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Why Care?

How Status Affects Our Health and Longevity

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I want to talk this evening about inequalities in health. You're very fortunate, in the United States, to have no inequalities in health. You have disparities, which is somehow kinder. And, in fact, if you inquire into these disparities, one finds that most of the language about the disparities is about racial/ethnic differences and very little about socioeconomic differences. So, if what I talk about this evening sounds like it comes from a different universe, because in the equalitarian United States, none of this is relevant, then I beg your forbearance. There's an outside chance though that some of it may, in fact, be relevant to your situation.

I want to start by talking about the social gradient in health. I can't talk about this topic without talking about the Whitehall studies. In the first Whitehall study, which shows the average mortality for the whole population of British civil servants, we found that top-grade civil servants, the administrators, had about half the average mortality, at age 40 to 64 [Illustration 1]. The professional executive grades had 20 percent lower mortality than the average. The clerical offices had about 30 percent higher, and the office support grades—the messengers and paper keepers and so on—had about double. So, it's a fourfold difference between the top and the bottom, but more particularly it's a gradient.

Now, when people think about inequalities in health, or disparities in health, they tend to think about it in terms of "them" and "us"—them being the poor, and us, the nonpoor. They, the poor, have poor health, and we, the nonpoor, don't. I think that's a most inadequate explanation of what we see here. Firstly, it would be difficult to describe even the lowest-grade British civil servant as poor in some absolute sense of the word. If you take the World Bank definition of living on

But, of course, we see the social gradient in heart disease and other indicators in nonhuman primates. In Robert Sapolsky's studies of baboons in the Serengeti, the baboons have terrible access to medical care. None has health insurance, not even the high-status baboons. None reads the health pages of *The New York Times*. They don't go to gyms or health clubs. And yet, you have this social gradient. In rhesus macaques, atherosclerosis exists in males and in females. If you want to give a female as much atherosclerosis as a male, then take out her ovaries: ovariectomized females have as much atherosclerosis as males. If you don't like the sight of blood and want to give just about as much atherosclerosis to a female as to a male, make the female subordinate. The effect of being subordinate is nearly as great as having ovaries removed. It's the subordination that leads to the disease, not the disease that leads to the subordination. That's been shown experimentally. In Sapolsky's baboons, HDL, the good cholesterol, is higher in the dominant baboons than in the subordinate baboons.

So, I don't think we can say it's simply lifestyle or lack of access to medical care. If we see hierarchies in health in nonhuman primates should we ask, are they not inevitable? And my answer is, compare species and compare circumstances. We find that the gradient in health varies from species to species. All primate species have hierarchies, but the link between hierarchy and health varies amongst species. Similarly, all human societies have hierarchies, but the magnitude of the gradient varies. We've seen, in Glasgow, it got wider. It's bigger in the US than it is in the UK. So, the gradient varies within populations and among populations. Hierarchies are inevitable, but hierarchies in health less so.

So, my explanations are that it's all of these: where you came from, what you do, and what you have thrust upon you. Let me talk about what you have thrust upon you. The first thing people think about is, what about money? We know income predicts health. If you have little money, the absolute amount matters. This is what affects mortality of children under age 1, infant mortality, in the English city of York, from Benjamin Seebohm Rowntree's study published in 1901. In the poorest working-class area, the infant mortality was 247 per 1,000 live births, and 173 in the best-off area. In his comparison group the servant-keeping class, that is, the wealthy group, it was 94 per 1,000 live births. Bear that 94 per 1,000 live births in mind. In Sierra Leone today, there are about 190 per 1,000 live births. This was the same order of magnitude as Sierra Leone now, and this can change. In a 2000 study of infant mortality in England and Wales, the worst-off group is unskilled manual or sole registration, single mothers with no father registered. Infant mortality in this group is 8 per 1,000 live births. Compare that with 94 in the best-off group 100 years ago. If England can go from 247 to 8, why can't Sierra Leone? I would argue that the fact that it doesn't is because we don't care. We have it within our grasp and within our power to do something about it. And the fact that we don't is because we don't care. So material deprivation matters.

I say money matters if you have very little of it. But with this dramatic improvement in infant mortality, I would argue that it's not poverty in the material deprivation sense that matters primarily in the rich countries. If you look at income and life expectancy at birth in rich countries [Illustration 6], Japan at 82, US at 77.4, and so on, there is simply no relation between life expectancy and income amongst these rich countries. If we take the GDP of Greece of $19,954, and the US of

$37,000, the US has about twice the income but has about one year shorter life expectancy. That's really rather curious because in the US a family that has an income of $19,000 and a family that has an income of $37,000 has a twofold difference in mortality. And yet, amongst countries, that difference in income appears not to matter at all. I think the relation between income and mortality is not primarily due to income. It's not primarily due to material conditions. Income is an indicator of socioeconomic position but by itself is not causal. I will tell you what I think is causal.

Illustration 6

Life Expectancy and GDP in $US (PPP) in 2003

	LE at Birth	GDP
Japan	82	27,967
Switzerland	80.5	30,552
Sweden	80.2	26,750
Spain	79.5	22,391
France	79.5	27,677
UK	78.4	27,147
Greece	78.3	19,954
Costa Rica	78.2	9,605
US	77.4	37,562
Cuba	77.3	5,400

About material deprivation, it's not the absolute amount you have or don't have, it's how much you have relative to others. H.L. Mencken said a rich man is one who earns $100 more than his wife's sister's husband. I'm going to do a little test—the dollar experiment. You live in a society where the average income is $100,000 and your income is $125,000. Consider a

new situation. Average incomes are now $200,000 and your income is $175,000. In the two societies, the dollar has the same purchasing power. Which situation would you prefer: to be richer but poorer relatively, or to be poorer but richer relatively? A majority of people opt for the $125,000. They'd rather sacrifice material gains for better relative standing. We value our relative position more than we value the absolute amount that we have.

Amartya Sen, Nobel laureate in economics, says, "The relative deprivation in the space of incomes can yield absolute deprivation in the space of capabilities." I thought that was mind-blowing. Now, I better explain why I think it's mind-blowing. The so-called relative income hypothesis is the one that I've just laid out, that we're sensitive to where we are in the hierarchy, that relative income matters. But there are always relative rankings. I've just said all societies have hierarchies. So, there's always going to be a relative position. If everybody gets richer, your relative position may not change. I think relative position matters because it's not what you have but what you can do with what you have—capabilities. And what you can do with what you have is powerfully influenced by the nature of the society in which you live.

In the United States, blacks are rich, fantastically wealthy, a mean income of $26,000. In Greece, the GDP is $19,000. So, US blacks are richer than the average population of Greece and have about a dozen years' shorter life expectancy. It's not what you have; it's what you can do with what you have. It's capabilities. It's an old argument. It goes back to Adam Smith. He talks about necessaries, which are commodities that are indispensably necessary for the support of life, but these commodities are based on whatever the customs of the country render it indecent for creditable people,

even the lowest order, to be without. Smith says that no self-respecting person of the lowest order would appear in public without a linen shirt. Equally, no self-respecting person of the lowest order would appear in the better part of Europe without a pair of leather shoes. The poorest person would be ashamed to appear in public without them.

If you're poor in relation to the society—and being poor means you can't participate in what society has to offer like living in a safe neighborhood, sending your children to a decent school, having access to amenities or health care—and if you can't get a decent job, then how much money you have compared to somebody in Greece is not the issue. It's whether or not you can participate in what the society has to offer.

If you're really swimming in it, then money is a way of keeping score. You know this one. The Oscar-winning actors and actresses lived an astonishing four years longer than their costars, than the actors nominated who did not win. Four years is enormous. It's like reducing your chance of dying from a heart attack from a bad average to zero. And the actors who were nominated and didn't win made, on average, about 54 films, so they were not in poverty. I find it difficult to shed a tear for those poor Oscar nominees who didn't win, but never mind.

What I come to—and I will go on to give you some more evidence—is that there are three fundamental human needs: autonomy, social participation, and health. And they're linked. We are social animals. We need to participate in society. We need to have control over our own lives, and we need good health. Part of what drives the relationship between socio-economic position and health is lack of autonomy and lack

of opportunity to be a full social participant in the sense that I've been describing, including access to schools and amenities and clean, safe neighborhoods, and so on.

Let me give you a little bit of the evidence supporting that: psychosocial pathways. You have to understand the European psyche to understand this. On June 22, 1996, the Netherlands played France in the quarter finals of the European soccer championships, held in England. It was a draw at the end of full time. Then they played extra time, and it was still a draw. So, then they had a penalty shootout. For those of you who are soccer moms and dads, you'll know about this. What happens is each team takes a turn to kick a goal in the penalty. If you're a committed football fan, there's nothing worse than watching a penalty shootout. I guess the only other thing that's worse is actually being the football host in front of the 100,000 fans and a television audience of several billion, having to kick it. Anyway, on this particular Saturday, the Netherlands lost. It was estimated that out of a population of 15 million in the Netherlands, 8 million were watching the match on television. I'd say it was every man and a few women. And the death rate went up 50 percent in men. My guess is that no one in the audience would have any difficulty in coming up with an explanation as to why the death rate did not go up in women. Forty-one men in Holland dropped dead from a heart attack or stroke, and that was 50 percent above expectation, based on the previous days and the same period the previous year. So acute stress can kill you, can cause heart attacks, but that's if you're on the precipice.

What about being on the slip? What about chronic stress? There's a huge body of animal literature and, to a lesser degree, quite a body of human literature that suggests that what determines whether a threat becomes stressful is the

degree of control you have over that threat, how predictable it is, the degree of support you have, whether or not there's a threat to status involved, the likelihood of going down in the world, and the presence of outlets. I won't go into all of it, but there's a lot of human literature supporting what we find in the animal literature. There are two potential important mechanisms, the HPA axis, or the hypothalamic pituitary adrenal axis, and the sympathetic parasympathetic axis.

One example is based on data gathered from my colleague Andrew Steptoe, who was looking at the cortisol and socio-economic position in our Whitehall II study. In men who are higher grade civil servants, cortisol declines throughout the day, and it's the normal diurnal pattern. There are higher cortisol levels, particularly in the morning, in the lower grade men, which suggests that being lower grade means having more stress throughout the day. The old idea, that it was more stressful to be at the top of the pile than at the bottom of the pile I think was a notion put about by high status people to justify their higher salaries and their perks. The evidence is pretty clear that it's more stressful to be low status than it is to be high status.

If we look at the metabolic syndrome related to insulin resistance by grade of employment for men and for women, there are clear gradients [Illustration 7]. The lower the grade, the greater the frequency of the metabolic syndrome. We published an article in the online version of the *British Medical Journal* that shows that how much control and demand you have in the workplace, a measure of job strain, is importantly related to the metabolic syndrome. People who report that they have job strain on several occasions have greater frequency of the metabolic syndrome. How much control you have on the job is importantly related to

coronary heart disease incidence. This is true of high job control, intermediate job control, and low job control. Those with low job control have about twice the incidence of coronary disease. We've adjusted for effort, reward, and balance. I'll come to that in a moment. We've adjusted for grade of employment, the standard coronary risk factors, and negative affect, and it doesn't change the relation.

Illustration 7

Metabolic Syndrome by Employment Grade – Whitehall II Study

Adj. Age and Menopause (Women) *Brunner et al. 1997*

We also asked about how much control people had at home. Not surprisingly, there are ways of depriving people of control over their lives other than in the workplace—at home, for example. This was one of those delicious findings (you know what I mean; this is a researcher talking now) that a colleague of mine predicted in advance. She said that control at home would be more salient for women; control at work, more salient for men. So, we asked a simple question: How much control do you have at home? And women who told us

they had little control at home had the higher incidence of coronary disease compared with women who told us they have high control at home. There was no relation for men. So, control at home matters as well as control at work.

I talked about autonomy and control. I also talked about social participation. In society of course we have hierarchies, but we also have affiliations. Time after time we find that what's most important are not material conditions but relationships. If you actually talk to your patients, talk to people you know, talk to students, what people value is not money—it's relationships. And one way we looked at this—I said I'd come back to effort, reward, and balance—is by considering the whole idea of reciprocity, that if you put out effort you expect reward in return. The reward can be social relationships. It can be status. It can be money. We've looked at people with low effort and high reward—nice work if you can get it—and high effort and low reward, and the intermediate group, high effort or low reward. There is a relationship between coronary heart disease and effort, reward, and balance that's independent of low control. Low control predicts disease independent of effort, reward, and balance. Effort, reward, and balance predict disease independent of low control.

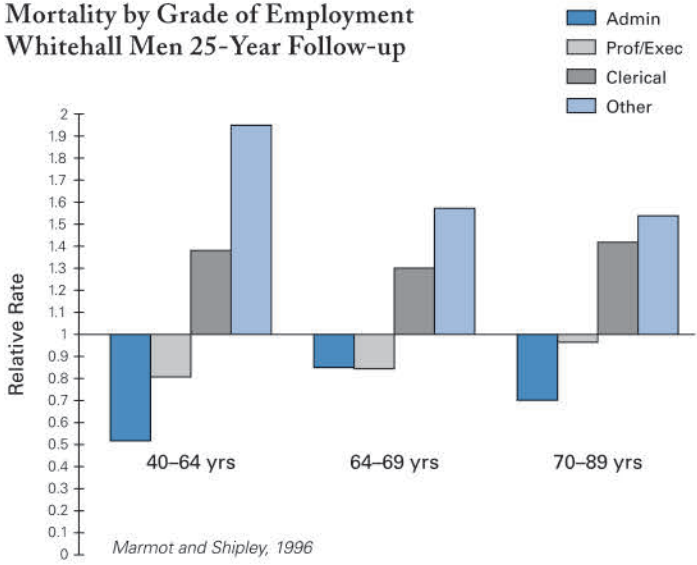
Now, I would argue that it's not just the social gradient but that whole societies can benefit or suffer from low control and low social cohesion, so that social support is not just a property of the individual. Social cohesion can be a property of the society. If we think about two societies, one rich, Japan, and one poor, the southern Indian state of Kerala, I would say they're both societies that are marked by high degrees of social cohesion, and the people in both societies have good health. One way of looking at social cohesion is income inequality. This is the share

of total household income enjoyed by the top 20 percent and the bottom 20 percent of households. So, the lowest 20 percent in Japan have 10.6 percent of total income, and the highest 20 percent have 35.7 percent. The lowest 20 percent in Sweden have 9 percent of total income, and the highest 20 percent have 37 percent. In Germany, Canada, and the UK, it's 6 percent versus 44 percent. In the US, it's 5.4 percent versus 45.8 percent, a ratio of approximately 9 to 1 of the top quintile versus the bottom quintile; whereas, in Japan, it's 3 1/2 to 1. In Chile, that ratio of the top 20 to the bottom 20 is 20 to 1; in Brazil, it's 30 to 1. So, if you want to see big inequalities, go to Latin America. But, in Japan, the ratio is very narrow, and I think that marks a relatively cohesive society that has good health.

Kerala is one of the poorest states in India. If we compare it with other poor states, infant mortality per thousand live births in Kerala is 17 per 1,000, much closer to Britain or the US today than it is to Sierra Leone. And this is what it is in other poor states. Female literacy is 66 percent in Kerala, which is much higher than in other Indian states. Literacy is important and, in particular, female literacy. Women married under the age of 18 is only 3 percent in Kerala and as high as a third in Rajastan and Madhya Pradesh states. So I think the role of women is really very important, and so is the participation of women in education.

At the other end, societies that have done rather poorly is what's been happening in Europe. These are the countries that now make up the European Union. Leaving out infant and child mortality, life expectancy at age 15 has shown a welcome increase year after year. In the countries of Central and Eastern Europe in 1970, life expectancy was very close to the European Union, but it declined and then finally started to pick up in the

Illustration 1



$2 a day, as a substantial proportion of the world's population does, then there is no low-grade civil servant who lives on $2 a day. The second—having said that even the lowest grade is not poor, why should professional and executive grades, people with university education, have higher mortality than those above them in the hierarchy? That's the challenge. And I'm old enough to be concerned about the policy implications.

It used to be that when I wrote a paper I'd say more research is needed. And now I'm starting to think that time is running out; more action is needed. I find no contradiction between saying we don't know enough and more research is needed, as I say in all the grant applications I do on Monday, Wednesday, and Friday, and then saying on Tuesday, Thursday, and

1990s. And in the former Soviet Union and then Russia, they've had this roller-coaster ride. It was declining, then there was improvement in the Gorbachev years, which some attribute to the anti-alcohol reforms, and then a devastating collapse of seven years. After the collapse of the Soviet Union, it improved. When the ruble collapsed, life expectancy again collapsed. There was more than a 5-, 10-, 15-year difference in life expectancy between Russia and Western Europe. And it's not due to infant and child mortality. It's due to adult mortality, to heart disease, to accidental and violent deaths.

So, once again the normal way of thinking about poverty doesn't apply here. It's not material deprivation. We don't think that material deprivation in the usual sense causes heart disease. It's not due to dirty water or lack of calories. I would argue it's due to lack of control and lack of participation. We tested this out in representative samples of different east European populations. We asked people how much control they had over their lives and then plotted the data against all-cause mortality. In the Czech Republic, people told us they had, relatively speaking, quite a lot of control. Poland, Hungary, Estonia, Latvia, and Russia had much less control and higher mortality. I would say that there are whole societies where people don't have control over their lives and in a sense feel that society is passing them by. And the inequalities in those societies have been increasing.

Amartya Sen says that the success of an economy and of a society cannot be separated from the lives that the members of the society are able to lead. It's an argument to say that we shouldn't measure success only by economic success. We not only value living well and satisfactorily, we also appreciate having control over our lives.

I said time is running out, not just on my lecture but in doing something about these problems. I want to finish by mentioning that in an effort to try and put some of this into action, the World Health Organization has set up a Commission on Social Determinants of Health that I have the honor to chair. And, in a sense, our motto for the condition is, what good does it do to treat people's illnesses, then send them back to the conditions that made them sick? And we are trying to say, do we have the knowledge? Yes, we do. How do we apply the knowledge on social determinants of health to reduce inequalities in health within and between societies? Thank you.

Questions from the audience:

Can you compare the approaches that you laid out with what we clinicians can relate to with regard to successful aging? Because many of the concepts you mentioned, particularly in regard to social integration and social activity, fall in the category of what we have called successful aging. Would you address that please?

Sir Michael: Sure. I think it's very important. In the baseline of the English Longitudinal Study of Aging—so it's cross-sectional so far; it will be longitudinal—we measured mental, emotional, and physical functioning, and cognition, etc. And, as I said, it looks like the people of higher socioeconomic position have their onset of decline about 15 years later than people of low socioeconomic position. In fact, we've now modeled it in Whitehall II, using longitudinal data. If you look at the level of functioning of people of high status, high grades, and then look at that level of functioning of people of low grades, it appears, for example, that a 74-year-old high-grade man, in terms of his ability to function, looks like a 58-year-old low-grade man. It's about a 16-year difference, so it's enormous. And that has led us to think about the successful aging

proposition because the differences in functioning, if anything, are bigger than the differences in life expectancy. Our evidence suggests, and we've looked at this using the SF-36 as a measure of functioning, that these same factors, control and support, are vital predictors of the ability to function.

If your hypothesis is right, that it's autonomy, social participation, and social networks that are important, this suggests that perhaps the approach that we've taken in the United States, in terms of trying to understand racial and ethnic disparities in health care outcomes, is rather simplistic and wrong. Perhaps we shouldn't be paying attention to lack of health insurance or to differences in the rates that people receive for various procedures or access to care. Is that the message, or are we misreading this?

Sir Michael: As I said earlier in my presentation, it's not only about access to care. I think that's important. But I had the pleasure of being at a meeting with Linda Fried on Wednesday and hearing some more about the Experience Corps. Her whole philosophy, her concept underlying the Experience Corps, is social capital. How do you bind people together? How do you give older people a role in society that gives them a reason for getting up in the morning? What she says is that people who volunteer to go into the elementary schools and help children tell her that doing this gives them a reason to get up in the morning. They feel that they're being useful, that they're doing something. Linda's whole idea is social capital. It's actually binding people together. We know that social isolation kills older people. The evidence is really very strong.

This is slightly fanciful, but in the English city of Sheffield the buses were subsidized, so older people could travel around for either no fare or very cheaply. Mrs. Thatcher said that anybody

who was anybody in society should not use public transport because it was a marker of being a failure. She believed in the motorcar. She thought it was against all decency to subsidize public transport. So she forced the Sheffield Council to stop subsidizing public transport and then she privatized the buses. Older people stopped moving about. Now, I don't think that their mortality went up, but they stopped moving about. So a simple intervention, like subsidizing the buses, making it easier for an older person to get on the bus and go shopping or go visit a friend or a relative or a grandchild or whatever; once this subsidy is removed, they can't get about. That's not access to coronary artery bypass grafting or an MRI or a CT scan, that's saying can you afford to catch the bus? Is there public transport and is it accessible? That's what Linda Fried is doing with Experience Corps, trying to give older people a role in society.

The other kind of analogy that comes to mind is the term quality of life. And it seems that much of what you said has to do with that concept. If there is a huge discrepancy among levels in this country versus levels in Greece, where there's a lower quality of life, perhaps how we define quality of life *is important as well. As you know, this is kind of an interesting and new but highly investigated field today. I wonder if you could just comment on that a bit.*

Sir Michael: Yes. It fits very well with the way I think about it. I use the phrase *human flourishing*. I think, but I'm no scholar, that the phrase derives more or less from Aristotle and the Aristotelian philosophers, whom in most ways I don't like at all but who do talk about human flourishing. I believe that the Sen notion of capabilities is close to that. Ministers of health are concerned with health care, how long people have to wait to get their hip operation, and so on. But, I think I almost got through to our Minister or Health when I spoke to her about

the fact that what we're trying to do is to give everybody the opportunity to lead flourishing lives, and that having control and being a full social participant is having the opportunity to lead a flourishing life. My evidence suggests that health will suffer, and you'll die sooner if you can't lead a flourishing life. Again, that's what the Experience Corps data would suggest. I think quality of life is a good concept. The way I would operationalize it is as human flourishing, which I think of as control or participation. Amartya Sen would talk about capabilities, but we're talking the same language.

You spoke about stress relating to a lack of control, relative deprivation, and so on. I think I've also read about "good stress," and I wonder if you think that's a useful concept.

Sir Michael: Yes. Excuse me. Mostly, I try and avoid the word *stress*, so that we don't have this discussion. Some people would look at the life that I lead and say it looks pretty stressful. I'm having a whale of a time. I mean, it's just enormous fun. I have more privilege than I care to adumbrate. Yes, of course, all of us in this room have busy, active lives. And, in a way, the busier and more active we are, the more we like it. I long ago took a vow that I would never, ever mention the number of e-mails in my inbox, because there's a macho thing of people boasting about how many unread e-mails they've got in their new mail. People love it, you know. It makes them feel vital. I've got 73 in the last three hours, and you've only got 50. So, yes, if you want to call that good stress, fine. But that's why I try and avoid the word stress as much as possible and actually talk about lack of control and lack of participation, and so on.

How would you design a frame of reference for people who are trying to inculcate the concept of quality of life empowerment

in teaching people that they do have choices, and, in that way, giving them license to feel a sense of control and exercise that control? If you use the greenhouse as a model of the mentally impaired and what they did with the hearth system, there is a social connection there, just as an example, and a much more flourishing use of staff at the lower level. I mean, we could find other examples in the States. And I was wondering what you would suggest as a means of bringing that concept forward, so we could be more effective with whatever resources we have.

Sir Michael: Sure. Well, let me make two comments. The first is that one of the reasons that we focused a great deal of attention on work and the work environment is that we thought this was something that was potentially changeable and that there was a coming together of interest. I've argued—with no evidence at all, but at least I'm honest when I know I haven't got evidence—that there's a virtuous circle between what's good for employees and what's good for an organization. I've argued, as I said with no evidence, that taking the cat-of-nine-tails approach with your employees is not the way to get the best out of them. There was a sign put up in a school: "The beatings won't stop until morale improves." This is perhaps not the most effective management technique. So my first response is that the workplace is a place that we can give people more opportunity to control their lives, more empowerment, and so on. It requires not just teaching the individual that you can take more control, it's actually teaching the managers, the people who design workplaces.

My second comment is—and I know this is going to sound quaint, even old-fashioned—the reason that, at various times in our history, we've all believed in collective action is that you can't just teach individuals to change society. We change society by taking collective action, by having powerful social

movements. Do you remember the time when there used to be trade unions? You actually argued for better conditions. True democracy means coming together and trying to improve things. I'm all for education. Teach people as much as you can. But to say that we're going to solve this by simply trying to teach individuals how to empower themselves is not the right way forward. We need collective action to improve society.

This strikes me as an opportunity to say something I have been thinking about. You began with the American situation. But, although we're a young country, we have built certain mythic aspects, including the idea that we are individualistic, that we don't need one another, exactly. There have been only a few times in our history where we've been involved in collective action and solidarity, in the 1930s and perhaps at the very beginning of the Puritans that escaped from your wonderful country and came to America. But what strikes me is that poor people don't think of themselves as anything else but eventually having the opportunity to be rich. And even the term successful aging implies something quite remarkable, namely, that to be anything else is not really to be. So what I'm asking is, in the sense of rank and hierarchy in the American scheme of things, are we really dealing with something that's so overpowering in terms of our huge myth? You know, we've never been really collective. We have about 7 percent of workers that are members of unions, for example. So how do we get out of this? Poverty isn't even on the radar screen for either political party in the United States. And the poverty index developed in 1965 was based upon the emergency food requirements of people living on farms, multiplied by three. And, of course, now it's housing, it's transportation, and it's health care that really amount to all the costs, so that the poverty readings of today are totally inaccurate and don't really reflect the poverty of America.

Sir Michael: Well, I wish I were wise enough to answer your question. Because I can't answer the question, let me quote some data—the last refuge of the scoundrel, quote some

correlations. There was an interesting study done by some American and European economists together, looking at well-being and happiness in relation to income and equality. They had several data points—states, times, and countries in Europe and so on. What they found is that as income and equality went up in Europe, happiness levels declined for the population as a whole. As income and equality levels went up in the United States, happiness did not decline for the population as a whole. In fact, the only group for whom happiness levels declined when income and equality went up were people who were rich and defined themselves as on the left politically, in other words, faculty members at Berkeley. Thinking about that and extrapolating wildly from these rather crude data, I would say that this supports your notion exactly, that it is a question of values. I've speculated that there is a mythical place, let's call it America, where people are not concerned about inequalities, they're only concerned about their place. So they don't think inequality is a bad thing, they think it's just bad to be down at the bottom. So, they're very happy to have an unequal society and huge income inequalities. They'd just like, personally, to be higher up; whereas, the Europeans are much more sensitive to the inequality issue, and actually, to some extent, think it's a bad thing to have a society with more inequality.

Now, I love coming to the United States. I wouldn't do it if I didn't like it. The US has had periods in history where its image has stood a little higher than it does at the moment, for good reason. And one of the things that strikes me, having visited here during election time rather than after, is that you hear people interviewed and talking, and there is a real sense of engagement. I mean, I find it very moving. I would say that the real sense of engagement people have with the political process is better here than in the UK. Now, we know it's a

subgroup because not many people vote in presidential elections, but it's a real engagement. So, I would say that the data would support what you're saying, that it's a question of values.

Now you're going to take it away?

Sir Michael: Well, not quite, but to say that I would argue the situation isn't hopeless, I mean, to the extent that income inequality is a measure of social solidarity, and I was speculating that it might be. We know it varies by state, and we know it varies by metropolitan area. The states with narrower income inequalities have better health. The metropolitan areas with narrower income inequalities have better health, and not only better health but lower rates of violent crime. When you have more social solidarity, you have better health, lower rates of violent crime, and there is variation in the society. And, dare I say it, perhaps what's needed is some people bold enough to stand up and talk about it rather than being told by the pollsters that they can't say anything. Even perhaps the word *leadership* comes to mind.

In your primate data, you showed that the dominant females, compared to the subordinate ones, had lower rates of heart disease. Now, where does wiring fit into that? I mean, is it possible that the dominant ones have different wiring, meaning physiology, because otherwise it implies that if you taught the subordinate primates or humans or anybody else to be more dominant than subordinate, that it would dramatically affect their rates of heart disease.

Sir Michael: This is a bit like my response to the question on whether can you teach people empowerment. I mean, you could teach me to be a good boxer from now till eternity, and if I got in the ring with a boxer, I'd be knocked over in seconds flat. You can't just teach animals to be more dominant.

For example, as an experiment, six animals are put in a troop, and they're in hierarchies. The top two are taken from three different troops and the bottom two from three different troops, and they make up a new troop. The animals sort themselves into a new hierarchy. Some animals who were dominant now become subordinate and some who were subordinate now become dominant. And the degree of atherosclerosis follows where they end up rather than where they began. It's not that the animal is hardwired to be dominant or subordinate and that's unchangeable. They have personalities and psychology and physical strength, and all sorts of things that make them dominant. It is not by teaching the animal to be dominant; it depends on the conditions.

In comparing Greeks to American blacks, I think the salary comparison was roughly $19,000 versus $26,000, and yet the Greeks had better health. I spent a little time in Greece, and practically everybody that I knew lived on inherited property. You know, Greece has been around for a long time. It has a long history. Where does that fit into your calculation of wealth or income?

Sir Michael: Well, sure, there's a difference between wealth and income, but I would say it's part of being a participant in society. One of the huge issues globally is land tenure. People can't be participants because they don't have tenure over the land. Where people have tenure over the land, it gives them a real stake, even if they have very little money. So that it's not the money per se or even the worth, because they're not planning to sell the land to anybody. They're going to pass it down in the family. But it gives them a real stake. They then become important people in their local community and in the society at large. So I would say what you're saying is grist for my mill about being a full social participant.

Saturday that we know enough to take action now. In discussing this issue with policymakers, I've found the policymakers think of the poor and the nonpoor. And I say, but it's a gradient, it's a graded phenomenon. It goes in linear and it comes back binary. I say it's graded and it comes back. The way the policymakers think of it is them and us, the poor and the nonpoor. And that's an inadequate explanation. The social gradient continues to the oldest stage. Although it's smaller in relative terms, it's bigger in absolute terms.

Now having said it's a gradient, there is, nevertheless, a substantial difference between top and bottom. In the United States, there's a 33-year gap in male life expectancy between Asians in Westchester County, who have a life expectancy of 89, and American Indians in South Dakota, who have a life expectancy of 56. Now, if that sounds a bit fanciful, I've taken the real extremes. There is an example in my book, which I'll advertise at every occasion. I say when you travel from the southeast of downtown Washington to Montgomery County, Maryland, for each mile traveled, life expectancy rises about a year and a half. There is a 20-year gap between poor blacks at one end of the journey, and their life expectancy of 57, and rich whites at the other. I strongly recommend not taking the metro in the other direction. It is a death-defying journey, a 20-year gap in life expectancy in populations that live cheek by jowl.

The ends of the distribution in the United States are really frightening when looking at the probability of survival from age 15 to 65 years among US blacks and whites. The average survival rate for whites in the United States is about 77 percent, so there is a 77 percent probability that a 15-year-old white male will survive to 65 [Illustration 2]. Not bad.

Hatch Lecturers

2006
Professor Sir Michael Marmot, M.B.B.S., M.P.H., Ph.D.
University College London
London, England

2005
Bernard Kouchner, M.D.
Doctors Without Borders
Paris, France

2004
Irene Higginson, M.D., Ph.D.
Kings College
London, England

2002
Dalmer D. Hoskins
International Social Security Association
Geneva, Switzerland

John Harris, FMedSci., B.A., D.Phil.
University of Manchester
Manchester, England

2001
Rosy Pereyra Ariza, M.D.
Director, ILC-Dominican Republic
Santo Domingo, Dominican Republic

2000
Katharina Pils, Ph.D.
Ludwig Boltzmann Institute
Vienna, Austria

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Stephane Jacobzone, Ph.D.
Organization of Economic Cooperation and Development
Paris, France

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Yuzo Okamoto, M.D.
Kobe City College of Nursing
Kobe, Japan

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Joachim Wilbers, Ph.D.
University of Trier
Trier, Germany

1994
Alan Maynard, Ph.D.
University of York
York, England

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Tokyo, Japan

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Takako Sodei
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Tohu Furuse
Japan College of Social Work
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Kazuo Hasegawa, M.D.
St. Marianna University School of Medicine
Tokyo, Japan

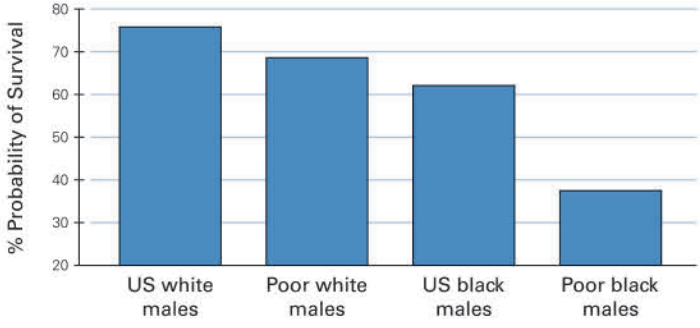
1988
James Williamson, M.D.
University of Edinburgh
Edinburgh, Scotland

1987
Alvar Svanborg
University of Goteborg
Goteborg, Sweden

Nowhere near as high a survival rate as Scandinavia and so on, but not bad. The probability for poor white males is under 70 percent. The average for blacks in the United States is about 62 percent. And in a poor black community in Harlem, the probability of survival is under 40 percent. I don't know why this is not a national scandal. I really don't understand why this isn't headline news every single day. How you can live with this scandal on your doorstep and do nothing about it is really rather frightening. Now, if I sound like an ignorant foreigner, let's move on.

Illustration 2

Probability of Survival from Age 15–65 Years Among US Blacks and Whites



Geronimus et al. NEJM 1996

We have the same sort of problem in the United Kingdom. As somebody said to me, if you want to understand health inequalities in Europe, you have to go to Naples in Italy and Glasgow in Scotland. In Scotland, life expectancy from 1991 to 2001 has been rising. If you classify areas of Glasgow by degrees of deprivation, then in the best-off areas life

expectancy has been increasing, and in the worst-off areas life expectancy has been decreasing. There was a gap of just under eight years, and that's widened to nearly 14 years. We have these huge differences, and they're getting bigger. An interesting thing is that if you're in a high social class, it matters much less where you live. In regions of England and countries of the United Kingdom, mortality for the top social class varies very little. Mortality for the bottom social class varies enormously. So, if you have the disadvantage of being at the bottom of the hierarchy, then it matters enormously where you live. It's not simply that poor people live in poor places. They do. But if you're poor and live in a poor place, you're in double jeopardy.

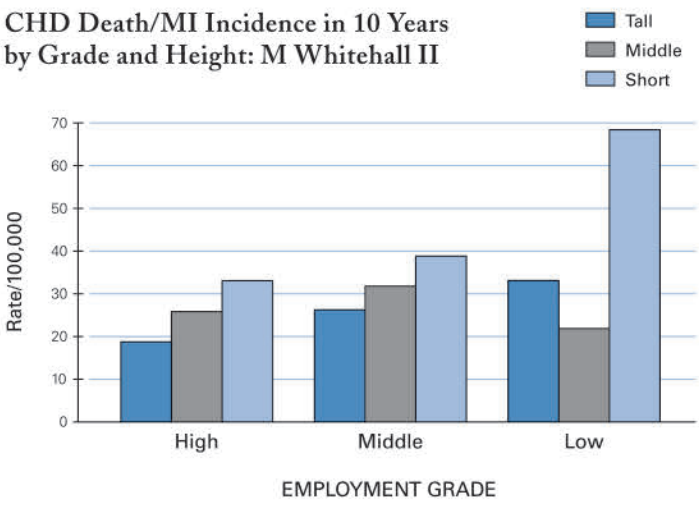
This is not only true for the Anglo-Saxon countries like the US and the UK. In egalitarian Sweden we have mortality rates for men age 64. Those with a master's degree or professional qualifications have higher mortality rates than those with a doctorate. I don't know what you're doing sitting here, those of you with only a master's. You ought to be out there studying to get your Ph.D. And that's true of a bachelor's degree, secondary education, vocational, and compulsory—this remarkable gradient. Once again, you can't simply say it's poverty. That's an impoverished explanation. I say in my book that throughout history, there have been very many average people. Some are born average, some achieve averageness, and others have averageness thrust upon them. If you think about explanations for inequalities in health, they have to do with what you're born to, what you achieve, and what you have thrust upon you.

So, let's start with where you came from and the importance of early life. In the Whitehall II study, our second study of civil servants, we looked at employment grade—high, middle,

and low grade [Illustration 3]—and incidence of death from coronary heart disease or incident myocardial infarction. We used height as an indicator of early life, genes, and environment, like everything else. Tall people have lower heart disease incidence than short people. And height, of course, is related to employment grade. It may be that when you get promoted, you grow—grow into the job. It may be that there's selection in some form or another, but there's clearly a correlation between height and status.

Illustration 3

CHD Death/MI Incidence in 10 Years by Grade and Height: M Whitehall II



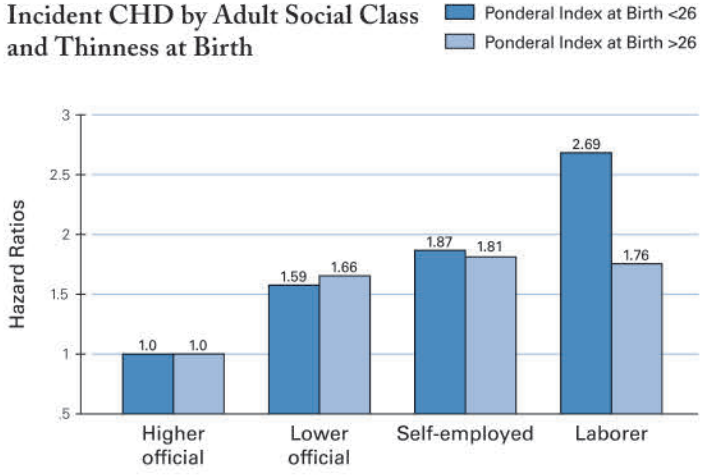
There was a famous comedy sketch in British television that had these three comedians. John Cleese, who's very tall, says, "I'm upper class, and I look down on him and on him." And the chap in the middle says, "I'm middle class. I look up to him and down on him." And the little chap says, "I know my place." So there is indeed a correlation between height and status. Short height, as an indicator of early life, is related to

heart disease incidence, but grade of employment, independent of height, is also related. So, it's likely that there are things from early life that predict disease, and height is related to status. But independent of height, status in adult life predicts incident disease.

David Barker's Helsinki study, looking at Ponderal Index, low birth weight, and adult social class [Illustration 4], shows the importance of the outcome of pregnancy—how low birth weight is related to subsequent heart disease. He and I interpret the data slightly differently: I say thinness at birth matters for incident coronary disease only if you're low social class because there's a difference for laborers. He says that low social class matters only if you're thin at birth. We agree that there's an interaction, that it's not simply what happens early in life and it's not simply where you end up. There's an interaction.

Illustration 4

Incident CHD by Adult Social Class and Thinness at Birth



Barker et al. 2001

Now, when one talks about the problem of socioeconomic status and health, I can tell that there are very few economists in the audience, if any, because when I talk about this topic to economists, I get interrupted within about four minutes. And I can now time it. They interrupt right at the beginning, and they say, "But surely you've got it backwards. It's health that determines socioeconomic position, not socioeconomic position that determines health." And it's quite remarkable that they imagine that they're the first ones who have ever thought of that.

I've been rude once about the United States this evening. I may as well be rude a second time. I don't know how you tolerate having somewhere between 15 percent and 20 percent of people without health insurance. I would say it's a shame on any society that has a pretense to call itself civilized. Why don't you do something about it? If the rascals in office don't do it, vote the rascals out and get a better set of rascals that will deal with this question. That said, I don't think that's the explanation of the inequalities in health. I think that when people get sick, they need access to high quality medical care, but it's not lack of medical care that caused the problem in the first place.

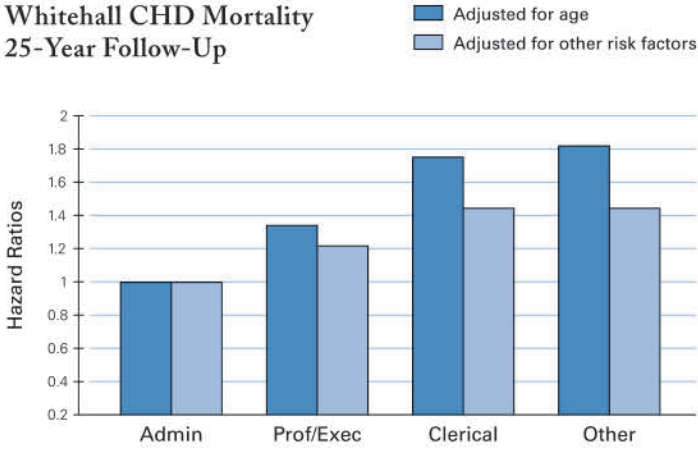
The problem with discussing this issue in the United States is that more than 40 million people without access to health insurance are so put off by the problem that they can't see beyond it. I've had political scientists say to me: "Why do you bother about social conditions? Let's focus on the health insurance issue first." And I say, well, and forget global warming? I mean, why should you just focus on one issue? If people get sick, they need high quality medical care. We should also focus on the social conditions that led them to get sick in the first place. The other issue, of course, is that if people get past the medical care barrier, it's assumed it must be due to

lifestyle. The belief is that people of low status just don't know how to behave properly, that they smoke and drink and eat rotten food, and they're lazy, and I don't know what else. But it's all their fault because of the way they behave.

Well, I think that won't do either. In the first Whitehall study, we did attempt to make adjustments for the behaviors and the standard risk factors—smoking, systolic blood pressure, blood sugar levels, plasma cholesterol concentration, and height—for the reasons I explained. We have a gradient after 25 years of CHD mortality adjusting both for age and for the standard risk factors [Illustration 5]. We explain somewhere between a quarter and a third of the gradient on these individual risk factors. We have to get beyond looking at the individual risk factors. In fact, I've now taken to using the phrase: We need to look at the causes of the causes. To the extent that smoking is a cause, we need to look at the causes of smoking.

Illustration 5

Whitehall CHD Mortality
25-Year Follow-Up



Controlling for (a) age, and (b) age, smoking, systolic blood pressure, plasma cholesterol concentration, height, and blood sugar.

The Harold Hatch Lecture
in Geriatrics and Gerontology

Why Care?
How Status Affects Our Health and Longevity

Professor Sir Michael Marmot
MBBS, MPH, PHD, FRCP, FFPHM

February 9, 2006
Hatch Auditorium, Guggenheim Pavilion
Mount Sinai Medical Center

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Sir Michael has been at the forefront of research into health inequalities for the past 20 years, as principal investigator of the Whitehall studies of British civil servants, investigating explanations for the striking inverse social gradient in morbidity and mortality. He chairs the Department of Health Scientific Reference Group on tackling health inequalities and chairs the National Institute for Clinical Excellence Research and Development Committee. He also chairs committees of the British Heart Foundation and the Wellcome Trust. He is the author of *Status Syndrome: How Social Standing Affects Our Health and Longevity* (Times Books, 2004).

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