

SPEECH BY THE RT HON LORD OWEN ON THE OCCASION OF THE
DOUBLEDAY/MANCHESTER AWARD 2011, WEDNESDAY 26 OCTOBER

THE IMPACT OF POLITICS AND ECONOMICS ON GLOBAL HEALTH

“The key determinants of the health of individuals and populations are the circumstances in which people are born, grow, live, work and age. And those circumstances are affected by the social and economic environment.” [Sir Michael Marmot]¹

I want to start by taking a wider look at global health and look first at global food production and its impact on global health. I am strengthened in doing this by the absence of any focus on malnutrition in the Rio de Janeiro Political Declaration on Social Determinants of Health of 21 October 2011 where Heads of Government, Ministers and government representatives came together to express their determination to achieve social and health equity through action on social determinants of health. They noted the three overarching recommendations of the Commission on Social Determinants of Health: to improve daily living conditions; to tackle the inequitable distribution of power, money and resources; and to measure and understand the problem and assess the impact of action.

It is essential to remind ourselves of the UN goal of halving the world's proportion of malnourished people by 2015. We are way behind schedule but if we were to have achieved that goal by 2015 the effect on global health would have been profound. Yet it is only recently that we have come to realise that we are in the midst of a global food emergency and this is already having a considerable impact on global health. The 1980s and 1990s and the early 2000s were marked by low and stable food prices. It was not until the spring of 2007 that the price of basic foods, rice, corn, wheat and soya beans, doubled reversing 50 years of falling food prices. Rice prices hit an all time high of more than \$1,000 a ton and one of the major reasons was that India, Vietnam, China and Egypt banned exports to protect local supply and keep domestic prices down. There is enough food in the world; it is, however, not reaching the places where it is most needed. There have been attempts to correct this geographical imbalance. The UN Food and Agriculture Organisation called a summit in 2008 and the G8 had a meeting of

¹ Sir Michael Marmot, Chair of the Commission on Social Determinants of Health, World Health Organisation

agriculture ministers in 2009. Barack Obama in his inaugural speech that same year focussed on agriculture. Grain prices, however, rapidly moved upwards in 2010, this time largely because Russia and some of the former countries in the old Soviet Union restricted exports to protect their home markets. We now live in a world where close to 1 billion people are chronically malnourished.

Of course the food crisis is not just caused by decisions made within the agricultural industry. The industry through no fault of its own has been strongly affected by the global financial crisis present from 2008 and also by rising fuel prices. In 2011 they were forced up, first, by the tsunami wave surging into the Fukushima Daiichi nuclear energy complex in Japan, then the fighting in Libya with the loss of petroleum exports and a general uncertainty about the stability of other Arab oil producing countries in the Middle East. While famine is fortunately rare at present, North Korea and Somalia being the prime examples, malnourishment is a major health issue. Brazil has shown how a government committed to overcome malnutrition can be successful over three decades. While India has failed with a malnutrition rate which has stayed for some time around 46% for children under five and double the average for sub-Saharan Africa.

Another aspect of malnutrition is population control. Few areas of consequence for global health are given so little attention by politicians than the rise in the world's population. Last year 125 million were undernourished; around 1 in 7 of the world population's of 7 billion. Yet on present trends very many more will be undernourished when the world's population reaches, as expected, 9 billion in 2050 and 15 billion by 2100. How can politicians rediscover the will to put this issue of population control more clearly onto the world agenda? I believe we do not give sufficient weight to the fact that if parents are not confident that their children will live into adulthood, they will have larger families. Reduce child mortality then population control becomes more of a rational choice. Another factor is economic growth leading to falls in population growth. Here the recent IMF predictions of greater economic growth in Africa, an average of 6% in 2012, may help to counter the impression that the urbanisation of Africa is of itself counter productive. Modern contraception is more likely to be used and education of girls will have a higher family priority with them marrying later and having fewer children. Africa's cities are not just overcrowded slums; they are cradles

of innovation. There is a new entrepreneurial generation of Africans, one that we have already seen emerge in Asia in countries like Vietnam.

When one talks of food distribution it is worth focussing on how India, the world's second largest producer of fruits and vegetables loses about 40% of its production because of inadequate logistic controls, storage and also poor transportation and marketing. Then there is the grotesque waste of food once it has arrived at its destination. In the UK, 33% of food is thrown away annually which puts us in no position to lecture the world.

The problem is, above all, political. People are aware of a global health problems but nowhere near as aware of global food problems. One only has to contemplate some of these stark statistics to sense that something is wrong; there is a disjunction. Food problems are solvable but agriculture is seen as globally discrete, even as a single entity, its malfunctioning is seemingly divorced from health. For too long politicians have been able to blame the weak global agricultural performance on global financial crises and climate changes. Yet we know we can increase crop yields far more than at present but we also know we need the agrochemical industry to innovate today at rates that they did develop successfully in the 1980s and 1990s.

We need, too, greater technological innovation. For example, in Haiti when the earthquake hit in 2010 Haitian Creole spoken by 8 million people was added to Microsoft's online translation engine in five days providing great help to humanitarian workers in the field. When World Vision's Last Mile Mobile Solution, LMMS, was introduced in Haiti, reporting and distribution took 30 minutes instead of previously 50 hours and the cost dropped from \$901 per 150 households to \$63, thereby producing big savings of time and cost.

Responding, quite rightly, to climate change and environmental concerns has led nevertheless to economic and political rigidity and an absence of joined up thinking. We perpetuate policies that need rethinking when the facts change. Does it really make sense to divert grain produced in North America into biofuels when natural gas production through shale is moving up as fast as it is in the United States and when grain is so unevenly distributed worldwide? The US ethanol industry consumes about

40% of the country's maize crop which is by far the largest in the world. In Europe we use wheat, barley, rapeseed and palm oil to produce biodiesel when we too now have access to more gas by pipelines and through LNG terminals. As the link between energy and agricultural commodities grows we need to insert scientific reassessment and talk more about malnutrition and its impact on health. I believe that a more rational debate may make politicians fundamentally reassess biofuels, hopefully also push harder the rational case for seeds that produce higher yielding crops and strains of plants resistant to disease, floods or droughts. Not enough has been done to reassure rather than ignite distrust and fear of genetic manipulation and biodiversity.

We need new thinking and policy making in these areas. Humanitarian concerns have taken second place to environmental passion and commercial vested interests. Medical scientists have successfully grappled with many prejudices and apprehensions over medical advances. Maybe in association with food scientists the disciplines can persuade public opinion that helping to solve the problems of malnutrition is a noble humanitarian objective that deserves to overcome commercial objectives in a few countries' agricultural industries and misplaced environmental lobbying.

Of all UN humanitarian concerns, health - in the wider World Health Organization (WHO) definition - is the one that provokes the least controversy and receives the maximum cooperation. WHO, within the UN family, has a proud and enlightened record of advancing the cause of humanitarianism. In seeking to further promote humanitarianism, the UN would be wise to reassert the pre-eminence of better health, for it can still do much to lighten the multiple loads of life.

The greatest preventive success of the WHO has been the eradication of smallpox. I was involved in 1974, albeit very much on the margins, in the Smallpox Eradication Programme, starting when one of the first papers presented to me as Minister of Health dealt with this subject. In 1973 the number of recorded cases of smallpox in the world had been 135,904. This was the highest for fifteen years. Nevertheless, I was advised that "target zero" was still felt to be on course, and the Ministry of Health and WHO doctors were optimistic. Indeed in 1975 the eradication of smallpox from Asia was achieved but smallpox was still present in Ethiopia and Somalia. Asian eradication was itself a formidable milestone, since it meant the end of transmitting the variola major virus, which had caused the most severe form of smallpox. However, the future effectiveness of the whole eradication program was threatened by cases of smallpox

among the hundreds of thousands of people displaced by floods and famine in Bangladesh, proving once again that disease is the all too frequent accompaniment of natural disaster. The number of smallpox outbreaks in Bangladesh had increased from 78 in October 1974 to 1,280 in mid-May of 1975; small numbers of themselves but in terms of eradication dangerously high.

I was also told there were no reserves of money left within WHO to cope with this extra demand. Sweden was contributing more money, and I unhesitatingly found extra money from our own hard-pressed UK National Health Service budget for WHO. We did the same in the UK the following year, when smallpox, though suspected of being confined in sixty-six villages in Ethiopia, looked likely to break out across the country as Ethiopia was engulfed by civil war. The WHO health teams faced formidable difficulties dealing with the scattered and mobile population in the Ogaden Desert, and they needed more vehicles and personnel. Despite the increased WHO activity, the smallpox virus did spread to adjoining countries. In Djibouti, Kenya, and Somalia some 3,000 cases occurred. Even so, the last case of naturally occurring smallpox was in Somalia in October 1977: ten years, nine months and twenty-six days from the start of the Intensified Smallpox Eradication Programme.

A tragedy then occurred when two cases of smallpox, resulting in one death, were caused by a laboratory infection in Birmingham, UK, in August 1978. Fortunately, this did not spread, and on 8 May, 1980, the Thirty-third World Health Assembly made the historic announcement that smallpox had been eradicated from the entire world. That was a magnificent result and one of the great successes of international activity.

The lessons for the future are that eradication of smallpox could never have been achieved without the existence of WHO, nor without the dedication of WHO staff, with their ability to stimulate the interest and commitment of health staff in individual nations. Eradication was not a centrally imposed program; rather, each national program adapted itself to fit particular circumstances. There was also an active research program running parallel to the fieldwork. The program gathered momentum from 1967, but even as late as 1976-1977 no one could be certain of a successful conclusion. As we now look to future health challenges, particularly malaria, we would be wise to learn some of the lessons from that smallpox program, and the 1,460 pages of *Smallpox and Its Eradication*² provide a comprehensive source.

² F. Fenner, D.A. Henderson, I. Arati, Z. Yezek, and I. D. Lednyi, *Smallpox and Its Eradication* (Geneva: The World Health Organization, 1988).

In 1988 the global eradication of poliomyelitis was launched. Polio was killing or paralysing 350,000 children a year worldwide. In World Health Report 1997 116 countries had already conducted national immunization days and the number of reported cases in 1996 was down by over 90% since 1988. But we have still not eradicated polio. We are 99% of the way, but recent outbreaks in China and Chad, as well as persistent challenges in Nigeria and Pakistan, are a reminder of what still needs to be done.

Eradicating other major diseases - whether cholera, dengue hemorrhagic fever, schistosomiasis, AIDS, or malaria – is proving hard. Malaria is the most dominant and debilitating disease in the world, particularly among children in the endemic regions. A serious humanitarian strategy for global health must now give malaria the highest priority. For the science has at least caught up with the long dreamed of prospect of a vaccine.

When I began as a medical student in 1956, the eradication of malaria was in full swing. Even during the consolidation period of the 1960s, medical opinion was still optimistic that the disease would become a rarity. Unfortunately, resurgence of malaria took place in the 1970s. Even so, when I ceased to be minister of health in 1976, many were hopeful that malaria would soon be eradicated and I took that into my new role as Foreign Secretary. Unfortunately, my optimism was misplaced.

As head of WHO, Gro Harlem Brundtland give a new welcome emphasis and priority to the eradication of malaria and in October 1992 a conference of all the nations' health ministers specifically discussed the problems of malaria. The treatment of bed nets and curtains with insecticides has in recent years produced good results and where introduced with persistence and discipline overall childhood mortality can be lowered by 15-35%. But it also has to be admitted that with DDT banned, the substitutes were not as effective; nor has the discipline of dealing with the breeding grounds been maintained. Control lost its effectiveness helped in countries where wars and poverty diminished their public health capacities. Malaria causes some 22.5 million acute illnesses and over 780,000 deaths annually.³ Yet spatial repellents, chemicals that keep mosquitoes away from treated areas are improving. Mosquito coils containing a chemical repellent in China cut the number contracting malaria by about 80%.

³ Dr Ala Alwan, Assistant Director-General. World Health Organisation April 2011, p.vii. http://whqlibdoc.who.int/publications/2011/9789240686458_eng.pdf

A vaccine called RTS,S against developing malaria took a big step towards proving its efficacy in the year 2011. The combination of the Bill and Melinda Gates charitable Foundation and the British pharmaceutical company, Glaxo Smith Kline, GSK, seems on the threshold of making a major breakthrough in preventing malaria. The Gates Fund also funded Seattle Biomed in 2011 with \$8.9 million to identify immune biomarkers associated with protection against malaria to help with future vaccine trials.

This combination of philanthropy and commercial commitment needs to be fostered and leads naturally to the place of the pharmaceutical industry in global health. I speak as someone who since 1996 has been the only non-US citizen on the Board of Abbott Laboratories in Chicago until I left at the retiring age of 72 in the spring of 2011. In the 1980s and early 1990s the big pharma companies in the US, UK, Germany, France and Switzerland, made drug discoveries of proven worth and during their patent life government's were ready to pay high prices. More recently there has been a fall off in genuine discoveries and the industry is neither as profitable nor as confident as it was. It is living under pressure to cut prices more in rich, as well as poor, countries. There has also been a build up in resentment about patent protection for effective drugs, particularly for those with AIDs or who are HIV positive.

Looking back, my own involvement in the pharmaceutical industry preceded being Minister of Health. When I was a Research Fellow on the academic Medical Unit at St Thomas's Hospital I was working with my my fellow researcher, David Marsden, on adrenaline beta-blockers using Inderal developed by ICI but not yet on general release. We were given every encouragement and were allowed to work without let or hindrance. I had to change some of my left wing prejudices about the industry during this period and have done so since. The industry needs enlightened science-based regulation but it is an important global industry. In 1974-76 as Minister of Health I was both the sponsoring Minister and the regulator of the industry. These dual functions have now been largely removed from the UK Department of Health. At that time I became involved in the attraction of new pharmaceutical investment into the UK. Today, there are a number of very promising biological research companies based in the UK, along with GSK and Astra Zenica, which provide a good base on which to build up the UK pharmaceutical industry, something which is sensibly a government objective. But it can only be done by establishing a mutually beneficial partnership between the NHS and the industry.

AIDS is the global illness that has in the past captured the world's attention. Even though the number of people who are HIV-positive is relatively smaller in the industrialized world than in the developing world, Western media attention ensured in the early years of the disease that massive resources for research have been allocated by the largely Western based pharmaceutical industry over the last 20 years. Abbott Laboratories identified a clear commercial interest in this area and provided considerable funds for developing the new drug Kaletra. This is now providing, if not a cure, a way of curbing the progression of the illness and improving people's life expectancy and lifestyle. It was estimated for 2008 that 33.4 million people in the world are HIV-positive, and the latent period means that there are many more who will develop the virus. More than 90% of new HIV infections are, however, in developing countries, many of who cannot afford the new expensive drugs and resent patent protection. That poses a real moral dilemma for the pharmaceutical industry and it has not always managed the conflicting claims on it as well as it should.

Some people claim that many of the retroviral drugs used to treat HIV and AIDs stem from government funded research in the 1980s. That was certainly not the case for Abbott Laboratories who put at risk large sums of money on Kaletra. Fortunately HIV does not seem to develop resistance to the drug. The problem for the future is will companies like Abbott, answerable to shareholders who invest in order to make a good return, feel able in the next decades to justify anywhere near the same investment into HIV. At present there are strong social and political pressures to sell such drugs at or even below cost in the poorer countries where HIV and AIDs is relatively commonplace, and as well for the drug patents to be removed. Pharmaceutical drugs are not just a commodity and in my experience the Board of Abbott wrestled with the dilemmas involved and were held accountable publicly at large shareholders annual public meetings with detailed criticism from the floor answered fully by the Chairman and Chief Executive.

When Brazil devalued their currency in 1999 the impact was felt controversially in the increased cost of imported drugs for HIV/AIDs and they used their growing economic and political strength to challenge the big US pharma⁴ companies about the WTO rules and they continue to do so vigorously today. Established in 1994 TRIPS (Trade-Related Aspects of Intellectual Property) became one of the main areas of the World Trade Organisation, WTO, agreements and medicines were included in its patent rules. Gradually, developing countries began to express concerns that TRIPS allowed monopolisation of life-saving drugs for 20 years and that high and increasing prices

⁴ Pharmaceutical Research and Manufacturers of America

meant poor countries could not afford to provide for their citizens the benefits of important drugs. It was felt too that the global rules were overly influenced by the rich countries in their determination to establish intellectual property rights worldwide. This pressure was given additional momentum by the high profile given to HIV and AIDs. Developing countries had to enforce the TRIPS rules by 2005. The Least Developed Countries, LDCs, - 32 of them in the WTO—had until 2006.

Since 2000, a number of global initiatives have been set up to deal with various global health crises and many big pharmaceutical companies have been actively involved in them, for they know the present WTO situation is far from satisfactory and that there are no simple solutions. Such pharmaceutical corporations support international initiatives either by donating drugs or by subsidizing drugs provision and they cite such agreements as evidence that strict patent protection under the WTO is compatible with socially responsible marketing. The Global Fund to Fight AIDS, TB and Malaria was created at the urging of UN Secretary General, Kofi Annan, in 2001. It was supposed to be the largest fund set up to tackle these global health issues. At a WTO meeting in Doha, Qatar, that same year WTO TRIPS were changed so that governments that could not afford branded drugs would be able to take measures to protect health by creating cheaper generics themselves, through “compulsory licensing”. At a WTO meeting in Cancun, Mexico in 2003 the developing countries managed to get another small win stopping the US and the pharmaceutical lobby from excluding many important diseases of the third world from the deal. In an interesting turn of events, President George W Bush directed very substantial US government resources to tackling HIV/AIDs through PEPFAR (the President’s Emergency Plan for AIDs Relief). President Clinton had also been very active in this field too and continued to be when no longer in office. At the 2005 WTO meeting in Hong Kong, LDCs requested a 15-year extension for administrative, economic and financial reasons. This was reduced to a 7.5 year extension with conditions.

The reality is that all these arrangements are too ad hoc and that commercial self interest and corporate philanthropy are hard to run together if shareholders interest are to be protected. If, as I hope, there is an answer then it is in harnessing philanthropic capital to pharmaceutical and academic research laboratories.

This, in essence, is what the Bill and Melina Gates Foundation, now financially supported by Warren Buffet, is trying to do. On 18 October 2011 the phase III trials of the RTS,S vaccine against malaria announced interim results. Among 5-17 month old

children, the vaccine prevented clinical malaria in 55.5% of trial participants over a period of one year. It also prevented severe malaria in 47.35 of this group of 5-17 month old children and in 34.8% of the entire study population including infants. This is, as Bill Gates said, a huge milestone and RTS,S is a first generative vaccine and second generation vaccines are soon to enter phase I trials. Glaxo Smith Kline, GSK, spent \$300 million (US dollars) over 25 years developing a malaria vaccine primarily for military personnel and travellers. The Gates Foundation provided the partner to justify the financial support Glaxo needed to conduct pediatric trials for impoverished nations. Glaxo has pledged to sell the vaccine at its manufacturing cost plus 5% that will be spent on research on malaria and neglected illnesses.

Why I believe pharmaceutical firms' research laboratories should link up with philanthropists is that they have unique manufacturing skills and other, for instance, in converting a liquid product into tablet form. When we did that for Kaletra in Abbott, it made it much easier to administer and far easier to handle in tropical climates. Also in big pharmaceutical companies there are teams of scientists working in different sectors but where insights can be very worthwhile across the whole spectrum of scientific research. What a pharmaceutical company has difficulty in doing is allocating research funds where there is little prospect of a commercial return. If some of that venture capital can be borne by funds dedicated to researching illnesses prevalent in developing countries and while keeping the prospect that they will share in any commercial return but have the commitment to influence pricing policy in the interests of holding prices down, there is a potential synergy which can bridge many divisions. It can also help dampen down the attacks on drug patented research for many other categories of drugs. That criticism of patents is understandable, but wrong. We need research based commercial companies to take risks with shareholders investment in many fields, but there has to be a reasonable prospect of earning a good financial return and for the most part there are reasonable returns now in pharmaceuticals, though not, I am glad to say, very high returns of 15 years ago. But abandon the structure for protection through patents intellectual property and you will have the companies who do no research living off the investment of those who do much research. That is a recipe for reducing discovery and innovation. It is both shortsighted and destructive, capable of damaging the poor more than the rich; the under developed more than the developed countries. It

will also set back the hopes of eradicating many of the illnesses which we are within sight of being able to eradicate.

It is noteworthy that India, which has many features of being a developed and an underdeveloped country six years ago, in 2005, tightened up its patent laws making cheaper alternatives less easy to produce. Admittedly this was under pressure from Western industrialized countries, but nevertheless India is not a country beholden to others, and is the world's largest democracy. India has since then greatly expanded its pharmaceutical research capacity as well as its generic pharmaceutical industrial base. All this shows how politics and economics impact on global health. It was ever so, but it is increasingly so.

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