The Australian Health Policy Institute and the Oxford Health Alliance

Seminar

Policy Responses to Contemporary Health Issues: Sustainability

Tuesday 23rd May 2006

RUTH COLAGIURI: Good evening, everyone. I'm Ruth Colagiuri and the chair of this evening's seminar and I'm the director of The Diabetes Unit at the Australian Health Policy Institute. It's my very great privilege to welcome you this evening to this seminar, which is entitled Policy Responses to Contemporary Health Issues: Sustainability.

Apart from sustainability being a very, very hot topic for societies everywhere, this is the first in a series of three Oxford Health Alliance Seminars, and some of you will be aware that the Australian Health Policy Institute recently joined the academic network of the Oxford Health Alliance, which is the bi-level NGO that is self-described as confronting the epidemic of chronic diseases. As part of our partnership we've agreed to put our efforts into drawing attention to and promoting action about chronic diseases in Australia.

And so I have double pleasure in welcoming you, and we will have highly reputable and credible speakers to discuss this topic tonight. We have Emeritus Prof Bob Douglas, who is the chairman of Australia 21. He will share his thoughts on *The Human Race: Extinction or a Sustainable Future*. We have Professor Tony McMichael, who is the director of the National Centre for Epidemiology and Population Health at the Australian National University, who will discuss *Environmental Change and Risks to Human Health: Why Sustainability Matters*;

and Professor Steve Leeder, who is the Director of the Australian Health Policy Institute and co-Director of the Menzies Centre for Health Policy, who will present some of his thoughts on the issues around how should public health respond to the challenge of sustainability.

Each presenter will speak for about 20 minutes. We'll keep the questions and discussion until after all three presentations are complete and then we'll have discussion.

Now, I need to advise you that this seminar is being recorded. The reason that the seminar is being recorded is that it will be written up and placed on Oxford Health Alliance's website and is for publication at the end of this three-seminar series.

So without further ado, I'd like to introduce Emeritus Professor Bob Douglas. After an illustrious career in public health, Professor Douglas became the first director of the National Centre for Epidemiology and Population Health. He vacated that position in 2001 and he worked with others to establish a new organisation called Australia 21, which is supporting networks to consider the challenges ahead of this society. Now, Prof Douglas has brought brochures from Australia 21 which are available outside the Auditorium. There is also a website, which is www.australia21.org.au. Prof Douglas is going to share his thoughts on *The Human Race and Extinction or a Sustainable Future.* Thank you, Prof Douglas.

BOB DOUGLAS: Thanks very much, Ruth, and thanks for the invitation to participate in this important seminar.

In his recent book "Collapse", Gerard Diamond argues that societies which have historically survived serious environmental challenge are those which have been

able to adjust their cultural norms to the new reality. The reality in 2006 is that planet earth is now becoming, as a result of human actions, unable to support the human numbers that are already here and will arrive in coming decades. Our society is on an unsustainable trajectory. Continued business as usual is a formula for the collapse of human civilisation. Referring to Australia, Diamond, in his book, says: "On the one hand the development of environmental problems in Australia, as in the whole world, is accelerating exponentially. On the other hand, the development of public environmental concerns and of private and governmental countermeasures is also accelerating exponentially. Which horse will win the race?"

So the question I'm posing this evening is whether we can modify Australian culture in a way that will address the intertwined social and environmental threats that now confront us, before they overwhelm us. The short answer to my own question is that the present policy response horse is not moving fast enough, and that we must engineer a cultural revolution in the values that currently dominate Australian society, and, for that matter, , much of the human world.

Six interlinked global threats now loom as obstacles to the health and future of the world. They are climate change, the operation of the current economic model, ecosystem destruction, global inequity, peak oil and the risk of nuclear conflagration. All are global in their scope and all require collaborative action across national borders. Constructive global action in the next two decades will be absolutely seminal to the survival of humanity and we cannot afford to be paralysed by fear of lesser order problems such as terrorism, rising interest rates, pandemic flu, the leadership of the ALP, or whether Alexander Downer lied over the AWB affair. Yet these lesser order problems are choking out urgent community consideration of the long-term health and survivability of the human family. Even the introductory blurb to this seminar tiptoes carefully and very

diplomatically around the economic system. But I want to propose here that despite the accomplishments of the neo-liberal economic model, it is absolutely central to our unsustainable way of life, and that as with all economic fashions, it is on its way out. Australia should be leading the way in our effort to make the human economy responsive to the needs of nature's economy, and the developing of an economic approach that genuinely addresses the well-being and health of all humanity, rather than favouring the already rich and powerful.

I also want to assert that life for our children could be even better than the life that we've been privileged to enjoy. In dealing constructively with the issues that are threatening our future, we could attain a new high point in the way human society operates. Consensus is building about the kind of human world that is both achievable and sustainable, and there are positive signs that a coming generation of young thinkers would like to convert that vision to reality.

The Global Scenario Group provides insights into these prospects for hope. This group developed four hypothetical models of the future. Each was based on different assumptions about the way humans will respond and adapt to changing pressures on us. They took into account the state of the world as we now know it and the resource and population pressures that can be anticipated in coming decades. Their hypothetical models represented different policy approaches that may be brought to bear on societal organisation and governance. In their hopeful scenario, progressive elements of civil society, government, international organisations and businesses will forge a new sustainability paradigm with a new vision of globalisation that is centred on quality of life, human solidarity, environmental resilience and an informed and engaged citizenry.

The other three models were found to result in undesirable global outcomes. They were market world, policy world and fortress world. The fourth hopeful approach led to the scenario that they described as “Great Transition”, where we

will stabilise population, redistribute resources, modify agricultural technology and change the way we relate to the environment.

To make this transition to a survivable world will require a drastic change in conventional values, economic structures and social arrangements. The Global Scenario Group argued that four major agents of change, acting synergistically, could drive us towards the new goal, through our global actors, into governmental organisations, transnational organisations and spiritual communities. The fourth, they say, is less tangible but is critical. It is public awareness of the need to change and the spread of values that underscore quality of life, human solidarity and environmental sustainability.

In the context of this analysis modern Australian culture contains hurdles which we will need to cross if we are to participate in this Great Transition. We now need to rethink current Australian attitudes in five value belief domains. The mnenomic for remembering these five domains is SEEPS: Stewardship, the economy, empowerment, purpose and solidarity. For each of these domains the dominant Australian culture is leading us in inappropriate directions. Let me deal with each in turn.

Firstly, stewardship. Home and home ownership have long been part of the Australian dream and for many they are now a reality. Our preference is for a moderately large block of land on which we can make our own imprint and which is our castle, where we reign supreme and are free to do what we want. That's now part of our cultural heritage. On this basis we radically cleared land of native vegetation, introduced species that are ill-adapted to our inhospitable environment, wasted precious water and non-renewable resources on ever larger houses, sprawling suburbs and manicured gardens. We must now change that mentality. We will need to move from the notion that, "My home and my land are my castle and I can do what I want," to the recognition that, "I'm steward of

this small part of the planet and I need to care for it in such a way that my descendants will have a life." This is a journey that most Australians are yet to make and one that is currently opposed by our booming building and development industry, our economy, TV shows and the glamour of celebrity life.

Next, economy. It was Bill Clinton's campaign manager who coined the phrase: "It's the economy, stupid," and every modern Australian politician believes, with considerable justification, that the way to win elections is through the hip pocket nerve. But the trouble with the modern economy is that it depends upon manipulated consumerism and the wanton destruction of non-renewable resources, paying zero, or near zero price for the damage it inflicts on the world's commons. Further, it entrenches and rewards the already rich and is not seriously committed to sharing the world's limited resources with those at the bottom of the global heap. It's long on the creation of wealth and short on distributive human welfare.

In his book "Economia" Canberra geophysicist, Geoff Davies, writes, and I quote: "I find the present condition of humanity to be deeply shocking. Our vaunted economic systems don't come even close to providing for the most basic needs of most of humanity. Their record is not one of mediocrity but of abject failure. They create human misery on a vast scale and threaten humanity with decimation or extinction, either through the propensity of our present societies for violence or through assaults on our own life support systems."

The modern human economy has been built with almost total disregard for nature's economy, which is now beginning to bite back. The view that it is nature's economy that is paramount is presently not widely shared or understood in Australia. So we need to shift the Australian value frame from the notion that is, "It is the economy, stupid," to the recognition that, "It's nature's economy, stupid."

Next, empowerment: Changes occur in society not because our leaders seek them, but because dreamers with concern, a vision of hope and a vision of how things could be different, persistence and self belief, dig in to bring change about. It was Margaret Mead who pointed out that a small group of thoughtful, committed citizens can change the world and that indeed that's the only thing that ever has done so. It was the ecologist, Paul Ehrlich, who drew attention to the fact that most people are preoccupied with the here and now and that very few people are looking either at the long-term or what is happening on the other side of the world. So we need to increase the number of people who think outside that box of the here and now, both about the future and the future of the whole planet, and empower them to take action.

I think Australia is drifting towards aimlessness and authoritarian rule, as growing numbers of people shrug their shoulders and say, "I can't change things so I'll get on with enjoying what I can." Many Australians are feeling sour and cynical about democracy and the political process. The rush of legislation on fundamental freedoms and entitlements, before the Christmas break last year, and the sordid revelations of the AWB affair have left many of us feeling deeply uncomfortable but impotent. We must somehow find a way of empowering the Australian electorate and returning to them a belief that they can help to move our nation and our world down a safer path.

Next, purpose: People in Australian society are being encouraged to define themselves and their purpose in terms of the things they own and the image that they portray. The modern human economy works to maximize consumption of material things and success is measured by wealth and possessions. Supermarkets and shopping malls are our modern temples and we spend much of our time and effort deciding what to buy and how to get more money to buy more. There is deeply entrenched in Australian society a view that well-being

equates to spending power, yet the evidence shows that beyond a certain level of affluence, which most Australians reached some years ago, more money and possessions do not contribute to greater happiness or enhanced well-being. Human well-being depends not on what we own but on having meaning, purpose and fulfilment in our lives. Readjusting the human economy requires not only that it becomes compatible in nature's economy, but also that it helps to promote meaning, purpose and fulfillment in people's lives. We must ensure that people have the time and opportunity to build relationships and strengthen community bonds, and we need to pay attention to the infrastructure in our society that promotes these fundamental issues.

Next, solidarity: There is a tendency in Australia to believe that this is our country and we have earned what we have the hard way. Our Prime Minister earned widespread applause during a recent election campaign when he expressed the view, "This is our country and we'll decide who comes here and under what circumstances."

But that is only one side of the issue. The problem is that our country is also a part of the planet and a very large part at that. The idea that we can isolate our nation and ourselves from the pain and suffering that is being experienced by our fellow citizens in other parts of the world is absolutely false. The problems that face us all are global and we are now more interdependent as a species than ever before. We must make the values transition to a belief that globalisation now means that all 6.5 billion of us are in the survival business together, and that the building of fortresses around our own good fortune will not alleviate the threats to our children's future. We have no viable option but to work together and to develop solidarity with humans everywhere, whether they are born into an African village or into a Saudi Arabian palace. Australians can and should be leaders in this endeavour and we should begin by developing genuine solidarity with the indigenous people who first inhabited our land.

So can we hasten the essential values transition? Adapting Australian culture to the emerging reality of our environmental predicament and the feasibility of long-term human survival is a daunting challenge. But if the alternative is human extinction or a barbarous future for our children, most of us will want to begin the journey. Let's not be queasy at the thought of setting out to engineer a change in widely held cultural values. Retailers have been engineering profound changes in Australia's community values for many years. That's exactly what marketing is all about. Our values are being subtly manipulated every time we see a television advertisement or switch on the radio. I think we need a new epidemiology of values and beliefs and there is no reason why conventional epidemiological methods could not be applied to help us to understand both the factors which contribute to modern value formation and to understand how to modify widely-held beliefs. I think we also need to fill the void that has been created by the decline in the appeal of the church and of organised political parties. Happy clappy fundamentalist religion that adopts simplistic views of science and creation cannot fill this void, though I do acknowledge that what I'm discussing here is the need for a fresh approach to a broadly defined spirituality. There is currently no safe environment within which thinking people can explore together alternative ways forward for our society and our human place in the cosmos.

In Canberra the Nature and Society Forum is experimenting with the possible development of an Australian life centre movement, with life centres developing in communities across Australia. This idea, originally proposed by Stephen Boyden, could be a vehicle for cross-generational exploration of the future. Life centres could become a vehicle for education, debate and action, assisting people in the local area to take greater control of the future and explore options in a safe and non adversarial environment. These centres could help to rebuild lost social capital and offer a new opportunity for people to interact with their

neighbours, as well as experts on issues relating to environment, health and well-being.

The centres could be located in public school premises and be staffed by volunteers. Volunteers, especially, from the growing population of retiring baby boomers. They could provide a fresh new focus on democracy and the political process. Experimentation with this idea could start immediately, building from the concern and cross-generational interest of older citizens and linking with the coming generation of young people. We're exploring that in Canberra at the moment.

I think we urgently need a new culture of sustainability. Without it, our grandchildren will not survive. The shaping and modification of culture begins at birth and goes on throughout life. Many people and institutions play a role in determining what we believe and how we respond to challenge. It's a subtle and ongoing subconscious process. Schools, sporting clubs, workplaces, churches and the media focus our attention and subtly modify our values and beliefs. Progressively, all of us arrive at some understanding of who we are and how we are connected to the rest of the world and our special place in it. At the simplest level, that's our spirituality. Globalisation and the neoliberal economic model are now shaping our spirituality. Giant corporations control the production, distribution and marketing of ever-more consumer goods. Advertising is a profoundly sophisticated activity in which we're subtly encouraged to find our purpose and meaning in the ownership of things. To transform Australian values to those which are compatible with human survival, we must find ways of helping people to explore the real facts of life and reshape the way they view the world and their place in it. Time will tell whether life centres can help to fill the values void. I see them as potential meeting points across the generations for people who are determined to change the current direction of society from the danger of collapse to genuine sustainability and survivability.

This is our vulnerable spaceship. It's the only one we have and we're making it uninhabitable.

RUTH COLAGIURI: Thank you very much, Professor Douglas. That was a wonderful menu of food for thought and I'm rather taken with the idea of epidemiology of values and perhaps we can get back to that during discussion time.

I call next on Tony McMichael, who is the director of the National Centre for Epidemiology and Population Health at the Australian National University. Prof McMichael has a variety of epidemiological interests, but a special focus on environmental influence on health. He has chaired several high level international committees on environment and ecosystem assessment, and has been a frequent adviser to WHO and the UN. He is also director of the newly-established Climate Institute of Australia and is the co-chair of the Project on Global Environment Change and Health as part of the National University science partnership.

Professor McMichael will speak on: *Environmental Change and the Risks to Human Health: Why Sustainability Matters*. Thank you, Prof McMichael.

TONY MCMICHAEL: Thank you very much, Ruth. Thank you, everyone, for the opportunity to come and speak about this topic.

It's a terrific topic for a symposium and very timely. We're just starting to see, now, some of the early writing and publishing, broadly, in the fields of environmental health and public health, about this question of how population health should be thought of in relation to sustainability. So really there are two main things I want to do in this presentation. One is to fill in, in some colour,

some of the things that Bob has very systematically outlined with respect to some of the impacts that we're having on the great natural life support systems of the world, and how that has implications for population health now and increasingly into the future.

But secondly, and indeed first up, I want to explore what we mean by the word "sustainability" and how we might think about relating population to it. That's really what that rather opaque subtitle is attempting to capture. I say opaque; the colours are actually a bit lurid for the title of this talk, but our Vice Chancellor commanded the PowerPoint template be redesigned and so now we have an immodest and immovable logo that takes up the top half. So in order to be heard you've got to shout with loud colours.

Why sustainability matters? Well, I want to argue that it matters because it's about achieving conditions supportive of human well-being and health. Because, above all else, our ultimate purpose in the pursuit of sustainability – and indeed I think our innate drive as a species, as organisms – is to thrive and survive. You'll be aware that a lot of the talk about sustainability has, to date, been directed at questions of about whether we can support those things that, tangibly, we depend on: economic productivity, the environmental conditions around us and social structures, social relations. All very important, and they're packaged as the triple bottom line – but my argument is that they're not the bottom line, they're the penultimate line. The reason we want to optimise those things and get them in balance is because they are actually the determinants of population health, both now and in a foundational sense, stretching out into the future.

So I think that we've got, actually, not just an opportunity, but a responsibility as folks interested in population health, public health, in elucidating this relationship and making that argument; in attempting to influence the policy discussion

because sustainability is actually about the sorts of things that Bob was alluding to, with respect to the prospects for congenial future lives, well-being, health and, indeed, survival of coming generations.

I've got a number of slides. I'm not going to bother about any of them very much in a technical sense. I just want to help to advance the discussion and give us a feel for the framework within which we might think about this relationship. The first half dozen actually do explore the question of sustainability, sustainable development, and how health relates to it. The second half does and then look broadly at this question of the overload of the planet systems that Bob has described; global environmental changes, contemporary, unfamiliar, unprecedented problem that our generation has to grapple with. Then the next dozen slides are on aspects of the more specific question of global climate change and human health.

Let's think about issues of scale. We'll all be familiar that very much of what we do (and we like to think that we do it well, and that it's important and it remains important) is shown at the bottom there. Studies understanding the health risks from things like very localised environmental exposures, or, at a higher level, and, indeed, air pollution impinging on whole populations. These things have also come onto the agenda in recent times: larger-scale questions that impinge on whole regions of the world and have health implications via effects through the air and through acidification of waterways and soil and so on, right through to global environmental changes such as climate changed. They pose, qualitatively, different sorts of health risks, of the kind that we're not yet very good at understanding and to which we're not particularly well developed in research methods or risk assessment methods. But we're having to work on that and that's a rapidly growing edge. So these are the issues that reflect the disruption of life and health support systems.

So I'm going to argue then that not only is population health, as has been well argued by economists (particularly via the International Commission on Macroeconomics and Health that Jeffrey Sachs chaired) that population health is an input, an asset for sustainable development, leading to subsequent positive feedbacks, gains in social conditions, economic conditions, which then will improve health further and so on. We must go further, and think of population health as a criterion of our success, or failure in the pursuit of sustainability, perhaps “sustainable development” – and I'd like to insist on the world "development". We're not talking, necessarily, about growth. Development does not have to involve expansion bigness.

Some wise words have been written by some different persons in the next several slides. The World Commission on Environment and Development, the Brundtland Commission, had these things to say - you can read through that first one in white for yourself. The second sentence is the critical one: "We all depend on one biosphere for sustaining our lives." But having said that, the work of that commission was pretty much focused then on questions of how to manage the environment in the interests of conventional economic development. Sustainability was then, in their terms, rather much about continuing economic development, which is fine as long as the system holds together and you're not overloading it. 20 years on we can see the overload becoming manifest. You'll recognise, I think, in blue, that very early definition that they offered us of sustainability, one that is much quoted.

Jim Lovelock, of course, won't buy that. He comes in with his own strong and somewhat idiosyncratic views on these matters, but this is a chastening statement I think, that: "Until we stop acting as if human welfare was all that mattered, it was an excuse for our bad behaviour, all talk of further development of any kind is acceptable." This is in his very recent book. However, he is talking, I think, of the protection of human welfare in that short-term sense that

we are exploring this evening. This short-term notion is that of: “let's go for prosperity today because tomorrow may never come,” or at least if it does come, or it is coming, in degraded, non-sustainable, form, then we can find a friendly economist, surely, who will discount the future to zero anyway.

I rather like this definition from the do-it-yourself, sort, of organic internet encyclopaedia, Wikopaedia, where they talk about sustainability and they have this nice statement that it is a system of parallel, care and respect for the ecosystem and the people within it – and it recognises the interdependence between these. It's a nice simple statement.

This next slide is a bit more complicated, but this is the last introductory comment about sustainability. I just want to make the point that we know well about the human pressures that we have long put on local environments via these sorts of processes and the sorts of direct health impacts that that can have on health. But we have this other category, now, that we're concerned about, larger-scale impacts that are affecting the functioning of the natural systems that we depend on. These are the systems that underpin these important entities, which I've described as constituting the triple bottom line, the focus of much current discussion.

Those things all bear, in various direct and indirect ways, on human health. What I want to argue, then, is that the real reason to be concerned about being on a non-sustainable pathway is that we're going to impair the positive flows from these entities that underpin human health.

Moving then to a quick review of global environmental changes. This is one of those heroic slides. It's not mine, it's by a group based in Switzerland, but it accords with a number of other macroscopic assessments of this kind, putting together, country by country, information in relation to impacts on large

environmental systems and greenhouse gas emissions. Their assessment is that for the last 30 years we've been trading in the red, we're in ecological deficit. We're drawing from nature more than nature can provide on an ongoing renewable basis, and anyone in business will know you can get away with it for only a while, but not long.

The main types of global environmental changes are these - I won't talk about them in detail; you'll recognise the list, I think. But it allows me at least to make the point that climate change gets a lot of headlines but it's just part of a larger syndrome. We're putting pressures on world natural systems on many fronts and some of these processes will interact. I'm going to show you an example with respect to the fisheries in just a moment.

I have worked as part of the Millennium Ecosystem Assessment Project. 13,050 scientists from around the world worked on this for four years, to assess the state of the world's ecosystems, the way that humans are changing them, what the impacts are now for well-being, health and other social functions, and what the trends and social impacts in the future are likely to be under the sorts of scenarios that Bob has compared for us from the great transition exercise. You see the conclusions there - this is an overview statement - but clearly this is something that we need to note and be concerned about.

This fisheries example comes from the work of the MA, the Millennium Assessment. You can see, on the left, that well-known story of the dramatic collapse of the Grand Backs Cod Fishery after that, well, almost orgy of exploitation during the post World War II period of industrialised fishing, just hoovering up the fish from the ocean floor, on the assumption that there would always be more. Well, there weren't and it collapsed. In 1992 the world agreed to a moratorium; but that fishery hasn't recovered, and the ecologists tell us that there has been replacement of species. The ecological niche has been occupied

by other fish and the cod are unlikely to return. On the right you see the picture of the world's ocean fisheries at large. Sure, they're making good to some extent with aquaculture, but that's got a number of environmental problems that we're also concerned about as, for example, we lose the mangroves all round South East Asia. Of course the particular relevance of fisheries here is that we're talking about a crucial source of high quality protein for a number of the world's populations, particularly in lower income countries.

That's worrying enough, but the further point I want to make here is that in addition to that, we had a report in the journal "Science" last year that the warming of the Northern Hemisphere oceans is now leading to the displacement of fish populations to higher latitudes as they seek to retain constant temperature, or else they're moving to greater depths in the ocean. So there is a disruption of fish populations in response to the warming of the world's oceans. Then, next, the UK Royal Society, a very eminent body, produced a report that took most of us by surprise. We hadn't thought about it, and yet it's obvious. If you put more carbon dioxide into the atmosphere, it's absorbed in part by the oceans and, guess what, the oceans become more acidic. High school chemistry. The pH is dropping. The Royal Society released a rather dramatic report in June of last year saying that, on their estimation, that if this were to continue for another three or four decades it would seriously jeopardise the basis of the marine food web. There are lots of calcification processes, very pH dependent, that produce many of the little creatures at the bottom of the marine food web.

So what we have, then, is, in combination, these huge pressures that human society is now putting on this natural resource, a source of food for much of the world. Over-fishing, ocean warming, and ocean acidification. I think it illustrates well the problem that Bob outlined of us now moving, now, into a world of global non-sustainability via, particularly, the combination of many of these practices.

So to climate change more specifically. Here is a graph I think many of you will be familiar with, the 'clinical' graph of earth's temperature over the last 150 years or so. It's showing a worrying rise there, towards the end. We've recently moved outside the band of historical climatic variability. The Intergovernmental Panel on Climate Change (IPCC) was set up by the UN in 1988 to advise the world's governments on the process of climate change and what its consequences would be and what we ought to be doing about it, or what we could do about it. IPCC can't prescribe policy; rather, it can list the policy options.

The IPCC has made this much-quoted estimation, and you see that there is a fair bit of uncertainty around it; a 1.4 to 5.8 degrees centigrade rise by the end of this century. That uncertainty reflects two main things. Firstly, there are things we still don't know about how the climate system will respond to a change in gaseous composition as we take it outside the bounds of anything we've experienced and studied as scientists. Secondly, we can't be sure of what the world's future trajectories of emissions will be anyway.

So we're talking about that order of temperature increase. The concerns are that this would be an extremely rapid rate of increase, and of course it would affect many climate-dependent, often specifically temperature-sensitive, systems – like the great sheet of ice over Greenland. You can see there the evidence, just in 10 years, of how much impact the warming has had. Recent estimates are the Arctic sea ice is likely to have disappeared by the 2030s and we'll be able to happily sail to the North Pole. Less happily, the retreat of that sea ice is disclosing a number of actually quite large oil fields that were previously inaccessible. There is a lot of manoeuvring going on now to stake out those oil fields. This would be the most ominous of positive feedbacks, actually, from this process, wouldn't it?

Climate variability is equally important. I just received this slide picture today and it reminds us that it's not just a change in averages we're talking about, it's a change in variability. It's a pretty unusual experience for this orangutan. It hadn't previously seen snow and suddenly there was an aberrant snowfall in lowlands Borneo. It happened recently.

This reminds us of some of the other dramatic recent events. I'm not going to go through the detail here, just to make the point that we are seeing, all around the world, climate change impacts on human species, changes in nesting times, bird migration, insect migration times, polar bear feeding, all that sort of thing that I'm sure you've read about. This just summarises some of the other work that's been going on, trying to see where this is all leading. You see in the first two dot points there, the big dot points, the suggestion that we're likely to see about a tenfold order of magnitude of increase in rates of migration of species towards the poles or up the hills in response to the warming.

And the sorts of impacts? Well, that one, number three, is Tim Flannery's estimate in relation to all the species on Earth – and how that relates to the great extinctions that we've seen happen grandly in Earth's history over the last half a billion years, half a dozen times, for temperatures changes of around 5 degrees centigrade.

Now, in relation to climate change impacts on human health, these are the pathways by which risks will arise. I've put three categories there: At the top, the direct impacts, easily foreseeable; second, the mediating processes that lead to the less indirect impacts via disturbances of ecosystems, mosquito populations, food production systems. I've mentioned here, also, the effects on fisheries, for example. All of those sorts of things that, via all sorts of pathways, will have human health consequences around the world, and particularly in various regions with vulnerable populations.

Less easy to quantify is that third category – the sorts of consequences that flow from social economic demographic disruptions. We all know the sorts of public health problems that ensue with displacement with environmental refugees, with conflict situations as resources are dwindling and so on.

Just a few quick examples, then, of these before I come to the end. Heatwaves: here is the big one, August 2003 – causing an excess of around 30,000 deaths. That was a warning sign for Europe, and British atmospheric scientists have concluded that the probability of that extreme event occurring had approximately doubled as a result of the underlying warning that's occurred in the last few decades. What was a one in 400-year event, will become, they estimate, a one in four-year event by around 2050 in Europe.

The cyclones: Are they increasing in intensity? Well, the evidence suggests that probably they are. This one, Hurricane Katrina, attracted a lot of attention. The question that was raised was to what extent might that have reflected a component of climate change, via the warming of the surface waters in the Gulf of Mexico. Those temperatures were one to 1.5 degrees above average at the time for the season, and almost certainly did contribute.

If you want to think about that in more mathematical terms, you can imagine that what we're seeing is climate change amplification to greater strength of the underlying natural cyclone. This is the sort of 'damage function' that is well familiar to people that work in this area, showing the risk functions for these types of stresses on systems. It's very likely, then, that the excess damage due to the climate change component actually accounted for a very large part of the damage that's actually occurred. The arithmetic is difficult and there are lots of probability distributions you want to look at before you actually bet your socks on this sort of thing, but I'm just indicating that these are the sorts of questions that

are not coming onto the agenda. A similar question might have been, might the impact have been reduced if we hadn't, or if they had not been eliminating wetlands, changing shorelines, re-engineering river flows and all of those sorts of things that made New Orleans more vulnerable.

Think, then, about how to estimate health risks in the future: Just a couple of slides here, on malaria and dengue.

We need biological modelling for some of these things because the underlying biology is complex. Look, here, at the ways in which different components of malaria transmission respond to variations in temperatures. You get a non-linear overall response shown at the bottom when you put these components together. Connecting that sort of biological model up with the projections of climate change allows future malaria risk assessment for the world at large, which we've done in the past, or for specific countries, as done in this case by some American colleagues.

This shows how we can estimate how the potential transmission of malaria will change in Zimbabwe in response to the reasonably foreseeable warming scenarios. There it is in 2000, showing where the disease can be transmitted at the moment. The Highlands are of particular interest, running diagonally across the country. There we are, modelled 25 years out. If we take it out to 2050, with further warming the transmissibility potential moves up the Highland slopes and very much of the whole country is then at risk. It is not saying the disease will be there, although it wouldn't be surprising given Zimbabwe's current political and economic state. But it certainly is going to impose huge public health costs, at the very least, on these populations.

We've done something similar in Australia, working with CSIRO, looking at, how future changes in temperature, and indeed in rainfall in this case (an important

influence on the *Aedes Egypti* mosquito), affect this primary vector for dengue fever. You see there, on the right, how the transmission would extend under those future climate scenarios in Australia – and the implications, at the very least, for public health control, if not for actually incurred disease risks in those populations.

Finally, I've mentioned environmental refugees as illustrating this more diffuse category of problems, and, for all sorts of reasons, the UN has made this, I think, quite alarming protection. I've put some exclamation marks here – I found it a bit unbelievable when I read it, but this was published just a couple of months ago. They see all of these large-scale environmental and demographic population increase changes, leading to this sort of increased mobility of displaced persons, refugee persons, and we can imagine the tensions, the conflicts the public health consequences.

In conclusion I, again, make the argument that in addition to health being an input, I think we need to understand the ways in which health is actually a quite crucial output, a criterion of the sustainability that we're seeking to achieve. Population health, again shown here in that introductory lurid colour, is the real bottom line of sustainability.

RUTH COLAGIURI: Thank you, Tony, for that extremely clear analysis of where exactly it is that the world stands at the moment on its trajectory towards unsustainability. I found it an excellent presentation but I'm now totally depressed and since I forgot before to remind you that you are invited for refreshments and drinks at the end of the seminar – I think we'll all need them by then... But thank you it was a very elegant analysis.

So I now call on Professor Stephen Leeder who will talk to us about the public health response to the challenge of sustainability. Professor Leeder is actually

my leader as I work with him and he has been a legendary public health figure in Australia. He is the Director of the Australian Health Policy Institute and co-Director of the Menzies Centre for Health Policy and Professor of Public Health & Community Medicine at the University of Sydney. So, Stephen, thank you.

STEPHEN LEEDER: Thank you very much, Ruth, and good evening everybody. Thank you, Bob and Tony, for those different but complementary presentations. I take, from Bob's presentation, a much clearer understanding of some of the obligations of citizenship in response to prevailing and future environmental challenges, and from Tony's presentation, a much clearer technical understanding of some of the concerns and what we might do about this.

Sustainability is a huge topic and stretches all the way from the concern about climate change and other manifestations of pollution, through worries about where we will find energy to support a world where rising material prosperity will demand, in 30 years time, four times as much energy as the world uses today. This is a trajectory that we've chosen to put the world on by virtue of the spread of the kind of social development philosophies that we endorse. We live in a comfort zone that makes it almost morally impossible, I would argue, to say to other people that they should not strive to be as comfortable as we are. Under those circumstances, given not so much globalising pressures, but the pressures inside developing countries we are looking at a quadrupling of gross global product within 30 years.

Sustainability encompasses concern about the rise of diseases that become more frequent as we bring humans and animals closer together, as we turn rainforests into beef farms. As Peter Singer points out, the weight of meat animals now equals four times the weight of humans on the earth. Think about the amount of methane that these guys produce! That's a big chunk of - something like 20 per cent of the greenhouse gases comes from, as Singer puts it – that comes from

animal farting. We're addicted to eating meat.

Some people worry that the sheer pressure of population rising from the current 6 billion, today, will create problems of its own.

The Public Health Response to the challenge of Sustainability

Where in all of this can we locate public health, the professional discipline that seeks ways of maintaining and enhancing the health of populations through organised community-based cooperative effort?

I wouldn't be speaking to you this evening if I did not think that public health has much to offer. But concurrently I assert that there is value in clarifying the path that public health can play in relation to sustainability, so that we, in public health, do not over-promise or miss the necessity of supporting broad, multidisciplinary approaches to achieving sustainability.

Public health has always had an endearing tendency to see itself as a kind of global Statue of Liberty: "Bring to me all those who are suffering from inequities or ghastly diseases or problems of society and we will make it better." That is a delusion of grandeur, and we need instead to have a realistic view of what public health can and cannot deliver.

I shall examine the public health response to the challenge under several headings. I shall invoke two concepts, coherence and obligation, as the desirable qualities of ethical public health response.

The dimensions of the challenge

The first response that I consider appropriate that public health make in the face of the challenges of sustainability is to come to come to as realistic an understanding of the problem as we can.

John Gray, who is the Professor of European Thought at the London School of Economics, offers pertinent comments on this in a review of four books about the environment in the May issue of the New York Review of Books: "If there is a way forward it lies in the intelligent use of science and technology to develop less dangerous sources of energy. But it's a mistake to think that a large change in the way we live can now be avoided."

Gray continues: "Climate change cannot be prevented, only mitigated, and whatever is done to deal with its effects, there is sure to be large scale disruption and conflict. The defining feature of the industrial civilisation that is spreading everywhere is exponential growth, but such growth is eventually self-limiting."

‘Coherence’ and ‘obligation’ as qualities of the ethical public health response

The second aspect of public health response to the challenge of sustainability, which follows an understanding of the dimensions of the challenge and taking those seriously, is to move from a point of feeling totally overwhelmed by the size of the problem, to one where we can do something about it.

Onora O'Neill, a British political philosopher, is an exponent of the ethics and philosophy of Immanuel Kant. Kant, as you may know, wrote extensively about the notion of moral duty, and O’Neill follows this line, seeking in complex situations to understand and define what we can do in response. She urges us to recast complex problems as combinations of problems that we can understand and do something about. She calls the desirable quality of these redefined problems ‘coherence’ (as opposed to mad, incoherent and overwhelming problem complexes) and then seeks to determine what our responsibilities are in the light of these problems. "Incoherence," she says: " ... occurs when a problem is said to require an impossible array of actions that are possibly only in an imaginary and idealised world."

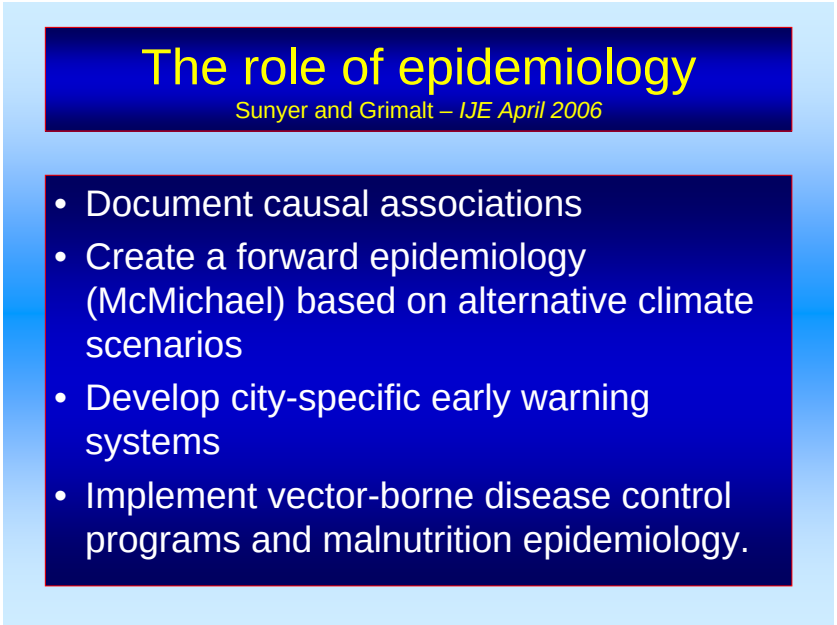
So from this massive canvas on which we see a huge and confusing picture of all the things that are going wrong with sustainability and all the ghastliness of it, O’Neill challenges us to see if it is possible for us to define coherent components, problems that we are able to address. She says it's easy and rather ineffective to talk about the universal right to health, but plain enough when one considers who has to do what for whom, that universal health cannot be provided so that there can be no such right. It's easy to say we must do something about sustainability. It is a different thing to say, "Well, what are our obligations in the light of a coherent element of that problem?"

The public health response to the challenge of sustainability is, first of all, to be clear about the nature of the challenge, the dimensions of it, to accept that we're not going to be able to tackle all of it, but that we need a coherent definition of the problem that we can tackle and a clear understanding enables us, as our second public health response, to define our obligation, what it is that we can do, to whom, with what, by when.

Modelling the health impacts of global warming

After defining a coherent problem and identifying our obligations, our third public health response is to do what Tony and others have been showing us that they are already doing, which is modelling future health impacts. Public health people are in a good position to do this. They can't do it alone, but they have an understanding of health that would enable them to fulfil that function.

In the most recent issue of the International Journal of Epidemiology two Spaniards wrote a paper entitled "The Role of Epidemiology in Relation to Global Health Effects and Global Climate Change". They offer four things that epidemiology can do.



The first of those is documenting causal associations through classical studies, creating what Tony McMichael calls a forward epidemiology, which he described at the International Society of Environmental Epidemiology, as including research on future scenarios, based on advanced modelling, applying projections at a local or regional level, carrying out validation studies of the projected future scenarios based on empirical data, and performing classical longitudinal studies on present and past patterns of disease on a broad range of health effects. So there are some hard yards to be done in this debate by the public health people who attend to what might be called the tough stuff of environmental epidemiology.

Developing a range of mitigating interventions

These authors further suggest that a public health response to global warming should be the development of city-specific early warning systems. With changing climatic patterns, early warning systems make great sense, in relation to tsunamis, cyclones and tornadoes. Their final suggestion is that there is a need to implement vector-borne disease control programs and to look into the epidemiology of malnutrition. So these are, if you will, kind of bread and butter public health responses, but nevertheless critically valuable to specific populations in the face of changing environmental conditions.

Advocacy with others

How far may the public health professional go beyond his or her data in seeking social change and engineering? Advocacy can take the form of working with concerned communities, political lobbying, working with other professional groups, working with the private sector and NGOs.

Educating professionals for the future

Then, finally, educating professionals for the future. If we asked our public health trainees "Do you feel that you're receiving satisfactory education to work with others outside the health sector?" very few would say yes

It behoves us, in public health to define our obligations and set about fulfilling them.

RUTH COLAGIURI: Thank you very much, Steve, for those well thought through insights into the obligations of public health with regard to striving for sustainability in particularly with the notion of public health reaching outside of the silo of health to other players and other elements in society. So, we'll now go to the questions and discussion. Please identify yourself by name and institution and if you wish a particular speaker to answer your question to identify who that is.

IAN MACINDOE: Thank you. My name is Ian Macindoe. I'm the National President of the Sustainable Population Australia, an organisation concerned with these very matters. I'll just mention that the House of Representative Standing Committee on Environment and Heritage currently is accepting submissions on a Sustainability Charter for Australia. Although the official date for those submissions is closed, I understand they will accept late submissions. In their discussion paper they considered the possibility of setting various targets to do with sustainability, resource use, etcetera. In that regard I was particularly interested in Professor Leeder's statement that we "need to judge the political will for feasible interventions". Because I think one of the things that should be done is to measure the changes in attitude, values and actions of politicians, senior public servants and other people who are decision makers in the community. My question to the panel is, given that kind of scenario, do you

recognise, and would you like to comment on, the powerful forces that will fight you all the way in any attempt to engineer healthier values along the lines of the Life Centre communities that you talked about?

RUTH COLAGIURI: Who would like to address that question? Bob?

BOB DOUGLAS: Ian, there is no doubt that there are huge forces arrayed against any serious approach to sustainability, given the operation of the economic model. I'm particularly influenced by Susan George's writings on this, that we're not going to turn this issue around until the community demands it. I think the politicians and the decision makers are trapped into an operation that is genuinely unsustainable and they have no control. The only control resides with the people, and until we can develop a strategy that empowers people to take charge of this because it is threatening their kids' future, I don't think we're going to make first base.

TONY MCMICHAEL: I think, also, if we look back historically, we can be encouraged by the fact that great and unexpected revolutions have occurred from time to time when circumstances have been disrupted in dramatic fashion. There are those who would wish to have retained the feudal system forever, but one reading of history is that the advent of the Bubonic Plague in Europe and the dramatic disruption of population numbers, distribution and labour-force availability, infrastructure and so on, actually led quickly to its dissolution.

That, inevitably, leads one to ask, perhaps a little morbidly, does it depend on crises to actually concentrate our minds, so that that political will emerges, including will that comes from the bottom, as Bob has described, as communities come to understand the seriousness of situations? Perhaps that's the most likely source for the moment. I think we're beginning to see a bit of that: it's been very interesting to watch the debate in Europe, following just that one episode of

the extreme heatwave in 2003. It actually encouraged a lot of public discussion in good major national newspapers of a kind that we don't see in this country in our major national newspapers yet, about the extent to which that event had something to do with climate change process.

Likewise in the US, I understand there is considerable ferment following Hurricane Katrina, asking those same sorts of questions. I think the rocketing oil prices are also helping to concentrate people's minds on the fact that things don't last forever. So I suspect that over this next decade, given current trajectories and the rather rapid rate at which we're continuing to pursue, globally, a growth objective, we are likely to face more these crises. One has to hope that sooner rather than later people come to see that actually we can't go on with this picnic. The world won't sustain it and we're going to have to seek radical alternatives and we're going to have to demand that governments listen or get thrown out.

RUTH COLAGIURI: Steve, do you have a comment on that?

STEPHEN LEEDER: Only to say that I agree that there is a contest of ideas and some of those will be well motivated and some won't. A role for universities in society is as an idea generator and an idea purveyor. When I look around Australia and ask, "To what extent are Australian universities fermenting clear thinking on sustainability", perhaps with the exception of ANU there is not much to see Universities can contribute to what that Bob was talking about.

It trips lightly off the tongue to say that we are a university that is community oriented, or a medical school that is community oriented. Unless that means coming to grips with these big issues, then that claim lacks grunt. So I'm not saying for a moment that you can win the contest with big oil and big coal and big everything else just by being a smart academic, but there is a contribution to be made there.

RUTH COLAGIURI: Thank you. Before we go to the next question I was interested Bob in you talking about the fact that Australians are disempowered and cynical about our capacity to control our destiny and so forth, which is a little bit of a flow on from what Steve was saying, I have a sense that's probably unsupported by hard core evidence that there is a bit of a rise or resurgence in civil society. I guess what Steve has been talking about would help to cure that – do you think that there is a rise in civil society that may come to voice its opinions about this in time and what would accelerate that?

BOB DOUGLAS: Well, I'm not all that optimistic that there is a rise. I think Hugh Mackay would say that it's not looking very positive at the moment. But it does seem to me that that's where the action has got to be, to reestablish some kind of empowerment.

I want to come back to the point I made about the epidemiology of values. It seems to me that that's something that public health does understand; how to structure studies of the distribution and determinants of certain attributes - health and disease attributes. I see no reason at all why we can't apply exactly the same kind of methods to understanding how to modify Australian values because I think we've got to.

I think its little different from studying the determinants of diabetes or hypertension. There is beginning to develop a global epidemiology of values. The World Values Survey is an extraordinary database, that, if you look at it, reveals quite stunning differences in just about every basic value you'd like to look at across populations. I think we need to ask ourselves how do we actively manipulate Australia's values in a more positive direction, because they're being manipulated in a very negative direction at present.

RUTH COLAGIURI: We have somebody at the back, I think.

QUESTION: A quick comment on population growth in Australia and our responsibility. You haven't mentioned limiting population growth in Australia? Sustainability without the sustainable population, and you must limit population growth if you're going to have sustainability.

RUTH COLAGIURI: Comments from the panel?

BOB DOUGLAS: I think the one comment I'd make is that we've got 5.3 per cent of the land mass of the globe and about 0.3 per cent of the population, and we're stuffing up the environment as fast as any part of the world. So point 1: I agree there is a relationship between population and deterioration of environment, but I think until we accept that we have a big chunk of the planet that we are not caring for, and that we are not adjusting our lifestyle even to that - I'm not nearly as concerned as you are about numbers, I'm concerned about the processes we adopt in Australia to deal with the impact we're making. I think for us not to respond to the environmental refugees that are going to be coming to us in the next 50 years would be absolutely criminal. So I think we have to do both.

RUTH COLAGIURI: Professor McMichael.

TONY MCMICHAEL: Just quickly, and this is a bit off the cuff, it's not an issue that I've properly thought through: But I think it's fair to say that we all can and do, and I guess should, wring our hands about the population issue because it's still a big one in the world, although increasingly the impact on environment is a function of a level of consumption and waste generation per person, rather than the number of persons. The balance is shifting as wealth levels rise all around the world.

But I think we've got a very difficult problem with this issue of national population size, so long as we live in a relatively competitive world - we seem to have inherited this from the 19th century, a world with competing nation states all pursuing self interest. So long as that exists within the framework of the existing global economic system, with its emphasis on competition, profitability, growth, all of those things that are orthodox economic objectives, the nation states are going to keep making the argument that if they're going to remain competitive, keep our heads above water in this particular globalisation, we're going to have to have the numbers as well as the economic grunt. One hears that from the Business Council of Australia, one hears it from the equivalent bodies all around the world, at a national level. So I think that until we can make a radical shift to seeing ourselves as not primary representatives of the nation state but as citizens of the world –and that's a pretty big ask – it's going to be hard to shift national preoccupations with maintaining parity in a world in which numbers are growing and economic activity is intensifying.

RUTH COLAGIURI: Thank you for your comment.

STEVE CORBETT: I would just like to echo a sentiment that Jared Diamond had in his book *Collapse: How Societies Choose to Fail or Succeed*, that Australia has made policy responses to sustainability which I think are worthy. We've got very successful programs such as Landcare; we've had impressive gains in water re-use in many of our cities with water tanks now mandatory in new development. The question I am interested in is what should be the public health contribution to these strategies. What can we value add. Is it really an appendage to the sustainability policies which are already in place at local government level or at state level, or is there an independent course to be struck? I think a number of the speakers were leading to possibilities of policy initiatives which Public Health could own?

STEPHEN LEEDER: The question really is, is health able to go it alone, or should it be the front runner on sustainability? My personal view is that, no, it should not. Sustainability will require the professional input from so many different groups, of which health is but one. The issues are far broader, ultimately, than just human health.

A sustainability approach would require, in Australia, strong central political leadership, with the support of industry, who might see market opportunities in achieving a more sustainable world. It's not beyond the realm of possibility. I'm thinking, there, about such things as carbon sequestration technologies, next generation of nuclear reactors, a whole bunch of stuff in which Australia may choose to take leadership in pursuit of sustainability that will have only a tangential relationship to health. We couldn't ask health to be the runner on that. My personal view is that it is a whole of government matter, whole of nation matter, and that it would be appropriate if it was managed as such.

PETER BAUME: I'm Peter Baume, I'm a former Cabinet Minister for Health. Just imagine two cliffs facing each other and connected by a bridge. One is marked new game and one is marked old game. On the new game side are all the scientists, all the scientific journals, all the people with high IQs, and on the other side of old game are the politicians and population. Now, Tony McMichael is sending you home with a message that it's only a crisis that will bring people across from one cliff to the other cliff. Steve Leeder has suggested there may be rather more noble and rational ways of getting across. What's your view, Bob Douglas?

BOB DOUGLAS: Well, I think we've got to get the population across. I think that's absolutely fundamental. Whether we helicopter them across, which I don't think is feasible, or whether we give them the opportunity to use their own

commonsense to walk across, as a result of recognising the reality. That's my attitude. The more I have explored this issue, and I've explored it more since I retired than I did pre-retirement, the more I've become petrified about whether my grandchildren are going to see my age. It seems to me that's a pretty powerful motivating force, if indeed that were transmitted to every person in Australia. So I think that they'd walk across very comfortably if they were properly educated and if they weren't constantly being barraged with a whole lot of irrelevancies to the main game. So my approach is to get the main game out into the community.

RUTH COLAGIURI: Any comments on that Tony?

TONY MCMICHAEL: Well, if the West Antarctic ice-sheet melts, the population will be able to comfortably swim across.

STUART HILL: My name is Stuart Hill. I'm a Professor of Social Ecology at the University of Western Sydney, where I teach the only subject on sustainability, which has only 30 students in it. They're education students and they're only in the unit because of university cutbacks to electives – it's the only elective they can fit into their program. It's a very sad thing because these are the teachers who are going to teach the next generation, and most never heard about sustainability until they accidentally came into my unit. Many said, "You know, this is the only subject that's had any real meaning for me in my four years." I don't think that's a rare situation in our universities.

I want to ask you a question which, actually, I asked at an international conference back in the early 80s. There were three fellows, like yourselves, all very inspirational, and there was also one woman speaking (the ecological economist, Hazel Henderson). I asked “what are three specific things that each of you have done to change your values and actions to make a significant

contribution towards solving the problems you have been talking about?" Instead of answering my question the three fellows each presented more information about how terrible things were. Hazel Henderson said, "Well actually I've given up three things. I've given up my car, I've stopped buying new clothes, I buy only second-hand clothes, and I've stopped going to the hairdresser, I do my own hair." Some people might think that's pretty trivial, but I think it is significant that she was the only person that was actually able to report on anything that they had actually done. So while you are just thinking about what you are going to tell the audience, I would like to share with you two or three hopeful signs that generally are unknown in Australia. I've worked in a number of areas, one of which is agriculture. Before I came to Australia I was familiar with the work of P.A. Yeomans, who developed the Keyline System for landscape management. He was the only Australian at that time that I considered would have deserved the Nobel Prize. He developed a system for capturing enormous amounts of carbon in soil. His middle son, Allan Yeomans just published a book called "Priority One" about this, in which he has calculated that if Keyline landscape management was implemented on the main pasture land of Australia, we'd capture more carbon each year than we produce from all fossil fuel burning. Thus, with the technology we already have, we could be leading the world in doing something really significant about reducing our contribution to climate change. [Of course, this would only buy us time while we reduced our consumption of fossil fuels and changed to solar based energy systems]. Another hopeful example: some of you may know about the Peckham Experiment in the UK (www.thephf.org.uk and www.onlineopinion.com.au/view.asp?article=2598: and I have, in fact, corresponded with Prof McMichael about it, but I'm not sure that he has fully appreciated its significance to the topic we are discussing this evening). In this example of incredible hope two doctors set out to make a population healthy. Soon they discovered that they didn't know anything about health, so they set up an experiment that involved nearly 2,000 families over a 15-year period. During that period the participants were allowed to do what they wanted to do.

Interestingly they actually chose to do things that made them healthy. They also changed their values phenomenally, such that there wasn't a single marriage breakdown in 15 years, there wasn't a single case of bullying between children, the children didn't choose to play competitive games and they actually achieved a lot of the things that our speakers were saying they would like to see in our society. My perception is that they illustrated what can be achieved when we progress in our psychosocial evolution from a "Socializing" culture to an "Enabling" one. Whereas in the former one generation tries to determine and control the agenda of the next, with predictable negative consequences, whereas in the latter the aim is to actually enable people to act in their best possible way (to follow their own unique benign agendas). That's what they actually achieved in the Peckham Experiment by enabling people to make their own life choices. So I think the potential for progress by being willing to learn from such examples is phenomenal. Just a couple more positive examples --

RUTH COLAGIURI: Sorry, I'm actually getting concerned that we won't have time to answer the questions. We've got two more people who want to ask questions, so can we make this --

STUART HILL: (Hill continues) With respect to the earlier question about population density, as an ecologist, if I were studying another species I would start by asking three questions: how many are there, how are they distributed and what are they doing? If you've got high numbers, a highly aggregated distribution, and a highly consumptive lifestyle, you will have phenomenal resource consumption and enormous environmental impact. If you ask these same questions of humans, in the form of what we should and shouldn't do, it is clear that if we have a low population, dispersed distribution within the environment, so that we're close to our resources, and a conserver lifestyle, then we can have a sustainable society. These are clearly areas that sooner or later we've got to deal with.

Finally, one of the things I've done that I think is quite effective in achieving some of the things we've been talking about, is to do the opposite of what most people do. Most people, faced with these sorts of issues, dream up impossible projects. I'm actually hired at the moment, by the Victorian Government, as 'Provocateur' to critique their programs, particularly their stupid mega-projects that aren't achievable. What I've found is, when you focus on small, meaningful, doable initiatives and make them contagious, you can bring about enormous amounts of significant change. One of the ways I've done this in my classes is to have my students adopt a leader in society, so this poor individual who hasn't been raised properly is given another chance. Faced with a student who asks them very challenging questions, I've seen enormous changes take place. I'm just saying there are hundreds and hundreds of ways we can be effective in addressing the issues that have been raised this evening. One of the things that we must resist doing is to just keep studying and measuring the problem. If I was in power and didn't want my critics to have any effect on this, I would make it possible for them to get grants to do what I call 'monitoring our extinction research'. That's the type of research where one mainly describes and measures problems. Rather, what we need money for is to redesign systems to make them problem-proof, and there is sadly virtually no money for this. I'm sure you are now ready to answer my earlier question.

RUTH COLAGIURI: Thank you. Who would like to respond?

BOB DOUGLAS: I believe I'm an optimist. I believe there is a huge groundswell of activity, commitment, interest and susceptibility to genuine sustainability action in Australia at the present time. I think the point that Clive Hamilton has demonstrated, that something like 24 per cent of Australians are down shifting and making active decisions for lifestyle rather than economics, is a very positive sign. Tony and I were agonising about the ethics of having flown up here tonight

from Canberra and how many years of oil we actually consumed in the flight here. My wife and I have constant interactions over this; she's a bottle tops person, I'm a big picture person. I think we've got to bring the bottle tops collection and the big picture into some kind of harmony.

RUTH COLAGIURI: Okay, thank you.

STEPHEN LEEDER: They're walking home. They're not flying back to Canberra, they're walking.

RUTH COLAGIURI: Absolutely. We've got two people waiting to ask questions. Can we make them very quick, please?

TONY CAPON: Tony Capon, formerly with Sydney West Area Health Service, currently Visiting Fellow at NCEPH. I have a comment to make about Peter Baume's metaphor: the bridge between where we are now and where we need to be in the future. I think, to pick up on Bob Douglas' earlier comment about Steven Boyden's life centre movement proposal, initiatives like that can potentially widen a bridge between where we are now and where we need to be in the future, and enable people to move more readily to the future. So we don't just have a trickle of people across a narrow bridge, we're actually widening it up.

My question is to Stephen Leeder and relates to his comment that universities in Australia need to show more leadership in this field. As somebody who has substantially been external from the university system over the last few years, what I put to Stephen is that the current model of reward for academics, with promotion based on successful competition for grant money, requires change. This paradigm need to change. One of the key things we need to do in Australian universities is begin an organisational change process that moves towards

collaboration and integrated research to enable us to develop knowledge that's relevant to sustainability. Until we acknowledge that, and get on that pathway, it will be a challenge for Australian universities to effectively respond in the field of sustainability and health.

STEPHEN LEEDER: Well, it's not beyond the realm of possibility that the university, so motivated, could set aside some of its operating money for that purpose, to establish a centre that actually seeded these ideas. I don't accept the view that there is enough research been done into all of this. There is precious little research, actually, around so many of the issues of sustainability that we have a hard case to put the argument clearly in the terms that can be grasped by people who will move when the evidence is strong enough.

If it wasn't for the results of research that had been conducted over the years by whatever resources we've got, into things like climate change, then we wouldn't be having this discussion this evening. So it's possible to do this. There are universities in North America, for example Harvard and Columbia have centres of earth studies which are funded by the university itself and sometimes by external granting agencies, sometimes through benefaction. So, I mean, there are different ways of doing this if the political will within the institution is there to do it. I would also argue that there are lots of opportunities not taken to expand that research to embroil private enterprise in it. The whole notion of urban development as though it was something that could be done without engaging in conversation with those people who are making a profit out of that development is stupendously naive, or getting changes to the national diet without constructive dialogue with the food producers and marketers. That's also another bizarre and naive notion that somehow or other if we just beat them up long enough, it will all change. I mean, there is a great deal of work to be done in the sociology of communication of academic ideas and research findings so that they actually contribute constructively to social change. It can be done

though.

In answer to the question, one of the most interesting transformations, I think, or addendums to work that's been done by Jeffrey Sachs and others at the Earth Institute at Columbia, where they've been dealing with the United Nations in an attempt to reduce poverty, has been the development of what they have called the Millennium Village Project, where they're worked through a supplementary way of achieving the millennium development goals in about three or 400 villages, now, located in impoverished countries. So it's perfectly possible to do the bottle top stuff and the big stuff and use one to inform the other and for them to be synergistic. This is not a competition. I mean, this is the competition we don't need. We need competition among research workers who are working in the same field, so you get the best results and you get driven commitment. But you don't need competition between the bottle top people and the macro-developers. That's just crazy. So those are things that need to be taken into account into getting a form of academic governance that is adequate for the challenge. It's feasible. It's been done elsewhere; we could do it there here.

RUTH COLAGIURI: Thanks, Steve. We have a gentleman up the back who's been waiting sometime. If I could ask that your question be brief…

DON MACLURCAN: Don Maclurcan – I am from the Institute for Nanoscale Technology at the University of Technology Sydney. I am also a Mosman resident, which, for those of you out-of-towners, is on Sydney's lower North Shore. We made front-page, last year, in the Sydney Morning Herald, for having the biggest ecological footprint. In reading the local paper a week later I noticed quite polarised responses. Some people said 'this is fantastic that we're broadcasting this and it's made me think about what I am doing'. Other people went the other way and said that 'this shouldn't be publicised, it's controversial, etcetera'. When I see health reports coming out about the $4 billion burden of

obesity on the Australian economy it seems that there is a different response. Does an ecological footprint touch a greater nerve? Why is there this different response?'

RUTH COLAGIURI: Thank you. Who would like to take that one on? Tony would you like to answer that one?

TONY MCMICHAEL: Well we may need to appeal to the audience for their expertise. Why is there a difference in response? I mean, I'm aware that some of my colleagues have the predictable and sometimes, I think, nitpicking criticisms of the conceptualisation, the measurement of the ecological footprint. You know, it's not a tidy measure, but it's the sort of measure we need and it's actually had enormous, I think, heuristic value in terms of having us understand that instead of asking the question, the obvious question about carrying capacity, how many humans can this portion of earth's surface support, we actually turn it around and say how much of earth's surface per capita does each of us actually impinge on. That's, I think, a more compelling issue for us as individuals, as communities, like Mosman, and as national populations.

So, I mean, I'm not aware of the sort of negative response that you've described. I've, really, only encountered, at the best, a sort of lukewarm response to it from those who don't fully understand what it signifies. But the great majority of people that I've talked with about it have actually found it both a very helpful way of trying to understand where we're going as a community and as a world, and a very helpful way, on a personal level, of getting a measure of their own - well, environmental misdemeanours. That includes every one of us in this room because we're Australian and we're well over the quota. So, I mean, I'm not answering your question, but I must say that I'm not really aware of that negativity that you described. We might have an answer from the audience.

MICHAEL WARD: The Mosman problem is because the environmental footprint is about us but the obesity problem is about them.

RUTH COLAGIURI: Thank you. Now, just before we invite you to join us for refreshments and thank the speakers, I would like to ask them if they would just very briefly provide us with a closing remark, and perhaps with one recommendation, if you could have one wish about what we would do first, or, most importantly, what would you like to see done? Fortunately you are closest to me Bob and so you have the least time to think about this.

BOB DOUGLAS: Well, I think I'd simply reinforce what I've been saying. If I could have one recommendation, it would be that we seriously attempt to develop a new structure in Australia that fills this gap for interchange between people about the issues that are confronting us. At the moment life centres is the best conceptualisation I can make of that. I do think there is a serious lack, in Australian society at the moment, of engagement of the kind we've been having in this room tonight. Unless we engineer that engagement, we're not going to move. I think to presume that we can do this through research engaging with policy makers, is kidding ourselves. We've got to engage Joe Blow, and for that I think we've got to change the substance of the debate and get properly embedded in the values question.

RUTH COLAGIURI: Thank you.

TONY MCMICHAEL: Just two quick comments that I hope I can show a connection between. Yes, Joe Blow is important, bottle tops are important, but we need to be wary of not preferring green consumerism at the individual level, to coordinated governmental commitment and action. If we do, then we run the risk of repeating what we're hearing people like Tony Abbot say: that the solution to obesity is individual self discipline and responsibility. Government doesn't

have a role. We've got to insist that government has got the big role here, but of course can be helped in many ways by individuals, families, communities all doing their bit. But that's not a substitute for actually tackling it at the national and international level, because if we don't do that, we're not going to solve these issues.

That brings me back to the point I attempted to make in my presentation, that I think we've got to convince the community at large and convince policy makers everywhere that what's at issue here are the future conditions for human experience: well-being, health and, in many respects, survival, if these trends would continue for many decades. That means, Steve, I'd be more assertive than you: yes, we may not want to rely on the formal health sector to take the lead, but I think we've got to be prepared to make the argument that in the last analysis, sustaining health is what it's all about. It's about human experience. It's not about sustaining economies as an entity in themselves, or sustaining social structures, social capital as entities in themselves. It's about those things because they are the determinants of our experience, our health and our survival, and I think we've got to be prepared to be up front, making that argument.

RUTH COLAGIURI: Thank you, Tony.

STEPHEN LEEDER: Yes, I'd like to offer John Howard a retirement job actually. That is to take his conservative interest in nuclear power generation and expand on it. So that he began to set up a high level task force, under Peter Costello's guidance, but looked at the potential that Australia has for making a major contribution, both industrially and socially, to achieving sustainable energy supplies as a global mission. I think that could be rather neat, if he'd accept that job and do it properly.

RUTH COLAGIURI: Thank you very much our wonderful trio of speakers for sharing your insights and for your very elegant analysis of the situations – it's very, very enlightening. And now we'd be grateful if everybody would join us for refreshments in the RL Harris Room which is the last door on the right before you exit the building down this long corridor. Thank you.