Gates Scholar Newsletter

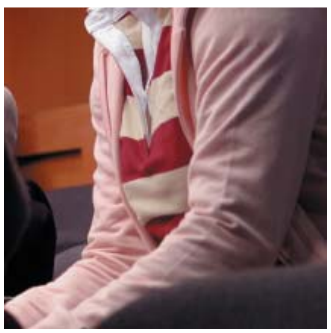
Volume 3 Issue 1 Summer 2006











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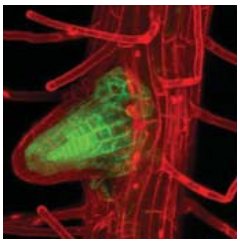
IN THE SUMMER ISSUE



The *Gates Scholar Newsletter* is the publication of the Gates Cambridge Scholars' Society. Articles and photographs may be submitted on any topic relevant to the Gates community. In keeping with the Society's goal of representing current scholars and alumni from around the world, individual issues of the Newsletter usually include articles on a variety of subjects from a number of authors.

Articles that offer a window into the lives and work of current or past Gates scholars or articles that tackle large interpretive questions relevant to the Gates 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. Finally, because there is limited space in any one edition of the Newsletter, contributors should understand that any article submitted for publication may be subject to editorial approval and/or truncation.

Submissions to the next issue should be emailed to newsletter@gatesscholar.org no later than October 10, 2006.

Gates Scholar Newsletter

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Welcome again

Gates Scholars' Society

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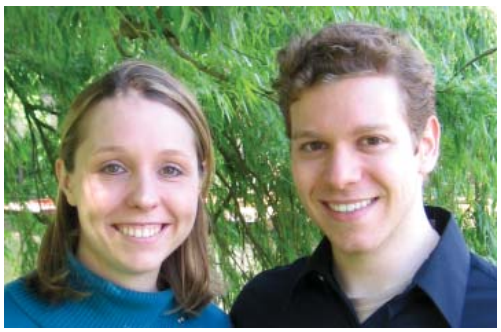
The Gates Scholars' Society includes all current and past holders of a Gates Cambridge Scholarship. Its membership is represented by two bodies: the Gates Scholars' Council and the Gates Scholars' Alumni Association.

The Gates Scholars' Council is a governing body of scholars elected by their peers. A conduit among the Cambridge community of scholars, the Gates Scholars' Alumni Association and the Gates Cambridge Trust, the Council is well placed to represent the interests and needs of all Gates Scholars studying in Cambridge.

The Gates Scholars'Alumni Association (GSAA) was created in 2005 to represent the needs of the over 300 Gates Scholars who have left Cambridge. Through regional events, newsletters and social gatherings, it strives to maintain communication between former scholars and the Trust while creating a worldwide network of former Gates Scholars.



This year marks the fifth anniversary of the Gates Cambridge Scholarship. During the next few months, 100 current Gates Scholars will complete their degrees and bid farewell to days that can only be described as uniquely Cambridge – formal halls, punting on the Cam, evensong and, yes, even a fair bit of coursework.

The first classes of Gates Scholars took the initiative to organize a community; a new generation of scholars continues to build dramatically upon their foundation. Gates Scholars now enjoy a thriving intellectual and social community, with regular events keeping them connected. Termly scholars' colloquia encourage interdisciplinary dialogue and debate, while the Distinguished Speakers Series attracts notable figures to the University. Organized cultural visits have taken scholars outside the boundaries of Cambridge. In March, scholars travelled to London's West End where a viewing of *The Producers* resulted in good fun as well as lively discussion comparing the musical and original film. In May, the first annual Gates Scholars' Society Foosball Tournament took place. Tournament winners will have their names embossed on a plaque hung in the Gates Common Room. This summer scholars will travel to Shakespeare's birth city of Stratford-upon-Avon. The academic year concludes in July with the second annual Gates Scholars' Dinner, an event supported by the Trust.

This year will also see the first class of Gates Scholars make the transition from the scholar community in Cambridge to a fully functioning Gates Scholars' Alumni Association. The Alumni Association will enable alumni to meet past and future generations of scholars, remain connected with those they already know and stay abreast of events happening in Cambridge. Eventually, a worldwide network will be available to link scholars and encourage communication and contact at the stroke of a keyboard. This network will hopefully enable scholars departing Cambridge to continue to work together to accomplish the goals set out by the Bill and Melinda Gates Foundation.

As the Gates community continues to grow in the coming years, innovative ideas from new generations of scholars undoubtedly will bring further improvements. This redesigned newsletter, the vision of scholars from the Class of 2005, is an excellent example. It is also a good example of what can be accomplished when the Gates Scholars' Council and the Gates Scholars' Alumni Association work together.

Our hope is that future issues of this newsletter will serve as a bridge between scholars currently studying in Cambridge and those who have graduated and moved beyond. On the Scholarship's fifth anniversary, it is remarkable to look back and take stock of how far our community has come in only five years. Building on these successes, there is every reason to believe that we can remain all that we are now and be more, far more, in the future.

Jennifer Gibson
Gates Scholars' Alumni Association

Michael Motto
Chair, Gates Scholars' Council

Deep and Dirty

Reprogramming Cell Development in Roots

Fluorescent dyes, gene tinkering, and the roots of flowering plants: in the Department of Plant Sciences, unravelling the mysteries of cell development can be dirty work...

Multicellular organisms comprise many different cell types performing diverse functions. In plants, cells are created from a group of continuously dividing stem cells, organized in regions called 'meristems' that provide new cells to the growing tissue. Once formed, cells can undergo either elongation, another cycle of division, transformation into a specific type of cell, known as differentiation, or a sequence of the two. The major challenge of developmental biology is to understand how these cellular processes and the whole organ development are orchestrated in order to reach a determined organ shape and size. By studying plants, we can address this challenge in a very practical way; most of their organs are created post-embryonically and during the organism's entire lifespan. This makes it possible to study not only the maintenance but also the initiation of organ growth.

"The major challenge of developmental biology is to understand how the cellular processes and the whole organ development are orchestrated in order to reach a determined organ shape and size."

To the roots

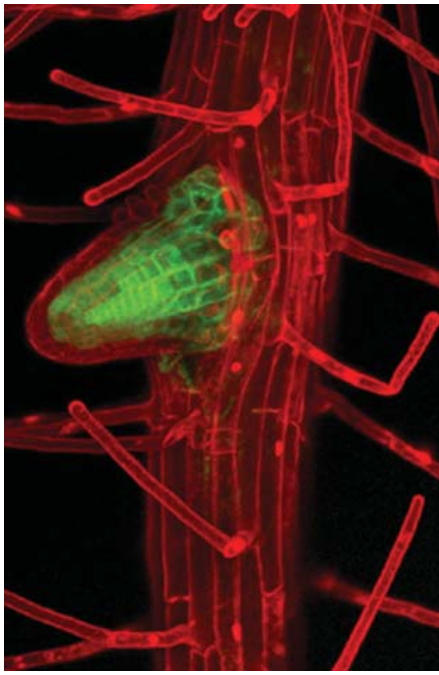
In our project we focus on the roots of *Arabidopsis thaliana*, a small flowering plant widely used in plant biology. Interestingly, in *Arabidopsis thaliana* cell processes take place in separated regions, called division and elongation zones, which sit side by side in roots. The interaction between the two is crucial for the rate of root growth: while cell elongation directly contributes to the size of the organ, cell production in the division zone determines how many cells will elongate afterwards. Therefore, a controlled balance between cell division and elongation takes place in the edge between the two zones, in a so-called 'transition zone'.

So far, we know that four particular chemicals known as phytohormones, such as auxins, cytokinins, ethylene, and gibberellins, are involved in the control of cell division and elongation. What we are trying to find out is how their actions are regulated and integrated by the root, processes which currently remain a mystery. To obtain a picture of how cell development is regulated, our strategy is to try to reprogram cells across division and elongation zones, manipulating the root growth by changing how much cell division and elongation occurs. To do this, we must manipulate the genes of the hormonal biosynthesis pathway in precise spatial patterns.

Probing deeper

In order to activate genes independently in different zones of the root, we are using transgenic plants called Enhancer Trap lines, developed here in Cambridge by Dr. Jim Haseloff and his team in the Department of Plant Sciences. By transgenic, we mean that they contain genetic material into which DNA from another organism has been artificially introduced: for our research, we insert the genetic components of *Arabidopsis thaliana* which control the processes of cell division and elongation. To be able to 'see' the processes occur, these lines also carry two special fluorescent proteins - green and cyan, which trace out the patterns of activation of the relevant genes. By studying these patterns, we hope to be able to understand better the way these processes are controlled naturally in the plant. In the image, you can see one of these patterns.

In the future, we plan to develop a parallel technique in which we will use lasers to turn the genes controlling cell growth on and off. We hope that when used in conjunction with our Enhancer Trap line work, we will gain an even fuller and clearer picture of the orchestration of organ development in these plants.



A fluorescent protein image of a gene activation pattern in Arabidopsis thaliana *root*

FERNAN FEDERICI
Class of '05, PhD in Plant Sciences
DR. JIM HASELOFF
Sainsbury Research Fellow & Lecturer in Plant Sciences Dept., www.plantsci.cam.ac.uk/research/jimhaseloff.html

Finding Nano

The Search for Novel Metal Oxides

The adage that bigger is always better may no longer hold true as the era of nanoscience blooms. Nanoscience is the art of the very small, as I soon discovered, working in a world less than 100 millionths of a metre in dimension.

When the idea of extreme miniaturisation was first suggested publicly by Richard Feynmann in his talk "There is Plenty of Room at the Bottom" on 29 December 1959, he made the comment that people are going to look back and wonder why it took so long to think of doing this work. Now that the whole field has exploded, scientists and engineers are appreciating more and more why it took so long to achieve progress in the field.

A new world down there…

All the excitement over nanoscience relates to the discoveries and observations that many of the rules for materials in the bulk scale no longer apply when dealing with nanoparticles. For example, under certain conditions non-conducting materials can become conductive or ordinarily non-magnetic materials - magnetic. These changes arise as the proportion of the atoms at the surface of the particle is massively increased compared to a bulk material. Combined with the ability to incorporate nanoparticles into polymers and other materials, this opens the doors for all kinds of exciting technical applications with promises of cheaper, more durable, less toxic and generally better materials for the entire world population.

One of the biggest challenges nanoscientists face is that because the particles are so small, electron microscopes are necessary to study the materials. It took a long time to develop sufficiently good, high-powered electron microscopes that allow for relatively straightforward studies of nanoparticles.

Hunting for novel metal oxides

In my work I hunt novel metal oxides. This involves creating new materials that contain at least two different types of metal as an oxide within a crystalline nanoparticle. By using nanoparticles I can explore new kinds of materials that are not stable as large crystals, but can exist as nanoparticles. So far my work has concentrated on making mixed metal oxides of tungsten and titanium. Here I succeeded relatively quickly and I was able to show that I could make nanoparticles that were crystalline and had both metals present.

However that is where the simplicity ended. Although I knew that tungsten was in the particles through elemental analysis, the magic of nanoparticle materials successfully hid the location of the tungsten. As if that was not frustrating enough – once the initial excitement had worn off – the material appeared to be able to create a stable amorphous state if there was a certain amount of tungsten present. And yet still we could not find the tungsten! After numerous experiments, many samples and dozens of attempts at molecular models, the answers are eventually starting to appear.

The changing face of chemistry

And as the results occur we appreciate once more that the world of chemistry is not nearly as simple as we were taught in school. The rules taught as unchanging, do, in fact, have a disconcerting habit of changing, leaving us in a field that is currently more of an art than a science. But then, for me, this is the intrigue of nanoscience and is why I plan to spend a lifetime studying materials based on the supposedly simple inorganic metal oxides.

PAUL FRANKLYN
Class of '04, PhD in Chemistry

Gates Distinguished Lecture Series

Three stimulating lectures filled our term card and got Gates Scholars talking this term:

Dr. Robert Skinner, formerly of the Oxford Institute of Energy Studies, gave a captivating lecture on the state of current oil markets, analyzing their development and discussing how the present situation may develop in the immediate and long term. The animated question and answer session that followed relayed the wide interdisciplinary interest surrounding modern oil issues.

Dr. Diarmid Campbell-Lendrum, of the World Health Organization's Department of Protection of the Human Environment delivered a thought-provoking lecture outlining predicted changes in disease burden due to climate change. The cost of managing disease in relation to ecosystem change, and the need for global partnership in responding to the challenges of environment and health, were highlighted.

Ambassador Robert Holmes Tuttle, the U.S. Ambassador to the Court of St. James's, presented a fascinating talk, focusing on the tradition of giving and volunteerism in America. Citing the work of the Bill and Melinda Gates Foundation, Ambassador Tuttle relayed the need for continued engagement with charitable works among individuals, NGOs, and corporations.

Gates Scholars' Colloquium

Tuesday, 14 March 2006 saw Whitney C. Duim, Daniel J. DiCenso, Fernan Federici and Paul Franklyn speak at the Gates Scholars' Lent Colloquium. See the 'Under Way' section for details of their research.

Gates Scholar wins at China-UK Business Idea Competition

Yalan Wang '03, a current Gates Scholar, and Zhihan Wang, both of the Engineering Department's Electronics, Power & Energy Conversion Group, have won second prize at the first China-UK Business Idea Competition. In addition to a monetary prize of £1,000, the pair has been granted a special award of one-year free business consultancy and a potential investment worth £20,000 from Fast Future Ventures. Congratulations!

The Conspiracy that Never Was

Perspectives from within Big Oil

Upon meeting my colleagues, one would hardly conclude that I work for an inherently evil organization. But, alas, thousands of journalists and more and more politicians in the West assure me that this is the case. I work for Big Oil.

After leaving Cambridge in 2004, I joined Shell International's Exploration & Production division. My new job was a particularly astute choice for someone who likes to travel as much as my wife and I do. Moreover, this part of the company frequently deals with technology management – the exact focus of my PhD studies. What R&D projects should be pursued in-house and which should be left in the hands of capable suppliers? What are the telltale signs of a winning technology, and when to pull the plug on a dud? And how do you push ahead with a far-sighted research agenda while

ROB PERRONS
Class of '01, PhD in Engineering

most of the company's executives are more preoccupied with quarterly earnings estimates and the headline *du jour*?

Indeed, I am not entrusted with answering these questions on my own (or at all, for that matter). The real decisions are made by veteran executives. My job merely consists of writing speeches, organizing schedules, managing meetings, preparing presentations for visiting government officials, and smoothing over the kinds of friction-filled situations that naturally arise in these kinds of environments. But as Executive Coordinator, a title that loosely translates to 'someone who organizes the more pedestrian aspects of an executive's life,' I am allowed to witness the processes by which such decisions are made in one of the world's largest companies.

An insider's view

The energy industry is, to borrow the Pulitzer-winning author Daniel Yergin's words, 'the world's biggest business.' Certainly, the entire industry has made a lot of money lately. What not everybody realizes, however, is that much of this is being re-invested in exploration and production projects that will probably result in more oil coming on stream in the years ahead. As the New York Times columnist Ben Stein says, the evil oil companies rarely appear quite so nasty when you peel back a layer or two. About 41% of ExxonMobil's stock is owned by retirement funds, pensions, and regular "ma and pa" investors. Shell's ownership closely mirrors this. Indeed, as Walt Kelly Pogo once quipped, "We have met the enemy, and he is us."

Price taker vs. price maker

How were private oil companies supposed to distort the market in the first place? ExxonMobil may be the biggest publicly traded company today, but it accounts for merely 3-5% of the world's daily oil production. Shell's share is even smaller. The top seven international energy companies – ExxonMobil, BP, Royal Dutch Shell, Total, Chevron, ConocoPhillips, and Eni – collectively control less than 10% of the world's reserves. We are price takers.
The price makers are countries that are blessed with most of the world's conventional, readily accessible oil reserves, such as Saudi Arabia (22%), Iran (11%), Kuwait (8%), and Russia (6%). Many of them do not allow Western energy firms to directly develop their oil and gas resources and, if they do offer some measure of access, it is usually quite restricted.

There are large political and economic forces at work behind the current high oil price environment. And it's natural that people wonder what they are. But there's honestly not much that Western oil companies can do – together or individually – in the short term to remedy this. As history shows, the oil price may eventually fall. But oil companies will have little say in either the timing or the magnitude of this drop when it happens.

A political piñata?

The chasm between what actually happens within oil companies and what people think happens is impressive. Most of the people I work with are genuinely nice folks who devote their day to finding and producing oil and gas in some of the most remote and unforgiving environments on the planet. It's also important to keep in mind that this stuff has to be extracted from reservoirs that are sometimes several kilometers below the earth's surface. The contents of these reservoirs are then transported halfway around the world and converted to a form that can be used safely by consumers. The public responds to these engineering marvels not with amazement, but instead with outrage on account of the fact that the resulting gallon of fuel costs slightly more than an equivalent volume of milk. Big Oil certainly isn't perfect. At the same time, neither I nor any of my co-workers are part of a larger conspiracy to mislead the public and gouge the average consumer. We might often be an easy target, but we're not always the right one.

Soap Star

Surface Adsorption of Industrially Important Molecules

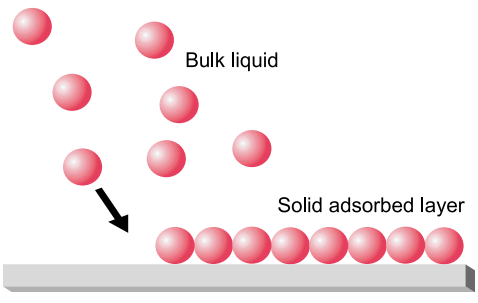
In the past week, chances are that you've washed dishes with detergent. This relies on a process called adsorption, the physical attachment of molecules to a solid surface from a liquid. Sound simple? You wouldn't believe how much trouble a single atom of oxygen can make...

WHITNEY DUIM
Class of '05, MPhil in Chemistry

The next time you use a detergent, look at the ingredient list. It should tell you that the product is a mixture of different kinds of detergent (surfactant) molecules, polymers, and even enzymes. Mixtures are typically cheaper, and often perform better, than the pure components alone. However, the mixtures cause these products to have very complicated adsorption and cleaning processes, many of which are not well understood.

Sighting the surface

This year I am researching the adsorption of molecules from their pure liquids and mixtures to graphite in the laboratory of Stuart Clarke of the BP Institute and the Department of Chemistry. Graphite is a widely-used surface in adsorption studies because it has a large surface area and relatively simple interactions with adsorbed molecules. I am specifically looking at the adsorption of two important types of molecules, alkanes (e.g. hexane CH3CH2CH2CH2CH2CH3) and ethers (e.g. diethyl ether CH3CH2-O-CH2CH3), which are used as solvents and additives. Many detergent molecules are derived from simple alkanes and ethers. While the adsorption of alkanes to graphite has been extensively studied, the adsorption of ethers and mixtures of ethers and alkanes to graphite is a new area of investigation.



The process of adsorption: particles leave the bulk liquid and attach to a solid surface in a layer.

The first question we ask of new compounds is, 'Do they form solid adsorbed layers on graphite?' By observing the melting of the solid adsorbed layers (often just one layer, a single molecule thick) when the compound and graphite are heated together, I found evidence that the pure ethers under investigation form solid layers on graphite when adsorbed from their liquids. We then examined the adsorption of mixtures of compounds that are individually known to form layers on graphite. I studied mixtures of a series of short symmetrical ethers (ethers having the same number of carbon atoms on either side of a central oxygen atom) and alkanes using the same technique. For mixtures, we are interested in how well the two compounds mix in the layer on the graphite surface and also if one substance is more readily (preferentially) adsorbed to the surface than the other.

Oxygen disruption

My results revealed that the symmetrical ether and alkane mixtures generally show poor mixing in the formed layer, with separation of the two compounds on the graphite surface. In addition, we found that if the alkanes were a similar size to, or smaller than the ethers, they would be adsorbed more readily. This provided a puzzle, since in general larger molecules are expected to be preferentially adsorbed over smaller molecules due to the larger number of favourable interactions large molecules have with a surface. Hence, this surprising result was evidence that a single central oxygen atom (the only difference between ether and alkane molecules) had disrupted the adsorption of the symmetrical ethers to the graphite surface.

The research in the Clarke group provides fundamental information about the adsorption process and the behaviour of mixtures of compounds in adsorbed layers. Combining previous results from other alkane mixtures on graphite with my results from alkanes and ethers will allow for predictions about the degree of mixing and preferential adsorption in new and untested mixtures of these compounds and their derivatives - some of which may one day end up in your kitchen sink! In my final months on this project, I hope to develop the predictive power of this research and to conduct further experiments on mixtures containing ethers and alkanes.

The Producers

A Classic Re-Made

When the word spread about a trip to the West End, tickets went fast. After all, it's not often you get a chance to see one of London's most popular musicals, 'The Producers', for just £17.50! The trip had all the makings of a great day, and we were not disappointed!

Early on Saturday, March 17 fifty Gates Scholars and friends converged on Queen's Road, to board a charter bus to London. We had a few hours to enjoy the city before our matinee show; some of us saw the sights, others went shopping, and some just stopped for a leisurely coffee. Later, we reassembled at the theatre to settle in for the show. 'The Producers' tells the story of two characters who meet when the timid accountant, Leo, comes to take a look at the failing Broadway producer, Max's financial books. The two eventually come up with a scheme to make a fortune by producing a brilliant musical flop, and the plot centers around the hilarity of trying to make a musical failure. The musical is based on the 1969 movie, a classic Mel Brooks comedy with Zero Mostel and Gene Wilder playing Max Bialystock and Leo Bloom respectively.

The musical's pluses…

As a fan of the original film, my hopes for the stage adaptation were high. In many ways, my expectations were exceeded. It was hilarious to see the opening night rendition of "Springtime for Hitler" actually performed live, and the expansion of Ulla's character beyond mere eye candy was a welcome addition to the plot. Although the love interest plotline occasionally seemed a bit contrived, in the end it added a nice twist to both Ulla and Leo's characters in their unexpected trip to Rio de Janeiro. On top of that, Fred Applegate, playing Max Bialystock, and John Gordon Sinclair, playing Leo Bloom, performed their parts as the main characters admirably, and did well in their attempt to fill the large comedic shoes of Wilder and Mostel.

…and minuses

On the other hand, there were several moments during the musical that I felt fell flat compared to the movie. Although there were several new jokes that caught me by surprise and made me laugh, I felt that Bialystock's classic cry of "God, I want that money!", a funny and climactic moment in the movie, lacked humor in the musical. I was also quite disappointed with the removal of the hippie character Lorenzo St. DuBois or L.S.D., who was, in my view, the funniest and most over-the-top of the production members in the film. It seems that 'The Producers' ran into the same problems that plague any remake of a classic. How do you make the characters and the plot seem new to those who have seen the original? How do you choose what to include?

The bottom line

Whatever my impression of the show, I enjoyed the London trip. From the moment the coach pulled away from Queen's College we all found ourselves engaged in an interesting discussion, reminding me why we're all together in the first place. It was great to spend the day wandering around London, eating good food with my fellow scholars, and having great conversations on random subjects. To be honest, I'd rather see a mediocre musical with a group of friends than a great musical only by myself…

CARL PFENDNER
Class of '05, MPhil in Theology and Religious Studies

Gates Scholars' Society Foosball Tournament of 2006

Open to all comers, the first ever Gates Scholar Foosball Tournament was held on a rainy Saturday, May 21, with a good time - and plenty of pizza - had by all. The winners were: Premiership League, Amol Pawar and Barbara Richter; Champions League, Hans Friedrichsen and Karl Friedrichsen.

Going to the Source

Among the few immutable academic rules at Cambridge, one must always be: go to the source. If you want to know how cancer cells function, scrutinize them under a microscope. If you are interested in what the population thinks, interview people. And if you want to experience St. Patrick's Day, spend it in Ireland – with friends.

On 'Paddy's Day' this past March, along with several friends and fellow Gates Scholars, we did just that - went to the source. In Dublin we experienced first-hand the people, land, and celebrations that inspire the city of Chicago to dye its river green, and friends and strangers alike to toast one another's health. From the parade that travelled down O'Connell Street, to the county finals of the Gaelic Games, we celebrated all things Irish, including the Guinness, of course! Although that day alone would have made the trip worthwhile, the days of our Éire experience to follow promised much more, as we discovered that the value of exploring the source is hardly limited to the labs and libraries of academia.

A guided bus and walking tour through County Wicklow and Glendalough, 'the garden of Ireland', showed us the parts of a culture we would have otherwise never known. In one day we saw cemeteries and monastic round-towers predating English conquest, a Nobel Peace Prize-winning youth camp established to bring together children from opposite sides of the Northern Ireland conflict, and a modern-day wool mill still using a one-man, hand-operated loom to weave its fabric. We walked the stone halls of Dublin Castle, visited St. Patrick's Cathedral, and toured a distillery where we learned the difference between Irish 'whiskey' and Scotch 'whisky'. Every evening, we celebrated in the pubs and soaked up the jovial atmosphere often associated with Irish culture. Live Irish music and smiling strangers we encountered everywhere, repeatedly confirming our sense of the Irish people's warmth and enthusiasm.

The sights, sounds, and tastes of Ireland are amazing in themselves, but the real value of my Irish experience was that I was able to share it with friends, many of whom I met through the Gates community. As vital as the saying about going to the source might be for good research (and great trips), the Irish have an equally valuable saying:

There are good ships and there are wood ships,
the ships that sail the sea.
But the best ships are friendships,
and may they always be.

We all hope that the paths we take in search of knowledge will lead us to the source - for me it is also desirable to explore these paths accompanied by good friends and colleagues. And, as my escapade to Ireland has shown, often it is not too much to hope for both.

STEVEN KREEGER
Class of '04, PhD in International Studies

Pictured at the Foosball table (from left to right): Dirk-Hinrich Haar and Szilard Fejer, Rebecca Normansell and Keith Paton, Barbara Richter and Amol Pawar (also below); Steven Kreeger and Jessie Wild (under the watchful eye of Towfique Raj).

A Case for Nonconformity

An Opinion Piece

Gates Scholars conform beautifully. Teachers give us gold stars, employers offer sign-on bonuses, and certain fellowship selection committees send us all the way to the UK because we are experts at analyzing systems, conforming to their ideal expectations and offending few during the process.

Some Gates Scholars are guilty of conformity obsession. Displeasing anyone is a horror, criticism - torture, living life by everyone else's rules and expectations - our bread and butter. We relish our success as cogs in the wheel, tools in the savvy's arsenal, chameleons that please everyone while never, ever admitting the cores of our true selves. My recent counterterrorism research at the CIA shows that conformity pressures negatively affect teams fully aware of the body of conformity research. Believe it or not, in its infancy, even the pristine Gates Council had its ephemeral glimpses of conformity obsession.

The frequent use of conformity is probably a human cognitive universal, resulting in misanthropy rejection. When times get rough, our conformity guarantees us bank balances, toothed mates, and natural selection wins. We just have to admire ugly haircuts, smile at annoying laughs, and ignore ineptness. A famous experiment shows that a room full of actors can lie about which of two drawn lines is longer, and get the vast majority of unsuspecting Ivy League experimentees to incorrectly agree. You are even conforming if you listen to my request to consider nonconformity.

If only we'd nonconform

While conformity enables us in certain social ways (driving is a somewhat less abrasive experience because of conformity), it also limits the heights we can reach, relentlessly pulling us back towards the dreaded mediocrity of the status quo. Many of the world's greatest inventions, discoveries, and processes were created by nonconformist individuals. These revolutionaries often got killed as a result of their nonconformity, but only after they had made their mind-boggling contributions to humanity (and wouldn't that be worth it?). When we nonconform, we are ultimately honest with ourselves and others, and this freedom of time and mind gives us the ammunition to pursue our goals at 110%.

Just think about the possibilities if we nonconformed... Linguistics might stop contorting syntactic theory into endless sentence analysis. Neuroscientists might look beyond three-dimensional, Newtonian models of the brain in explaining behavior. Music might obliterate elitist hierarchies towards emergent forms of sound expression, tickling our memories and emotions. Humanities might move beyond an intellectual treadmill heralding the philosophical idea *du jour* (with "x-number of" snobbery-wielding foreign idioms per published article). Math with more rigorous axiomatic premises might ruin cryptography. Medicine might move towards preventing illness as much as medicating it. Universities might move beyond proximal business bureaucracies towards worldwide digital banter and dialogue. Software businesses might add efficiency and value rather than exploiting monopoly status and consumer laziness. Novel approaches to analysis of world problems might begin emerging that could solve some of the very problems our beneficent Gates Foundation is currently championing.

As Gates Scholars we were elected to have an impact on worldly problems. Ironically, while our deal with the conformity devil got us our Gates reward, our best shot at solving Gates Foundation problems lies in eventually shunning the conformity hand that feeds us.

Can't stop conforming?

Just do it! Start small. Dare to displease someone today. Laugh next time your advisor suggests English is a fixed, unchanging entity with indisputable stylistic rigor. Fail early and often. Let someone know you don't care what they think of you. Open your mind to a goal you'd normally dismiss. And then persist. Relentlessly. Be the maverick.

Nonconformity doesn't come without cost. You'll need creativity to sustain life's basic needs as some roads close to people like you. Think instead about how it will all be worth it when you create a unified theory of quantum gravity or cure AIDS with household cleaners or make a clean ubiquitous water supply with your nanobots. Some Gates Scholars will continue to thrive down the road of expense accounts, tenure-track jobs, smarmy high-table meals with endless crimson neckties and botched middle-aged Botox injections. Others will take the bumpier road of the Renaissance man, the inventor, and the singularitarians designing the emerging human-computer interface. Maybe the powerful conformist Gates Scholars will help the nonconformist Scholars succeed if they can find system-conforming excuses because they will remember having read this article way back, wishing secretly they'd picked the nonconformist road. But you don't have to listen to me: when Bill Gates spoke to Scholars in 2001, he predicted even one successful „out-of-the-box" scholar's contributions could exponentially return his scholarship investment.

Do you agree? Disagree? Got something else entirely on your mind? Email your opinion piece submissions for the Autumn issue by October 10, 2006 to newsletter@gatesscholar.org. We'd love to hear your thoughts!

SEAN BENNETT
Class of '01, MPhil in Cognitive Musicology

A Bilingual World

In this issue, we ask you about the idea of a 'bilingual world'. What would the world be like if everyone spoke a universal language in addition to their native language? Would this be a step forward or backward? What would the universal language be, and how would you teach it? Here's what you had to say…

The idea of a single universal language to facilitate verbal interaction at the global level has always fascinated humanity. The search for a uniform and simple means of international communication has led to multiple attempts to hybridize existing authentic languages and to engineer a new language on the basis of their elements. Synthetic languages such as Esperanto, Ido, Interlingua, Klingon, Quenya, Folkspraak, Loglan, Glosa, Volapük, and Europanto, to mention but a few, though created with various logical, artistic, and experimental purposes in mind, have still been striving to achieve one objective – to linguistically unite people across borders. With their relatively simple vocabulary and grammar (this simplicity being the result of constant efforts on the part of linguists to provide a comprehensive and effective tool for communication), these manufactured languages aimed at global expansion at various times. However, their inherent ease of acquisition has not made them communicatively functional.

"The actual status of language and its recognition by speakers are by no means predefined by 'ease' of use, but by a long way of historic development that gave each language its inimitable beauty of form and expression..."

The failure of artificial languages to compete with such widely spoken natural languages as English, Chinese, and Spanish can be accounted for by the fact that the actual status of language and its recognition by speakers are by no means predefined by 'ease' of use, but by a long way of historic development that gave each language its inimitable beauty of form and expression rooted in literature and community traditions. A linguistic construct lacking this cultural dimension and hence resources for its inner evolution could never substitute for a full-fledged language, despite its presumably successful instantiation of a code for communication.

With the trend towards bilingualism becoming more obvious and the need to master a second language even more evident, it seems that educational systems in all countries should adopt an agenda to foster intensive foreign language teaching at schools and universities. But instead of investing time and energy into elaborating a curriculum for any 'universal language' learning with its unavoidable restrictions in future use, all efforts should center on the promotion of study of languages that do already enjoy status as a 'lingua franca'. Ultimately, a language policy oriented towards the specific linguistic needs of every country would be more fruitful, internally and externally, by effectively facilitating communication in situations of language contact in the country itself and strengthening diplomatic and economic ties between various states.

If such a common language were manufactured, its adaptation could be quite unpredictable in the sense that it would not be an instantaneous event, but a continuous process during the course of which new pidgin and creole languages might emerge. This in turn would undermine the unattainable ideal of uniformity and unification of language advocated by those wishing to return to pre-Tower of Babel times. Our life is based in linguistic diversity, thus diminishing all endeavors to construct languages in the field of pure linguistic experiment and enhancing the influential role of authentic languages in our multi-faceted world of cultures and attitudes.

ANNA LOPATINSKAYA
Class of '05, MPhil in English and Applied Linguistics

English is the fastest growing second language, but others such as Spanish, Russian, and Chinese also play an important role. In my experience as a teacher of English in Taiwan, my students' primary motivation for learning English was improving their job prospects (not becoming better acquainted with another cultures). I would argue that this is the case for most people around the world learning a second language and, notwithstanding forced language learning, probably always has been.

Some people argue that learning a second language detracts from one's own sense of cultural identity. In my experience, most second language speakers maintain a strong connection to their first language. The cultural influences associated with a second language, such as the way Hollywood and McDonald's have spread from the U.S. to other parts of the globe, are having a much larger impact in transforming cultural identities.

A greater danger is that second-generation second language speakers might lose touch with their native languages if they are living in an environment where greater privilege comes from learning that second language. This is happening now amongst minority cultures all over the world, where economic incentive and nationalism encourage parents to school their kids in the dominant language at a much younger age. Generation by generation, the first language diminishes.

A recent talk at Cambridge by linguist Peter Austin argued that a language dies on average every two weeks. Thus, it is important to create an environment where, particularly in the case of minority speakers, attention is given to their primary language environment. Some countries such as Australia, Taiwan, or South Africa have in fact started to do this.

ROSS ANTHONY
Class of '05, PhD in Social Anthropological Analysis

It seems that we already live in a largely bilingual world. Nowadays, English is without a doubt the main language of international communication in business, higher education, tourism, and wherever there is need for communication between speakers of different languages. Given this present state of affairs, what can we expect in the future?

"The only factor that can naturally lead to stronger bilingualism is further growth of the need to communicate with people from different linguistic backgrounds."

Much time will probably have to pass before the conditions are right for everybody to be fluent in a universal language. It is definitely worth having this as a goal, but we have to be aware that the only factor that can naturally lead to stronger bilingualism is further growth of the need to communicate with people from different linguistic backgrounds. If such a need extends from its current limited contexts to all areas of our everyday life, complete bilingualism will come to exist spontaneously. We can only help this process by orienting the language policies of our countries in this direction.

What should the universal language be? Personally, I find completely implausible the idea that any type of artificial language could be used as a universal means of communication because each language is much more than a system of rules, and in order to be felt as real it must be related to a culture and to personal experiences. Speaking from the perspective of somebody who has always been interested in languages and who has spent years in the company of dictionaries and grammar books, I can claim with certainty that nothing is as useful as the opportunity to communicate – for real – in the language one is trying to learn.

I studied Italian and English for years (my native language is Serbian), but despite a BA in Italian Language and Literature, I had to ask for my first train ticket in Italy to realize that I could actually speak Italian. And the IELTS exam did not tell me as much about my English as did a brief conversation with the person at the information desk upon my arrival at Heathrow Airport (especially since I consequently got lost).

Therefore, both parts of me, the linguist and the ordinary language learner, believe that universal bilingualism would be a good thing, but only if it develops as a result of the world's genuine communicative needs, and only if the universal language is a real language, one people can attach cultural and emotional values to. Finally, although choosing one out of many languages might seem unfair, the choice will inevitably impose itself through the historical, economic, and sociopolitical circumstances of any given period, just as happened earlier with Latin and more recently with English.

MAJA MILIČEVIĆ
Class of '04, PhD in English and Applied Linguistics

"You speak Arabic?" a woman asked while I waited for my falafel at a local restaurant recently. My questioner had seen me watching the Arabic language satellite news on the big screen TV in the back of the shop. "No," I replied, "but I do like to see how much I can figure out." She smiled broadly, no doubt pleased that a young white American would make the effort to listen to her native tongue.

It is a wonder that this effort is not made more often, considering that we live in an international age. The U.S. Census Bureau estimates that one out of every five people in the U.S. speaks a native language other than English. As China and India continue to rise on the global stage, Chinese and Hindi, already the languages with the most native speakers, will grow in importance. Moreover, a billion and a half people speak Arabic, Bengali, German, Japanese, Portuguese, Punjabi, Russian, or Spanish as their first language.
In this era of global business, global immigration, global tourism, and global terrorism, it is vital that we listen to each other, and learn what our neighbours have to say. Since September 2001, the United States has tightened borders and made the process of obtaining a visa much more difficult in an effort to prevent terrorists from entering the country. As a side effect, fewer foreign visitors have opted to study, teach, perform, and vacation in the U.S., while at the same time, many Americans have chosen to refrain from travelling abroad.

"In the era of global business, global immigration, global tourism, and global terrorism, it is vital that we listen to each other, and learn what our neighbours have to say."

This situation is unfortunate. If we are to find a lasting peace, we must learn from the successes and failures of our history. We must learn the languages of our neighbours and our enemies, and hear what they have to say. We must shun cultural isolationism, and instead heed the advice of former U.S. Vice President Henry A. Wallace, who, at the height of World War II, wrote:

> *"There can be no privileged peoples. We ourselves in the United States are no more a master race than the Nazis. And we cannot perpetuate economic warfare without planting the seeds of military warfare. We must use our power at the peace table to build an economic peace that is just, charitable and enduring."*

In this world of many peoples, many religions, and many languages, the path toward mutual understanding is often rough and uncertain. But unless we are willing to speak each other's languages, we have no way to take the first steps forward.

LANE SCHWARTZ
Class of '01, MPhil in Computer Speech, Text and Internet Technology

Partnering Up

Working Together for Cultural Diplomacy

At left, Augustine Lo '04, Chad Golder '01, Cynthia Carver '02 and Andrew Robertson '01 attending the British Embassy event on March 7, 2006 in Washington DC.

The British Council operates worldwide as the UK's public diplomacy and cultural organisation. Forging a new link between the Marshall and Gates Scholar communities is just one part of their vast network of efforts to foster international understanding.

Following the terrorist attacks in New York, London and Madrid, citizens and governments of Western nations have actively engaged the question of 'why they hate us so much'. This issue has inspired countless studies delving (correctly or incorrectly) into global activities of the West, its quest for oil, its role in climate change, its military activities, or its role in the Middle East. Whether or not you agree with these assessments, these studies have all highlighted the urgent need for cultural diplomacy.

Considerable efforts are now being expended through America and Western Europe on convincing a global audience about the West 'as a force for good in the world'. As a European leader and one of the USA's closest allies, the British have a significant part to play in bridging what Tony Blair called the 'gulf of misunderstanding'. It will take a great deal more cultural diplomacy over many years to progress in the 'war' against international terrorism, but cultural diplomacy is an essential strategy.

An engine for change

The British Council embraces a broad definition of the word 'culture'. With offices in 109 countries around the globe, the Council is connecting people worldwide with learning opportunities and creative ideas from the UK. In this way the Council builds mutually beneficial relationships between the UK and other countries. In the United States the British Council, through its work in the arts, challenges the stereotypical images of historical Britain that many in the US hold by demonstrating that contemporary Britain is culturally diverse, dynamic and creative. For example, the Council's film and television department internationally promotes the work of young British filmmakers through programs such as the British Film Office in Los Angeles. Its Design Department, in addition, organizes international workshops and conferences on fashion, graphics, interiors, digital media and product design that bring together entrepreneurs from around the world to exchange ideas.

Perhaps globally one of the Council's most important roles is as the UK's international organization for educational opportunities. Of the 600,000 students that travel to the UK for academic study each year, the Council has helped over half of them by providing information about academic programs, funding, housing, and general lifestyle in the UK. For those students who cannot afford to travel to the UK or commit three years abroad, the Council has helped over 200,000 students a year earn UK qualifications in their own countries through coordination with local institutions or through distance learning. In the USA, the British Council acts as the Secretariat for the prestigious Marshall Scholarships. This scholarship, funded by the Foreign and Commonwealth Office, awards over 40 American graduate students the opportunity to study for two years in pursuit of a British post-graduate degree at any accredited British university. Programs such as these form the cornerstone of British cultural diplomacy.

Creating a partnership

The Gates Scholars' Alumni Association believes that it has much to gain, especially in its early years, by developing positive working relationships with external organizations such as the British Council. These relationships will increase opportunities for both Gates and Marshall Alumni by building extensive social and professional networks. So far, through the British Council, the Gates Alumni have been invited by Sir David Manning, Her Majesty's Ambassador to the United States, to his home for the Press and Public Affairs Conference Reception. Local Gates alumni are also included in the annual orientation activities that are organized for the departing group of Marshall Scholars. This year Gates Alumni will share their experiences of life at Cambridge with the Scholars who take up their Marshall awards in September. These partnerships not only enhance cultural diplomacy through the exchange of ideas, but help build upon international diplomacy efforts and promote inter-cultural understanding around the world.

KATHY CULPIN
is the Events Coordinator for the British Council, USA, at Her Majesty's British Embassy in Washington DC.

ANDREW ROBERTSON
Class of '01, PhD in Genetics

Alumni Notes

New Scholar Mentoring Initiative 2006

GSAA is currently working on a new initiative to bridge the gap across scholar generations by putting Alumni in touch with newly selected Scholars. The Alumni–New Scholar Mentoring Programme will assign each new Scholar to an Alumnus contact point from their home country or region. The Alumnus will get in touch with and meet the new Scholar before he or she leaves for the UK. This type of interaction will give a face to the Gates Cambridge Scholarship and give incoming scholars a feeling of community long before they arrive in the UK. Furthermore, as the lack of understanding of the Cambridge system continues to be a common complaint of incoming Scholars, this new initiative aims to make the transition to the new environment of Cambridge a smoother experience.

If you're interested in participating in this program, please send us an email at gatesalumni@gatesscholar.org. Be sure to include in your email where you will be this summer and any places you may be travelling to, including dates. We will contact you as soon as the selection process and details have been finalized.

Join a Regional Mailing List!

The GSAA is currently setting up regional mailing lists, enabling Alumni to keep in touch at a more localized level about events in their area. In order for these lists to work, though, we need you to make sure your details on the website are up-to-date so we know where critical numbers exist. Please login at www.gatesscholar.org, go to "Edit My Profile" and enter your city in the current address section.
Below is a list of the current regional mailing lists. To join one of these lists, please email gatesalumni@gatesscholar.org and put the city of your choice in the subject line. If your city isn't listed, but you know there are several of you there or you just want to serve as a contact point in case others are in your area, please let us know so we can set one up.

Current country mailing lists:
Australia@gatesscholar.org,
Canada@gatesscholar.org
China@gatesscholar.org
Germany@gatesscholar.org
Greece@gatesscholar.org
India@gatesscholar.org
Netherlands@gatesscholar.org
Southafrica@gatesscholar.org

Current city mailing lists:
Boston@gatesscholar.org
Edinburgh@gatesscholar.org
LA@gatesscholar.org
London@gatesscholar.org
NYC@gatesscholar.org
Sanfrancisco@gatesscholar.org
Washingtondc@gatesscholar.org

Become a Regional Contact Point

In addition to the regional mailing lists, we are also looking for Alumni in each region to serve as Regional Contact Points (RCP). RCPs will be a first port of call for people moving into the area and/or those visiting. They will work with the GSAA to plan regional events and keep the GSAA updated on the opinions of Alumni in that region. Thus far, we have RCPs for Germany - Oliver Fischer (o.fischer@gatesscholar.org) - and Canada - Nilima GuIrajani (n.gulrajani@gatesscholar.org). If you're interested in becoming a RCP or helping Oliver and/or Nilima, please email gatesalumni@gatesscholar.org.

Class Notes

2001

Andrew Ashcroft. After taking some time off to play professional ice hockey in Switzerland, I submitted my PhD in Engineering in June 2005. I joined JP Morgan at the end of August and I am loving my new job as an Oil Derivatives Trader in London.

Anne Berry. After leaving Cambridge in 2002, I jointed to the Council of Economic Advisers at the White House, where I worked as a staff economist and then as an economist. I just finished the first year (of four) of my JD/MBA program at Stanford. I am working at Davis Graham & Stubbs in Colorado this summer.

Rachel Bortnick. I'm currently living in Cambridge, MA where I'm working on my MD/PhD at Harvard.

Eli L. Diamond. I'm completing a year of neuroimaging research at Brigham and Women's Hospital in Boston before returning to my final year of medical school. Recently I presented my work on functional MRI and Alzheimer's disease at the Annual Meeting of the American Academy of Neurology (email: elidiamond@post.harvard.edu).

Axel Gelfert. After submitting my PhD ('The Structure of Testimonial Knowledge') in September 2005, I spent the academic year 2005-06 as Junior Fellow at Collegium Budapest (Institute for Advanced Study). Since May 2006 I have been an Affiliated Research Scholar in the Department of History and Philosophy of Science (Cambridge). From September 2006 onwards I'll be a Postdoctoral Fellow at the Department of Philosophy, National University of Singapore.

Rachel Giraudo. I am a PhD student in the Anthropology Department at the University of California, Berkeley. I plan to begin my dissertation fieldwork in January 2007 in the Tsodilo Hills, Botswana.

Hilary Levey and Alexander Nyren (both '02) will be married in New York City in February 2007. Fellow '03 Scholar, Cyndee Carver, will be in the wedding party.

David Green. After completing my PhD in criminology in August 2005, I started a three-year Junior Research Fellowship at Christ Church, Oxford University. I'm comparing the interplay among crime, media, public opinion and policy in England, Norway and the USA.

Geraldine Parsons. I was elected to a Title A Fellowship in Trinity College, Cambridge in October 2005 for my work in Medieval Irish literature. I have just taken up this post, having spent the period October 2005 - March 2006 lecturing in the Department of Anglo-Saxon, Norse and Celtic, Cambridge. I hope to spend some of the four years of this fellowship working in Ireland and perhaps the United States.

Rob Perrons. I am married and living in the Netherlands with my wife, Shannon. I'm currently working for Shell International Exploration & Production, and will be transferring to the company's Houston office in October of this year. For a more thorough update and some photos, please visit www.perrons-woodward.com.

Andrew Robertson. I'm on detail to the Office of Global Health Affairs at the US Department of Health and Human Services, International Influenza Unit. My focus is disease surveillance capacity in Southeast Asia and Africa, and North American pandemic policy.

Matt Varilek. After Cambridge I returned to my job as an environmental policy consultant in Washington, DC. In 2004, I took an economic policy job with Senate Minority Leader Tom Daschle. After Senator Daschle completed his final term, I became Economic Development Director for Senator Tim Johnson of South Dakota.

2002

Wendi Adelson. It is an understatement to say it has been a busy year for me. I wanted to share that in February, I married the man of my dreams, Dan Markel, near my ancestral home in South Florida. This past October I changed law schools for my final year to be with Danny in Tallahassee, Florida, where he is an associate professor of law at Florida State University. I will graduate from law school this weekend and return to Miami to begin a job with the Center for Ethics and Public Service at the University of Miami Law School, doing children's rights and immigrant advocacy law. I hope all of you are happy and thriving.

Lina Barrera. I left Cambridge in 2003 after completing an MPhil in Environment and Development and have been living and working in Washington, DC ever since. I've been working with Conservation International, an international organization that aims to conserve the Earth's biodiversity, as an advisor to the Latin America programs for nearly three years.

Cynthia Marie (Cyndee) Carver. I am presently a third-year student at Georgetown University School of Medicine in Washington, DC. My interests include pediatrics, med-peds, dermatology and ENT. I am serving for a fourth year as Treasurer of the Medical School's Class of 2007. Currently I am involved in research for the treatment of psoriasis via a Stage 3 Clinical Trial using Raptiva.

Jenny Ifft. After three years of working in Washington, DC, Beijing, Indianapolis, Delhi, etc., this fall I'll begin working towards a PhD in Agricultural & Resource Economics at UC Berkeley. I'm looking forward to becoming a California resident and to another Gates Alumni Reunion in the Bay Area!

Jennifer Piscopo. I'm currently a PhD candidate in Political Science at the University of California, San Diego. I'm researching affirmative action quotas for female legislative candidates in Latin America and recently completed fieldwork in Argentina. I would love to hear from Gates alumni in the San Diego area. Contact: jpiscopo@ucsd.edu.

Jay Reddy. I'm currently finishing the third year of an MD/PhD program at Baylor College of Medicine in Houston, TX. I have joined a lab that studies the molecular underpinnings of breast cancer using murine models.

Oliver Rinne. Since 1 November 2005 I have been a Postdoctoral Scholar in the Theoretical Astrophysics and Relativity Group, California Institute of Technology.

2004

T. Augustine Lo. I'm working with the US Department of Commerce in Beijing during summer 2006.

We would love to hear what you're doing! To submit an Alumni update for future publication in the Gates Newsletter, please email a brief blurb of no more than 50 words to gatesalumni@gatesscholar.org. Please include "Alumni Note" in the subject line and the year you received your Gates Scholarship.

Up and Coming
Mark Your Calendar

Cambridge Events

Stratford-upon-Avon Visit

See *Romeo and Juliet*, performed by the Royal Shakespeare Company. Sign-up required.
Date: June 10
Cost: £5

Panel Discussion with Mr William H. Gates, Sr.

Bill Gates, Sr. will join several scholars in discussing the role and importance of leadership in and beyond Cambridge. All welcome.
Date: June 13, 4.30-6.00pm
Venue: The Chancellor's Centre, Wolfson College

Reception with Gates Cambridge Trustees

The Annual Photograph will also be taken during the reception. All welcome.
Date: June 14, 3.30-5.15pm
Venue: University Botanical Gardens

Gates Scholars' Annual Dinner

The Annual Dinner serves as an informal end to the academic year within the Gates community before summer activities commence. All scholars and their guests are warmly invited and encouraged to attend. Sign-up required.
Date: July 14. Dinner will commence in hall at 7.30pm, with drinks from 7.00pm.
Venue: Wolfson College
Cost: £10 (incl. pre-dinner drinks and wine with dinner)

Gates Scholars' Orientation 2006

The event offers new Scholars the opportunity to join together and enjoy a fun-filled program of social and team-building activities. Sign-up required.
Date: September 25-27
Venue: Edale Activity Centre, Peak District

Worldwide Events

Alumni Dinner in London

The GSAA Executive Committee is currently organising a dinner in London. Online sign-up required.
Date: July 1, 2006 (tentative)

GSAA/Marshall Event in Washington D.C.

The British Council has invited Gates Scholars to the annual send-off party they arrange for Marshall Scholarship recipients. If interested, contact Andrew Robertson (gatesalumni@gatesscholar.org) for details.
Date: September 2006