Large, measurable improvements in global public health are within reach. Progress depends on disease-specific health strategies and innovative health-systems programs that are effectively governed and administered. New organization structures can yield more of the right resources – for example, chloroquine, X-ray machines, ambulances, neonatal isoletes, trained community workers – where and when they are urgently needed by the destitute sick. This essay briefly outlines some ideas about ways in which economic analysis and social-justice advocates can work together to make this happen.

Untapped resources are available now for improving the health of the poor. Student interest in global health is exploding. Business executives and citizen-sector leaders have been inspired to offer their specialized capabilities for public health. As evidence of their interest, a long, technical book by the economist Jeffrey Sachs has become a best-seller by arguing that extreme poverty can be eliminated with a decade of foreign aid between $135 billion and $195 billion annually (Sachs 2005), amounts that would have once been inconceivable but that now are only one order of magnitude beyond current levels of aggregated aid.

This broad base of interest coincides with the 2006 publication of several studies (Jamison et al, 2006a, 2006b and Lopez et al 2006) from the Disease Control Priorities Project (DCPP) to update the landmark World Development Report 1993: Investing in Health. The 2006 publications of the DCPP represent a major advance over the 1993 report and its 1990 antecedents. Coverage of programs is greatly expanded, with 73 separate chapters and 1,400 pages in Jamison et al (2006a) alone. Led by a team of scholars and practitioners, the report includes disease- and system-specific insights from specialized experts in affiliated fields, as explained on the DCPP website (www.dcp2.org):

“In 2002, [the Project] asked some 600 public health and policy experts to update [the 1993 analysis], expanding research and writing about the burden of disease and cost-effective interventions for a broader range of diseases and conditions affecting developing countries. [Jamison et al (2006a, 2006b)] authors include scientists, epidemiologists, health economists, academicians, and public health practitioners from over 100 countries. [The Project] convened nearly three dozen technical consultations to encourage interdisciplinary debate among authors on data sources, methodologies, challenges, and priorities.”

* Thanks to Gerald Keusch, Arthur Kleinman and Kearsley Stewart for inviting this essay, with special thanks to Keusch. I am grateful for comments and encouragement to participants in the London Business School SIM retreat. The views expressed here are not necessarily theirs.
We now know more than ever before about global health, disease and mortality thanks to this extensive effort.

I have been asked by the conference organizers to write in a few pages from moral experience about the opportunities for reconciling the agenda of economic analysts such as those involved in the DCPP with the agenda of social-justice advocates who come from popular, anthropological, sociological and medical traditions. This essay is part of a conference volume that explores how scholars from the analytical and social-justice traditions consider “global health as a global value.” My specific charge is to discuss health systems in resource-limited settings, which, overall, have failed to develop satisfactorily or quickly. Certainly the 1990s-era reform policies that motivated the 1993 World Development Report have as yet failed to generate the economic miracles in resource-limited settings that had been envisioned as an objective of reform policy.

This is a difficult assignment. Economic analysis and social-justice scholarship are each diverse and multifaceted. These are complex issues to which many people -- including those represented elsewhere in this volume and the 600 health experts represented in Jamison et al (2006a) -- have devoted their lives. Yet an integrated approach that aligns the energies of economists and social-justice advocates is essential to redress the policy failures that have put aid at risk (Easterly 2006). Alignment is also crucial for channeling public enthusiasm and philanthropy to positive ends and to avoid the disastrous failures of well-intentioned intervention in the past.

In this essay, I make just a few recommendations on how social-justice advocates and economic analysts can work together to promote global health. These ideas only begin to define a viable collaborative agenda – much more could be done. The four major suggestions described in this essay begin with a relatively narrow set of recommendations regarding analytical methods, but conclude with a broad recommendation for health policy.

First, I argue that effective health policy depends on new analytical methods for deepening our understanding of the causes and effects of global health. The specific suggestions are to (a) systematically consider criteria other than cost-effectiveness in resource-allocation decisions, (b) report the deliberations of the three-dozen technical consultations that supported DCPP, (c) eliminate the discounting of future years of life in economic analysis, (d) increase interdisciplinary behavioral analysis, and (e) commission sociologically informed, non-linear projections of the disease and morbidity burden in resource-limited settings.

Second, using Guinea worm disease as an example, I discuss the challenge of allocating resources between and among disease-specific programs, and of evaluating disease-specific interventions for ex-post performance. This section also contains several recommendations for harnessing the combined energies of social-justice advocates and economists in an actionable, ongoing dialogue. The unifying theme is that disease-specific strategies are appropriate for disease-specific programs.
Third, I put forward several suggestions for improving decision rules regarding resource allocation to support country-specific health systems. I argue that programs fail at three levels: (a) they do not deliver personal security, clean water, basic nutrition, primary education and primary health in a balanced way, (b) they are inefficient because of poor economic valuations or poorly governed disbursements, and (c) they rely on underdeveloped capabilities to enact “diagonal” approaches.

Finally, I conclude by observing a promising shift in policy toward support for well-managed, “customized” (i.e., country-specific) programs to promote health, education, and growth in tandem rather than sequentially. This shift creates an opportunity for new ideas about health policies that benefit the destitute poor. The theme of the short discussion is to implement policies that can effectively direct more of the world’s stock of relevant, available resources (including specific medicines, skilled health workers, and nutrient-rich food, for example) where and when they are urgently needed – and by innovating to develop the specialized resources required to improve the health of the destitute sick. Progress depends critically on thinking not in terms of “interventions” or “closing the gap” but instead as doing new things that are deeply and exclusively relevant in resource-limited settings.

1. Effective health policy depends on new analytical methods for deepening understanding about the causes and effects of global health

Some social-justice advocates object to economic analysis on the grounds that it focuses the attention of policymakers on distributing the insufficient level of current aid dollars rather than on making the case for additional aid. There are two challenges operating contemporaneously in this situation: the first is that many economists have not rigorously separated descriptive diagnostic analysis from the prescriptive and normative agenda, and the second is that the objections are based on the mistaken conviction that effective resource allocation is at odds with increased levels of aid. This section focuses on opportunities to improve descriptive analysis through expanded and refocused economic methods. The purpose of this analysis is to encourage investments in understanding the resource requirements necessary to improve the health of the destitute sick, and ultimately to motivate additional aid for global health.

There is no conflict between the social-justice agenda to remediate health inequalities and the gathering of information about the global burden of disease in a broad sense. Understanding health inequalities is a prerequisite to their remediation. The mission of the DCPP – namely, to identify the geography of disease – is entirely compatible with the social-justice advocacy agenda. Several DCPP premises resonate specifically with the language of social-justice advocacy. A breakthrough insight in the Project is that illness and suffering are as relevant to health inequality as premature morbidity. Another insight is that the healthy poor are more vulnerable to illness and premature death – i.e., have higher “risk factors” – than those who are wealthier. This means that two people of comparable ages and with the same overall health may differ in their chances of getting sick or of dying only because their incomes differ. Thus, the logic of the DCPP astutely suggests that promoting better health among the impoverished
sick is only the first step in remediating health inequalities. Additional health interventions are also required because the fact of poverty itself means that health is not secure (as explained in Lopez et al, 2006). Poverty and health challenges work in a relentless cycle.

a. **Systematically consider criteria other than cost-effectiveness in resource-allocation decisions**

The commissioning of the 1993 report and its 1990 antecedents by the World Bank reflected a new way of thinking about aid disbursement to member countries that sought to replicate the miracle GNP growth of several Asian countries during the prior two decades.¹ Under this thinking, the Bank and several other major multi-lateral aid agencies allocated support to countries that implemented a specific set of large-scale fiscal, monetary, and “structural adjustment” reforms. Many observers associated the thinking with the neo-liberal idea that a rising tide of economic activity in a country, organized mainly through corporations, would broadly benefit all of the country’s citizens. With one exception, the favored reforms did not specifically address remediation of inequality. The exception was to invest in health, education and infrastructure improvements to reduce the gap between the rich and poor in the interests of growth. The prevailing view was that a healthy middle class had been a centerpiece of miracle GNP growth. Thus, improving the health of the poor to create a viable workforce became one of the objectives of pro-growth policy.

The *World Development Report 1993* was written to advise the World Bank and other agencies on how to disburse monies into health programs in support of this objective. To promote public health, the Bank and sponsoring agencies needed a new criterion – other than GNP growth – for deciding among competing candidate projects presented by member countries.

The recommended criterion in the 1993 report was cost-effectiveness, which was defined as “the ratio of [a program’s projected] costs to health benefits” (p. 5). According the report, health benefits could be assessed in terms of “DALYs,” or disability-adjusted life years, calculated as the number of years of healthy life lost due to premature death as compared to a low-mortality population, with: (a) future years of life discounted at a 3% rate, (b) additional discounting for young and old ages (called “non-uniform age weighting”), and (c) years of illness discounted by weights that reflect relative severity. DALY was intended as akin to GDP – a bottom line – a statistic for measuring how countries performed in health relative to one another and over time.

The DCPP – and particularly the *World Development Report 1993* and Jamison (2006a, 2006b) – continues to promote cost effectiveness as the principal criterion for evaluating health interventions (Musgrove and Fox-Rushby, 2006, p. 271, 273):

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¹ The reforms were labeled the “Washington Consensus” by economist John Williamson, something he later regretted.
“The principal analytic tool [in the Global Burden of Disease Report] is [cost effectiveness analysis (CEA)], which compares the cost of an activity, called an intervention, with the known or expected health gain. The result is summarized in a cost-effectiveness ratio (CER)…. This ratio corresponds to the concept of (health) value for money…. Interventions can be directed against an injury or disease (such as trachoma), a condition associated with or deriving from a disease (such as blindness), or a risk factor that makes the disease or condition more likely (such as the lack of hygiene that leads to trachoma). An intervention may pursue primary prevention at the population level – promoting personal behavior change, controlling environmental hazards, or delivering a medical intervention such as immunization to a large population – or individual action for primary prevention, cure, acute management, chronic management, secondary prevention, rehabilitation or palliation.”

Using DALYs, the 1993 report offered impressive, detailed, unprecedented empirical information about disease around the world. While there were constituent recommendations, the principal message was that the World Bank should stop supporting programs that offered little “value for money” and support programs that were highly cost-effective. The subtitle of the report, “Investing in Health,” signaled that GDP growth would result from the improved health of the poor both by enabling the poor as a workforce and by reducing the administrative and health-system burden on the non-poor of the society.

Almost immediately, social-justice advocates objected to the approach on the grounds that (1) more resources were needed, not the fine-grained allocation of insufficient aid, (2) DALYs repulsively traded lives against lives and repulsively discounted elderly and disabled life, (3) costs were taken as given despite the profits to rich, first-world interests, and (4) the evaluation on costs per DALY did not account for the sustainability of the health systems created by funded programs.

Despite the objections, the wealth of information on the burden of disease made the report compelling to readers from a range of backgrounds, including Bill Gates, who viewed it as one of the best pieces of writing on global health. There was nothing else like it out there. Reducing waste resonated with the experience of health advocates in the field. The recommendations for disease-specific interventions and for reduction of bureaucracy, along with an ongoing focus on structural continuity, contributed in large part to a shift in emphasis in the public-health community toward disease-specific projects. Disbursements proceeded and the report became influential among multi-lateral, governmental and private agencies around the world. The Global Fund to Fight AIDS, Malaria and Tuberculosis (GFATM) and the President’s Emergency Program for AIDS Relief (PEPFAR) were motivated in large part by the perspective engendered by the report’s recommendations. Program-specific initiatives that generated a demonstrable reduction in the burden of disease expanded at remarkable rates. Despite the flaws, cost-effectiveness analysis had become widespread – even definitive – among researchers, private agencies, governments, and bi- and multi-lateral agencies (Neumann, Goldie, and Weinstein 2000).

Over a decade later, in 2006, the DCPP continued to rely on cost effectiveness as the principal – even the exclusive – criterion for evaluating health programs.
methodological chapter of Jamison (2006a) explains that “cost-effectiveness provides the clearest simple way to promote value for money in health,” although “[w]here possible, chapters consider the equity effects of expanding or changing interventions” (Musgrove and Fox-Rushby, 2006, p. 272). Thus, the 2006 advances were accompanied by an anchoring effort around the cost-effectiveness criterion.

In part because of its widespread use, cost-effectiveness analysis is encumbered by several problems:

(a) the disbursement of resources on cost-effectiveness criteria creates perverse moral-hazard incentives among program directors in the field to manipulate the reporting of costs and/or patient participation,

(b) because DALYs for specific interventions are not additive, programs and interventions that receive financial support from more than one funder may double-count the patients affected by each funder,

(c) non-linearity in the costs of disease-specific interventions makes accurate marginal, average, and total cost analysis difficult and sometimes impossible (see part 2 below),

(d) the costs of health-system programs are exceptionally difficult to assess accurately because of interactions and complementarities with non-health expenditures,

(e) legitimate transaction costs and other governance costs are not accurately reported by recipient agencies and programs because of their fragile link to DALY

(f) cost-effectiveness analysis does not explicitly model variability in the quality of interventions above the short-term impact on DALY

(g) prerequisites to the remediation of disease (i.e., to measurable improvements in DALY) such as clean water and basic nutrition are not easily captured in DALY

(h) calculations of DALY do not consider how improvements in health are distributed within a population, i.e., DALY does not discriminate between a program adding 10 years to one life and a program adding 1 year to each of 10 lives

(i) health system infrastructure investments that do not lead in the short run to measurable improvements in DALY are not valued

(j) the legitimacy of CEA as an analytical tool is in question in both the economic and social-justice communities because of these problems, which compounds the moral-hazard problems in reporting

Musgrove and Fox-Rushby (2006), p. 272, offer a solution that emphasizes equity:

“Cost-effectiveness is only one of at least nine criteria relevant for priority setting in health if the objective is how to spend public funds (Musgrove 1999). Cost matters by itself, as do the capacities of potential beneficiaries to pay for an intervention. The other criteria that may affect priorities include horizontal equity (equal treatment for people in
equal circumstances); vertical equity (priority for people with worse problems); adequacy of demand; and public attitudes and wants. Two criteria – whether an intervention is a public good and whether it yields substantial externalities – are classic justifications for public intervention, because private markets could not supply them efficiently, just as in other sectors.”

While these nine criteria are specifically designed for public funds, they are also relevant more broadly. Participation by multi-lateral, bi-lateral, governmental, quasi-governmental, and tax-advantaged private institutions (such as the Gates and Clinton Foundations) blurs the line between public and private funding agencies. Both private and public monies are deployed to fight specific diseases and to augment health systems. Thus, the nine criteria identified by Musgrove and Fox-Rushby (2006) – and particularly the equity criteria – are relevant to a range of health decisions, and not only to those funded publicly. Achieving the goals of reform policy depends on their systematic implementation in decisions to allocate resources about global health.

b. Report the detailed deliberations of the three-dozen technical consultations in DCPP

The WHO (2007a, p. 1) explains that DALYs incorporate disability weights:

“One DALY can be thought of as one lost year of ‘healthy’ life and the burden of disease as a measurement of the gap between current health status and an ideal situation where everyone lives into old age free of disease and disability.…

“Egalitarian principles were explicitly built into the DALY, and the Global Burden of Disease study used the same values for all regions of the world. It used the same life expectancy ‘ideal’ standard for all population subgroups and it excluded all non-health characteristics (such as race, socioeconomic status or occupation) apart from age and sex from consideration in calculating lost years of healthy life. Most importantly, it used the same ‘disability weight’ for everyone living in a year in a specified health state.…”

The sense of egalitarianism conveyed here is the idea that a particular disease causes the same amount of suffering no matter who it afflicts. The disability weights are important because they are used to discount the values of particular years of life, as explained in a different document that is currently posted on the WHO website (2007b, p. 29):

“[Disability weights] quantify societal preferences for health states in relation to the societal ideal of good health. Thus a weight for paraplegia of 0.57 does not mean that a person in this health state is ‘half dead’, that they experience their life as halfway between life and death, or that society values them less as a person compared to ‘healthy’ people. It means that, on average, society judges a year with blindness (weight 0.43) to be preferable to a year with paraplegia (weight 0.57), and a year with paraplegia to be preferable to a year with unremitting unipolar major depression (weight 0.76). It also means that, on average, society would prefer to have a person to have a year in good health followed by death, than a year with paraplegia followed by death. Society would also prefer a person to live three years with paraplegia followed by death (3 years x 0.57
The judgments attributed to “society” here are crucial. Box 1.3 on page 26 of the *World Development Report 1993* describes the method for their determination as including “community surveys” and “expert opinion.” Jamison et al (2006a, 2006b) uses the same disability weights as in the 1993 report. The DCPP would make a pathbreaking contribution by reporting the transcripts of discussion between experts over disability weights. The 600 contributors to the project – the 73 chapters – and especially the 36+ technical consultations – possess crucially relevant insights that must be unlocked to inform policy and further research by social scientists from a range of disciplines.

Revelation of the deliberations behind the disability-weight assessments would enhance their credibility and advance social science by exposing them to scrutiny. With additional study, improvements could occur in methods and assessments. Consider, for example, that in some cultures, the elderly are revered, which could lead to significantly different disability weights for osteoporosis in one culture than another. Even within a society, people are irreconcilably diverse in their views about health, and individual views vary over time (ask Michael J Fox whether he’d rather have Parkinson’s disease or AIDS, and how he would have answered this question in 1993). It is not water under the bridge that impoverishment, illness and suffering occurs in large part because of past policies and interventions of one society in another (ask Bill Clinton about why his health initiative focuses on Rwanda and why he didn’t focus on Rwanda in 1994).

In short, societal consensus and unified judgments about disability weights are inconceivable – but some judgments may be more controversial than others. Decisions must be made about the level and disbursement of resources to various diseases under the controversy. Exposing the technical consultations and expert deliberations to public scrutiny would improve public understanding of the tradeoffs and would motivate greater levels of support for particular causes. Certainly the credibility of DCPP findings would be enhanced by public debate about the prioritization of diseases.

c. **Report on the sensitivity of DCPP recommendations to the discounting of future years of life, and eliminate 3% age discounting**

The recommendations of the 2006 DCPP publications support more aid for programs with measurable results that target tuberculosis, HIV/AIDS, child health, malaria and other tropical diseases, maternal and neonatal health, cancer, mental health, cardiovascular disease, injury prevention and several other conditions. The additional recommendations suggest strengthening health systems mainly by decentralizing decision-making authority. As in the 1993 report and its 1990 antecedents, Lopez et al (2006) discusses the financial and health risks of disease and recommends risk-reduction through private and public insurance programs. In general, the 2006 recommendations are more specific and technical than the 1993 recommendations, which focused principally on how local conditions in target countries should change (i.e., improving household health, governmental health investments, and private-sector involvement).
Both the 2006 and the 1993 reports are based on the application of cost-effectiveness criteria but the method for calculating cost effectiveness changed in an important way between 1993 and 2006. The 2006 updates used uniform age weighting rather than non-uniform age weighting. Non-uniform age weighting applies extra discounting of years lost to illness that would be lived by the young and the elderly. This means that, all else equal, a disease that afflicts people in their most productive years has a greater burden than disease that primarily afflicts young children and/or the very old. I could not find in Jamison et al (2006a) a detailed discussion of the decision to eliminate non-uniform age weights, but I applaud it because it removes a formulaic element of the DALY assessment and thereby puts greater emphasis on societal judgment.

Scholars with interests in social justice would also be interested in the application of the discounting of future years of life at a 3% rate in the DALY calculations used in both the 1993 and 2006 reports. The idea of discounting proposes that future years of life are not as salient or relevant to the disease burden, perhaps because of the risk of future accidental death or the promise of new treatments. The WHO (2007a, p. 2) explains that “With non-uniform age weights and 3% discounting, a death in infancy corresponds to 33 DALYs, and deaths at ages 5 to 20 to around 36 DALYs. Thus a disease burden of 3,300 DALYs in a population would be the equivalent of 100 infant deaths or to approximately 5,500 persons aged 50 years living with one year of blindness (disability weight 0.6).”

In my view, eliminating the 3% rule would represent another major advance similar to the elimination of non-uniform age discounting for three basic reasons. First, the elimination of age discounting would attach higher priority to diseases that affect the young because the years of future life lost would be considered equally. If the 3% discounting is applied from the average year of disease onset differentially by country or by program (the formula is not immediately apparent in Jamison (2006a)), then the loss of future life for the poor may be discounted disproportionately because of earlier onset. Second, the 3% rate is arbitrary because it is equally applied to all years of life. And third, investments to reduce accidental death and to develop new treatments are endogenous to the way that DALY assessments are implemented to make resource-allocation decisions. The 3% rate is not calibrated for differences in accident rates, and it does not consider the endogeneity of death risk or treatment improvements to the supported policy decisions.

Implementing this recommendation by omitting the 3% discounting rule would mean that DALY’s would principally reflect the societal judgments currently offered by the technical experts, but which could be liberalized under public scrutiny, on the severity and priority of diseases.

d. Increase interdisciplinary behavioral analysis

Jamison (2006a, 2006b) includes 17 specific case studies (see Medlin et al (2006)) as examples of effective health interventions. The reports also refer to many examples of effective programs. Yet this coverage is still minimal as thousands of NGOs, governmental agencies, partnerships and private health programs operate in
resource-limited settings with public, semi-public, foundation, and private support (by one estimate, more than 60,000 programs operate in Africa alone). Many more studies are needed as learning depends on shared information about effective and ineffective interventions on a range of dimensions, such as shared experience in training community health workers and managing relationships with district hospitals. Systematic investments in case research to facilitate this process are sorely lagging.

Additional investments in field-based case studies are also urgently needed to inform a new wave of economic research that seeks to influence policy. Consider, for example, the work of economist Emily Oster of the University of Chicago on HIV incidence and the sexual behavior of impoverished Africans, which has lately been published in the highly influential Quarterly Journal of Economics (Oster 2005) and celebrated in the New York Times (January 10, 2007) and on www.freakonomics.com, a popular economics website.

In her newest paper as of this writing, Oster (2007) uses a simulation model to make inferences about why impoverished Africans engage in riskier sexual behavior than gay men in the United States. She models how many sex partners a rational person would choose after thinking about the probability of contracting HIV from each partner and weighing the odds of contracting HIV against the benefits of a longer life in which wealth accrues over time. According to Oster, the greater the future wealth prospects of uninfected persons, the greater the incentive to reduce risky sex behavior so as to participate in the future wealth. By her logic, American gay men, for example, have fewer sex partners than impoverished Sub-Saharan Africans because the incentives are correct to choose longer life. On page 29 she concludes that the high incidence of multiple sex partners among the impoverished of Sub-Saharan Africa is “consistent with rationality.” In the newest version of the paper (unlike an older version), she stops just short of making a policy recommendation, but the implication is that programs such as PEPFAR should be augmented to provide the poor with greater wealth, so as to induce everyone to take on fewer sexual partners in the hope of leading wealthier, longer lives without HIV.

This study is objectionable for several reasons. First, policy implications should not be inferred (however gingerly) from a study that examines whether field data conform to the predictions of a computer-based simulation model. There is a logical fallacy in inferring that the causal relationships in the simulation model are those that drive the observed outcomes in the field. Second, the model does not incorporate the insight that poor health is a barrier to income, which is at the foundation of neo-liberal health policy. The HIV-uninfected destitute poor in Sub-Saharan Africa often cannot work because of poor health, malnutrition, and the absence of personal security. Third, the suggestion that impoverished people in Sub-Saharan Africa rationally choose sex partners based on projections of non-HIV lifespan and income is, at best, uninformed. Similarly, the reasons for behavioral change among gay men in the United States since the inception of the HIV/AIDS epidemic are also complex and do not bear up in this comparison.
A single study, however, should not impede progress. Behavioral analysis carries the potential to contribute significantly to improved global health – and especially to improved health systems – when it is based on accurate information about context, transmission mechanisms, and prevention strategies. More, better, validated, accurate, field-based data on disease incidence is required for good policy (Oster 2007 relies on data collected through the INDEPTH network) but it is not enough. We also need behavioral surveys and detailed field studies to cultivate understanding of destitute poverty and the conditions of disease transmission and prevention. The investment required is significant. An extensive line of work in several branches of social-science research describes the challenges of accuracy in surveys conducted even in the US and Western Europe. The problems are likely to be significantly greater in resource-poor settings for the same and additional reasons.

e. Commission sociologically informed, non-linear cost and disease projections

Many examples exist of public-health programs for which costs were underestimated and benefits overestimated, sometimes dramatically. Estimating the future costs associated with public-health programs is quite difficult. The World Development Report 1993 contained extensive discussion of externalities, public-goods problems, incomplete markets and other problems that would make the calculation of interventions difficult under any circumstances. The forecasting problems become exacerbated when the programs occur in resource-poor settings where the objective of effective policy is, in part, the creation of markets. Non-linearities are a central facet of health interventions (an illustration appears below under point 2), and, as a result, greater analytical power is required to evaluate them effectively.

Even current forecasts of the burden of disease are insufficient. There is a circularity in the empirical analysis of the “risk factors” section of the Global Burden of Disease Project (Lopez et al, 2006) in the following sense: As explained earlier, the logic of the health plank in the World Bank’s reform policies contends that primary health is a prerequisite for economic productivity. Thus, the basic motivation for the DCPP studies (that economic development cannot occur without a primary level of health in the population) is based on the reasonable assumption that a person’s health may improve even if his or her income does not increase. But as Lopez et al (2006) co-author Colin Mathers explained on February 20, 2007, in a seminar at Harvard’s Initiative for Global Health, the “risk factors” studies use income to project future health risks. In other words, the studies do not allow for the possibility that health risks may change among impoverished patients even if their economic wealth does not change. This approach is problematic because, as the World Bank reform policy suggests, the primary health of a

2 Hans Rosling of the Karolinska Institute in Sweden and co-founder of Medecins Sans Frontieres has created a non-profit called Gapminder Foundation that synthesizes data on primary health and economic income. In a speech at the TED conference in February 2006 (www.ted.com/tedtalks) he demonstrated how countries may adopt different strategies for managing the corroborative relationships between health and economic growth: since 1960, Chinese macro policies have emphasized growth while Vietnam has emphasized health. Rosling shows that Chinese health indicators and Vietnamese economic activity have both improved, but in the same ways as if they had been the principal objective of policy during the period.
resource-poor population may be significantly worse than suggested by income levels. Estimates based on income may therefore dramatically understate the incidence of diseases that disproportionately affect the poor.

The under-reporting of poverty illness may be compounded for another reason. Mathers expressed concern in the seminar that the projections to 2030 in his most recent risk-factors studies continue to extrapolate from correlations based on primary data from low-mortality Western European and North American countries. His concern was, primarily, that the risk-factors projections are inaccurate for the resource-poor countries of Africa and Asia. The DCPP may not have the budgetary resources to study health outcomes directly in resource-poor environments, and may have been forced to make estimates using income data and historical correlations of illness with income. While this approach is understandable on pragmatic grounds, the shortcuts reduce the accuracy, timeliness, relevance, and thus the value of the “risk factors” projections. The projections are unlikely to be a sound basis for policy if they continue to rely on historical correlations based on extrapolations from the experience of Western European and North American countries. Investments in rich field-based data on the incidence of illness and the consequences for premature morbidity are urgently needed.

2. Disbursing aid between and among disease-specific interventions requires disease-specific thinking; so does program evaluation

President and Nobel Laureate Jimmy Carter describes himself as becoming “almost obsessed” in 1986 with the eradication of Guinea worm disease. Victims of this disease are exposed by drinking water infested with tiny fleas that carry the larvae of Guinea worms. Within the patient’s body, the worms develop, mature, grow and mate, and the males die. After a year of development, one or more female worms as long as three feet breaks through the skin (usually at the legs or feet) to expose its head through excruciating blisters that often become infected. These fiery blisters compel the victim to submerge his or her legs in water for some relief. The exposed female worms then disseminate the next generation of larvae in the victim’s bathing water and die. After a worm dies, it can be extracted only through a terribly painful process in which it is rolled onto a stick but extraction is important to relieve infection. Patients typically can only tolerate the extraction of a few inches of the worm each day, and thus the extraction process and the subsequent healing can take months. Aggressive rolling is also inadvisable because, if the worm breaks, the opportunity for removing it is lost and infections may worsen. The disease is preventable through the filtering of drinking water and by blocking larvae dissemination into water. Guinea worm is just the second disease (after smallpox) that the WHO has resolved to eradicate from the planet.

By 2006, due in part to coordination through the Carter Center, the number of cases of Guinea worm disease was 1% of the 1986 level (Miller, Barrett and Henderson, p. 1173), but eradication was still many years off. As late as 1993, the WHO optimistically sought to eliminate the disease by 1995 (this goal was active when the World Development Report 1993 was published (p. 92)). Smallpox – the only infectious disease to have been entirely eliminated from the globe – was eradicated 170 years after
the possibility was first expressed (Miller, Barrett and Henderson 2006, p. 1164). Completely eradicating even a preventable disease such as Guinea worm requires assuring that every case, every larva, and every hosting flea is eliminated. This work is expensive, and the cost of eliminating each case increases over time as the disease prevalence diminishes because the easiest-to-reach cases have been treated, the relevant resources and skills become more specialized (imagine trying to find the last case in the remote reaches of the Sudan), and because those with an interest in perpetuating circumstances related to the disease may persist.

Carter remains passionately committed despite the slim chance of eradicating Guinea worm disease during his lifetime. The Carter Center works with governmental agencies, NGOs and international experts in a measured, rational way to clean drinking water and to provide education and treatment. Judgments are needed about how the Center can best spend its resources. As the interventions in particular villages succeed they are finalized (i.e., success means that “sustainability” is not relevant). In the end, as the Guinea worm is eliminated from more and more villages, the effort required to prevent each new case is likely to become greater and greater. The resources required will escalate dramatically to find and eliminate the last handful of cases, both because the villages themselves are likely to be hard to reach (because of civil strife, for example) and because cases may not be well documented. Jimmy Carter would give everything he has to kill the last flea, but he should not have to do this.

The Guinea worm eradication program (GDEC) co-sponsored by the Carter Center and many other institutions and agencies is representative of the class of health interventions that are disease-specific. The World Bank, Gates Foundation, and many other aid and donor agencies face four related challenges regarding these interventions that range from macro health policy to program management: (1) deciding which diseases to target (e.g., Guinea worm vs. HIV/AIDS vs. malaria); (2) choosing among candidate programs within each disease class (e.g., funding the GDEC vs. a different Guinea worm program); and (3) evaluating funded programs ex post for their effectiveness and efficiency (e.g., evaluating whether GDEC was well run); and (4) evaluating how much in aggregate to devote to disease-specific programs (e.g., vs health-systems programs and non-health aid); I have much to say about each of these challenges and their implications for economic analysis but as I do not have much space, I will focus on a few major points.

a. Rethink “sustainability”

The sustainability of a specific program such as GDEC in a village in Ghana may be unnecessary over time, and, thus, the sustainability of the program should not be a criteria for deciding whether to support it. At the same time, a sustained commitment to combat the Guinea worm disease may be vital to its success: Carter won’t rest until he gets to the last flea carrying Guinea worm disease. In public policy, we need to rethink what is meant by sustainability, and take a nuanced approach to the imposition of sustainability as a criterion for assessing the effectiveness of a program.
Decisions to target particular diseases are long-term commitments. Efficient and effective administration of a group of disease-specific programs must account for the future evolution of the disease and of the circumstances of those afflicted. The current burden of a disease represents only part of the picture. Particular programs may end because they have successfully achieved interim objectives in addressing a disease (e.g., Guinea worm has been eradicated from Pakistan, India and Yemen); indeed, the cessation of GDEC in these three countries – their lack of sustainability – reflects the success of the programs.

The implication is that program applicants should not be asked to demonstrate that their disease-specific interventions are sustainable. Instead, they should be asked to show how their interventions support the goals of the funder’s disease-specific strategy. What is needed in disease-specific interventions is a sustained commitment by funders, not program administrators, to a good plan (a strategy) that reflects the disease’s specific epidemiology and the disease victims’ particular circumstances.

Let me illustrate with an example. Please imagine that a funder such as a donor, foundation or agency must decide whether to approve an extension of GDEC to Sudan where Guinea worm is endemic. Under this scenario, Jimmy Carter advocates for Guinea worm while other persuasive social-justice advocates ask for help to fight other diseases.

To see how DALY’s or related assessments of the burden of Guinea worm disease would fail to reflect the WHO commitment to eradication, please imagine, for just a moment, how the DALYs associated with Guinea worm disease would be calculated (neither the 1993 nor the 2006 reports indicate a disability weight for Guinea worm, and so an estimate is required). To use the language of the WHO as noted earlier, “society would judge” guinea worm disease as “strongly preferable” to AIDs or cancer, and probably “preferable” to episodic malaria or deafness – perhaps in the same range as osteoarthritis, alcohol dependence syndrome or infertility (see WHO (2007b), p. 30).

Guinea worm is not identified with premature morbidity and is endemic to the water supply of particular places. Imagine that each person contracting the disease is afflicted from exposure to the water supply from babyhood and then contracts an episode in every remaining year of his or her life. Suppose each healthy person has a DALY of 36 years (WHO (2007a, p. 2)). Then, for argument’s sake, the per-person impact from Guinea worm would be 6.5, which equals 36 years multiplied by the estimated disability factor for Guinea worm of 0.18. According to the logic of WHO (2007b), p. 29, “society would prefer” a person to live 29.5 or more healthy years than 36 years with Guinea worm disease. This figure would not change as the disease is eradicated. In other words, the very last person to contract Guinea worm disease before it is eradicated would contribute 6.5 DALYs to the global burden of disease – just the same as one of the 2.25 million people who contracted the disease in 1986 before eradication programs on a large scale were implemented.

Consider how the burden of this disease would be assessed over time during the period of its eradication. In 1986, 2.25 million people were afflicted but in 1996, after
GDEC had commenced, 330,000 cases occurred (Kim, Tandon and Ruiz-Tiben, 1997). Thus, to continuing this thinking, Guinea worm contributed 14.6 million DALYs to the global burden in 1986, but just 2.1 million DALYs in 1996. In a futuristic final year before eradication, the disease might generate only a handful of DALYs – say, only 650 if there are a hundred victims in the last year. Thus the assessed burden from Guinea worm would decline over time from 14.6 million to 2.1 million to 650 as the eradication program continued.

If the agency were to rely exclusively on the DALY as a criterion for evaluating whether to extend GDEC, then it would support the program early but not late. Of course, no agency or foundation of which I am aware does this, but many do assign heavy weight to burden-of-disease statistics. The diminishing burden of Guinea worm disease would put late-stage applications for funding at a disadvantage despite the efficacy of the programs. This problem reflects the irony of the burden-of-disease calculations for disease-specific programs: the more successful the programs, the more difficult the case for additional funding. Late-stage control, elimination or eradication programs are more expensive because they dig deep at the foundations of their targeted diseases.

The fundamental problem here is that a decision rule for allocating resources to a disease-specific program should account for the potential *future* disease burden, not the historical or current burden, with the understanding that disease prevalence may lessen over time while the costs of its management may increase. The last flea carrying the Guinea worm larva should be eradicated not only to prevent the 100 people in the local village from contracting the disease contemporaneously, but many more – perhaps millions – from contracting it over future years. This is one reason why we need accurate projections into the future of the burden of disease based on field data.

Guinea worm is treatable without medication. Consider the implications of burden-based evaluations for viral and bacterial diseases that adapt opportunistically and become drug resistant: tuberculosis and HIV/AIDS are examples. The problems associated with funding decisions based in historical or concurrent burden-of-disease statistics deepen. Medical protocols and other field-based experiences lose relevance as diseases adapt during periods when program funding is not available. Thus, episodic or inconsistent funding can sustain a disease instead of the programmatic knowledge that develops over time as the disease is treated. This problem worsens if the disease is viral or bacterial because the disease itself may adapt opportunistically to gaps or reductions over time in interventions. Because programmatic knowledge may wane with episodic funding even if the disease is not infectious, we need to rethink what sustainability means.

b. **Disease-specific interventions do not add up to effective disease-management programs**

Consider the second challenge confronting donors, foundations and agencies: choosing among competing candidate programs within each disease class. As the prior
discussion suggests, specific interventions should be evaluated against the funder’s goals and overall strategy for targeting a disease.

I will highlight three problems with applying cost-effectiveness analysis across specific interventions that each target one disease. First, the burden of disease is not additive across individuals regardless of whether the disease is infectious. If you were diagnosed with something you would go on the Internet to learn more. The volume and quantity of the information that you would find -- the diagnostic tools – the specialists – the support groups – the available medicines – would all depend on how many other people have the disease both concurrently and in the past. This means that interventions directed at individuals do not add up neatly, and cannot be evaluated separately for cost-effectiveness because they interact. Second, the costs of implementing specific interventions do not add up for more-or-less the same reason: the cost of a particular intervention that affects a group of individuals with a disease has implications for the cost of a separate intervention for other individuals. Finally, some opportunities for intervention are unique. The reason that advocates such as Jimmy Carter target diseases such as Guinea worm is because the specific features of the disease are compelling, resonant, and aligned with their values, interests and capabilities. Say no to Jimmy Carter and you may never have the chance again to work with someone as capable or committed.

Economists can deal with each of these problems by adjusting cost-effectiveness analyses in various ways. What becomes important and relevant about their analyses is the adjustments, i.e., the non-linearities and interactions and projections that are involved. Evaluating a particular intervention becomes part of the larger picture for confronting the disease. This is what I am recommending when I suggest that specific interventions should be evaluated against the funder’s goals and overall strategy for the disease.

c. **Ex post evaluations of management efficacy in disease-based programs should be standardized**

The third challenge – evaluating funded programs ex post for their effectiveness and efficiency – is a problem run amok in global health. In 2005, I examined the 142 international development organizations covered by Charity Navigator and found that, on average, 10.4% of their budgets were administrative expenses, and 7.7% were fund-raising expenses. Thus, over 18% of the budgets of organizations that sought private funding for international development were devoted to tasks such as reporting, measuring, solicitations, record-keeping and management.

Many NGO’s, staffed by underpaid and under-trained administrators, struggle to write non-standardized reports for funding agencies with differing objectives. Let me recommend that the accounting and basic administrative burdens become standardized through the rapid extension of Sarbanes-Oxley requirements to 501(c)3 organizations in the United States, and through the extension of similar legislation in the European Union States and elsewhere. The imposition of these requirements would spark a period of transition in which 501(c)3 organizations would scramble to develop new systems that
would improve their financial and management control systems. Accountancies and consulting firms should be encouraged – perhaps with tax incentives – to donate support during the transition through implementation and toward full enforcement. Ultimately, the charities receiving funds would be compelled to manage their funds professionally, and funders could focus their decisions to provide support and to monitor effectiveness on audited information about whether program recipients had fulfilled their original promise. If recipient agencies and NGO’s were compelled to manage their funds professionally, then funders would have assurances that their monies were spent responsibly and could base their allocation decisions on the recipients’ specialized capabilities rather than on ad hoc assessments of efficiency.

d. Projecting the resources required for disease-based strategies requires sophisticated and inter-disciplinary operational research

The final challenge – determining how much funding in aggregate to devote to disease-specific interventions as compared to health-systems and non-health programs – is the province of those whose money is spent. Of course, private donors make these fundamental decisions privately. Questions arise, however, about public funds and about the obligations of organizations such as foundations and charities that benefit from public incentives such as tax-advantaged status. Even private donors look to public documents for guidance.

Calculations about the aggregate amount of required aid are persuasive when based on sophisticated medical, epidemiological, and social analysis on the full costs of achieving the objectives of control, elimination or eradication of specific diseases. Defining the goal for managing the disease is crucial (Miller, Barrett and Scott, 2006). Jimmy Carter wants to eradicate Guinea worm, not to control or eliminate it from a particular area. The experience of the WHO in failing to meet the 1995 target for eradication of this relatively well-understood disease – and of failing to meet the goals of the 3x5 initiative – demonstrates that the full costs of achieving disease-specific goals can easily be underestimated. The reason may have to do with the systemic nature of diseases. By collaborating with social scientists, medical specialists, and advocates with lived programmatic experiences in making the assessments, economic analysts have a much better chance of accuracy.

3. Successful interventions to build health systems require a new way of thinking about return on investment

The January-February 2007 issue of Foreign Affairs features an article by Laurie Garrett arguing that general health in resource-limited settings suffers because of too great an emphasis on specific diseases. She summarizes the problem this way:

“…[U]nless… efforts start tackling public health in general instead of narrow, disease-specific problems – and unless the brain drain from the developing world can be stopped – poor countries could be pushed even further into trouble, in yet another tale of well-intentioned foreign meddling gone awry” (page 1).
Her wake-up call is issued both to private donors and advocates (page 5):

“… [A]id is almost always ‘stovepiped’ down narrow channels relating to a particular program or disease…. Stovepiping tends to reflect the interests and concerns of the donors, not the recipients. Diseases and health conditions that enjoy a temporary spotlight in rich countries garner the most attention and money. This means that advocacy, the whims of foundations, and the particular concerns of wealthy individuals and governments drive practically the entire global public-health effort.”

Garrett (2007) provides detailed examples of stovepiped aid that drains weak public-health infrastructure and drives trained health professionals away from general care. She cites, in particular, the case of Ghana, where health workers have been drawn into HIV/AIDS and malaria programs and away from providing care for locally relevant diseases such as Guinea worm. The challenge is that health-delivery systems – and especially the local availability of trained health providers – are not developing in parallel with disease-based technologies for treating HIV/AIDS and malaria, and particularly not developing as fast as disease-specific pharmacological technologies for treating HIV. There is no question that this challenge must be addressed.

Jamison et al (2006a) envision a transition from vertical to horizontal programs over time as a “public health polypill:”

“The medical literature has long debated which approach to delivering health interventions is more effective: vertical [focused, proactive, disease-specific, massively scaled] programs or horizontal [integrated, demand-driven, resource-sharing, service-oriented] programs…..This is a false dilemma, because both need to coexist in what could be called a diagonal approach – that is, the proactive, supply-driven provision of a set of highly cost-effective interventions on a large scale that bridges health clinics and homes.”

Yet despite this vision, confusion about what works and what it will take to succeed continues to escalate. Health systems in many countries are not satisfactory. DCPP continues to call for surveillance – mainly through investments in information technologies – and decentralized decision-making. It is clear that that public-health community lacks detailed examples of successes in the development of health systems.

Delivering the “public health polypill” envisioned by Jamison et al (2006a) is the most conceptually challenging element of effective valuation for global-health advocacy on this list because, first, horizontal systems may not fully develop with even well-designed vertical programs and, second (as Garrett argues), vertical systems may be designed to push first-world technologies and interests in ways that create unresolved horizontal problems in resource-poor settings. Attracting talented, passionate health advocates to the polypill problem has to be part of the solution, but it is not the whole solution. As Garrett’s analysis suggests, the policy community also seeks policy improvement.

a. Balanced investments in health systems require different metrics
Cost-effectiveness analysis – measured as the cost of delivering a particular intervention per DALY achieved – captures only part of the return on investment in health systems for several reasons. First, birth is a prerequisite for a person’s prospective years of life to be tabulated into the DALY for the area. Thus, DALY may rise perversely with improvements in natal morbidity rates and neonatal maternal care because the new life is captured in DALY statistics. Programs that diminish natal morbidity and remEDIATE maternal malnutrition, for example, may not be credited with improvement in DALY (and, indeed, may be associated with deterioration in DALY because of the increase they cause in life).

Second, measurable improvements in health occur only after a series of prerequisite, complementary interventions to create basic personal security, address malnutrition, and generate clean water. For example, leaky roofs may facilitate the spread of tuberculosis and make better housing a priority. For another example, Rosenberg (2006) explains that mothers in Sub-Saharan Africa frequently pass HIV to their children at birth despite the availability of nevaripine because of the stigma and shame of admitting their HIV-positive status even to themselves. Peter Piot, head of UNAID, told the New York Times in 2006 that “[W]e have grossly, grossly neglected the social, cultural and personal stuff that makes [technology] work” (Rosenberg, 2006).

Finally, investments may be required to avert escalation of the disease burden even without any measurable improvement in a community’s health. Rebuilding clinics after hurricanes, earthquakes or floods may not generate an appreciable improvement in a population’s disability-adjusted life years, and yet may be essential to avert health crises. No amount of surveillance designed to assess the burden of disease will yield comprehensive information on the strength of systems that are not specifically designed to treat disease.

The following measures reflect conditions prerequisite to effective health systems, although none of them, of course, singularly reflects the objectives of effective systems:

(a) Birth rates including information on neonatal conditions
(b) Rates of murder and violent crime
(c) Indicators of basic nutrition such as body mass indices
(d) Water availability and quality
(e) Number of trained health workers per capita

Other measures reflecting primary security, basic nutrition, availability of clean water and prerequisite health-system functions are worthy alternatives, of course. The principal message here is that investments on these dimensions are as important to health outcomes as in interventions commonly classified as healthcare. Understanding the development of health systems requires measurement on these dimensions.

b. Improved health governance requires investment in transactional systems

DCPP emphasizes the role of local political leaders in health-system development. Getting healthcare right requires an awareness of context that can only be
acquired through years of lived experience, and is a central reason for the engagement of community health workers in care delivery (Behforouz, Farmer and Mukherjee, 2004). Two well-known examples illustrate the challenge. Larry Brilliant, civil-rights advocate and leader of the WHO’s successful smallpox eradication campaign, assaulted a sleeping village leader in the night to inoculate the man against his will, and then asks how “you justify breaking down a person’s door to vaccinate him, even if that inoculation saves his life?” (Rubin, 2000). Fiona Terry (2002) suggests that every intervention has a dark side and asks whether her employer, Medicins Sans Frontieres, should provide care at all in refugee camps where those mobile enough to reach clinics quickly become oppressors.

The resources required to deliver health are also complex (i.e., the long-term commitment of researchers, community workers, social workers and local representatives). This is expensive, and because it is prerequisite to effective health interventions, investments in the relevant capabilities may not immediately generate DALY and therefore may be underappreciated.

For private corporations, NGOs and agencies, the issues associated with working effectively in resource-limited settings are complicated beyond understanding what it takes to advocate better health. Resource-poor settings run on cash and hand-written receipts. In resource-limited settings, formal employment laws may create the almost sure bet of a lawsuit if a layoff is eventually necessary – while an abundance of impoverished, able workers constantly seek informal employment. Who should an NGO employ when the laws appear designed to enrich aid-chasing, middle-class lawyers, and when informal employment puts precious dollars directly in the hands of the indigent poor? The Foreign Corrupt Practices Act sets high standards and creates significant risks for executives who seek to operate effectively in resource-limited settings – for example, to unlock equipment stuck in customs, or to prevent the looting of pharmacies.

The current emphasis on CEA offers no incentive for hard-working, understaffed NGOs and health providers to report accurately – or even to know – how cash in the field is spent. Many studies have documented the extent and pervasiveness of corruption in resource-limited settings – although very none really deal in a nuanced, comprehensive way with the illegitimacies that may make cash transfers benefit the destitute sick. Transparency depends on allocating resources to legitimate systems for making things happen: better IT in customs to unlock the stuck X-ray machine; private and reliable wholesale distribution systems that make unnecessary the use of ambulances to carry medicines from the airport to the clinic; decent salaries for local physicians so that they need not be “topped up” to prevent flight; investment in the electric grid to assure that a clinic has enough power to run; an audited, reliable banking system with transaction fees that are not usurious.

Until we invest in better management systems for governing health programs, the financial reports from the field in resource-poor settings may be of significantly variable quality. Better health outcomes depend on investments in the infrastructure necessary to deliver water, food, medicine and basic care to the indigent poor, which must develop contemporaneously with both better governance systems for each to be effective.
c. Develop and support diagonal approaches

Disease advocacy is intuitive to those of us with exposure to the world’s most advanced health systems because, for us, disease is (more or less) exceptional. We are accustomed to clean water, foundational nutrients, childhood vaccines, dental care, abundant cleaning agents, and no Guinea worm disease. In familiar resource-rich settings, it is natural to think in terms of healthcare cycles that begin with diagnosis and that proceed through treatments to outcomes that may include death, but that often include restoration to health (Porter and Teisberg, 2007). Health interventions in resource-limited settings are dissimilar.

Recall that Jamison et al (2006a) discusses the possibility of a “polypill” for global health. The formula is that vertical, disease-specific interventions disseminate advanced technologies from resource-abundant to resource-limited settings while, at the same time, investment in horizontal health systems occurs. Under the “diagonal” approach, vertical interventions create horizontal systems. Gates briefly discussed this possibility at the World Economic Forum in 2007: recipients of aid for vertical interventions often must build horizontal systems to succeed in achieving their programmatic goals.

The challenge here is multi-faceted. First, the horizontal infrastructure that results from vertical interventions may typically be rudimentary, unbalanced, and incomplete. Consider, for example, that Guinea worm fleas can be eliminated with simple water filtration systems, but no first-world health provider would be satisfied that the filtered water is clean just from the filtering. Second, many vertical interventions don’t involve infrastructure development at all. Vaccine-development programs, for instance, may occur exclusively in developed countries, and may involve no investment whatsoever on the ground in resource-limited settings. Third, the horizontal infrastructure developed by agencies and NGOs in resource-limited settings may be inappropriate and even perverse. Brief exposure to a well-intentioned intervention may foster misconceptions such as those promoted by Mbeki in South Africa through most of the 1990s.

The goal articulated in Jamison et al (2006a) is to complement and corroborate top-down, technically advanced, specific interventions with bottom-up, locally informed and tailored infrastructure development. The diagonal approach is greatly enhanced if the vertical, top-down interventions are health-system specific rather than disease-specific.

Examples of specialized vertical capabilities for health-system improvement include training curriculum for community health workers, morgue construction skills, tuberculosis diagnostics, and systems for disseminating bednets with training that ensures that they are actually used as bednets rather than redeployed to bind cement in the building of roads, for example. System capabilities are as specialized as disease-specific capabilities. Investment in them should occur in parallel with disease-specific interventions. The identification of top-down, technically sophisticated vertical interventions exclusively with specific diseases is inaccurate.
4. Support health policy with new, centralized institutions

Neo-liberalism has been attacked from all sides. This section does not deal with fundamental questions about macroeconomic policy, but rather suggests three approaches to capitalize on the current blast of public interest to improve the productivity of health programs in resource-limited settings. The theme here is that, in the end, the provision of aid from resource-rich to resource-limited settings should not be conceived in terms of unilateral, unidirectional “interventions” or as “closing the gap” between systems (the health systems in many first-world countries are in crisis in the first place, and thus efforts to construct them to resource-limited settings may amount to the exportation of failed infrastructure).

a. Provide governments, health agencies and NGOs with the power to negotiate for specialized medicines, medical devices, equipment, skilled workers and other resources

The WHO’s database on pharmaceutical prices is a major advance because it provides governments – and the programs that they sponsor – with access to detailed information that makes them more powerful negotiators. A critical reason for the efficacy of this system is standardization of the units of medicines. Similar standardization is needed on medical devices, equipment, consumables, and other goods and services for resource-limited settings. Web-enabled databases are also critical.

The market for labor presents different challenges. At this writing, qualified labor from resource-rich settings is abundant – legions of students want to tend to the poor. At the same time, qualified health workers from resource-limited settings are fleeing, as Garrett (2007) documents. Certainly rotation systems, Peace Corps placements, and student internships could be devised to confront this difference in interests.

b. Augment incentives for innovation

Public-private partnerships are currently in the vanguard of health interventions. The Gates-Merck-Botswana example has been heralded as seminal. One of the challenges for private organizations is in confronting public criticism of any intervention as too much, too little, too late and too soon. More could be done to provide private-sector institutions such as corporations and universities with ways to coordinate intervention. Examples include ventures organized similarly to SEMATECH for research on standardized technologies for resource-limited settings; tax deductions for research on technologies that are particularly relevant to resource-limited settings; targeted, systematic interventions to improve the clean passing of cash through resource-limited settings.

Like good medicine, the ultimate outcome for economic valuations is that, through innovation, resources are no longer scarce. This occurs when the valuations convey information that helps inventors, entrepreneurs and other health advocates to see
how resource scarcity can be relieved. By exposing what it takes in economic terms to deliver health in resource-poor settings, global-health advocates can spark a process of innovation that ultimately relieves resource scarcity first by deploying the available resources and secondly by sparking innovation to create new resources.

c. **Well-managed, customized interventions to promote health and growth in tandem depend on accumulated knowledge about health interventions**

The 73 chapters and 600 authors involved in the DCPP report a stunning body of knowledge about successful health interventions. More is needed. Macroeconomic policy to promote global health is in question (Easterly 2006) just as knowledge about effective interventions develops through its infancy and into adolescence. As Piot confessed in Rosenberg (2006), the next step is to respond to the biosocial requirements of those that suffer illness in extreme poverty.

The potential exists for a new movement in economic policy toward customizing interventions to promote health and economic prosperity simultaneously – introducing microcredit programs, for example, as district hospitals are renovated. The case for implementing these sensible policies must be made as forcefully as possible.

Social-justice advocates can promote the transfer of technical capabilities from elite, first-world institutions to the destitute sick by sharing crucial information about their financial experience in the development of horizontal health systems. Information is needed about the costs in resource-limited settings to

- establish clinics and acquire and install equipment
- acquire, transport and store medicines
- deliver medical care
- train local health workers
- conduct operational research and advocate for patient-based biosocial support, and
- manage health interventions in the field

Even estimates based on incomplete information – but based on lived experience – can provide a foundation for understanding the diagonal capabilities necessary for health-system development. Building knowledge about the global burden of inadequate health systems to complement current analysis on the global burden of disease is essential for the global health polypill.

5. **Conclusion**

In my experience, executives in large corporations have only a vague idea of the true profits in their firms of producing goods and services. Calculating the costs of something involves judgments about fixed infrastructure, scale economies, alternative raw materials, sunk R&D expenses, labor content and units sold. Prices in many corporations are set in ways that reflect even vaguer projections about how the good or service will be used (i.e., we can charge $37,000 for an incubator because elite medical
institutions need it for neonatal procedures and because our competitors don’t offer as good a deal). Accurate cost-effectiveness analysis in the most sophisticated of Fortune 500 companies is among the most arduous of management tasks, and yet it is not abandoned because it is central to responsible stewardship of invested capital.

What does this mean for global health? A comprehensive understanding of costs and of cost effectiveness and of units of improvement is beyond the reach of even the most sophisticated resource-rich analysts. But just as resource allocation proceeds in resource-rich environments, resource allocation based on the best possible understanding of the burden of disease and of inadequate health systems must proceed in resource-limited settings. It is imperative in particular because the overall level of resources improves with increased knowledge about effective allocation of resources.

Morality is intrinsic to economic valuation. Morality is involved anytime you set a price, do a budget, buy something, sell something, or decide not to buy or sell. Economic valuation is a moral act because the required equivalence comparisons always incorporate judgments, often implicit, about what is important. Many economic valuations are trivial (e.g., you’d pay a bit more for coffee than for tea), some are essential (e.g., an annual course of ARVs is available in Sub-Saharan Africa for $120 instead of $600), some are good (e.g., a budget to provide food for a malnourished child instead of travel for a summer intern), and some are bad (e.g., $1,000 as a customs bribe when nothing should be required to get the Xray machine expedited). The moral content of economic valuations – i.e., the relative ranking that they embody – is particularly vivid when economic valuations relate to poverty, health and illness.

There is only one reason that economic valuations are essential and worthwhile in global health: the specialized resources needed to confront global-health challenges are not abundant. This does not mean that the world cannot afford global health. Cash and human energy may be available, but the world does not have enough specialized medicines, clean drinking water, food, clean surgical instruments, working medical devices, sanitation systems, dry housing, basic education, community workers, trained nurses, social workers, midwives, epidemiologists, relevantly trained physicians, and so on – in the right places and at the right times – for adequate public health. Economic valuations create incentives for efficient mechanisms to arise for translating generic resources like cash into the specific resources that health providers need to treat sick people where they live. The dismal fact of scarcity in relevant, specialized resources is the moral imperative for economic valuation in global health.³

The poor need justice to be cheaper. Relieving the enormous, varied burden of poverty illnesses depends on stimulating innovative competition to provide the right medicines, medical devices, food, clean water, sanitation systems, etc., at low prices

³ Thomas Carlyle first called economics a “dismal science” in a painfully racist 1849 essay in which he argued that liberating slaves led to squalor because the forces of supply and demand insufficiently supported those who were freed. He was writing about Haiti and other Caribbean societies with a purpose to persuade the liberal “philanthropists” of England that slavery should be re-instituted.
where they are needed and at the right times. Scaling health delivery depends on unlocking the creativity of a new generation of global-health advocates in the interests of the poor. Entrepreneurs, students, corporations and inventors from resource-rich parts of the world want to get to work but don’t know what to do. Economic valuations can create incentives that support them in responding effectively. Tripping off a positive cycle of competition among them to serve the poor will require informational, organizational, institutional technical and medical innovations. The purpose of this essay is to offer some initial ideas about how to spark these innovations in the interests of global-health advocacy.

At the end of Jamison (2006b), the following statement appears (p. 179): “Waiting for economic growth to improve health would be a mistake when developing and applying knowledge can achieve so much.” A social-justice advocate reading this extraordinary book might pass by this sentence as if it were self-evident. But an historian sensitive to the assertions of the 1990’s era reform policies would recognize the stakes. This simple sentence was written in response to questions about whether “investments in health” as characterized in the 1990s report had paid off in GDP growth.

Were the investments in health worthwhile? A cold analyst might say no: We have no economic miracle in sub-Saharan Africa comparable to the miracle in Japan during the 1970s. No working class. No comparative advantage. The authors of Jamison et al (2006b) are saying “yes” despite the tragic drop in GDP in sub-Saharan Africa. They deserve recognition from the social-justice community as global-health advocates for this claim, and for the subsequent claim that “Ultimately, the uneven applications of knowledge and resources results in unjustifiable health gaps between rich and poor, whether within or between countries” (page 180). A close reader senses a shift in emphasis from the first chapter of the World Development Report 1993 to the end of Jamison et al (2006b) toward justice over growth. The fight for cost effectiveness is framed, in the end, as a fight against inefficiency: “Resources are wasted when the wrong interventions are selected or low-quality care becomes an accepted norm” (page 181). The bottom line is that we need the benefits of technical progress to be shared universally – an equity message.

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