

The Social Determinants of Health and Disease:
Reflections on a Troubled Life

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They say that misery loves company. So let me share with you some of troubles I have had in my life so I may feel a little better. And you can feel good that you are helping me feel better.

I am a Professor in the School of Public Health at Berkeley. And I have had a hard life. When I began my career, my goal was to identify risk factors for disease so that I could tell everyone about them. My thought was that people who heard my message would rush home and change their behavior to lower their disease risk. I was on a mission.

My first job was in a Heart Disease Prevention Program in the U.S. Public Health Service many, many years ago. Heart disease was the number one cause of death in the country at that time and, of course, it still is. But when I began work on this disease, we knew none of the risk factors for it. During the period 1950 to 1970, however, we were able to identify dozens of important risk factors for this disease. You know the ones I am talking about: cigarette smoking, serum cholesterol, high blood pressure, diabetes, obesity, physical inactivity. The list is now well known. But it wasn't then.

Anyway, since we now had good information about these risk factors, we decided in 1970 to do a nationwide clinical trial to show the benefits that would occur if we were able to get people to take action on these risk factors. We decided to recruit into our clinical trial middle-aged men in the top 10% of risk in the country. Based on their cigarette smoking, cholesterol levels, and blood pressure. Unfortunately, we went to our statisticians to get their advice on the size of population that we would need to do this

study. We shouldn't have done that. They told us we would need to enroll 12,000 men in the study: 6,000 to work with us in our clinic and 6,000 to work with their own doctors as a control group. If we had included women, the number would have been 30,000. That was a shock and a setback, but we decided to proceed with this important study anyway - but only with men.

To find 12,000 men in the top 10% risk category in the nation, we had to screen almost 500,000 men in 22 cities in the country. This was overwhelming hard work, and it was overwhelming expensive too. But we figured it was worth it because we had identified the major risk factors for this disease and we were now in a position to prevent the number one cause of death in the country. We figured the cost, and the work, was worth it.

After that first screening in 22 cities, we did two additional, very intensive screenings totaling about 1½ hours each. During the second screening, these men were mercilessly probed, punched, run, stuck, pulled and squeezed. After it was over, we told some men that they did indeed seem eligible for the trial: they did seem to be at high risk and they did seem to be free of coronary heart disease at that time. We then told them that we needed them to come back to the clinic one more time for another 1 1/2 hour screening to be sure of their eligibility. We told the men that if they were still eligible for the Trial after that third screening, they would be randomly assigned to work either with us or their own doctor and that they should not volunteer for the study if that was not acceptable. And we told them that if they were assigned to work with us in the clinic, we would ask them to change their diet, take pills for their high blood pressure and stop smoking. Further, they would be asked to come to the clinic very frequently at the beginning, oftentimes with their family, and that the Trial would go on for 6 years. They should not volunteer if they had any reservations. And we also gave them a big stack of questionnaires to fill out when they came for their third, and last, screening. And we had a psychologist in every clinic who recommended that certain men be rejected because they did not seem to be good prospects for the long haul.

In the end, we selected a highly informed and highly motivated group of men. And we involved them in a superb intervention program. For example, we invited the men and their families to the Clinic to demonstrate low-fat cooking. We took them to the supermarket to show them how to read labels. We went to their homes to cook with them. And so on. We did the study about as well as it could be done.

And the Trial failed. After 6 years, there was no statistically significant difference in heart disease rates between the Special Care group and the control group. This was primarily because so few men in the Special Care group changed their behavior in comparison to men in the control group.

As I said at the beginning, I have had a hard life. But there is even worse news. It turns out that all the heart disease risk factors we identified only help us a little. It turns out that all of these risk factors, combined, account for only about 42% of the heart disease that occurs. So for the disease that is the number one cause of death in this country and for which there has been an enormous amount of excellent research all over the world to discover risk factors, more than half of the disease that occurs is not explained by that research. And it's not likely that we missed some important risk factors because those missing risk factors would have to account for over 50% of the remaining heart disease that occurs. It's not likely that we would miss risk factors of that importance. So we have only done a medium job of identifying risk factors for heart disease and, even when do, we can't get people to change their behavior anyway. A tough life.

As if all this isn't bad enough, there is even worse news. Even if everyone did change their high risk behavior perfectly, new people would continue to enter the at-risk population, forever, because we have done nothing to fix the problems that caused the problem in the first place. So we just keep patching as best we can but we will never get ahead.

Let me share with you a made-up story I tell to beginning students in my Public Health class. I tell of a curvy road in the mountains where, at one point, cars fall off the cliff at a

very high rate. And they crash at the bottom causing very serious damage. Head injuries. Spinal cord injuries. And the medical care at the bottom is not good. As a consequence, people have to be transported long distances, usually by helicopter or ambulance, to get help. Not good.

In my story, I suggest that we develop a state-of-the-art health promotion and injury prevention program for this road. First, we will develop a hazard assessment and barrier program that will prohibit certain groups from driving on this road. Certain old people or people with vision and physical problems will be directed to take an alternative road. Those drivers who are permitted to proceed will have to submit to a behavioral intervention: a safe driving course. But we will also develop an environmental intervention by reinforcing the cars, structurally, to make them safer. And we will build a state-of-the-art medical facility at the bottom of the cliff. This new facility will have the best medical staff imaginable – neurosurgeons, orthopedic people, and other specialists. And we will remove all economic barriers for care so that everyone has universal access. And we will insure that everyone gets culturally appropriate medical treatment with language translation help when necessary. In short, we will do everything that it is now being recommended in first-rate health promotion and disease prevention programs.

In my classes, someone will eventually raise their hand and quietly ask, “How about fixing the road?” I then attack that person by asking how they can permit the diversion of funds from critically injured and bleeding people to do a highway construction project? Eventually, someone will tentatively suggest that if we don’t do the highway work, people will keep falling off the road. We eventually agree that a truly effective health promotion program must take account of the fundamental forces that cause our problems in the first place.

In my field of Public Health, we have not done a very good job of identifying fundamental forces. Instead, we tend to focus on sick people and on people at risk of becoming sick. On people who are driving on the road and on people who have crashed at the bottom of the cliff. When I was working in the heart disease clinical trial, I spent

time as a smoking counselor. Every time I was able to help one of these men to stop smoking, I recall driving back home over the Bay Bridge from San Francisco to Berkeley and thinking that one or two kids were probably taking their first tentative puffs on a cigarette that day in some school yard somewhere. I am not arguing against helping people who are sick. Nor am I arguing against helping people lower their disease risk by changing their behavior. Obviously, these are important and worthwhile things to do. But unless we fix the road, new people will keep entering the at-risk population forever and we will never get ahead of the game.

And this story about heart disease is one of the good stories. Our success in dealing with most other diseases is even worse. We have not done nearly as well with cancer. Or arthritis. Or stroke. Or diabetes. Or obesity. And on and on. I should have chosen another profession.

Another way to approach this problem is to say, “Look, it may be hard to prevent these diseases but let’s at least provide good medical care for people. If we could do a good job in caring for people, we can improve the health of the nation that way. It may not be perfect, but it’s certainly a good thing to do.” The problem with medical care is that it is limited in its effectiveness. I know this is controversial and not something we want to hear. Medical care is of obvious value for certain medical conditions: cataract surgery really works; the treatment of people who have had a heart attack is fantastic; hip surgery is very effective; so is the use of antibiotics. And medical care is also very effective in relieving pain. So I am not against medical care. What I am against is the argument that good medical care is the solution to our health problems. Because it isn’t and it never will be.

Let me give you an example demonstrating the limited impact of medical care. In England following the Second World War, considerable research was done showing that many people did not have access to good medical care and it was decided to do something about it. Their goal was to improve the health of all those people who were without good medical care. They said that these inequalities were unconscionable. In

1948, the English government therefore developed the National Health Service. In 1980, 32 years later, an expert committee chaired by Sir Douglas Black issued a report to see if the National Health Service had in fact narrowed health inequalities. The committee found that providing good medical care to everyone, free of cost, had improved the overall health of the country. But they also found that this had no effect at all on widespread health inequalities. They concluded, instead, that the main cause of these inequalities was poverty, and that to attack these inequalities, the gap between people in the upper class and lower class needed to be narrowed. In 1998, 50 years after the establishment of the National Health Service, another committee, this one chaired by Sir Donald Acheson, found the same thing. Canada has reached the same conclusion. Medical care is obviously important for all of us but it will not solve all of our health problems. New people keep entering the population and keep suffering from the same health problems. We need to fix the road.

These are especially serious problems because of the baby boomers in our country. There may be some of you in the audience this morning. I don't mean to pick on you if you are in fact out there. It's not your fault. But as we all know, 78 million babies were born between 1946 and 1953, following the Second World War. This giant population will enter the over 65-year-old population between 2011 and 2030. When they do, the number of people in our country over the age of 65 will be double what it is now. We know that our medical system is overburdened right now. When the number of older people is doubled, our medical care system will be strained beyond anything we can imagine now. Not only will the number of people needing care increase but so will there be an increase in costs of their medical care. The average cost of providing medical care to each person in America is about \$2,700 per year. The average cost of medical care for older people is about \$3,900, an increase of 45%.

So, what to do? One obvious answer is to do a better job of preventing disease in the first place and working to insure that people entering the over 65 year old population are healthier to begin with. Unfortunately, as I indicated earlier, we do not do a very good job of prevention. I happen to be an expert on this topic. A few years ago, I chaired a

committee of the Institute of Medicine of the National Academy of Sciences to review and evaluate our success in interventions to prevent disease. My distinguished Committee worked for two years, we interviewed dozens and dozens of authorities, we read thousand of pages, and we produced a 500-page report of findings. The report said that we had done a fairly good job in preventing many infectious diseases but that we had a poor job in preventing the major non-infectious diseases and conditions of concern today: coronary heart disease, cancer, arthritis, pulmonary diseases, stroke, obesity, smoking, diabetes, and so on. So you can see why my life has been a very difficult one.

One might argue about my including cigarette smoking on this list. The prevalence of smoking in the U.S. has plummeted from about 45% to about 18%. Is this not a major triumph? It is, but we public health people can take only a little credit. It is true that we in public health did the research showing that smoking was an important risk factor for disease. But we were really, really ineffective in convincing people to stop smoking. We spent years showing people the statistics regarding smoking and health, and we made pamphlets showing people the diseased lungs of smokers, and so on. This had very little impact. Then everything changed. Data on passive smoking began to appear showing that your smoking affected me, a non-smoker. Suddenly, the issue of smoking was no longer just your business but the business of everyone around you. Your wife, your children, your friends. Suddenly, laws were passed limiting where you could smoke. Prices were increased. It became more difficult to buy cigarettes. Smoking advertising was strictly limited. Tobacco companies were successfully sued everywhere in the country. Were public health people involved in all of this success? Sure. But only marginally. When we public health did it ourselves, we failed. When everyone got in on the act, we succeeded. We learned how to fix the road, together.

So, what to do? Do I have anything to suggest beyond complaining and moaning about our troubles? Well, I do. Let me explore some tentative ideas with you. It turns that the major determinant of health and disease is social class. Whether we assess social class in terms of income, education or occupation, people in the lowest social class positions have the highest rate of virtually every disease, condition, and risk factor that you can name.

So let's do away with these differences in social class and that will fix everything. Not likely. Social class divisions have been with us since the beginning of recorded history and it is not likely we can make them go away next Tuesday. Even revolutions that were specifically designed to bring about this result eventually failed. In fact, social class is such an important and enduring determinant of health and disease that we public health researchers have been taught that we must remove it from our statistical analyses because if we don't, social class will overwhelm everything else and we will not be able to study our favorite topics such as physical activity, air pollution, nutrition, child care practices, whatever. As a result, for many, many years, we have not really studied social class itself. But why study a factor like social class if there is nothing one can do about it? Social class is here to stay so let's ignore it and get on with our lives.

If we were willing to take on the issue of social class as an intervention focus, what would we intervene on? Money? Is poverty the main ingredient driving the social class-disease connection? Or is it education? Or perhaps inadequate nutrition? Or inaccessible and costly medical care? Or bad housing? Or bad jobs? Or a contaminated physical environment? Which of these is most important? The answer, of course, is that these factors are all important and they are all inextricably bound up together. It makes no sense to try to tease them apart and pretend that one is more important than the other. The temptation therefore is strong to change the subject and study issues that seem more amenable to change.

This has been a difficult challenge. A breakthrough, however, occurred several years ago when a former student of mine, Dr. Michael Marmot, studied coronary heart disease in 10,000 British civil servants. He found, as one would expect, that workers at the bottom of the civil service hierarchy, workers who were guards and delivery workers, had coronary heart disease rates 4 times higher than those civil service personnel at the very top of the hierarchy. As any self-respecting researcher would be expected to do, he adjusted these data to take into account all of the usual heart disease risk factors that we are familiar with such as serum cholesterol, smoking, blood pressure, obesity, and so on. After adjusting the data for all these factors, the difference in heart disease rate between

those at the top and those at the bottom was reduced to 3 1/2 times. This is still, of course, an enormous difference.

The interesting part of the story is that he observed a gradient of disease from top to bottom of the civil service hierarchy. Those at the top had the lowest rates of disease but those one step below them, professionals and executives, doctors and lawyers, had heart disease rates twice as high as those at the very top. We might be able to explain the high rates among those at the bottom in terms of poverty, or poor education, or inadequate nutrition, or poor housing but that would not explain why doctors and lawyers had rates of disease twice as high as those at the very top. Doctors and lawyers are not poor. They do not have bad educations, poor medical care, or poor housing. And yet they have disease rates twice as high as those above them. Those above them are the directors of the civil service agencies all of whom are very senior civil servants who wear black bowler hats and black suits with striped pants and who basically run the British government and whom the Queen of England knights when they retire.

Below the professionals and executives in the hierarchy, there is a step-wise gradient of increasing rates of disease. And this gradient persists even after account has been taken of virtually all the well-known risk factors that might otherwise explain this phenomenon. And it is well to remember that the British national medical care insurance program covers all of these civil servants. One hypothesis to account for this gradient is that the statistics apply only to coronary heart disease. He checked that possibility and found exactly the same pattern for all of the diseases in the civil service. Another hypothesis is that these observations are limited to employees in the British civil service. We did a review of this possibility and found that gradient exists for virtually every disease in every industrial country in the world.

This is a major breakthrough in our thinking. Instead of shaking our heads at the complexity of social class as a determinant of disease, perhaps there is something that can do about it. Marmot's observations do not mean that we can ignore those at the bottom. They do mean that perhaps something else is going on that would explain the higher rates

even near the top. This does not solve all of our problems but it at least it gives us something to think about and to work on. Which is better than simply ignoring the issue. For his work, Marmot was himself knighted by the Queen of England. So one of my students now insists he be called Sir Michael! Just kidding. But Michael's work has opened up a whole new field of research.

How can the gradient be explained? Many people are thinking about this but my hypothesis deals with the concept of "control of destiny". By this phrase I mean the ability of people to deal with the forces that affect their lives (even if they decide not to deal with them). Another term that has been used to express this idea is "empowerment". I don't know if this is a good idea or not but, if it isn't, we will need to come up with a better idea. The point is that if we are going to deal with health problems in our society, we will need to think about fundamental forces that are at the root of our problem and not simply deal with the easy explanations that come to mind. We need to fix the road.

How can we improve people's ability to deal with the forces that affect their lives? I have two thoughts about this but we all need to think more creatively about this issue and we need to come up with better ideas than I have done so far. One of my ideas deals with the workplace, the other deals with broader community settings.

First the workplace. We have been studying 2,000 San Francisco bus drivers for many years now. The project started when a former student of mine became the Director of Health for San Francisco city employees and, as part of her job, supervised the physical exam for the bus drivers when they get their driving license renewed. She called me one day to say that she thought the prevalence of hypertension was too high and would I come and have a look. I did. And she was right. Among drivers over the age of 60, the prevalence of hypertension was 90%! So we applied for a research grant to study this problem in detail. We did all the things you would imagine and wrote several journal articles about the problem. Then we began to develop an intervention program to help the drivers.

Then we noticed that the drivers were complaining about a lot of back pain. We got another grant to study this problem and we wrote several journal articles about that. And we brought in some ergonomic experts to help with the redesign of the driver's seats and so on. Then we noticed that the drivers had high rates of gastrointestinal problems and respiratory difficulties. And recently we have observed that they have high rates of alcohol problems (after work – not while they are driving!). And we get research grants for everything and design interventions for all of these problems and, while what we are doing is not a waste of time, it certainly is not going to solve the problem for the drivers. For example, even if we did a wonderful job on the blood pressures and the back pain and the stomach problems and the breathing difficulties and the drinking issue, as new drivers come to work for the bus company, they will soon exhibit the same disease profile as the old drivers because none of our work is addressing the fundamental problem. The fundamental problem is the job itself. We got so focused on the various specific disease problems of the drivers that we did not recognize the problem common to all the complaints: the job.

I need to say here that I am not against paying attention to specific diseases. I want to help drivers with their medical problems and I am not suggesting we ignore them. What I am suggesting is that we already have physicians and nurses and other clinicians who look after people with medical problems as part of their jobs. But we have virtually no one who has the job of preventing disease in the first place.

We therefore began a new project to see if we could figure out what it is about the job of bus driving that is problematic. It didn't take long to discover the problem. It is the schedule. In San Francisco, drivers must keep to the schedule but it cannot be done. For example, if you were to look at the schedule, you would see that you had to get from Mission and Army Street to Mission and Geneva Street in 2 minutes. It cannot be done. Even if you drove your Ferrari on Sunday morning with no traffic to contend with, and no passengers to pick up, it would take much longer than 2 minutes.

I always thought that a bus schedule was developed by driving a bus from stop to stop and seeing how long it took. That would be OK if you had lots of buses available. There is a shortage of buses in San Francisco and the schedule is therefore made by a computer that simply allocates times depending on the number of buses that are available. But then, drivers are penalized when they are late in arriving at the bus stop. The drivers compensate for this by giving up their rest stops at the end of the line. They just keep driving and hope to minimize their lateness in this way. They dash into a fast-food restaurant when they need to use the bathroom and when they need food.

And since they are almost always late, passengers are almost always mad at them. The drivers feel that they are being unjustifiably blamed for a situation that is not in their control and they sometimes behave impolitely to passengers who then get upset with the driver. Then there is the traffic over which they have no control.

Most drivers have a terrible shift arrangement. They must come to work very early for the morning rush hour and they must be at work for the evening rush hour but they have nothing to do in the hours between these two intervals. There is generally not enough time to go home so the drivers generally hang around and do little. At the end of their very long day, they are usually completely worn out and many go to the local tavern to wind down. By the time they get home, they are often not in good shape for social interaction. They go to bed and get up at 4 AM to begin another grueling day.

Yes, they have hypertension and back pain and stomach and breathing and alcohol problems and they should be helped with those problems. But the job needs to be fixed. The management and bus drivers union have not been on the best terms for many years but they are willing to meet to discuss health issues. Management is motivated to do this because 1/3 of their budget has to be put aside to hire substitute drivers when regular drivers don't come to work. 1/3 of their budget! Further, they are concerned over the fact that so many drivers quit soon after they have completed a very expensive training program. And many others take early retirement. At great cost to the company. And bus

companies have high accident rates. These are very serious problems that, in my view, are caused primarily because the drivers have little control over issues in the workplace.

Another way to think about control deals with a broader issue in the community: education. I have, over the years, been enormously impressed by the results achieved in an early education program begun many years ago in Ypsilanti, Michigan. This was the very first pre-school program ever offered in the country. It was called Head Start. It was begun in the early 60's and is now being used all over the world. The first results from this program later led to the nationwide Head Start program but the national program turned out to be a watered down version of the original Ypsilanti effort. The Ypsilanti program invited poor Black children, aged 3 to 4, to participate in a 2-year preschool program. The children were randomly divided into 2 groups: those who got the program and those who did not. These children were then studied when they were 18 years old and again when they were 28 years old and again when they were 38 years old. And the difference in their lives was profound. Those who participated in the program had significantly higher rates of high school graduation and college training, higher monthly earnings, significantly higher percentages of home ownership, significantly lower percentages receiving social services, and significantly fewer arrests. The first book they wrote about this was called "Changed Lives". I think that was a good title.

What did they do in this program? I interviewed a Head Start teacher in Oxford England about this. She explained that children were asked what they wanted to work on and then, she said, all the resources of the school were organized to help them do that. She said that the day before, a little boy said he wanted to work on airplanes and all the other kids said "Me too!" So they made paper airplanes and flew them. And they crashed. So they re-assembled, talked about the crashes, and made new airplanes. And they crashed too. So they talked about that and tried again. And, she said, that's all they did that day. And, she said, that's basically all they do everyday. I have heard similar reports from other Head Start teachers including a nationally recognized expert on Head Start at Stanford University.

My interpretation of this phenomenon is that these kids were learning how to accomplish their own goals and learning how to fail and how to learn from failure and how to go on. How, in short, to deal with the things that were affecting their lives. When they went to first grade, they were already different children. Interestingly, the Stanford expert told me that this program does not work very well with children from upper middle class backgrounds. Those children are bored by the Ypsilanti approach. My expert thought that those kids already knew about these things. But that poor kids can't get enough of it.

And evidence is now available to show that when people are better able to deal with the challenges they face in everyday life, the health benefits are clear. We saw this first in the workplace. We saw that when workers had more discretion and latitude in dealing with work life, they had much better health outcomes than when they did not have this opportunity. We are now seeing this in other life circumstances as well. We are also now beginning to develop an ability to measure the improvement in basic biological processes affecting the body's immunologic effectiveness due to this kind of empowerment.

This new research evidence now explains why the usual disease risk factors didn't do a good job in explaining the diseases they were supposed to explain. It turns out that having high cholesterol or high blood pressure is not enough to cause disease. Your body has to be vulnerable to these risk factors. If you are vulnerable, if your immune system is compromised, you are at higher risk to getting sick but that does not predict what disease you will get. What disease you get depends on the risk factors you are exposed to: smoking, viruses, bacteria, high blood pressure. But it takes both risk factors and a compromised defense system. We never took into account that two steps are needed to cause disease. That's why the usual risk factors explained only about half of the disease that occurs.

So early education has been shown to make an enormous difference in the lives of children. Improved education in later years is also a critical issue. This education does not necessarily come from formal schooling but it must come from some source. The key

is to help people manage the events that impinge on one's life. To learn to work the system. Along these lines, let me offer a new definition of stress. I now define stress in terms of one's ability to deal with challenge. If I challenge you with a major life problem that you know how to deal with, it is not stressful. If, however, I challenge you with a minor issue, which you do not know how to deal with, that is stressful. So, to me, the key to improving the health of the population is education.

The evidence supporting this view is clear. My favorite piece of evidence on this comes from the Indian province of Kerala. Kerala is one of the poorest and most densely populated provinces in all of India and it used to have the poorest health. Unbelievably high infant mortality rates, poor life expectancy, terrible medical care, and so on. Reforms in Kerala focused almost entirely on improving education in the province. Little else. Kerala today is one of the most literate and gender-equitable regions in India and it is now also the healthiest region. Kerala has one of the most advanced educational systems in India and, unlike the other Indian states, Kerala's basic human development indices are roughly equivalent to those in the developed world. Kerala is now substantially more environmentally sustainable than any other country in Europe or North America and it is the least corrupt state in the country. These achievements are almost entirely attributable to the revolution in education.

So, after a lifetime of failures and false starts, I think I am beginning to see a way to improve the health of the population. You need to be very skeptical of my latest idea based on my miserable track record. But I really think I've got it right this time. On the other hand, I always say that. Assuming for the moment, however, that I am right this time, what are the implications of these ideas for improving the health of the people in this country? If these ideas really do lead to improved prevention, will this lead to lowering the cost of medical care? If that is a likely scenario, how can we help people behave in healthier ways?? They need to stop smoking, they need to eat better, they need to watch their weight, they need to be more physically active, they need to get periodic check-ups. We all know this story. But I hope I have impressed you with the fact that these activities are only a part of the story. In fact, they are a small part of the story.

First, people rarely do what we want them to do. And even when they do, new people keep coming to take their place, forever. We never get ahead. In the end, we will have to really take seriously the concept of communities of health. We will need to take seriously the idea that health is more than health care and that there are social forces in the community that shape our lives, our hopes, and our health. And that some of these forces are amenable to change. We can organize work so that employees have a more meaningful role in the workplace. We have solid evidence that this really does affect health in important ways. We don't know exactly what components are involved in developing a more meaningful role but we know something about this issue is important.

We can offer high quality early education to our children. We have solid evidence that these programs changes lives in important ways that have consequences for better health. I haven't specified what it is about education that has this important effect. I haven't specified what are the critical components of the educational experience that we need to understand, emphasize, and emulate. But we know that education is really important. I don't think we understand this issue very well. It would be worth our time to think about this more deeply and creatively.

There are surely other important issues we also need to understand better. We need to begin a serious discussion of these problems. My thoughts are really just beginning ideas. They need to be thought about and discussed by all of us. We should begin the dialogue.