first and most important victory in the fight for mental health.



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# IMPROVING MATERNAL HEALTH

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## A bench-to-patient approach to the fifth Millennium Goal

Said Saab (USA, 2012) – MPhil Translational Medicine and Therapeutics



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The World Health Organization defines maternal death (MD) as ‘the death of a woman while pregnant, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.’ There are approximately 350,000 MDs a year, 99% of which occur in developing countries. Of these, more than 80% are due to preventable causes.

As such, the United Nations made improvement of maternal health the fifth of its eight Millennium Development Goals (MDGs). It calls for a three-quarter reduction of the maternal mortality ratio (MDs in a given time period per 100,000 live births) between 1990 and 2015 and universal access to reproductive healthcare.

Progress in some North African and Asian countries has been remarkable since the implementation of the goals, with MDs more than halved. Yet in most developing countries, especially in sub-Saharan Africa, the risk of MD remains high at one in 30 compared to one in 4,300 in developed countries. The majority of deaths result from a lack of access to health services, equipment, supplies and skilled personnel. Nonetheless, a significant population of otherwise healthy women die from illnesses such as eclampsia and pre-eclampsia, which are characterized partly by increased blood pressure during pregnancy. Treatment for these illnesses is limited even in developed nations.

Here at Cambridge, at the intersection of basic science and clinical medicine,

researchers are working to achieve the fifth millennium goal. The Centre for Trophoblast Research (CTR), a multi-departmental collaboration chaired by Professor Graham Burton, aims to ‘alleviate the suffering resulting from placentally-related complications of pregnancy.’ CTR investigators work to elucidate the pathological underpinnings of placentally-grounded diseases such as pre-eclampsia.

In the department of Obstetrics and Gynaecology, Professor Gordon Smith leads the Pregnancy Outcomes Prediction Study. His goal is to develop a novel approach to screening for complications in pregnancy, namely growth restriction, pre-eclampsia and stillbirth. Biomarkers and ultrasonography will be evaluated for their ability to identify mothers at highest risk for these unfavorable outcomes at various stages of their pregnancies. Ultimately, a positive screening test would allow for the necessary clinical intervention and provision of preventative care, resulting in decreased adverse neonatal outcomes and reduced maternal mortality.

Although the CTR’s studies’ achievements will result in improved pregnancy outcomes for both mother and child, the question of access to novel interventions in developing nations remains a primary concern. Notably, the CTR is involved in Uganda’s Makerere Hospital, contributing funding for research on the immunogenetics of pre-eclampsia. Some members of the CTR are also affiliated with the Thrive Programme, comprised of Cambridge researchers with a focus on global health, particularly involving Africa. Public health professionals, local governments and doctors must collaborate further to ensure that women do not die from undue and unnecessary causes.

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Said Saab wishes to acknowledge Derina Sweeney in the writing of this article.



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# ASSISTED REPRODUCTION

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## Canada's online human egg market

Katie Hammond (Canada, 2011) – PhD Sociology

Nestled between a *craigslist* advertisement for a used 2006 Kia and a pet grooming service is an egg donor advertisement: '5'7", 130 lbs, brown-haired, brown-eyed, university-educated egg donor looking to help a couple. Compensation negotiable. Please reply via ad for more information.' As the use of assistive reproductive technologies (ARTs) continues to increase, so has the demand for egg donors. Prospective parents in Canada are turning to the Internet to find them.

In Canada, payment for egg donors is banned under the Canadian *Assisted Human Reproduction Act* 2004 (AHR Act), although so far there has been little enforcement. While reimbursement of so-called 'receiptable expenditures' is permitted, the regulation outlining permissible expenditures for donors is not yet in place, and both donors and recipients have been left to interpret the law on their own. While the number of donors has dwindled since the ban, many women who are willing to 'donate' are being compensated between C\$3,000 and C\$10,000.

### Egg donation is a time-consuming process that bears high physical and psychological risks for the women involved

Egg donation is a time-consuming process that bears high physical and psychological risks for the women involved. There are concerns of a possible conflict of interest on the part of clinicians making a profit, as well as concerns surrounding the coercion of donors with financial incentive. In a

market where donors are hard to come by, there is a greater risk that clinicians may downplay risks, encourage repeat donations or increase hormone dosages to maximize a donor's egg yield – causing donors to be less informed and putting their health at greater risk. And where there is little oversight of the market, donors may be offered larger sums of money for their donation – increasing the possibility of coercion.

While the AHR Act was put in place to prevent the commercialisation of the human reproductive capacity and to protect the interests of those most affected by ARTs, the current regulation is protecting neither of these values. Health Canada, the government body

responsible for developing regulations under the Act, needs to choose to either enforce the ban and outline receiptable expenditures or negotiate a certain level of compensation as part of those expenditures. Otherwise, Canadian egg donors are going to continue to be placed at considerable risk.

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Katie Hammond is completing a PhD in Sociology at the University of Cambridge. A volunteer experience in India, where she was exposed to reproductive tourism, led to her interest in how Canadians are contributing to this industry. She is a member of the Cambridge Interdisciplinary Reproductive Forum and a blogger for MaMSIE, a blog dedicated to issues surrounding motherhood.

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# MALI:

## WAR AND MEDICINE

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### Political instability complicates medical research

Nicole Basta (USA, 2004) – MPhil Epidemiology

Bacterial meningitis can kill a perfectly healthy person in less than 48 hours. The disease is particularly feared in the African meningitis belt, which stretches across central Africa from Senegal to Ethiopia. Over the past century, hundreds of thousands of people have suffered from meningitis in the region.

Vaccination is the single most powerful way to prevent a directly transmitted infectious disease like bacterial meningitis. For three decades, public-health responders have waited to deploy vaccines in Africa until after an outbreak has been identified. While this strategy saves lives, it doesn't prevent

annual outbreaks because older vaccines provide only a few years of protection.

In 2010, a new era in the fight against meningitis in Africa began. The Meningitis Vaccine Project launched a preventative vaccination campaign with a newly developed vaccine, MenAfriVac, designed to protect long-term against a common cause of bacterial meningitis in Africa. To date, over 100 million people have been vaccinated.

I booked a trip to Bamako, Mali, in the months before the vaccine launch to conduct epidemiological research with the Center for Vaccine Development-

Mali (CVD-Mali). I had never been to Africa, but as an epidemiology PhD student, I was well aware of the challenges of conducting public-health research in low-resource settings. Classic cases that I had studied described how to communicate research objectives to participants, address ethical concerns and collect biological specimens despite constraints.

Once I arrived in Bamako, however, I quickly realized that although I had spent months carefully designing a clinical research study, the logistical hurdles of implementing my plan in collaboration with sixteen local staff

*The Djenne Market in Mali.*





A doctor examines a young patient as part of the CVD-Mali program.

members from CVD-Mali seemed insurmountable. How would we recruit a representative, population-based sample without a listing of residents? How would we convince participants that blood collection was safe, when many believed that blood never regenerated? How would we transport samples and prevent contamination when dry-season temperatures exceeded 40°C and thick yellow dust hung in the air?

Dr Samba Sow, the director of CVD-Mali, listened patiently to my concerns and responded with reassuring confidence.

'This is what we do. These are our people, in our country. We conduct research to improve public health because it is what we believe in, so we will make it work.'

I began to ask more questions of my new colleagues and found that all were willing to help me understand how to make progress in an unfamiliar culture. Throughout the next two years of fieldwork, Dr Sow's words rang true. None of my training had prepared me to take advantage of the greatest resource I encountered in Bamako: the doctors, nurses, technicians, social workers, community liaisons and others without whose knowledge, dedication and patience we would not have been able to proceed. By the time I graduated with my PhD, the CVD-Mali teams and I had begun to see research through each other's eyes.

The course of history in Mali changed dramatically on 22 March 2012 when a military coup d'état overthrew the president, ending two decades of democratic rule and plunging the country into chaos. The destabilisation created an opportunity for Tuareg groups who had fought for independent rule in northern Mali to

join forces with Islamists and occupy many of the key cities of Timbuktu, Gao and Kidal. The Islamists quickly drove out the Tuaregs and ushered in harsh Sharia law, claiming control over more than half the country. The French military intervention in early 2013 has so far succeeded in regaining control of cities in northern Mali, but the long, difficult road to restore peace, security and democratic rule has just begun.

The political instability facing Mali has taken the challenges of conducting public-health research to an entirely new and unexpected level. Given the warnings against travel to the region, I have not been able to visit CVD-Mali for months. Many well-meaning colleagues have advised me to abandon plans to continue research there and establish collaborations elsewhere.

But I am reminded of the lessons I learned during my early days of research in Bamako. By combining the unmatched skill of the CVD-Mali staff in implementing complex research protocols in resource-limited settings with my expertise in infectious-disease epidemiology, we have built a solid foundation. This synergy has ultimately safeguarded our research against many unforeseen challenges.

Recently, I received a five-year Early Independence Award from the National Institutes of Health to investigate the persistence of immunity following the introduction of MenAfriVac in Bamako. Amazingly, despite the chaos, uncertainty and fear gripping much of the country, CVD-Mali recently completed enrolling 800 participants for this research.

**We conduct research to improve public health because it is what we believe in, so we will make it work**

Public-health research can produce powerful evidence that will drive policy and ultimately reduce suffering. But behind the research lies the people without whom such knowledge could not be obtained. In order to endure, cross-cultural research collaboration must focus on building partnerships that can adapt and evolve to face the immense challenges which political turmoil and civil unrest cause.

# EDUCATING THE WORLD



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## An acquisition for ever

Antonia Ruppel (Germany, 2001) – PhD Classics

In Leo Lionni's book *Frederick*, a family of field mice collect food for the winter. One of them, Frederick, does not join in, but instead gathers rays of sunshine, warm colours, beautiful words. At the end of the winter, when the food is almost gone and the mice are hungry, they turn to Frederick. He shows them beauty and wisdom and makes them happier than they were even when they still had plenty of food. I sometimes think of Classicists – and academics in similar fields – as Fredericks.

In spite of its age, Classics – the study of ancient Greece and Rome and their legacy to occidental civilisation – is a thoroughly modern field. When universities issue calls for more interdisciplinary work, Classics departments usually just need to compile a list of their existing collaborations with departments of modern languages, comparative literature, philosophy, history, art, archaeology or linguistics. Not only do Classics students learn at least one new language, the sources they work with also closely acquaint them with two civilisations that are at the root of Western culture, but different from it in several key ways. What could be a better preparation for life in a globalised world? Yet most importantly, the study of Classics offers what the historian

Thucydides called a *ktēma es aei* – literally, 'an acquisition for ever.' Poets like Ovid depicted love in ways that still resonate with us 2,000 years on, and philosophers like Seneca wrote about how to set priorities and de-clutter your life long before the advent of modern self-help books – and all in a much more elegant manner. 'Democracies' like that of fifth-century Athens show us how principles may remain the same even while details change, and the ideals of Classical architecture pervade our cities, from stately buildings in London or Washington, DC, all the way down to fast-food restaurants.

Studying the civilisations of ancient Greece and Rome helps us learn what is human and what is specific to our modern world. Engaging with ancient texts puts us in a long line of generations that have learned from them, and enjoyed them. In fast-paced societies where economies crash, jobs are lost and we are regularly asked to uproot ourselves and go where new work is, the insights we gain and the beauty we encounter when we engage with the Classics stay with us wherever we go.

Antonia Ruppel is the Townsend Senior Lecturer in the Greek, Latin and Sanskrit Languages at Cornell University.

## Geronimo!

Alexandra Kamins (USA, 2009) – PhD Veterinary Science

Cambridge, as one of the oldest, most elite universities in the world, might seem like an odd place to tackle the education revolution. But together with Andra Adams (Canada, 2010) and international collaborators, we have started a non-profit to take on that challenge. Black Mountain College aims to empower world-changers by helping students find their passion and arming them with the practical tools needed to transform their dreams into reality.

Traditional schools too often focus on rote memorisation, individual work and finding the 'right answer', when our global challenges call for innovation, collaboration and open-minded creativity and exploration. With our Geronimo Program, we focus on life skills like wise risk-taking, forging powerful connections, personal motivation and financial savviness. Our students come to learn everything from how to start non-profits and construct 'for-purpose' businesses to how to become a successful artist or think-tank expert.

We also wanted to make Geronimo accessible to anyone, as well as accountable to its students. Rather than charge tuition, we encourage students to donate 8% of their salary for the first five years after beginning their careers. To learn more, check out [www.geronimoeducation.org](http://www.geronimoeducation.org)

© STOCKPHOTO



## ICT: Powering the education revolution

Timothy Kotin (Ghana, 2012) –

MPhil Engineering for Sustainable Development

Education is rightly often identified as integral to the continued development and positive transformation of any society. This understanding underpins many global and national efforts. One of the Millennium Development Goals is to provide universal basic education for all children by 2015.

Much of the estimated \$2.5 trillion in global public and private funding (excluding household contributions) directed at education traditionally goes into infrastructure and human capital investments. This includes school buildings, training programs and student loans. However, there is now an increasing emphasis on the use of Information and Communications Technology (ICT) tools in education delivery, powered by growing Internet access, connectivity and awareness. A standout development is the surge in popularity of online education often offered through massive online open courses ('MOOCs') led by initiatives such as Coursera and Edx, a collaborative effort headed by MIT and Harvard. These efforts are enabling millions of new audiences around the world to access world-class educational content at little or no cost. It thus came as no surprise that debate over the potential of online education took centre stage at this year's World Economic Forum in Davos.

Particularly in the developing world, an increase in the acceptance and integration of ICT in education delivery, assessment and administration promises to offer benefits beyond mere efficiency improvements. First, ICT could lower administrative costs and thus fees, which remain a significant barrier. Computerised testing could also empower teachers to utilise class time more effectively by better identifying troublesome concepts or struggling students through easier, rapid and

more frequent student assessment. Lastly, building on the growth of social networks, ICT could enable students to become active agents in their own education beyond rote learning through easier peer-to-peer collaboration and the ability to verify taught concepts.

In Africa for example, several exciting ICT initiatives are emerging to tackle

age-old challenges. E-Coach Solutions, a start-up I co-founded, aims to address these by developing learning software for students and administrative tools for schools. Of course, for the digital revolution to transform education, investments are still needed in basic infrastructure, electricity access and literacy. But with this foundation in place, the potential for ICT is limitless.



These efforts are enabling millions of new audiences around the world to access world-class educational content at little or no cost

© IICD/Flickr



# THE NEW SYRIA

## An Islamist fortress?

Raphaël Lefevre (France, 2012) – PhD International Relations

In one of his rare media appearances, Syrian President Bashar al-Assad defended his crackdown on protestors by describing the uprisings as a 'struggle between pan-Arabism and Islamism' – a way for him to stress his regime's inclusive nature and contrast it with the supposedly polarising demands of the mainly Sunni opposition. While, on the one hand, the ideology of pan-Arabism suggests policies privileging ethnic identity and political consciousness rather than religious beliefs, Islamism is often seen as putting forward a politicised expression of Islamic values and precepts which can potentially infringe upon minority rights. Does this mean, however, that should the opposition manage to topple Bashar al-Assad, Syria would become an Islamist fortress antagonistic to the interests of its sizeable Christian, Alawite and Druze communities? This is unlikely for at least one reason: those who wish to see the advent of an Islamist state over Syria and are desperate to court

the country's 70% of Sunnis are deeply divided amongst themselves.

While the Muslim Brotherhood is, as in the other countries of the region, the best organised of all Islamist forces, it has been sent into exile for the past 30 years and is still struggling to rebuild a social base after such a long absence. Over the years, moreover, its discourse and practice have mellowed to the extent that it is now calling for the advent of a 'civil state' in which Islam would be more of a cultural frame of reference than a rigid framework from which all laws should derive. Such ideological moderation led the Syrian Brothers to accept the idea that a Christian or a woman could be elected as president if voted in through the democratic process – something they made clear by recently supporting the candidacy of George Sabra, a Christian Marxist, to the post of head of the Syrian National Council, an opposition coalition of which the Muslim Brotherhood is a key component.

The real threat to Syria's minorities, however, will stem from the increasingly assertive Salafist movement – a more conservative Islamist strand of thought sometimes seen as antagonistic because of its literal advocacy for the return to the practices of the Salaf, or the ancestors who were the companions of the Prophet Muhammad. But these Salafists are bitterly divided amongst those who wish to play by the democratic rules of the game, those who reject politics and instead concentrate on peaceful religious proselytising and finally, those who wish to implement their Islamist agenda by forcing it on society. The real tragedy of the current Syrian crisis is that, as the repression suffered by the Sunni majority at the hands of the regime is growing day after day, those extremist corners of Islamist constituency prepared to resort to force against society are becoming ever more influential.



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Top right and above: Worshippers at the Umayyad Mosque in Damascus.



## Gates Cambridge Alumni reunite for Syria activism

Shlomo Bolts (USA, 2010) – MPhil Modern Society and Global Transformation

Paula Long (USA, 2010) – MPhil Middle Eastern Studies

Mathew Madhavacheril (India, 2010) – BA Natural Sciences

The conflict in Syria is perhaps the world's worst current humanitarian crisis. Assad regime forces have targeted populated civilian areas with artillery bombardments, military airstrikes and house-to-house killings. Violence continues to worsen; in January, a regime airstrike on Aleppo University during final exams killed dozens of students. So far, the United Nations estimates a death toll of over 60,000 civilians.

For some Gates Cambridge Alumni, events in Syria might seem a world apart. Yet they hit close to home for us. Mathew Madhavacheril grew up in Kuwait as a member of a religious minority without citizenship rights. However, his prospects improved as Kuwait democratized, and he believes democracy's self-correcting qualities will eventually benefit Syrian minorities. Paula-Rosine Long hails from the Lebanese Christian community and fears Lebanon will be dragged into the

Syria conflict. She also has hope; after the conflict, she plans an e-commerce enterprise for Syrian women. Shlomo Bolts, as a Syrian Jew, is outraged at regime bombardments of cultural sites and at atrocities that mock the cry 'Never Again.' He now supports Syria's opposition directly through the Syrian Expatriates Organization.

When Shlomo began planning an interfaith rally in Syria, he quickly thought of Paula and Mathew. The three of them were Gates Cambridge Scholars in 2010-2011, when the Arab Spring erupted and reached its height. They chanted together at multiple Arab Spring solidarity protests in the Market Square. At the Cambridge Union, they listened carefully to duelling presentations on the revolts, then reconvened in the Gates Room to debate their effects on minority rights, religion in politics and the Israeli-Palestinian Conflict.

**For some Gates Cambridge Alumni, events in Syria might seem a world apart. Yet they hit close to home for us.**

Then, they did not fully agree on the issue. Now, they do: international action is needed to stop the bloodshed. In advance of the interfaith Syria rally, at the UN's New York headquarters, Paula helped Shlomo with publicity and shared advice from organising similar rallies at Cambridge. To attend the rally, Mathew made the two-hour trek from Stonybrook, where he is studying for a PhD. The rally attracted the attention of many passers-by, including some Saudi students excited to publicise the event back home. It marked the first time the three Gates Cambridge Alumni were together since they had left the university.

# SMOKING PROFITS

## Trade, banks and tobacco

Todd Tucker (USA, 2012) – PhD Development Studies

*'I'm just a bill, yes, I'm only a bill. And I'm sitting here on Capitol Hill.'* – From the song 'How a Bill Becomes a Law'

The process of an idea becoming a bill becoming a law was tunefully captured in the cartoon musical *Schoolhouse Rock!* from 1975, complete with verses on the obstacles posed by legislative committees and presidential vetoes. If the song were written today, we'd have to add several verses about the possibility of democratically decided laws being challenged internationally.

My research has looked at two specific policy areas where international tribunals are poised to do exactly that: financial regulation and public health.

*Global Financial Reform and Trade Rules: The Need for Reconciliation*, a book to be published by Boston University this spring, tackles the first area. I wrote a chapter for the book, which also features work of colleagues from academia, government and international organizations. We look at how the World Trade Organization (WTO) and other trade pacts have created rules that may restrain countries in their efforts to right-size and regulate the banks that crippled the global economy a few short years ago. My chapter focuses on how many developing nations have signed up for deep WTO commitments that will make it more difficult to tackle destabilising capital floods and flights. These rules may be getting their first real test this year, when Panama challenges Argentina's anti-tax-haven policies at the WTO.

Because these international rules are not well known or are poorly understood, many policymakers – not to mention citizens – are unaware of their implications. My co-authors and I will be launching the book at seminars for policymakers in Geneva, Washington, D.C., Quito,

Beijing and elsewhere. Our goal is to present leaders with a series of recommendations to reform the WTO rules to better accommodate financial reforms.

In a separate arena, anti-smoking has also been the target of international litigation. This is especially worrying since tobacco use is the leading preventable cause of death in the world today. In April 2012, the WTO ruled against an effort by the Obama administration to ban sweet flavours in cigarettes, a bill that was enacted to curb teen smoking. In addition, at international investment tribunals, tobacco multinational Philip Morris is challenging efforts by Australia and Uruguay to enhance warning labels on tobacco. Philip Morris has also been supportive of three pending challenges of the Australian legislation at the WTO. I contributed a chapter on these disputes to a special November 2012 edition of the journal *Transnational Dispute Management*, which is in the process of being converted into a book.

In my piece, I explore the first dispute, which was over the 2009 Family Smoking Prevention and Tobacco

Control Act. This hard-won political compromise took aggressive action to reduce smoking by teens through prohibiting the sale of sweet-flavoured cigarettes. On the other hand, it took seriously the warnings made consistently by the US Supreme Court, police organisations and economists that banning cigarettes used by adults in large numbers could have serious adverse consequences for crime. A key part of this political compromise was exempting menthol from the flavoured cigarettes ban. Health researchers have shown that menthol smokers have less elastic demand and that many would keep smoking the products even if illegal.

The WTO ruled against the US because one of the 13 banned flavours – clove – was primarily imported from Indonesia, while menthol was regulated by other means. While equity certainly requires that cigarette workers in developing countries be given some consideration, the WTO appellate body (staffed by trade lawyers, not health experts) made the interests of tobacco producers the only consideration that counted. As such, they went against smart, incremental policy and sensible



Todd Tucker teaches a law seminar at Cambridge.

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cost-and-benefit weighing. Indeed, if the US wants to try to comply with the ruling without reducing the number of flavours subject to the ban, it would have to ban menthol cigarettes – something that is not feasible politically or administratively.

The implications for this ruling extend far beyond the US. The World Health Organisation's framework calls for, among other things, national prohibitions on sweet tobacco products that are appealing to teens. Over 75 countries report making progress on this front. The WTO ruling could be cited to pressure other countries' to weaken their bans on sweet products. So, how do we get international law on the right track?

In the short run, nations will understandably focus energy on winning the cases or limiting the extent of losses. Uruguay is mounting a vigorous defence with the assistance of the Bloomberg Foundation. We must also work in spite of the international rules to strengthen financial protections and lower demand for cigarettes, something Gates Foundation grantees are working to achieve in developing nations.

But in the long term, WTO and investment treaty decisions with a bearing on sensitive regulatory questions could be appealed to panels with more expertise in such matters. This would create incentives for international lawyers to pay closer attention to the logic of how bank and health regulators make decisions on the ground. Better yet, costly litigation could be avoided in the first place by having trade negotiators carve out financial and health regulation from trade deals. This type of firewall could go a long way towards keeping kids from lighting up and the economy from heating up.

Costly litigation could be avoided in the first place by having trade negotiators carve out financial and health regulation from trade deals

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# REDEFINING MASCULINITY

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## Combating violence against women

Anjali Bhardwaj Datta (India, 2009) – PhD History



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*Women protesting for their rights in Jawahar Maharashtra, India.*

The gang rape of and ultimately fatal assault on a 23-year-old female paramedical student in Delhi should do more than outrage us. Rape is not simply about law and order or deranged individuals. More laws, more police and more CCTV cameras will not solve the problem. Instead, the gang rapes that are occurring in India with alarming regularity must compel us to reflect upon who we are as a society.

India has no premium on sexual violence, of course. However, more than the scale of violence in India, it is the blend of state apathy, general tolerance and desensitisation that makes handling sexual violence so difficult. The additional demands of silence and shame imposed on victims complicate matters even more. This silence over everyday violence is the country's ugliest secret.

Violence against women is a part of a larger patriarchal system and its notions of masculinity. The ideas of 'making' and 'producing' are crucial to the study of masculine identities as gender is always a relationship between women, men and any other genders. Violence towards women is a part of everyday life in India, and patriarchal values justify it. It originates in a basic antipathy in some families, which see a girl as a burden because her upbringing and marriage will take a huge toll on the entire household. By contrast, these same families treat a boy with pride, as he is commonly considered to be a saviour and protector simply on account of his sex. He has the sanction to sexually abuse other women, rape and beat his wife and abuse women publically. This all too common patriarchal mindset renders women secondary creatures,

almost 'objects' of desire who must succumb to men's commands – be it at work, in bedrooms or on buses.

Protest marches and rallies against this violence are spreading across the nation as anger over the gang rape in Delhi cuts across the region. The incident has also raised fierce national debates over the attitudes towards women and ways of empowering them. For the overwhelming majority of Indian children, however, education in violence begins in the family. India needs a masculinity that does not involve violence. Moral sermons alone won't cut it: respect for women can emerge only from a culture that genuinely values rights for all.

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# GATES (CAMBRIDGE) COMMUNITIES

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## Painting the town in Cambridge blue

Victoria Tobolsky (USA, 2012) – MPhil Human Evolutionary Studies

Cambridge, both the town and the University, is an organic compilation of over 800 years of academic and social growth structured only by its chaos. And yet, amid the centuries-old splendour and tradition, the town does stand distinct from the institution by supporting and complementing the structure of the University embedded within it. With that independence comes a suite of both boons and burdens that are wholly separate from those the University faces. While many students at Cambridge are passionate about global issues, we tend to focus on the big picture and are often ironically myopic regarding issues closer to home.

The Gates Cambridge Scholars' community is making strides to change that. We believe that service is an inherently social activity that is made more fun by the presence of old friends and the prospect of making new ones. In order to draw our own Scholar community more closely together, as well as to strengthen our ties with the wider community of Cambridge, the Scholars' Council has implemented bi-terminally Cambridge Community Days. For our first Cambridge Community Day several Scholars painted the town. Literally. Blue Cross, a local cat shelter, needed a new coat of paint and we were able to provide a helping hand. Some Scholars visited the elderly at Stanton House, a local care facility, while others spent an afternoon playing with disabled children at BOUNCE! organised by Cambridge Student Community Action. In March, scholars will reconvene at Wintercomfort, a local homeless shelter, to give the centre the shiny new scrub-down it needs to ensure the continued health of those it helps.

Cambridge is not your typical college town for a variety of reasons, Charles Darwin and Isaac Newton notwithstanding. Cambridge the University and Cambridge the town are one. But maybe this is one of the town's greatest strengths. The town and the University exist to both fortify and complement one another, coexisting in symbiosis. With our projects we are underscoring the ties that already bind us to our surroundings.



© VICTORIA TOBOLSKY



# PROFESSIONAL UPDATES

## 2001

**Peter Brereton (USA – PhD Physics)** was awarded a prestigious National Research Council Research Fellowship at the US Navy Research Laboratory in Washington, DC. The three-year fellowship, awarded in September 2012, will allow Peter to research fundamental quantum optical processes in semiconductor nanostructures in a world-leading research lab.

## 2003

In his new book, *Ungifted: Intelligence Redefined*, **Scott Barry Kaufman (USA – MPhil Biological Science)** challenges the assumptions in traditional metrics used as childhood predictors of adult greatness. His book, which will be published in June 2013, highlights the diversity of paths to success, considering the latest research in genetics, neuroscience and evolutionary, developmental and cognitive psychology. Scott is an adjunct assistant professor of psychology at New York University, where he teaches courses on cognitive psychology and human intelligence.

**Aditi Mukherji (India – PhD Geography)** was named the first recipient of the World Food Foundation Prize for her research on groundwater resources, which has benefited thousands of farmers in West Bengal. The \$10,000 award was presented in October 2012 in Des Moines, Iowa, as part of this year's World Food Prize International Symposium.

**Margaret Young (Australia – PhD Law)** won the International Union for Conservation of Nature's Junior Scholarship Prize in September 2012 for her book on the role of international law in addressing overfishing. Her book, *Trading Fish, Saving Fish: The Interaction between Regimes in International Law*, has its origins in the research she did as part of her PhD at the Cambridge and was published by the Cambridge University Press.



## 2006



© PRADIPTA BISWA

**Pradipta Biswas (India – PhD Computer Science)** started a visiting professorship on Human Computer Interaction at the Indian Institute of Technology in Mandi. The professorship, awarded in October 2012, provides the foundation for future collaboration between Cambridge and IIT Mandi.



© TED.COM

**Molly Crockett (USA – PhD Experimental Psychology)** was invited to give a prestigious TED talk in November

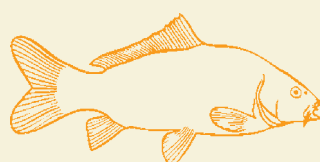
2012, giving advice on how to spot when neuroscience has been simplified to support unrealistic claims. Molly is currently a Wellcome Trust postdoctoral fellow studying altruism, morality and value-based decision-making in humans at University College London.

## 2007



© EVIATAR YEMINI

**Eviatar Yemini (USA – PhD Molecular Biology)** joined Oliver Hobert's group at Columbia University as a postdoctoral HHMI Research Associate in February 2013. His research focus has shifted from behavioural genetics to an investigation of stress-related, neural re-programming. While his focus has changed, he remains ever faithful to the worm, continuing his work in *C. elegans*.



## 2008

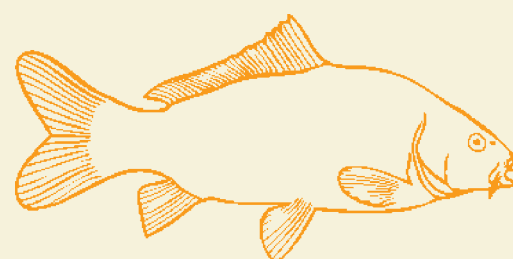
**Corina Logan (USA – PhD Experimental Psychology)** was awarded a prestigious \$14,172 Waitt Grant from the National Geographic Society in October 2012 to help her study the innovative ways that grackles have developed to find food despite their relatively small brains. Corina is a SAGE Junior Research Fellow at the University of California, Santa Barbara.



© CORINA LOGAN

**Galina Mardilovich (USA – PhD History of Art)** curated part of an exhibition that featured Russian printmaking at the prestigious Metropolitan Museum of Art in New York. The display was showcased in the museum's permanent galleries and ran from August through November 2012.

After receiving the UK Student Volunteering Gold Award in June 2012 from the Office of External Affairs at the University of Cambridge for his science outreach, **Niraj Lal (Australia – PhD Physics)** moved to the Australian National University as an Australian Solar Institute Postdoctoral Research Fellow in the Centre for Sustainable Energy Systems, where he is engaged in further outreach and research into nanophotonics for solar cell applications. Niraj is also currently serving alongside Julian Assange on the twelve-member National Council of the Australian Wikileaks Party for the upcoming Australian federal election.



## 2010

In September 2012, **Danelle van Zyl-Hermann (South Africa – PhD History)** won the prestigious Historical Association of South Africa's postgraduate conference paper competition for a paper linked to her PhD on the transition from apartheid to democracy in South Africa.



In December 2012, **Anastasiia Kamenska (Ukraine – PhD Biochemistry)** and the Calvitium Solutions team won the Biotechnology Young Entrepreneurs Scheme Annual Award, worth £1,000. Anastasiia and her teammates developed their award-winning business plan based on a hypothetical biotechnology company with an innovative, affordable hair loss treatment.

## 2011

**Marie Brunet (France – PhD Pharmacology)** was awarded the National Silver Medal of the National Veterinary School of Paris for her research on a potential drug treatment for cystic fibrosis. Her thesis, "The effect of genistein on Cystic Fibrosis Transmembrane Regulator mediated chloride secretion: a study on murine colon mucosa", was published in November 2012.

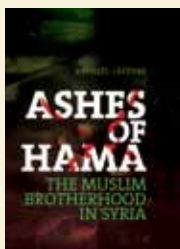
**Kevin Nead (USA – MPhil Epidemiology)** co-authored a study in September 2012, published by the Society for Vascular Medicine, showing that a person's lack of fitness is a key indicator of their likelihood of dying from heart disease, independent of whether they suffer from blocked arteries. Kevin was also awarded the American Heart Association Student Scholarship in Cardiovascular Disease and Stroke and the American Association for Cancer Research Scholar-in-Training Award. Kevin is currently studying medicine at the Stanford School of Medicine.



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Winning Cambridge Bioscientists: (from left to right) Linsey Porter, Liam Hurst, Alap Chavda, Ajob Baridi and Anastasiia Kamenska.

## 2012



**Raphaël Lefevre (France – PhD Politics and International Studies)** wrote the first book to examine the history of the Syrian Muslim Brotherhood Islamic movement. His book, *Ashes of Hama: The Muslim Brotherhood in Syria*, was published in April 2013.

**Jill Paterson (Grenada – MPhil Theoretical and Applied Linguistics)** won the John Reinecke Prize for her undergraduate work in Linguistics at the University of the West Indies, Trinidad and Tobago. Jill is the first Grenadian to win an award for outstanding achievement from the Society for Caribbean Linguistics.

**Katrin Pfeil (Germany – PhD Criminology)** won the Manuel Lopez-Rey Prize for her MPhil in criminological research, which focused on ways to improve the testimony and identification performance of older adult witnesses in order to prevent wrongful convictions in an ageing society.

**Njoki Wamai (Kenya – PhD Politics and International Studies)** participated in a panel discussion at Cambridge on the 2013 Kenyan Elections with leading scholars Professors John Lonsdale (Trinity College, Cambridge) and Bruce Berman (Queen's University, Ontario; Smut Visiting Research Fellow at Cambridge).



# RESEARCH ROUND-UP

## Gregory Jordan (USA, 2007) – PhD Molecular Biology

Members of the Gates Cambridge community have had a very productive year, with a proliferation of published articles, editorials and news pieces as shown by the examples below. Visit the new group library at <http://bit.ly/gatespubs> to view others' work and to add your own.



Butler R (2012) The Anglo-Indian architect Walter Sykes George (1881–1962): a Modernist follower of Lutyens. *Architectural History* 55.

Richard Butler researched the life and works of influential Anglo-Indian architect Walter Sykes George, making use of previously unpublished correspondence, which provided fresh insight into the life of George's tutor, famous British architect Edwin Lutyens.

**Richard Butler (Ireland, 2012)**  
**PhD History of Art**



Casey CM, et al. (2012) A Redshift Survey of Herschel Far-infrared Selected Starbursts and Implications for Obscured Star

Formation. *The Astrophysical Journal* 761:140.

Using two of the world's largest optical telescopes, Caitlin Casey performed a survey of star-forming "starburst" galaxies, shedding new light on how these special galaxies formed and grew over time.

**Caitlin Casey (USA, 2007)**  
**PhD Astronomy**



Chowdhury R, Stevens S, Gorman D, et al. (2012) Association between fish consumption, long chain omega 3 fatty acids, and

risk of cerebrovascular disease: systematic review and meta-analysis. *British Medical Journal* 345:e6698.

In a comprehensive meta-analysis of 38 studies spanning nearly 800,000 patients, Rajiv Chowdhury quantified the link between fish consumption and risk of stroke. He found a moderate association between increased fish consumption and reduced stroke risk, while use of omega-3 supplements had no significant effect.

**Rajiv Chowdhury (Bangladesh, 2009)**  
**PhD Public Health and Primary Care**



Conklin A, Morris Z, Nolte E (2012) What is the evidence base for public involvement in health-care policy?: results

of a systematic scoping review. *Health Expectations*. in press.

Confronting a recent trend, Annalijn Conklin questioned whether involving the public when forming healthcare policy has a measurable impact. After identifying 19 relevant studies, she found little evidence for explicit benefits resulting from public involvement and only some evidence for process-related effects.

**Annalijn Conklin (Canada, 2011)**  
**PhD Medical Science**



Crockett MJ, Apergis-Schoute AM, Herrmann B, et al. (2013) Serotonin modulates striatal responses to fairness and retaliation in

humans. *Journal of Neuroscience*. in press.

Molly Crockett found that serotonin levels can affect the way our brains process social values, identifying significant differences in retaliatory behaviour between normal and serotonin-depleted human subjects.

**Molly Crockett (USA, 2006)**  
**PhD Experimental Psychology**



Norén-Nilsson A (2013) Performance as (re)incarnation: The Sdech Kân narrative. *Journal of Southeast Asian Studies* 44:4–23.

The Cambodian Prime Minister Hun Sen has endorsed a narrative placing him as the reincarnation of Sdech Kan, a rebel ascendant to the throne in 1512. Astrid Norén-Nilsson evaluated this depiction in the context of a modern leader's quest for political legitimacy.

**Astrid Norén-Nilsson (Sweden, 2007)**  
**PhD Politics**



Oreska MPJ, Carrano MT, Dzikiewicz KM (2013) Vertebrate paleontology of the Cloverly Formation (Lower Cretaceous), I: faunal

composition, biogeographic relationships, and sampling. *Journal of Vertebrate Paleontology* 33:264–292.

Matthew Oreska and colleagues conducted a comprehensive survey of vertebrate fossils in the Cloverly Formation, nearly doubling the known diversity of the well-studied geological formation. Their results indicated greater ecological similarity between Cloverly and other Early Cretaceous formations than had previously been thought.

**Matthew Oreska (USA, 2008)**  
**MPhil Zoology**



Pawlowska MM, Butterfield NJ, Brocks JJ (2013) Lipid taphonomy in the Proterozoic and the effect of microbial mats

on biomarker preservation. *Geology* 41:103–106.

Through a joint analysis of chemical and body fossils, Maria Pawlowska showed that prior to the Cambrian geologic age (540 million years ago) benthic microbial mats, rather than plankton and organisms that lived in the water column, were the main contributor to the fossil biomarker record.

**Maria Pawlowska (Poland, 2007)**  
**PhD Earth Sciences**



Ponnuswamy N, Coughon FBL, Clough JM, et al. (2012) Discovery of an organic trefoil knot. *Science* 338:783–5.

Nandhini Ponnuswamy reported a breakthrough in the chemical synthesis of knot-shaped molecules in water, solving a long-standing problem in chemical synthesis and providing new insight into the formation of well-known knot molecules found in DNA and proteins.

**Nandhini Ponnuswamy (India, 2007)**  
**PhD Chemistry**



Rhines AS (2012) The role of sex differences in the prevalence and transmission of tuberculosis. *Tuberculosis (Edinb)*. in press.

The gender imbalance in tuberculosis prevalence is striking, with male cases occurring nearly twice as frequently as female cases in some regions. Allison Rhines discusses the possible causes and implications of this imbalance, concluding that models of tuberculosis should account for sex differences, especially in countries with skewed gender ratios such as China and India.

**Allison Rhines (USA, 2010)**  
**MPhil Human Evolutionary Studies**



Wexler R (2012) Integrity vs. authenticity in video journalism. *CPJ Journalist Security Blog* (<http://cpj.org/security/>)

Rebecca Wexler highlighted the complex societal issues at play in the wake of a 2010 leaked video, which allegedly showed a Sri Lankan newscaster slain by government officials. Though the United Nations documented evidence in support of the video, the Sri Lankan government insisted it was a fake, leaving the murder unaccounted for.

**Rebecca Wexler (USA, 2005)**  
**MPhil History and Philosophy of Science and Medicine**



Brown AEX, Yemini EI, Grundy LJ, et al. (2013) A dictionary of behavioral motifs reveals clusters of genes affecting the locomotion of

*Caenorhabditis elegans*. *Proceedings of the National Academy of Sciences of the United States of America* 110:791–6.

Ev Yemini designed a platform for high-throughput video analysis of *C. elegans* worm shapes and movements. Colleagues used this system to construct a concise dictionary of the worm's behavioural motifs, enabling a better understanding of the connection between genetics and behaviour in this important model organism.

**Eviatar Yemini (USA, 2007)**  
**PhD Neurobiology**



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