Refugees or Residents: When Camps Become Towns in the Western Sahara
Ironing the Oceans: A New Hope for Climate Change or Tampering with the Sea?
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“When it comes to global health, there is no ‘them’ … only ‘us’.”

Global Health Council
FOREWORD FROM THE RECTOR

It is my pleasure to write in commendation of ‘A Global Village’ journal, and welcome you to the second edition.

‘A Global Village’ is an achievement in accomplished journalism which explores some of the most pressing global problems of today. The journal masterfully balances the general and the particular, offering meaningful insights into the featured subjects, but further, the essays, and journal overall, tackle some of the most imposing and overarching international challenges of our time. Readers are called to consider the various forms of “debt shouldered by future generations”, their roles in this debt, and this future (Raphael Houdmont, p.6, issue 1).

In the first edition essay-writers were daring enough to take on political corruption, religious extremism, over-population, poverty, censorship, environmental responsibility, human rights violations, mass atrocities, and more. The questions asked were courageous and self reflective; the type of questions which require a moral evaluation of individual and collective behaviours and responsibilities; questions that call for global cooperation, and political or cultural upheaval at times.

‘A Global Village’ has been created through the inventiveness, astuteness, and also the ethical conscience of Imperial College’s staff, students and alumni. I would encourage colleagues to contribute to the Journal, so that the diversity of thought at the College is represented, and that the College community is provided with the type of compelling and affecting reading given to us so far through the Journal. Just as Marcelo Vasquez Rios in his essay tells us: “In Teheran, young bloggers kept the world updated on the protests via real-time news posts and analysis” (p.12, issue 1), ‘A Global Village’ offers the opportunity to open up debate on issues from which we often recoil because of their difficulty, or the possibility that they will implicate ourselves, and our societies.

I look forward to future editions of the journal, and I would not be surprised to see some of those who contribute to it, and run it, emerging as the next generation of international policy-makers who contribute to the global change that they are currently writing about.

Sir Keith O’Nions, Rector
A Note from the Editor

We are very happy to welcome you to the second issue of ‘A Global Village’. Much has happened since the first issue was published in January 2010. Notably, we have become an independent publication under the Imperial College Union in order to ensure that we establish a sustainable journal with a broad contributor base and readership throughout the College.

This issue sees our contributors tackle a range of pressing global issues. These range from creative solutions to climate change through geo-engineering, to challenges met by the aid community in the Western Sahara — and the future of global healthcare, Cuban-style! Following on from a discussion on the need for ‘adaptation to climate change’ in the last issue, our insider at Copenhagen exposes what happened and why. Turning to European issues, our contributors consider the implications for Europe as Ukraine turns towards Russia following the recent Presidential elections and ask, in the wake of the Greek crisis, what new powers have been bestowed upon the European Union by the Lisbon Treaty.

Finally, we would like to express a warm thank you to Prof. Alan Fenwick OBE and the Schistosomiasis Control Initiative for their generous support of this publication — we hope you enjoy reading it!

Neave
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DISCLAIMER
‘A Global Village’ seeks to enable both Imperial College students and staff, present and past, to publish essays rooted in personal opinion yet broadly based on an informed knowledge of a given topic. The Editors cannot accept responsibility for error or any consequences arising from the use of information contained in this journal. Furthermore, the views expressed here may in fact be opposed to those of the Editors. No essay, or part thereof, may be reproduced in any form prior to gaining the permission of the author. Authors may be contacted either directly or indirectly through aglobalvillage@imperial.ac.uk.

IMAGE CREDITS
Refugees or Residents: When Camps Become Towns in the Western Sahara

Saba Shafi is a recent graduate of Imperial College who has worked in a variety of roles within international development. She is currently managing a healthcare initiative in the Western Saharan refugee camps and is in the process of launching her own charity.

The Western Saharan refugee camps in southwest Algeria have almost been forgotten. In 1975 thousands of small tents were pitched in one of the most inhospitable regions in the world, filled with women and children, waiting for their husbands, brothers and sons to return from war. These Saharawi have proved themselves to be a formidable force, arriving in the camps with a literacy rate well below 10% and reversing it to one above 90% today. Although recognizing the benefits that international assistance has provided them, as the camps develop and the refugees grow more vocal, international development agencies are increasingly struggling to continue to work effectively employing traditional methods.

A recent visit to the camps with Imperial College’s International Education Fund highlighted these problems. It became apparent that the future of international development in the camps depends on the ability of aid agencies to adapt – to truly understand and to respect the Saharawi people while reconciling the problems of working in a politically charged atmosphere with the ‘take-no-sides’ approach of many charities.

Disputed Territories
The region known as the Western Sahara was previously a Spanish colony during the period 1884-1975. When Spain left the country in 1975, it was claimed by both Morocco and Mauritania resulting in a conflict that left thousands homeless and remains unresolved today. This is despite a UN ruling in 1991 that provided for a referendum on independence for the Saharawi people or integration into Morocco. Such a referendum has never taken place largely due to a dispute over the identification of who exactly is eligible to vote.

Currently Morocco occupies two-thirds of the Western Saharan region with the remaining third, referred to by the Saharawi as the liberated territories, home to a few Bedouin and UN peacekeepers. Most Saharawi, not in the occupied territories, actually prefer to live in the refugee camps in neighbouring Algeria rather than in the liberated territories that are ridden with landmines.

“It is safer, it is where most of the development has taken place, it is safer ... We can be ourselves.”
Saharawi

Nowhere is the temporary sense of a refugee felt more than in the Western Saharan refugee camps, and yet nowhere does it seem less obvious. Many find it hard to believe that a refugee camp can have satellite TV, local elections, a national museum, a burgeoning tourism industry and its own radio station complete with entrepreneurial journalists. Despite the obvious success of development efforts over the past 35 years, it is striking that the region is still referred to as a refugee camp. No permanence of any structure – radio tower, water pump or otherwise – is accepted by any member of the camps. Indeed, the fact that the people still refer to their homes as campsites
is a good indicator of local sentiment. Foreign aid has helped to support and build a work ethic and standard of education unrivalled in many parts of the world yet the Saharawis don’t see a future in the refugee camps dependant on the help of outsiders; they want to go home.

**Good Intentions**
Growing publicity of the region has led to large numbers of ethical tourists visiting the camps each year, all eager to support the refugees through events like the Sahara marathon and the annual Sahara film festival. However, a cynicism grows within the community at this influx of aid and attention, at the people who come and leave behind their sleeping bags when they depart. In the words of one of the refugees, “I would rather not have that aid in the first place.” Many people spend time in the camps without gaining any understanding of the culture and values of the Saharawi; assistance given without consultation is often perceived as patronising by the Saharawi. There is a feeling that such good intentions, while helpful, are limited and rarely lead to an understanding of the needs and wants of the Saharawi people. Without such an understanding the success of any charitable mission will surely be stunted.

The Saharawis, however, are far from being ungrateful or at a stage where they could be independent from aid: the arid and inhospitable climate of the region, dubbed “The Devil’s Garden” amongst Algerians, means that the Saharawi are wholly dependent on external support from the United Nations High Commissioner for Refugees (UNHCR). They remain eternally grateful to the Algerian government who have continued to back the Saharawi cause, not only providing access to hospitals, schools and airports but also allowing levels of autonomy to the Polisario, the government-in-exile of the Western Sahara. Spanish NGOs, perhaps feeling some post-colonial guilt, are the main international supporters of the Saharawi after Algeria. Indeed, the ‘success’ of the refugee camps is in part due to incredibly successful infrastructure development drives.

*The Saharawis just want to go home*
A Long Road Home

However, it is because of the Saharawi people that such development projects have been so successful and why future development in the region is easy to access and appealing to NGOs. Notably the refugees have maintained control of all services from hospitals to schools, water transportation to electrical supplies. Food distribution is under the supervision of local women. Indeed, the UNHCR places these camps in a different league to many others who are not only dependent on aid but also governance. These are the most well-organised and run refugee camps in the world. For example, the Polissario Ministry of Health was able to tackle a 1980s outbreak of the disease trachoma – reducing it from 18% of children aged 3-19 to just 3% within a decade with basic antibiotics and a ferocious public education campaign. As such, Saharawi influence on further development projects should not be disregarded. However, more recently the Polissario government voted against proposals to develop a piping system across the camps that would allow cleaner and safer water distribution – the permanence implied by its presence outweighing the significant improvements it would provide. Why continue development beyond basic infrastructure when you don’t plan on staying?

Long-term issues at the forefront of the Saharawi mindset centre on concerns over disempowerment of the youth, loss of their culture and most importantly, a viable roadmap to return to their homes in the occupied territories of the Western Sahara. International development agencies might prefer to prioritise the growing of kitchen gardens that could tackle chronic malnutrition, or perhaps the stark lack of doctors and

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*A new generation of children, born far from where they call home*
trained medical professionals in the region. The Saharawis are concerned about these issues but it is a question of priority. Their main aim is to return home. Ensuring that this wish is respected presents a challenge to aid agencies that must reconcile continued development within the camps with a need to reassure the Saharawis that their situation is temporary.

The best projects, currently in operation, help to incorporate things that are important to the Saharawi people. These projects focus on living conditions and social inclusion in the camps, publicity for the Saharawi cause and education. One example is the annual Sahara Marathon, now in its tenth year, which is known as a race of solidarity for the Saharawi people. It receives significant publicity each year and is growing rapidly in popularity, with recent runners including footballers from Real Madrid. The race organisers encourage international participants to join the refugees: to eat with them, to sleep with them and then to run with them. The route of the marathon symbolically connects the camps, taking runners through the barren desert. It is known as the voice of the Saharawi people.

However, it is fair to say that the highly politicised situation has deterred many charities that do not want to be seen to either support the Polissario agenda or be tacitly answerable to it. In the past, the Polissario have been reluctant to allow any census of the population. This is a contentious issue, as these numbers will determine the outcome of any referendum to determine the status of the Western Sahara population as proposed by the UN in 1991. This practice has impeded the important gathering of medical data. However, such a challenge is not unique to the refugee camps - working alongside difficult governments is the remit of any international development mission and the Polissario are known to be more cooperative than most.

There exists a view that the camps are in fact, too saturated with NGOs. The many successes of the Saharawi people make it easy to forget that there is still much work to be done. The burgeoning healthcare system owes much of its success to public education campaigns and foreign aid from Spanish NGOs like Medicos del Mundo. Increasingly Saharawi women are being trained as nurses and medical practitioners but the camps are still in dire need of experienced, properly trained personnel. Diagnosing patients remains at the heart of the problem. As the Minister of Health explained, “Thousands die and we don’t know why.” The Polissario’s sensitivity to population surveys is frustrating, but not insurmountable.

**Imperial College in the Western Sahara**

Despite significant hurdles, it is possible for charities to work effectively within the refugee camps alongside the government to design projects that are celebrated by the local population. In February 2010, a group of students from Imperial College London went to the refugee camps representing the International Education Fund (IEF). The Fund, essentially a student-run mini-NGO, raised well over £10,000 for schools in the region. Throughout the fundraising and project management stages the IEF worked collaboratively with representatives from the Saharawi government to develop a program.
There were two parts of the project – one was to bolster the local blind schools and the other was to provide some computers for local schools. For a community that prides itself on social inclusion at all levels and ensuring no one is left behind, investment in specialist schools like those for the blind is very important. The IEF also spent significant time with both the government, heads of hospitals and schools and locals to determine which areas of education and public health they felt were most in need of funding. Crucially, throughout the process the Saharawis retained a significant role in determining where the money should be spent and how it should be distributed. Seemingly obvious, this practice isn’t always followed by many charities.

Defining the success of the project via the enthusiasm and involvement of the Saharawi, the IEF was able to develop where no other agencies had. The outcome of the project and the trust developed between the Imperial team and the government allowed the students to develop a healthcare initiative for the camps, despite previous concerns about regional surveys. This initiative is currently being developed and should be in operation by the start of the next academic year, October 2010.

The future of international development in the camps is certainly positive. Increased media coverage over the past year will serve to increase attention received by aid agencies to the Saharawis. However, it is important that any future development projects see the camps as being more than a refugee homestead. It is not the camps themselves but the Sahrawi people who need and deserve further investment. Portable development, like education, a healthy population and a sense of worth will last longer than any underground piping system – at least in the eyes of the Saharawi and it is to them whom developers are most accountable.

Interested? Contact Saba at sabashafi3@gmail.com.
The Politics of Climate Change: Why the Copenhagen Summit Ended in Failure

Nicola Peart was an MSc student at the Centre for Environmental Policy at Imperial College. She wrote her thesis on climate change adaptation, and the UNFCCC process. She has attended the negotiations since early 2009 working for the World Wildlife Fund. She is now studying law at the College of Law, Bloomsbury.

In a direct act of defiance, climate change activists from Oxfam rallied outside the Copenhagen Summit last December, disguised as caricatures of the world’s most powerful leaders: “The main obstacle to a climate deal” they said, “is state sovereignty”.

Two weeks later, following the presentation of the Copenhagen ‘Accord’ – a statement of political (rather than legally binding) intent drafted by a small select group of powerful states – the UK Prime Minister, Gordon Brown, echoed the same sentiment: “Never again should we let a global deal to move towards a greener future be held to ransom by only a handful of countries”.

The Oxfam protestors and Gordon Brown illustrate a broader belief amongst those following the climate change negotiations: stubborn assertion of state sovereignty and ‘political hijacking’ caused the meltdown of what was one of the most complex negotiations that the United Nations has ever attempted to co-ordinate.

Global finance, intellectual property and the rights of marginalized, young and indigenous people.

Given the complexity of the debates on climate change, as well as the range of stakeholders and sovereign interests involved, many question whether the United Nations approach to world-wide diplomacy – one nation, one vote – is suitable for handling truly global and urgent concerns such as climate change.

Stubborn assertion of state sovereignty and ‘political hijacking’ caused the meltdown of what was one of the most complex negotiations that the United Nations has ever attempted to co-ordinate.

Is a global agreement on a cohesive strategy for tackling climate change and associated problems really possible via alternative forum or a sub-group of ‘representative’ nations, such as was seen in Copenhagen? Or is the United Nations system, where rules and principles are respected and negotiators arrive at the table willing to discuss an ecologically interdependent global community rather than with a preconditioned mandate to serve only their sovereign interests, needed to address this unprecedented challenge?

2009: The Year of the Climate Change Deal?

2009 was a year filled with preparatory meetings and negotiations on the substantive elements of a climate change deal, set to be signed in December at the 15th annual Conference Of the Parties (the COP-15) in Copenhagen. Towards the end of 2009, however, it became clear that negotiators were unlikely to be able to agree on the collaborative and ambitious deal that the world was waiting for. Discussions
at the start of the COP-15 indicated a huge split not only between developed and developing countries, but also within the group of developing countries.

“We are moving further apart instead of closer together ... It feels as if two worlds are colliding”

Nepalese delegate, Barcelona 2009

Carbon Space
In essence, developed and developing countries were divided primarily due to the charge that developed countries are responsible for current and short-term future climate change. These countries faced demands from the rest of the world to dramatically mitigate future carbon emissions and pay for the damages caused by past emissions. Mitigation in any country will have huge economic repercussions as it demands, amongst other things, transforming the energy sector, rethinking subsidies for high-carbon activities, altering our dependency on air and sea transport, investing in renewable energy, increasing the cost of fossil fuels and reducing our dependency on high carbon goods from abroad. Furthermore, developing countries demanded that money to fund adaptation activities, such as building defences against climate change impacts such as sea level rise, drought, disease of migration, should be made through compensation payments. Importantly, these payments should be in addition to, rather than part of, existing pledges of aid. Technology and financial support should also be provided to enable developing countries to emerge along ‘low-carbon’ trajectories.

Developing countries argue that they should have the ‘carbon space’ to develop and move out of poverty

Whilst developing countries argue that they should have the ‘carbon space’ to develop and move out of poverty, many developed countries see low carbon development as the only viable means of meeting a global carbon emissions cap. The latter may restrict growth and development thus hindering advances in both economic and political spheres. Furthermore, there is a vast difference between the short and longer-term emissions arising out of a developing country such as China, and one such as Tuvalu. It is hence very difficult to treat all developing countries the same. Should an island such as Tuvalu be as heavily penalised for low carbon development as China? Should Saudi Arabia be eligible for adaptation finance that is arguably more urgent in regions of sub-Saharan Africa? A paradox arises in that the voice of the smallest developing country can often only be heard if it is projected from within a coalition of developing countries that include the largest developing nations. Thus it is the case that coalitions of countries form in the hope that as a collective, their voices will be heard when faced with economic heavyweights such as the United States or China.

Movers and Shakers
The political dynamic that emerged in 2009 cannot be characterized only as a standoff between developed and developing countries, as is often the case in multilateral negotiations involving trade and...
finance. In addition to the major developed/developing economic split, there were significant factions within coalitions of countries: the US and EU didn’t always stand on common ground, and increasingly the major emerging economies – China, India, South Africa and Brazil known as the BASIC group – stood apart from other developing nations. There were marked differences between the Organization of the Petroleum Exporting Countries (OPEC) and other coalitions such as the Small Island Developing States (SIDS) due to conflicting interests in protection of oil trade. A new coalition emerged between Latin American countries and the African group; the African group showed unprecedented political strength within the negotiations leading up to Copenhagen. Finally, bilateral pacts such as suspected trading agreements between certain African and Asian countries only served to complicate alliances, and split coalitions further.

“Convergence would mean a meeting of minds: meeting of minds would mean a common understanding. We don’t have a common understanding on any issue. Therefore, Mr Chairman, we have no convergence”

Philippine delegate, Copenhagen 2009

A Backroom Deal

Given the array of elements to be negotiated, national priorities and interests, and the range of alliances and fractions within and between groups, negotiations proceeded at a predictably slow pace. By the second week of negotiations in Copenhagen, there was a distinct possibility of not being ready to present a draft deal to the arriving heads of government. The COP President, the Danish Prime Minister Lars Lokke Rasmussen, at the last minute, convened a high-level ‘Friends of the Chair’ – a sub-group of nation states, with the authority under the UNFCCC to draft a decision on behalf of the whole. Although this group made some progress towards drafting a text, it is widely believed that the real dealmaker occurred during a meeting between US President Obama and the BASIC group of powerful emerging...
economies. It is thought to be their interests that drove the drafting of the Accord, and which are primarily served by it.

A Disappointing Outcome
The Copenhagen Accord does not meet most expectations. It does not include any overall targets for the emissions reductions of developed and developing country. Its governance structure is ‘bottom-up’ – it is up to individual countries to volunteer targets and ensure that they meet them without obligation under the UNFCCC. It does contain promises of funding in the short and long term, but without any guarantee that such funding will in reality materialise outside previously promised development aid. Finally, the Accord does not fit clearly into international law and says nothing about the future of existing legal instruments such as the Kyoto Protocol.

In order for the Accord text to be officially recognized under UN negotiations on climate change, unanimous support amongst 190 nations to ‘adopt’ it, had to be achieved. In the final meeting of Copenhagen, the Accord was to be presented to all the nations in attendance in anticipation of them agreeing to adopt it as the official outcome of the COP-15. Yet before the plenary had actually opened, US President Obama held a press conference at the COP venue, shortly before departing for Washington, in which he announced that there had been a “meaningful and unprecedented breakthrough here in Copenhagen. For the first time in history, all major economies have come together to accept their responsibility to take action to confront the threat of climate change”. At the time, however, the vast majority of countries that were not ‘Friends of the Chair’ had not actually received the text of the Accord – they would only receive it four long hours later. In an emotionally charged, all-night negotiating session, the Parties to the UNFCCC battled to agree on whether to adopt the Accord. By the end of the meeting, carrying on the trend from the past year of negotiations, political consensus was not achieved.

“We are surprised and offended by the methodology used ... We do not believe this is respectful of a democratic mechanisms. Which part of the world was consulted? Which interests of the world have agreed this document that we have not had access to? Why have we not discussed this amongst all of us? ... We are seeing actions in a dictatorial way and this is not the way the world should discuss the future of humanity ... It does not reflect nearly two years of work. The rights of our people are not being respected ... Our position is absolutely clear. It is a document of a small group of countries who feel they have the political authority to impose this document on us.”

Evo Morales, President of Bolivia

“We all work under the umbrella of the UN ... we demand that all nations are given respect, and use processes to consider matters collectively. This is called the Conference of the Parties. Earlier tonight a prominent member was announcing to the press that he had a ‘deal’. This is disrespectful to the UN process. Negotiation via the media may be the norm in some countries. But other countries have greater respect for these processes ... Can I suggest that in biblical terms we are being offered 30 pieces of silver to betray our peoples’ future. Mr President our future is not for sale. Mr President I regret to inform you that Tuvalu cannot accept this document.”

Ian Fry, International Environmental Officer for Tuvalu
“[you are asking] Africa to sign a suicide pact, an incineration pact, in order to maintain the economic dominance of a few countries ... I want to put on record that in conducting your duties as President of COP 15, you have been biased, violated all rules of procedure of transparency.”

Lumumba DiAping, Sudanese Diplomat

“There is nothing to apologise for in terms of participating in the process convened by the President of this body. This was a transparent group ... with representatives from each of the major regional groupings ... This was an appropriate role for the Chair and we applaud it.”

Jonathan Pershing, US Lead Negotiator

“... We have one choice: to accept this document and get it going to start money flowing.”

Ed Miliband, UK Secretary of State for Energy and Climate Change

Consensus was not reached amongst the parties, and there was no decision to formally adopt the Accord under the UNFCCC. As such the Accord remains little more than a political declaration, with no legal authority or principles to guide its interpretation. Because it does not sit under the UNFCCC, it provides a legitimate opportunity to take action on climate change to alternative fora. These might include political fora where the major economies are already well represented and not everyone’s voice can be heard. Examples include the Major Economies Forum (MEF) or the G20.

The Blame Game

Who or what was the cause of the failure of Copenhagen? The blame game that has ensued since the close of the final plenary has seen fingers pointed at individual Parties as well as the UN system as a whole.

“The immediate reason for the failure of the talks can be summarised in two words: Barrack Obama.”


“How do I know China wrecked the Copenhagen deal? I was in the room.”

According to John Vidal of the Guardian (20 Dec.), Ed Miliband “accuses China, Sudan, Bolivia and other left-wing Latin American countries of trying to hijack the UN climate summit and ‘hold the world to ransom’ to prevent a deal being reached.”

A senior Chinese official, however, published an opinion piece in China Daily entitled ‘Obstruction of developed nations’ in which he points out the “developed countries, especially the EU, have not reflected on their activities that delayed and hampered progress at the global climate talks”.

Some commentators and delegates, clearly disappointed and disturbed by the events of the final plenary, referred to the process that gave rise to the Accord as the primary problem in the climate negotiations. As reported by the Financial Times: “One immediate target of criticism was the unwieldy United Nations negotiating process, which several nations blamed for Copenhagen’s failure”. In his Guardian opinion piece the day after the final Copenhagen plenary, Ed Milliband emphasised the “need to have major reform of the UN body overseeing the negotiations and the way the negotiations are conducted”.

About a month after the summit, it was reported in the US press that “America sees a diminished role for the United Nations in trying to stop global warming after the ‘chaotic’ Copenhagen climate change summit.” The role of the UN would be as a forum “for countries such as Cuba or the small islands ... to air their grievances”.

**United Nations?**

It is difficult to establish a single country or group of countries as the cause of the Copenhagen stalemate. Yet similarly, it is difficult to attribute primary blame to the UN. As a climate-negotiating forum, the United Nations is highly imperfect. Professional negotiators who consider defending historical national positions more important than progress dominate climate talks. The rules of procedure invite delay and obstruction. Progress is very slow and often absent. But the United Nations is not the main impediment to progress on climate change.

So long as the assertion of individual national interests remains a major influence, political consensus will be an insurmountable hurdle in the pursuit of a Climate Deal. It is state politics, together with blatant disregard and disrespect for UN procedure, that remains the fundamental cause for the Copenhagen failure – not the United Nations itself. In fact the UN process, if properly used and rules abided by, actually provides a mechanism to deal with the problem of political bargaining in multilateral negotiations.

As a lead US negotiator, Jonathan Pershing, pointed out, the UN procedures are there to ensure “a global buy-in”... and “there is no other institution other than the UN that can provide that.”

“... The responsibility ultimately was not with the UN, but with the Parties and, as such, with their leadership collectively.”

Benito Mueller, Director of Energy and Environment with the Oxford Institute of Energy Studies

Looking forward to Mexico – the next Conference of the Parties under the UNFCCC – the responsibility for a successful outcome lies with the Parties and their willingness to abide by the principles and rules of procedure of the United Nations. In particular, all rules on voting must be decided upon prior to the start of the next round of negotiations. States must sideline national interest, bilateral alliances, and the temptation to create subgroups of the most powerful regional and national interests. Instead they must use the framework of the UNFCCC and the forum of the United Nations to focus on what needs to be a truly shared vision.
Neglected Tropical Diseases: Can We Take the ‘Neglected’ Out of the Name?

Prof. Alan Fenwick OBE is Chair of Tropical Parasitology at Imperial College London and Director of the Schistosomiasis Control Initiative for Neglected Tropical Diseases.

The Neglected Tropical Diseases (NTDs) are a number of usually chronic but sometimes-acute diseases, which were first grouped together back in 2003 by the World Health Organisation. They have earned the name ‘neglected’ almost by default due to the fact that very little of the funding for health which goes to the poorest countries is directed at them.

Most African countries depend on external funding for support to their Ministries of Health, and while some money goes for salaries, hospitals and infrastructure, and some is directed at individual high priority diseases, very little goes to the treatment of NTDs. The acute killers, including the big three of malaria, TB, malaria and HIV/Aids, can infect tourists, affect people living in major cities and even infect government officials, and as such attract money from major donors. Government funds are also primarily directed at them. NTDs on the other hand attract little money or attention because (1) they affect the poorest of the poor yet rarely affect the well off, (2) the people infected rarely complain of early infections because they are chronic and (3) people visiting remote health facilities will not receive an accurate diagnosis or suitable drugs, and so do not make an effort to go.

In addition to being neglected in terms of patient treatment, NTDs also suffer from a lack of allocated research and control funding both by donors and the pharmaceutical industry. Indeed, with less than 10% of research funds received for NTDs compared with malaria, HIV and TB.

*NTDs affect the poorest of the poor yet rarely the well off*
**Burden of Disease**

In terms of the burden of disease, NTDs cause as much suffering as TB and malaria due to the numbers infected and the period of time over which people suffer from disabilities and a poor quality of life. For example, intestinal worms and schistosomiasis together infect over 1 billion people but, as they are chronic infections, very few deaths are attributable to them. Lymphatic filariasis causes horrible disfigurement, while river blindness and trachoma cause people to go blind - neither kill. On the other hand, some NTDs such as sleeping sickness and visceral leishmaniasis infect relatively few people but are quickly fatal.

The United Nations Millennium Development Goals (MDGs), adopted in 2001, consist of eight international development goals that all 192 United Nations Member States and at least 23 international organizations have agreed to achieve by the year 2015. The MDGs aim to stimulate development by improving social and economic conditions in the world’s poorest countries. There is a case to be made that 5 out of the first 6 MDGs can never be achieved unless we can treat the millions infected by NTDs.

1. **Eradicate extreme poverty and hunger** – to eradicate poverty we must first treat the worms that cause the poverty.
2. **Achieve universal primary education** – dewormed children will go to school feeling fitter and healthier, and with a better nutritional status.
3. **Reduce child mortality** – if we treat these diseases infants will be less likely to die.
4. **Improve maternal health** – we can lower anaemia by de-worming and hence improve birth outcomes.
5. **Combat HIV/AIDS, malaria and other diseases** – again treatment of the ‘other’ diseases will help reach this goal.

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*Neglected Tropical Diseases controllable by Mass Drug Administration (MDA)*

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<tr>
<th>NTD</th>
<th>Status</th>
<th>Control Strategy</th>
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<tr>
<td>Soil transmitted helminths (STH)</td>
<td>Over 1bn people infected globally, usually poor children</td>
<td>Annual treatment with albendazole or mebendazole</td>
</tr>
<tr>
<td>Ascaris lumbricoides</td>
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<tr>
<td>Trichuris trichuris</td>
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<tr>
<td>Necator americanus</td>
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<tr>
<td>Ancylostoma spp</td>
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<tr>
<td>Schistosomiasis (Bilharzia)</td>
<td>200m infected, mostly in Africa from water contact</td>
<td>Treatment with praziquantel, improved water supplies and sanitation</td>
</tr>
<tr>
<td>Schistosoma mansoni</td>
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<tr>
<td>S. haematobium</td>
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<tr>
<td>S. japonicum</td>
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<tr>
<td>Lymphatic filariasis (elephantiasis)</td>
<td>120m infected in Africa and the Indian sub continent, but elimination is possible</td>
<td>Six annual MDAs with albendazole + Mectizan (in Africa) or albendazole + DEC (elsewhere)</td>
</tr>
<tr>
<td>Wucheraria bancrofti</td>
<td></td>
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<tr>
<td>Brugia malayi</td>
<td></td>
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<tr>
<td>Trachoma (preventable blindness)</td>
<td>80m infected, 8m visually impaired, eliminated from Morocco</td>
<td>Annual treatment with Zithromax, as part of a ‘SAFE’ strategy</td>
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<tr>
<td>Chlamidia</td>
<td></td>
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<tr>
<td>Onchocerciasis (River blindness)</td>
<td>50m infections in Africa</td>
<td>Control of symptoms by annual treatment with Mectizan</td>
</tr>
<tr>
<td>Onchocerca volvulus</td>
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The Bottom Billion

The NTDs are usually highly prevalent in rural areas where piped water does not exist and hygiene and sanitary conditions are poor. This promotes hand to mouth and water borne infections with insect breeding leading to vector borne diseases.

Three species of intestinal worms infect the ‘bottom billion’ – those people who live in poverty in the poorest areas of the poorest countries of the world. They are hookworm (*Necator* and *Ancylostoma spp*), whipworm (*Trichuris*) and the round worm (*Ascaris lumbricoides*). These worms inhabit the human gut and live off our ingested food while their eggs are passed out in our faeces. They have no intermediate hosts; in poor hygienic conditions the last two are ingested, while hookworm undergoes a free-living stage before reinvading a human host through the skin.

The misery, malnutrition and anaemia that these worms cause is enormous, yet they can be expelled from the human body with a single 500mg tablet of a drug called Albendazole, which costs as little as one penny per tablet from a generic manufacturer. It has been shown that annual doses of de-worming tablets may have a remarkable effect on a child’s growth, nutritional status and school attendance.

Other NTDs that can and should be easily treated are the schistosomes that cause schistosomiasis or bilharzia. These worms cause a variety of symptoms including blood in the urine and stools in the early stages and then more severe symptoms such as fibrosis of the bladder or liver, and death from bleeding or cancer. An estimated 200 million people are infected globally with schistosomiasis, almost 90% of those infected are found in Africa. Yet these worms can be killed by a single dose of the drug Praziquantel at a cost of less than 50 pence.
Two other worms, which can be easily cured, are onchocerca that causes blindness and lymphatic filariasis that causes horrific swelling of the limbs and scrotum. These worms again can be treated with pills taken once a year – the drugs used, Mectizan and Albendazole, are donated by manufacturers Merck and GSK respectively.

While we can eliminate some of these diseases, there are other NTDs that are not so easy to eradicate and some that are more deadly. These include sleeping sickness, rabies and visceral leishmaniasis – vaccines exist for rabies yet we do not have a safe drug for the others. Other diseases for which money is needed for research include Dengue fever, Japanese encephalitis, and buruli ulcer – all horrible diseases for those infected.

So, in summary, NTDs are a diverse group of infections that tend to affect the poorest of the poor such that, without combating them, the MDGs will never be attainable. For one subset of NTDs an inexpensive rapid impact package of drugs can be delivered annually at minimal cost and could easily control or eliminate the suffering of up to a billion individuals.

Many pharmaceutical companies have been generous in donating products that command high prices in the West, but are unaffordable to those who need them in the poorer countries. However, more drugs and much research funding are needed to fully address the needs of those struggling with NTDs.

We have calculated that if we could raise £200 million every year for 5 years these infections would be virtually gone from Africa, and so we are conducting a campaign to raise funds to eliminate these diseases.

Please find out more and donate online at www.imperial.ac.uk/schisto.

**Contributions by pharmaceutical companies towards NTD control**

<table>
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<tr>
<th>Company</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>Merck &amp; Co Inc.</td>
<td>donates Mectizan for as long as needed for onchocerciasis and lymphatic filariasis control in Africa.</td>
</tr>
<tr>
<td>GlaxoSmithKline</td>
<td>donates albendazole for lymphatic filariasis globally at least to 2020.</td>
</tr>
<tr>
<td>Pfizer</td>
<td>has committed to donate up to 120 million doses of azithromycin for trachoma.</td>
</tr>
<tr>
<td>Novartis</td>
<td>has a continuing commitment to Multi-Drug-Therapy for leprosy.</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>donates mebendazole for removal of intestinal worms.</td>
</tr>
<tr>
<td>Medpharm</td>
<td>has donated praziquantel and deworming drugs via Canadian donations.</td>
</tr>
<tr>
<td>E. Merck</td>
<td>has committed to donate through WHO up to 200 million praziquantel tablets over 10 years.</td>
</tr>
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A Physical Barrier to Peace: Territorial Fragmentation in the Middle East

Iseult O’Clery is a final year student of architecture at University College Dublin. She is interested in exploring the relationships between design, construction and society.

In early 2010, Israel announced plans to expand its building programme in East Jerusalem. The ensuing diplomatic crisis between Israel and its traditional ally, the United States, drew attention to the tensions surrounding Israel’s use of physical structures as a political tool. The creation of Palestinian enclaves, both within East Jerusalem and throughout the West Bank, through the construction of a ‘separation wall’ and the widespread disruption of transport routes has spatially fragmented the Occupied Territories. Affecting prospects for long-term peace in the region, the isolation of communities has had serious repercussions for both public sentiment and the economic situation in the region.

Israel’s victory in the 1967 Six Day War precipitated its seizure of a number of territories including the West Bank and East Jerusalem from Jordan. At this time, a large number of Palestinians were relocated to the West Bank and Gaza Strip where they remain today.

The 1949 UN mandated ‘Green Line’, proposed following the Arab-Israeli War of 1948, splits Jerusalem in two, designating East Jerusalem to be part of the Palestinian West Bank. The Palestinians see East Jerusalem as the capital of a future Palestinian state comprising both the West Bank and the Gaza strip. The Israelis however dispute this division, declaring a united Jerusalem to be their rightful capital and currently occupy the city.

Although widely seen as illegal under international law, civilian Israeli communities have relocated to the West Bank over the past 50 years forming large settlements – today over 450,000 Israeli settlers live within the Occupied Territories including East Jerusalem. In 2002, a security fence or ‘separation wall’ was erected by Israel between East Jerusalem and the West Bank as a defensive measure against a perceived terrorist threat. This barrier runs close to the Green Line of 1949 yet separates East Jerusalem from the West Bank, deviating to surround and ‘protect’ Israeli settlements in the vicinity. This attempt to enclose and defend Israeli settlers has resulted in the creation of high-density Palestinian enclaves which, when coupled with Israeli measures to curtail movement of Palestinians within the West Bank, result in a territorial fragmentation of the region as a whole.

“So such a fragmentation of the West Bank may have long-term political implications for peace.”

Sharon Rotbard, Israeli architect, 2008

“Although it never had recognized borders, the State of Israel never seized to search for them in order to define itself geographically and socially.”

Sharon Rotbard, Israeli architect, 2008
Divide and Conquer
At a length of over 724 km, the barrier has been described as a ‘frontier’: its elastic and fragmented nature being the antithesis of the generally static and stable interpretation of a border. The ‘temporary’ nature of the wall allows expansion eastwards of Jerusalem; as the frontier pushes further into the West Bank, entire Palestinian villages have become walled enclaves, surrounded by newly acquired Israeli territory.

A much larger closure system spans the West Bank. This includes the closure or obstruction of many roads, and the presence of ‘roaming’ checkpoints that serve to effectively divide the West Bank into disconnected sub-regions or larger enclaves distributed throughout the Occupied Territories.

Cut off from the surrounding hinterland and appearing on a map like an archipelago of islands, these enclaves have isolated Palestinian communities across the West Bank, with an estimated 125,000 people affected. This spatial segregation has had a devastating impact on both everyday life and the region’s economy.

“Palestinian life is scattered, discontinuous, marked by the artificial and imposed arrangements of interrupted or confined space.”
Edward Said, author, 1986

Wall and Tower
Architecture and politics in Israel have been inextricably linked for generations. Eretz-Israeli architecture, originating in the early 20th Century, was characterised by a Western style distinct from the pre-existing Palestinian design. Concerted efforts by the Israelis to inhabit physically distinct and separate spaces from the Palestinian people, from the time of the first aggressive building programmes in the 1930s, has contributed to a fractured and disjoint society today.

“[The Israeli] approach establishes architecture, just like the tank, the gun and the bulldozer, as a weapon with which human rights could be and are violated. The mundane elements of planning and architecture are placed there in order to disturb and dominate.”
Eyal Weizman, Tel Aviv architect, 2002

The current barrier in Jerusalem, although repeatedly referred to as ‘temporary’ by the Israeli government, is an elaborate construction. An imposing and frightening structure, it includes strips of sand...
smoothed to detect footprints and a stack of barbed wire six coils high. Concrete or ‘gunfire protection’ walls predominate with observation posts such as cameras and watchtowers installed periodically along its length. Obstructive, the wall bisects many roads including the highway from Jerusalem to Ramallah. Once busy thoroughfares have become nothing more than rural trails.

Israeli settlements of the 1930s were characterised by a ‘Wall and Tower’ approach. Constructed within a day, these small compounds were surrounded by wooden walls and included a surveillance tower. Today, this same strategy takes the form of hilltop development – yet in reverse; the Israelis look in.

“There is a paradox in this beauty in that what is considered by the settlers to be a pastoral, romantic panorama is actually the traces of the daily lives and cultivation of the Palestinians, and the settlers both enjoy that view but simultaneously supervise it …”

Eyal Weizman, Tel Aviv architect, 2002

While little to no high-rise development is permitted within the Palestinian enclaves: the areas surrounding them are quickly built up to tower above, overshadowing and dominating them. The developments allow settlers to enjoy spectacular views while ensuring maximum surveillance of the enclaves.

**Density without Urbanity**

Although Palestinian farmland is easily assimilated into Israeli territory, villages are a more difficult proposition; they become enclosed and often fully surrounded by high walls. Within the enclaves, a studied lack of Israeli involvement pervades. The high-rise apartment blocks and western style villas of East Jerusalem contrast with a lack of developed infrastructure and planned space within these enclosures.

“We hang a swing inside the house. Ten years ago people had open courtyards; now there’s no room.”

Fuad Jalalah, Palestinian resident of Sur Bahir, 2006

The population of the enclaves has more than doubled in the last decade due to Israeli settlement in surrounding areas. These zones have an urban density while still maintaining a rural scale and infrastructure. Tight planning restrictions ensure that this ‘density without urbanity’ has led to low-rise, overcrowded settlements fuelling discontent amongst residents.

Over 94% of planning applications were refused in 2009. Temporary dwellings are hastily constructed and are removed almost immediately by the Israeli authorities, Yehotal Shapira explains; “…illegally built homes are regularly demolished by the municipality. Heaps of rubble from demolished homes scar the neighbourhood, a viable reminder of the choked space”.

These planning policies have a much deeper psychological role, Weizman argues: the enclaves have become ‘states of exception’ which due to their temporary nature, lie outside normal jurisdiction. This indeterminate state means that construction permits are impossible to obtain, therefore, the majority of Palestinians are forced to build illegally, becoming criminals under Israeli law.

Spatial tension is felt on both sides of the divide; a resident within a Jewish settlement describes his fear and isolation;
“Here everyone is locked in his own house ... there are isolated houses, organized in straight lines ... I hate to get out, whenever I leave the house I have a war, I have a war.”

Haim Yacobi, architect, 2007

Enclosed and Isolated
The fragmentation of territory into homogenous zones has further aggravated the social isolation of the Palestinian and Israeli communities, fuelling conflict. Adjoining and interconnected, yet divided and isolated, the proximity of these separated communities has exacerbated tension and resulted in a breakdown in communication and trust. The impenetrable physicality of the wall and surveillance techniques of both the concrete towers and high rise Israeli settlements has led to suspicion and fear on both sides.

“The split, torn and broken up place creates split and broken up thoughts.”

Raif Zreik, lawyer, 2007

The wall and closure systems isolate both communities. Any reconciliation between these fractured groups, and thus prospects for peace, will be inhibited until such spatial fragmentation is broken down.

“They were our neighbours. We didn’t think any of them would one day say that we were their enemies. We got along before the politics made us enemies. It isn’t the people. It is the politics.”

Samir, Palestinian resident in Nazareth, 2007

Wall and Tower: Just who is looking at whom?

Wall and Tower: Just who is looking at whom?
Bailout for Greece: Did We Read the Fine Print of the Lisbon Treaty?

Rhodri Oliver is a physics student at Imperial College who, amongst other things, enjoys debating and learning to fly.

Following the successful ratification of the Lisbon Treaty, the European Union is endeavouring to present itself to the outside world as both a strong economic union but also a force on the global stage. The Greece debt crisis, however, has exposed both divisions within Europe and the expansive range of powers now conferred on European institutions to respond to such situations. To many, a European safety net is seen as a blessing for struggling Greece, yet to others a worrying trend has emerged as the EU swoops in to impose a harsh budgetary regime on the Greek government.

In February 2010 Greece’s financial problems, caused by a massive budget deficit, surged to the fore causing a meltdown on the Greek stock exchange and the setting of massive short positions against the euro by speculators. As a result the European Council set a series of highly ambitious targets for the Greek government in order for them to meet their loan repayment schedule. Unbeknownst to many, hidden deep inside the Lisbon Treaty were the tools needed by the EU to step in and take control of Greek finances, namely tax and spending policies. Crucially, these targets were not requested of Greece but expected of them.

Unforeseen and unprecedented, the current crisis is the first test of this new legislation. Should we be concerned at the evident potential for Europe to use such laws to ever expand into sovereign territory, specifically the authority of a national government to manage its own finances? Just what can we tolerate in defence of the euro?

‘Natural Disasters or Exceptional Occurrences’
A tremendously complex piece of legislation, and the root of much controversy including two referenda in Ireland, the Lisbon Treaty aimed to reform the running of the European Union with an expanding number of Member States in mind. It also extended the number of areas within which the EU regulates under the subsidiary principle, and finally developed a framework within which the EU may act as a player in the international arena. It is a hugely important document and was debated in the press for months prior to ratification; did we read the fine print?

‘Where a Member State is in difficulties or is seriously threatened with severe difficulties caused by natural disasters or exceptional occurrences beyond its control, the Council, on a proposal from the Commission, may grant, under certain conditions, Union financial assistance to the Member State concerned.’

Article 122.2, Lisbon Treaty

Can we consider Greece’s woes to be the result of a natural disaster or exceptional circumstances beyond their control? Many would argue not; Greece dug itself into this situation and now the EU is planning to dig it out. Vague as it is, the article suggests that, without the consultation of either the directly elected European Parliament or the European Central Bank, the European Council may step in and bail out Greece from some sort of communal pot. These provisions allow the Council to bypass a co-decision
process with the Parliament and avoid the delicate task of asking Member States individually to contribute to any bailout. Crucially, such a vote would be based on a qualified majority and hence even states outvoted would be liable to contribute to any bailout from this pot. Article 122 may be contrasted however with the so-called ‘no-bailout’ clause, Article 125, which explicitly prohibits member states from taking on the financial ‘commitments’ of a national government. Ambiguities abound and even the institutions concerned seem confused...

“No definition of ‘exceptional occurrences beyond the control of a Member State’ exists and the Council has never discussed it.”

European Council, May 2009

It became clear early on that Greece would need access to serious funds and fast in order to stave off a loan default of epic proportions. It wasn’t clear however that the money needed to come from within the European Union, whether it be in the form of ‘Union assistance’ or a bilateral arrangement. Europe doesn’t need outside help was the line from Jean-Claude Trichet, President of the European Central Bank, as he knocked all suggestions that the International Monetary Fund (IMF) would step in and bail out the stricken Greeks.

“I do not trust that it would be appropriate to have the introduction of the IMF as a supplier of help through standby or through any kind of such help.”

Jean-Claude Trichet, President of the European Central Bank

Out of our Hands

Determined to maintain control of internal financial matters, the Greek crisis has shown the European Union under the Lisbon Treaty to be anxious to spread its wings. Indeed, the current EU President has expressed support for some form of supranational economic governance of Europe.

If the EU, and therefore Germany, helps out Greece economically, it will need to give something in exchange ... some islands, for example, might be a solution. – Marco Wanderwitz, member of Chancellor Merkel’s CDU party
“Recent developments in the euro area highlight the urgent need to strengthen our economic governance.”

President of the European Council, Herman Van Rompuy

Article 126 of the Lisbon Treaty highlights the procedures under which the European Council can, in essence, seize control of a ‘troubled’ Member State’s finances. In cases of ‘excessive deficit’, the Council shall address ‘recommendations’ to the Member State in question ‘with a view to bringing th(e) situation to an end within a given period’. If these recommendations are not heeded, the Council may make such recommendations public. If a Member State persists in ignoring these recommendations, the Council may ‘give notice to the Member State to take, within a specified time limit, measures for the deficit reduction which is judged necessary by the Council in order to remedy the situation.’ These measures are undertaken ‘without taking into account the vote of the member of the Council representing the Member State concerned.’

It appears to be clear: under the Lisbon Treaty the European Council has been bestowed with the power to remotely govern the finances of one of it’s Member States without the input of that state itself, the European Parliament or even the European Central Bank. Unprecedented, and perhaps unforeseen, the Greek dilemma has undoubtedly shown who’s boss in Europe ... the only question is: who is next?

In Defence of the Euro

Many would argue that such a bailout had to occur, that Europe should go to any length to protect the euro. A reluctance to allow external parties, such as the IMF, to come to the rescue of Greece has shown a certain ruthless determination on the part of the European Union to resolve financial problems internally and do whatever it takes to protect the euro. In this case, however, it has become apparent that the funds and security required by Greece necessitated intervention from the IMF and a joint IMF-EU rescue is currently on the cards. In a rare show of disunity, reluctant to commit cash to an assistance plan and facing angry voters, Germany’s Angela Merkel challenged an EU-funded bailout on the grounds that Greece’s problems were ‘home-grown’ and called for countries that repeatedly ignored EU rules to be expelled from the Eurozone. The future of Greece remains uncertain.

There is, however, a much larger question at stake here. This episode has highlighted the powers bestowed on the European Council in particular to step in and take control of a sovereign nation’s finances, irrespective of their support for such an intervention. The method of ‘recommendations’ to problematic Member States, via a majority vote that may disregard the vote of the Member State in question, has drawn attention to the wide-ranging new powers invested in the Council by the Lisbon Treaty. Conceived as last resort perhaps, but at what cost to state sovereignty?

Just what else is hidden in the fine print? Is this perhaps an ominous precedent of things to come?
Cuban Healthcare Revolution: The Future of International Healthcare?

Rahma Elmahdi is a third year undergraduate medical student at Imperial College with an interest in global health.

The Cuban healthcare system is renowned for being one of the most effective healthcare systems in the world today with life expectancies equal to those of some of the world’s leading economies. Cubans have for some time been making a push to reach out far beyond their small island borders in order to export their methods of disease prevention and treatment worldwide, particularly in the developing world where their influence is greatest. Should we be advocating the expansion of health programs implemented by a country with such a long history of tyranny and authoritarian control?

A leader medical philanthropy, Cuba has long led the way in healthcare schemes both at home and abroad. Despite fears of a Cuban disrespect for both patient and worker rights, such schemes have proved immensely successful in both short-term crisis management and long-term healthcare in some of the most impoverished countries in the world. Cuban standards may not live up to those of some developed countries, but should we stand in the way of a new approach to international healthcare?

Cuban standards may not live up to those of some developed countries, but should we stand in the way of a new approach to international healthcare?

In 1991 Cuba was a country in ruins. The collapse of the Soviet Union meant the end of the subsidies upon which the country had relied for so long to provide food, fuel and healthcare for its citizens. This was further compounded by the crippling embargo imposed upon the country by the United States who, at the time, was attempting to make a clear stand against the fallen communist colossus and all who were associated with it. This period was devastating for Cuba and many of its supporters as the Cubans were already at this time well recognised in the Caribbean, Latin America and Africa for health and humanitarian programmes which were specifically targeted at the most deprived communities in the world. All such international assistance provided by Cuba came to a halt and this time became known as Cuba’s ‘Special Period’.

Since the 1990s, however, Cuba has been able to foster a strong economic recovery, despite the ongoing US embargo, through opening its borders to foreign visitors and allowing limited free-market trade. This has enabled the Cubans to finance the rebuilding of their own healthcare system, training a greater number of doctors and nurses and providing a ratio of one doctor to every 175 people, one of the best doctor to population ratios in the world. Today Cuba is again a force in healthcare both at home and around the world.

“Cuba should be the envy of many other nations ... Cuba demonstrates how much nations can do with the resources they have if they focus on the right priorities – health, education, and literacy.”

Kofi Annan, Secretary General of the United Nations, 2000
Doctor Diplomacy
Cuban medical internationalism, otherwise known as ‘doctor diplomacy’, was a Cuban programme founded after the Cuban Revolution in 1959 that is aimed at exporting Cuban health practices and practitioners to developing nations. Rooted both in foreign policy objectives, including Cuba’s policy of supporting anti-colonial struggles of the 1960s, and humanitarianism, the programme today sees 50,000 healthcare personnel working globally each year.

One of the first countries active in medical crisis operations, in 1960, 1972 and 1990 Cuba dispatched emergency assistance teams and medical professionals to provide support to struggling national governments after major earthquakes in Chile, Nicaragua and Iran, arriving on the scene well before developed world parties. In 1963 Cuba was again one of the only countries to send a medical brigade to Algeria where the country was suffering hugely in the wake of a long war for independence.

Following the dramatic events of the early 1990’s, Cuba has gradually returned to its former international healthcare provision. In 2004 medical teams were sent to Sri Lanka after the Asian tsunami. In 2005 Cuba prepared to send a ‘brigade’ of 1,500 doctors to New Orleans in the wake Hurricane Katrina; this offer was declined however by the former US president George Bush. After the recent earthquake in Haiti the Cubans were one of the first to set up medical facilities to assist the injured. These efforts would be considered uniquely philanthropic if carried out by any of the world’s developed nations but what makes it exceptional in this case is that Cuba has a minute fraction of the GDP of a developed nation such as the UK.

Cuba to the Rescue
Humanitarian crises, although devastating when they occur, are few and far between. That is why, since 1998, the Cuban Comprehensive Health (CPH) programme has formed the cornerstone of Cuban

Revolutionary healthcare
international health cooperation. This programme has allowed the Cubans to move towards the establishment of durable international healthcare provisions and runs alongside its international relief programme. The CHP aims to promote international solidarity and bolster the public health infrastructure of a country through staffing local clinics and hospitals with Cuban medical teams.

The programme runs in 27 countries in Latin America, Africa and Asia and as a result there are now health workers providing medical care and assistance for some of the most isolated and deprived populations in the world. Indeed, in several countries such as Honduras, Guatemala and Mali, Cubans have been the first bearers of local physician services to rural, indigenous and other marginalized communities.

The Cuban approach combines population based public health principles and preventative programmes with clinical medicine, formulating long-term healthcare initiatives and taking these directly to the populations where it’s needed. Since its foundation, the CHP is estimated to have sent 3,446 health professionals to participating countries. These personnel have carried out over 96 million patient visits, saved 1.8 million lives in the poorest parts of the world and greatly improved the quality of life of many more.

Patient Matters
This seemingly harmonious solution to the world’s health needs is not without its critics. A case which is often cited as an example of the dangers of exporting Cuban style healthcare was the Cuban government’s use of so-called sanatoria during the early years of the AIDS epidemic. In these health resorts HIV positive individuals experienced mandatory quarantine, kept out of contact with the general population. This raised many questions surrounding individual rights, specifically Cuba’s historically documented disregard of these. Although the Cuban press is keen to point out that the country has the lowest level of HIV prevalence in Latin America at 0.1%, with the regional average being 2.5%, many Cubans still complain privately about patent rights in choice of medical treatment and more general healthcare decision-making. There is no right to privacy or refuse treatment, including for religious or ethical reasons. Accusations of malpractice are also outlawed. A certain disregard for what are considered basic civil liberties in most of the developed world has led many to speak out against the spread of Cuban-style healthcare.

There have also been claims that Cuban doctors sent abroad are ill treated, subject to very low wages, tight supervision and curfews. They are actively discouraged from remaining abroad, their family and children restricted to Cuban soil.

“(The Cuban government) bars citizens engaged in authorized travel from taking their children with them overseas, essentially holding the children hostage to guarantee the parents’ return. Given the widespread fear of forced family separation, these travel restrictions provide the Cuban government with a powerful tool for punishing defectors and silencing critics.”

Human Rights Watch

Availability of funding and resources also presents an obstacle to the CHP. These programmes are implemented in the most deprived countries in the world and consequently the facilities available to
Cuban healthcare professionals are often poor with frequent absences of essential drugs and of clinical equipment. These problems have been tackled to a large extent with increased efficiency, improved logistics and human resource management.

**The Future of International Healthcare**

For many, however grave external concerns are, the programme produces excellent results. An extensive list of countries that have benefited from the CPH and Cuba’s other relief programmes. Indeed, many argue that this is the future of international healthcare for the poorest countries in the world; they contend that a Cuban approach achieves great results despite extremely limited resources.

The Cuban programmes are unlike the usual aid and development programmes implemented by developed countries and large NGOs that require significant investment and are very often limited by political considerations. Cuba instead works in cooperation with the poorest countries embracing the ideas of international fraternity and philanthropy. This concept would once have been regarded as naïve and impracticable but the Cuban’s have made it a reality for so many. The question is now: can they convince the rest of the world of this?
From its very beginnings, Archaeology as an academic field has been a global discipline in which international scholars investigate historical sites in a host country. While the highly publicized question of physical ownership of archaeological material was technically clarified by UNESCO in 1970, where it was stated that archaeological material is the cultural property of the host country, another question remains far from resolved: the question of academic ownership of archaeological material. Whose material is it – that is, who has the right to work with and publish works on excavated material? How are these rights defined and regulated internationally?

This problem – the subject of many a discussion amongst scholars over the last couple of decades – stems from a lack of cooperation between the site excavators and the scholars who later work on the excavated material. It is intensified by a lack of national and international regulation, and the failure to enforce the little legislation that does exist. The result is a substantial publication lag that affects the scholarly community worldwide.

Of Kings and Nobles
A classic case-in-point is the royal tombs of Vergina in northern Greece, excavated in the late 1970s by Manolis Andronikos under the auspices of the Greek Department of Antiquities. The significance of the site is well known: Andronikos uncovered a number of ornate stone chambers containing undisturbed burials accompanied by luxurious grave goods. The close proximity of the tombs to the site of ancient Aigai, the historical residence of the Macedonian kings and birthplace of Alexander the Great, clearly underlines the importance of this site as a likely resting place of Macedonian nobles. Therefore, with great anticipation, many followed the discovery and excavation of the tombs, waiting eagerly for the publication of this rich material.

Some thirty years have passed since the original discovery, yet scholars find themselves still waiting for large amounts of material to be published – very surprising in view of the tombs’ significance. Andronikos himself published the bulk of material now available. In a number of articles from 1980 and a book of 1984, he recounted his experiences at the site and put forward his highly debated interpretation that the interred were Macedonian kings, including Philip II, father of Alexander the Great. Key to his interpretations is the paintings of Tomb I and Tomb II, however these were only published in 2004. Other significant items from the tombs, such as the metal vessels, weapons, the jewellery and the deathbeds, are only now due to be published.

The implications of such behaviour are clear: the author’s interpretations remain sole, and the international academic community is forced to rely on their
accuracy without being given the basis upon which to challenge it.

What’s Mine is Mine
So, what accounts for such an enormous delay in the publication of such important material? Various explanations for such a delay have been proposed ranging from insufficient staff, time and money on part of the excavator to insufficient guidelines on publishing or a means to enforce these.

In the case of Vergina, the above reasons seem unlikely in view of the site’s stature as a UNESCO World Heritage Site and popularity. Greek and international funding of the site has been generous, and its importance has continuously attracted the attention of scholars from around the world, many of whom would have been only too willing and eager to collaborate with Andronikos on the material’s publication. Delegation is necessary for this magnitude of find yet this never happened at Vergina. This, therefore, would seem to be the root of the problem, and a rarely discussed one – the unwillingness of excavators to share the material they themselves have not yet been able to publish, for whichever reason.

Morag Kersel, an archaeologist at Brown University, questions such possessive behaviour of principal investigators who ‘become very territorial with the material and do not want to share’. This is a rather sensitive discussion, as the excavator-scholar relationship is very one-sided, with the latter depending heavily on the former for access to sites and material. Scholars therefore (necessarily) avoid officially naming names and pointing fingers for fear of jeopardizing their collaborations.

On a small scale, this behaviour most likely reflects the desire of the excavator to keep the glory of publication for him-/herself, wanting the site and its more ‘prestigious’ finds to always be associated with his/her name, and therefore refusing to delegate material even to colleagues or students from his own country. Certainly the name most frequently associated with Vergina, to this day, remains Andronikos’.

National Treasures
On a larger scale, however, could this behaviour stem from the divide existing between excavated and excavating countries? Even though excavations are now carried out in almost every country of the world, the bias is and has always been towards the countries of the so-called Ancient World – those which make up the ancient regions of Greece, the Roman Empire, Egypt, Mesopotamia and the like – in other words present-day Mediterranean countries as well as the Near and Middle East. The majority of excavating archaeologists, however, tend to come from outside the countries of excavation with the exception of Greece and Italy. Are we therefore dealing with a case of the country of excavation as a whole trying to keep its cultural heritage, and its publication, in its own possession?

The excavator-scholar relationship is very one-sided, with the latter depending heavily on the former for access to sites and material.
To understand this, it is necessary to look at the laws that stipulate the duties of the excavator in each respective country. In Greece, excavations are regulated by the General Directorate of Antiquities, which adopted a new law in 2002 on the protection of antiquities and cultural heritage. The new regulations – unfortunately not in effect during Andronikos’ campaigns – seemingly respond to a growing awareness of the publication lag and stipulate that a final excavation report must be submitted within five years following the end of excavation. For long-term excavations, such as Vergina, regular progress reports are required every two years. Other countries such as Cyprus and Israel have adopted similar rules. International bodies such as the United Nations and the American Schools of Oriental Research also cite similar regulations.

The problem today lies in the insufficient definition of such clauses, combined with the lack of enforcement. Few countries’ statutes actually define what exactly construes ‘a reasonable period’ for publication or a ‘final publication’, while others tend to use phrases such as ‘in a timely fashion’ or ‘prompt and complete’. And what ‘reprimands’ are included within these rules? Israeli and Cypriot regulations ‘threaten’ a refusal of further permits to excavators who have not yet published their previous work, while Cypriot regulations go further to stipulate that no excavation may be undertaken by members of the Antiquities Department at least three years before retirement, in order that the member may finish publishing previous material before retirement. How are such limitations and reprimands enforced? Would Andronikos have followed them? And is the degree of enforcement the same for both local as well as foreign archaeologists?

It is often precarious to direct criticism at countries or claim favouritism or negligence on part of the respective antiquities authorities. And it is not necessary. Many institutions worldwide are now reviewing the publication conduct of the excavators under their supervision or sponsorship, with many conferences convened and articles written on the subject. The fact is that archaeologists from all countries and in all countries practice publication negligence – it is up to individual states to collaborate on the regulation and enforcement of publication on a global level. Vergina is not a unique case, but it is a well-known and classic example of the problem at hand.

Are we therefore dealing with a case of the country of excavation as a whole trying to keep its cultural heritage, and its publication, in its own possession?

Palmyra, Syria
Elections in Ukraine: Eastern Europe or to Europe’s East?

Rupert Cabbell Manners is a first year undergraduate at University College London, reading English Literature. He has also contributed to Pi Newspaper and Tengen Magazine.

A question mark hangs over the future of Eastern Europe’s second largest state. Ukraine, once a satellite state of the Moscow-led USSR, has in recent years sought closer relations with the European Union; the membership to which it eagerly aspires would not only transform the balance of power within Eastern Europe, but also within the Union itself. Such a transformation, however, now seems likely to be deferred for some years. Besides the isolating force of the global recession, which has struck Ukraine with particular severity, the result of the 2010 Presidential election appears to promise a renewed fidelity to neighbouring Russia.

Ukraine has always been wedged, both physically and politically, between competing powers. Ukraine’s cultural identity is founded upon its beginning as the Kyivan Rus, a Slavic empire that became the largest in Europe during the 10th and 11th centuries. This disintegrated in the 12th century and by the 19th century Ukraine was largely absorbed into the Russian Empire. The present state is its third attempt at independence from Russian rule in modern times, succeeding the Cossack Hetmanate of the 17th century and a brief period of rebellion during the period 1917-1920. Russian forces subsumed both states yet in 1922 Ukraine became a founding member state of the Soviet Union. Ukraine’s political autonomy is assured today yet the present state has, to an extent, internalised the historical conflicts of possession between East and West.

The candidates for the 2010 Presidential elections have been defined, both within and outside Ukraine, by their ‘pro-Western’ or ‘pro-Russian’ identities. Such definitions may be seen as representative of Ukrainian attitudes to social change and democracy. Ukraine has been a functioning democracy since their Constitution of 1996, establishing institutions of free speech, freedom of the press and freedom of religion. Regardless, the influence of the industrial oligarchy has never been entirely removed, and the disproportionately great power of the office of President exacerbates the problem. The President, with his ratified choice of Prime Minister, controls the executive branch of government and holds a five-year term. Ukraine’s Parliament, the Verkhovna Rada, does have powers to initiate legislation and ratify appointments and treaties; however, strangled by the diverse coalitions necessary under Ukraine’s system of proportional representation, its voice is divided. Polls consistently register public mistrust of political parties at around 70%.

Ukraine held the second-round of its Presidential elections on February 7th 2010; the result seems to promise renewed ties with Russia over the coming years. Pro-Russian Viktor Yanukovich emerged victorious, with 48.95% of the ballot to rival candidate West-backed Yulia Tymoshenko’s 45.47%. Despite the opposition’s various legal appeals, later withdrawn, Viktor Yanukovich was inaugurated on February 25th as the fourth democratically-elected President of Ukraine, albeit the first to win with less than 50% of the vote.
A Tongue-Twisting Threesome

Three people have dominated Ukrainian politics in recent years: Viktor Yushchenko, Viktor Yanukovich and Yulia Tymoshenko. Mr. Yanukovich represents the ‘Party of Regions’, but is more widely known to the West as the Russian-backed candidate in the controversial Presidential elections of October 2004. Following the second round election a re-vote was ordered by the Ukrainian Supreme Court, prompted in part by widespread evidence of electoral fraud by second-round winner Mr. Yanukovich’s party and in part by peaceful mass demonstrations in Kiev, the nation’s capital. The so-called ‘Orange Revolution’, named for the colours of rival candidate Viktor Yushchenko, seemed to promise a more democratic, not to mention pro-European, future. Mr. Yushchenko’s scarred but victorious smile – he was allegedly poisoned with the dioxin TCDD in the months leading up the election – might well have summarised the mood in 2004.

By early 2010, however, the revolutionary enthusiasm of 2004 seemed to have waned. Mr. Yanukovich and Yulia Tymoshenko, former close colleague and Prime Minister under Mr Yushchenko, contested the second round election after Mr. Yushchenko failed to pass the first round of Presidential voting, scoring a meagre 5.45% of the vote. A bitter split having consumed the former allies, Mr. Yushchenko declared, somewhat gracelessly, that those 5% who had supported him in the first round vote should vote for neither candidate in the second.

There has been no suggestion of gerrymandering in this year’s elections, with all international observers declaring Mr. Yanukovich’s victory fair and legitimate. If those 5% had been added to Ms. Tymoshenko’s tally, the electoral figures would largely resemble those of 2004, reflecting a longer-term geographical divide in Ukraine’s vote. The northwest tends to vote for Western-leaning, reformist candidates, whereas the southeast inclines towards those candidates supported by the Kremlin. The outcome however favoured Mr. Yanukovich by a very slight margin, less than 4%.

Internal Manoeuvres

The new President’s first problem, ironically, has been the ousting of Ms. Tymoshenko from the office of Prime Minister. Unable to form a conventional coalition, he was forced to alter Ukrainian law thus allowing individual MPs to join his ‘Party of Regions’ coalition and effectively restoring Presidential powers ceded in 2004. The extra votes enabled him to install a loyal appointee, the Russian-born Nikolai Azarov. Mr. Yanukovich will, however, need to
placate those MPs that defected to him and much internal horse-trading is expected to distract the new government from key tasks at home and abroad in the immediate future.

Both in the run-up to the election and now, during the establishment of a new government, the remarkable collapse of the Ukrainian economy has been centre-stage. The state had exposed itself to volatility in global markets by its aggressive borrowing; moreover, prices for its main export, steel, fell precipitously. The nation’s GDP plunged by 15% in 2009, prompting an International Monetary Fund bailout; the IMF then suspended lending in alarm at the extravagant election pledges of both candidates. Yet both candidates pledged, pragmatically, to defend the nation’s utility giants, the gas and oil oligarchies that supply Western Europe. A swift appointment was the greatest necessity for the ailing state. Yulia Mostoveya, Editor of the Ukrainian weekly Zerkalo Nedeli, notes that the new cabinet “resembles a board of directors for Ukraine, Inc.”

**The new President’s first problem, ironically, has been the ousting of Ms. Tymoshenko from the office of Prime Minister**

Russian Roulette

Rather than repeat the premature congratulations of 2004, Vladimir Putin dispatched the leader of the Russian Orthodox Church, Patriarch Kirill, to bless Mr. Yanukovich before his inauguration. The Kremlin has just reason to celebrate, even if any kind of political or economic re-unification is firmly out of the question. Russian ambitions to maintain influence in the Caucasus have become increasingly evident over the past few years as the EU expands east. In 2008 Russia seized the initiative in the Black Sea region with the invasion of Georgia and, although it recognises the separatist regions of Abkhazia and South Ossetia as fully independent, it maintains forces along its borders. NATO, by contrast, has failed to re-

new membership negotiations with Georgia, despite that country’s aspirations for membership of both NATO and the EU. With the recent instalment of a pro-Russian leader in Ukraine, has the European Union lost an opportunity for influence in the region?

The EU has reacted with similar circumspection to Ukrainian enthusiasm for membership. In December 2008, it proposed an ‘Eastern Partnership’ with Ukraine, Moldova, Estonia, Lithuania, Latvia and Belarus, but both the Ukraine and Moldova were disappointed to be offered no provisional membership. Furthermore, they were not differentiated from other Eastern European nations, including the recalcitrant Belarus, often reviled as the continent’s ‘last dictatorship’. This modest step on the EU’s part was accompanied by conciliatory rhetoric.

‘The Cold War is over,’ declared José Manuel Barroso, then European Commission President, ‘and where there is no Cold War, there should be no spheres of interest.’ This is distinctively untrue of Ukraine, the pipeline nation for Russian gas exports and strategic hub for trade between Russia and the EU.

In the longer term, membership of the European Union remains attractive to Ukraine. However, a current reluctance amongst EU member states to expand eastwards will ensure that tentative diplomacy, rather than the more aggressive stance adopted by the Russians, will dictate European moves for influence in Ukraine. There is little doubt that the election of a Pro-Western Prime Minister in the upcoming Parliamentary elections is needed to rejuvenate discussions between Kiev and Brussels.
Crisis in Haiti: The WFP Faces an Unprecedented Challenge

David Orr has recently served as a WFP Public Information officer in Haiti. He was posted to Haiti twice last year. He has also worked for WFP in Pakistan, India, Nepal and Lebanon.

This particular earthquake assistance operation has been the most complex, most challenging humanitarian mission ever undertaken by the UN World Food Programme (WFP) anywhere in the world. It has also been the single, largest intervention by any UN agency in post-quake Haiti.

The 7.0 magnitude earthquake took Haiti, and the rest of the world, by surprise at 16:53 on Tuesday 12 January when many Haitians were getting ready to leave work or preparing for the evening ahead. The epicentre of the quake was less than 20 kilometres southwest of the capital, Port-au-Prince. In approximately 35 seconds, much of the city was reduced to ruins. As news of the quake spread round the world, it became clear that a cataclysm of major proportions had taken place. The government of Haiti appealed for international assistance. WFP – active in the country since 1969 – responded with the launch of an Emergency Operation to bring assistance to some two million people in the quake zone.

The Haitian earthquake was not the first disaster that WFP, or other UN agencies, had had to confront in the region. In 2004, a devastating hurricane ripped through the Caribbean island that comprises Haiti and, to its east, the Dominican Republic. The damage was terrible, as was the death toll. Again in 2008, a series of storms and hurricanes struck Haiti; the impact on this vulnerable nation of 13 million people was huge, particularly in Gonaïves, which was inundated by huge volumes of rainwater and mud that ran off the surrounding hills and flooded the town.

Emergency Response

Haiti was still recovering from the trauma of 2008 – and already had some 1.9 million people without a secure supply of food - when the January 12 earthquake convulsed the area around the capital and its hinterland.

It took weeks for the full scale of the devastation to become clear. In the last week of February, the President of Haiti estimated the death toll from the quake to be as high as 300,000, with about one million people made homeless. Their houses were destroyed or so badly damaged that they dared not re-occupy them as the after-shocks continued for weeks.

The main focus of relief efforts was on the capital Port-au-Prince, home to 2.5 million people before the quake. Search and rescue teams with sniffer dogs managed to rescue scores of trapped people while bodies were removed for burial. Survivors took refuge in some 300 spontaneously erected settlements around the city. In the initial phase of WFP’s response, emergency rations – mostly high-energy biscuits, either stocked in-country for hurricane relief or flown in from WFP’s Humanitarian Response Depot in Panama – were delivered to the inhabitants of these encampments. Some consisted of up of hundreds of people, while others such as the Champ de Mars in central Port-au-Prince hosted thousands of people.
Logistical Challenges
Every January morning following the quake, WFP’s trucks set off from our warehouses loaded with staff and volunteers. The convoys, accompanied by escorts from the multi-national MINUSTAH force present in Haiti since 2004, fanned out daily around the city and further afield to towns like Leogane which was particularly badly damaged – nearly every building collapsed and most of the population was forced to camp in public spaces.

Priority was given to rehabilitation work on the capital’s port but, in the very early stages, most aid supplies were flown in to the international airport. At one end of the airport lies the UN Logistics Base where WFP and most other UN and humanitarian organisations relocated in the aftermath of the quake. Other urgent relief supplies were brought in by road from the neighbouring Dominican Republic where WFP established a regional logistics hub. In all, five aid corridors – land, air and sea – were in use by WFP before the end of January. As has become established practice in major emergencies, WFP was asked to provide, from the outset, both the logistics capacity and Information and Communication Technologies (ICT) support for the humanitarian community at large.

The mobile distributions of those first few weeks targeted as many camps as possible in the face of considerable logistical and other constraints – sometimes, distribution only reached a handful of settlements while, on other days, 10 or more were served. It soon became clear that this disaster presented an extreme challenge to WFP and the other UN agencies. Never before had we had to mount an operation in such a degraded urban environment, amidst such devastating damage to infrastructure and to the operational capacity of government and other institutions. Despite these huge challenges, most distributions were orderly and emergency supplies reached the places where they were most needed.

Survivors took refuge in some 300 spontaneously erected settlements around the capital, Port-au-Prince
Within a week of the quake, WFP had also started delivering ‘dry rations’ – rice, beans, oil, sugar and salt – to hospitals and children’s homes around the capital. One of these homes was Notre Dame de la Nativité where more than 50 children had been crushed to death – nearly 80 survived and were moved to the grounds of a neighbouring building.

The next phase saw a massive scale-up of WFP’s relief operation: general distributions of two-week rice rations from 16 fixed sites in the capital and two on its outskirts. The coupon-based initiative was undertaken in partnership with the Government, municipal authorities and NGO partners. The US Army’s 82nd Airborne Division and MINUSTAH peacekeeping personnel provided security at the distribution points. The intervention, which stabilised the price of imported rice in the local market, reached some three million beneficiaries with nearly 12,500 tonnes of rice in three weeks.

During the second week in February, WFP – in conjunction with the Government, sister UN agencies and aid organisations – launched a nutrition drive for pregnant and breast-feeding women, and children aged under five. Three-week rations of high-energy biscuits and sachets of Supplementary Plumpy (ready-to-use food for under-threes), were handed out from the backs of trucks to coupon-carrying beneficiaries from the capital’s camps. The measure was designed to prevent malnutrition, a real danger in these makeshift settlements.

**A Brighter Future**

The one-month anniversary of the quake was marked by a national day of prayer in Haiti. For WFP, it was also the occasion to partner the Government in announcing the rollout of a long-term food- and cash-based recovery strategy to help quake victims rebuild their lives. Food-for-Work schemes, already a significant feature of WFP’s pre-quake programme, would be re-launched and expanded in rural Haiti; the schemes would also be introduced to damaged urban areas where debris needed to be cleared and drainage systems restored.

Though schools in much of the country re-opened in the weeks after the disaster, they remained closed in Port-au-Prince and the vicinity of the quake zone. WFP was determined to re-activate its hot meals programme for the capital’s school children without delay. The programme began before the end of February; once fully up-and-running, it should be reaching as many as 60,000 children from some 170 schools.

From early March, WFP’s food assistance activities in Port-au-Prince focused increasingly on the most vulnerable in the camps. At the same time, WFP ramped up its assistance to outlying areas where an estimated half a million people city-dwellers settled in the weeks following the earthquake. Their arrival has placed additional pressures on already food-insecure rural households – the main target of WFP’s pre-quake operations.

In the months ahead, WFP’s focus will be on laying the nutritional foundation for the country’s long-term rehabilitation and recovery.
Ironing the Oceans: A New Hope for Climate Change or Reckless Tampering with the Sea?

Catherine Lichten is a doctoral student in systems biology currently based in Edinburgh. She has been following news about ocean iron fertilization since 2004, when she first heard about it as an intern at Woods Hole Oceanographic Institution in the United States.

Amidst gusting winds and across vast expanses of the stormy Southern Ocean, ships carrying teams of scientists and engineers are preparing to release hundreds of tons of iron dust into the sea in an effort to save the planet.

Could this be the start of the next Armageddon sci-fi flick, or a clever, realistic and economically lucrative solution to managing climate change? Due to the scarcity of scientific data about the long-term effects and effectiveness of the method, a debate rages among environmentalists, scientists, and private companies about whether dumping iron into international waters would mitigate climate change or cause irreparable damage to the earth’s ecosystem.

This activity, called Ocean Iron Fertilization (OIF), has become increasingly associated with geo-engineering. This emerging and controversial field aims to manipulate our planet’s natural processes in an effort to reduce the concentration of carbon dioxide in the atmosphere, known to be a cause of climate change. To succeed, schemes such as OIF must change the earth’s chemistry and ecology, and so may have unforeseen, or even disastrous, consequences.

Phytoplankton bloom in the Bay of Biscay
OIF would make use of phytoplankton, the microorganisms which form the foundation of the marine food web. These organisms carry out photosynthesis, drawing CO₂ out of the atmosphere. When they die and sink to deeper water, the carbon they have absorbed enters long-term storage, potentially lasting for decades to centuries. Because a lack of iron may limit phytoplankton growth in certain otherwise nutrient-rich regions, the idea behind iron fertilization is that increasing the iron concentration in these places would boost phytoplankton growth and thus remove carbon dioxide from the atmosphere.

The Iron Hypothesis
Oceanographer John Martin first described this idea, dubbed the ‘iron hypothesis’, in a 1990 article in the journal *Paleoceanography*. Since then, research groups around the world have completed 13 fertilization experiments, monitoring the effects of adding hundreds to thousands of kilograms of iron sulphate, an industrial by-product that is soluble in seawater. The fertilized patches ranged in size from 40 to 300 square kilometres.

The results validated the first part of Martin’s hypothesis. Increasing the iron concentration in the targeted areas created phytoplankton blooms that were visible by satellite, confirming that a lack of iron had previously limited plankton growth. Evaluating the second part of the hypothesis – that an increase in phytoplankton population would help transfer CO₂ from the atmosphere to long-term storage – is more difficult. Results varied considerably, depending on geographic and biological factors. For instance, other organisms eat many of the phytoplankton in a bloom before they sink, which means that much of the carbon absorbed by the phytoplankton is quickly recycled back into the atmosphere. As past experiments did not focus on the fate of the phytoplankton bloom, it has been difficult to estimate how much of the carbon reaches the depths necessary for more secure storage.

To better estimate how much carbon the OIF process actually removes from the atmosphere, researchers from India and Germany recently designed an experiment to observe what happens when the bloom sinks. It was named LOHAFEX (LOHA is Hindi for iron, FEX stands for Fertilization EXperiment). The group
spread 6 tons of iron dust across 300 square kilometres in the Southern Ocean and then monitored the area for 45 days. The results were disappointing. The iron-induced bloom, made up of a variety of phytoplankton species, was low in diatoms, the phytoplankton that are best for storing carbon as these organisms sink quickly when they die. As a result, relatively little carbon reached the depths necessary for long-term storage.

**OIF Makes Waves**
LOHAFEX made headlines for another reason. Just before the expedition set out in January 2009, protests erupted on the grounds that the experiment violated a United Nations convention prohibiting dumping in international waters. This caused the German government to detain the research team. Only after a two week delay were the scientists allowed to proceed, based on a clause permitting OIF for scientific research purposes. The incident left in its wake frustrated scientists, politicians, and environmentalists.

The controversy surrounding LOHAFEX stemmed from two general concerns about OIF. The first concern is that at present, there are insufficient data demonstrating that it is an effective, practical way to prevent climate change. In a 2008 article in *Science*, co-authored by 16 iron fertilization researchers, American oceanographer Ken Buesseler explains, “Although [our] experiments greatly improved our understanding of the role of iron in regulating ocean ecosystems and carbon dynamics, they were not designed to characterize OIF as a carbon mitigation strategy.”

In fact, modelling evidence suggests OIF is not an effective strategy. Computer models can pick up where the small-scale experiments leave off; the models use data collected to estimate what would happen if OIF were implemented on a much larger scale. Several such studies have been published in the last decade, all reaching similar conclusions. For instance, a 2008 model predicts that at most, OIF could reduce atmospheric carbon by about 1 Gt (109 tonnes) per year, about 11% of global anthropogenic emissions in 2004. However, this estimation rested on an unrealistic assumption of continuous fertilization over all iron-limited regions worldwide to find the upper limit of OIF’s potential.

The second concern is even more troubling: supposing OIF were found to be effective for carbon capture, what other effects would it have? The marine ecosystem is a complex network of chemical, physical, and biological processes. Disturbing this fragile equilibrium would undoubtedly have unpredictable consequences beyond the intended outcome of transferring carbon dioxide from the atmosphere to the ocean. Potential side effects include disrupting the ecosystem from minute bacteria to whales, reducing the water’s pH and dissolved oxygen levels and increasing levels of other greenhouse gases.

**Spend a Buck, Save a Planet?**
To further complicate the issue, the private sector was quick to recognize that it could potentially earn profits by selling carbon credits in exchange for carrying out OIF. Even though the Kyoto protocol does not currently recognize these types of credits, iron fertilization companies have formed. The only surviving company today is the four-year-old, San Francisco-based Climos run by a Silicon Valley entrepreneur. Although it has not yet begun any fertilization, the company has big plans. The largest experiment done to date covered 300 square kilometres, but Climos’ proposed experiment would cover a 40,000 square kilometre patch in the Southern Ocean. These per-
sistent commercial interests have been driving the need to regulate iron fertilization.

**So Is It Legal?**

Although existing regulations could apply to OIF, the LOHAFEX confusion highlighted their ambiguity. OIF falls within the purview of a few different UN conventions. As of a few years ago, none of those addressed OIF directly, but additional legislation is in the works.

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter traditionally applies to waste dumping, but its groups have raised concerns about large-scale OIF. They banned any OIF activities other than “legitimate scientific research” and have begun work assessing OIF risks and outlining future regulation. The UN Convention on the Law of the Seas governs general conduct on the high seas. Its general assembly has not passed any specific resolutions on OIF, but did support calls for further OIF research and bans on large-scale OIF.

The UN Convention on Biological Diversity, cited by LOHAFEX protestors, has become known as the “UN moratorium” on commercial OIF. It bans large-scale fertilization and applies to OIF insofar as large-scale fertilization could impact the marine food web. Regulation remains incomplete, but the wheels of policy-making have been set in motion. Through OIF’s rapid evolution from a purely scientific pursuit to an attractive, prospective quick fix for climate change, it has become clear that specific legislation is required.

**The Bottom Line**

As the reality of climate change sets in, we face the dilemma that our desire to save the planet is proving weaker than our reluctance to make the changes necessary for reducing our energy consumption and greenhouse gas emissions. In light of this, geo-engineering proposals offering a way to combat climate change without changing our behaviour have an irresistible appeal.

Scientists on the whole agree that meddling with the planet’s complex ecosystems should be avoided when we cannot predict the outcomes of our actions, but are divided on whether or not to pursue further research into OIF as a geo-engineering option. Many worry that as carbon levels continue to rise, so will our willingness to try risky mitigation strategies. Those in favour of continuing research feel that the better we understand the effects of OIF, the better prepared we will be for pressure to implement it on a large scale. Those against argue that enough research has been done to demonstrate that OIF is risky for marine ecosystems and ineffective for climate change mitigation, and thus it should be abandoned as a geo-engineering solution. Still others, such as experts in international economics and law, feel that OIF does have significant potential and abandoning it now would be premature.

We cannot definitively resolve the controversy and quantify the impact of large-scale OIF without actually carrying out large-scale OIF experiments; instead we must use the evidence available to us to predict whether the benefits of trying such a manipulation of the environment outweigh the risks. Legislation must reflect the available evidence so that the lure of profit and the urge to find a quick fix for climate change cannot overshadow the facts about its side effects and potential for success.

*Our desire to save the planet is proving weaker than our reluctance to make the changes necessary*

*A version of this article originally appeared in EUSci, the Edinburgh University Science Magazine, Issue 5, January 2010.*
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