

SECTION 1

Introductory Chapters



At the edge of the abyss –
Alexis Leiva Machado
Installation

'Do you forget something?
-Hopefully.'

***The Emigrant* (Short story) – Luis Felipe Lomeli**

'Here too. Here as on the other extreme of the
continent...
Here too, that unknown and anxious and brief
thing that life is'

***Texas* (Poem) – Jorge Luis Borges**

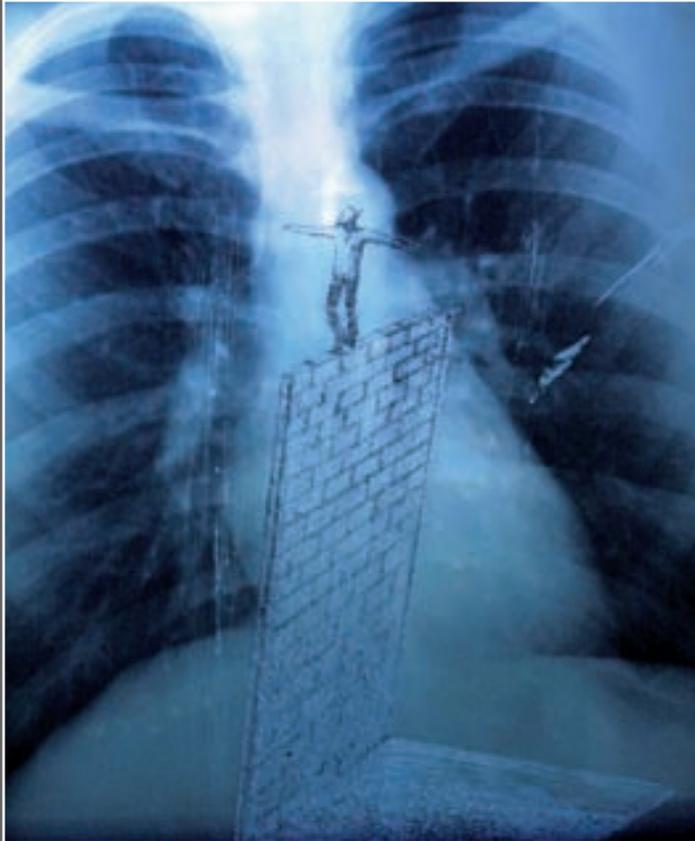
Alexis Leiva Machado (Kcho)
Isla de la Juventud, Cuba

Alexis Leiva studied at the Elementary School of Art and the National School of Art, Havana.

He has received prizes in the Municipal Salon of Visual Arts and Design (Nueva Gerona, Cuba), in the National Salon of Art Schools Professors, Provincial Center of Visual Arts and Design (Havana, Cuba), and in Biennial of Kwan-Ju, South Korea. He has also been the recipient of a scholarship from the Foundation Ludwig, Fórum Ludwig, Aachen, (Germany), and a residency at the Atelier Alexander Calder, Saché, France.

His works have been exhibited in Canada, Cuba, France, Israel, Italy, Japan, Portugal, Spain, and the United States. They are also in the collections of the National Museum of Fine Arts (Havana); the Museum of Modern Art (MOMA) (New York), the Sandretto Re Rebaudengo per l'Arte (Turín), the Museo Nacional Centro de Arte Reina Sofía (Madrid), the Gallery Gabriela Mistral (Santiago) and the Foundation Ludwig (Aachen).

TB complexities must be mitigated by seeking new solutions and alternatives based on the concept of sustainable health



Inner Balance – Agustín Bejarano

Mixed/X-ray film
(43 x 35.5 cm)

'Perpetuum mobile is a perpetual movement. If you find the perpetual movement, I can't see the limit of human creation.'

Scenes from the Age of Chivalry (Unfinished Drama)
– Aleksandr Pushkin

Agustín Bejarano
Camagüey, Cuba

Agustín Bejarano graduated from the Higher Institute of Art in Havana, Cuba. Since the 1990s he has taken part in various art exhibitions held in Canada, Cuba, France, Mexico, Puerto Rico, Spain, Switzerland, and the United States. He received an award from the National Salon of Engraving (San Juan, Puerto Rico) during its IX Bienal de Grabado Latinoamericano y Caribeño, and the Grand Prize of the National Salon of Engraving, the Provincial Center of Fine Arts and Design, Havana.

His works are found in the Museo Nacional de Bellas Artes, (Havana); Colección Blasco & Lausín (Zaragoza); Colección Meter Ludwig, (Cologne); Collection Christie (Mexico); and at the Center for the Art (Florida), among others. He is a member of the Union of Writers and Artists of Cuba (UNEAC) and received a Distinction award from the Ministry of National Culture.

CHAPTER 1

Sustainable Strategies against Tuberculosis

Dzulkifli Abdul Razak

The President of the European Research Council's Scientific Committee, Prof. Kortis C Kafatos, recently reaffirmed that a child dies every 30 seconds in the world and that the majority of victims of malaria are in the age group of 5–10 years, mostly in Africa. He was speaking at the Centre for Cellular and Molecular Biology in Hyderabad on 26 November 2008, and was quoted as saying: 'It is not the financial meltdown; a major challenge would be the task of controlling the infectious diseases like malaria and HIV which are the major scourges of humanity.' After all malaria has existed from ancient times and is not about to be eliminated easily.

To be sure, tuberculosis (TB) is another of such scourges. According to the World Health Organization (WHO) recently, despite the discovery of a cure half a century ago, TB remains the leading infectious disease killer of adults after HIV/AIDS (human immunodeficiency virus/acquired immune deficiency syndrome). More specifically, in some Asian countries such as Cambodia, China, the Philippines, and Vietnam—some of the countries most affected by TB—it is a top killer (1).

To make matters worse, only 1 per cent of the estimated 150,000 people with multidrug-resistant TB (MDR-TB) in WHO's Western Pacific Region, for example—which covers East Asia and the Pacific—are getting appropriate treatment. Each untreated TB patient could infect 5–10 people a year. While MDR-TB may not cause an immediate outbreak of disease, it reportedly has a heavy, long-term toll, being a chronic, lingering, wasting disease. Some compared this to what AIDS was a decade ago in causing a slow and painful death. Formerly, TB was known as 'consumption' for this reason. Like HIV, MDR-TB too kills working-age adults and causes poverty.

Reportedly, MDR-TB raises the risk of a TB epidemic that would be costly and complex to control and consequently would only make the achievement of the Millennium Development Goals (MDGs) even more difficult. In fact, drugs used to treat MDR-TB can be about 100 times more costly than the regimen for normal TB. Among WHO regions, comparatively, the Western Pacific Region has the largest number of MDR-TB cases, although the concentration of cases is higher in parts of Eastern Europe. In China and the Philippines, MDR-TB is claimed to be a serious problem, followed by in Mongolia, the Republic of Korea, and Vietnam, where it is somewhat of greater concern.

It is not surprising, therefore, that recently WHO warned that should there be a failure of Asian nations to combat the spread of highly lethal, drug-resistant strains of TB, it could be a threat to global public health security. The then WHO Regional Director for the Western Pacific, Dr Shigeru Omi, was quoted as saying, 'MDR-TB does not stop at borders. An uncontrolled local epidemic threatens the stability of global health security. TB anywhere is TB everywhere.'

Such is the potential threat of TB as another human scourge. Furthermore, given the billions of people travelling on airlines every year, and the internal migration of millions, diseases are on the move. 'We are more vulnerable than ever to the MDR-TB threat,' said Dr Omi when speaking to health ministry officials from countries with a high TB burden, global TB experts and representatives of donor agencies in Tokyo; to review progress and plan policies at the 6th Technical Advisory Group Meeting to Stop TB in the Western Pacific Region, in July 2008 (1).

That TB is a very contagious disease which easily spreads through the surroundings is perhaps best illustrated in an alleged 'scare' which occurred in 2007 when the so-called 'TB Man' managed to move almost unrestricted across the world while he was reported to have contracted MDR-TB. Usually, the concern is more commonly associated with coughing, sneezing, and spitting.

So pervasive is the situation that according to the WHO, someone in the world is newly infected with the TB bacilli every second (2). Overall, one-third of the world's population is currently infected with the TB bacilli. It is estimated that the number of deaths due to TB in 2005 and 2006 remained relatively unchanged at about 1.5 million people annually. In addition, another 200,000 people with HIV died from HIV-associated TB.

In 2006, WHO estimated that the largest number of new TB cases occurred in the South-East Asian region, which accounted for 34 per cent of incident cases globally. However, the estimated incidence rate in sub-Saharan Africa is nearly twice that of the South-East Asian region, at nearly 350 cases per population of 100,000. The highest mortality rate per capita is in Africa.

Table 1.1 Estimated TB Incidence, Prevalence, and Mortality, 2005

WHO Region	Incidence ^a						Prevalence ^a		TB Mortality	
	All Forms			Smear-positive ^b			Number ('000s)	per 100,000 pop	Number ('000s)	per 100,000 pop
	Number ('000s) (per cent of global total)	per 100,000 pop	Number ('000s)	per 100,000 pop	Number ('000s)	per 100,000 pop				
Africa	2,529 (29)	343	1,088	147	3,773	511	544	74		
The Americas	352 (4)	39	157	18	448	50	49	5.5		
Eastern Mediterranean	565 (6)	104	253	47	881	163	112	21		
Europe	445 (5)	50	199	23	525	60	66	7.4		
South-East Asia	2,993 (34)	181	1,339	81	4,809	290	512	31		
Western Pacific	1,927 (22)	110	866	49	3,616	206	295	17		
Global	8,811 (100)	136	3,902	60	14,052	217	1,577	24		

Source: WHO, <http://www.who.int/mediacentre/factsheets/fs104/en/>

^a Incidence—new cases arising in given period; prevalence—the number of cases which exist in the population at a given point in time.

^b Smear-positive cases are those confirmed by smear microscopy, and are the most infectious cases.

Pop indicates populations.

In 2006, there were an estimated 9.2 million new cases of TB, that is, an increase from 9.1 million cases in 2005, supposedly due to population growth. India, China, Indonesia, South Africa, and Nigeria rank first to fifth respectively in terms of absolute numbers of cases (3). WHO launched in 2006 the new Stop TB Strategy known as the Global Plan to Stop TB 2006–2015, a programme which is aimed to be implemented over 10 years. The plan is intended as a comprehensive assessment of the actions and resources needed to implement the Stop TB Programme.

Although the majority of cases are said to involve many Asian and African populations, developed countries are increasingly not spared. This in part is linked to the increasing number of people contracting the disease due to their immune system being compromised by HIV/AIDS, immunosuppressive drugs, or substance abuse.

In other words, the strategy to realize the MDGs—namely, goal number 6, target 8: Halt and begin to reverse the incidence of TB by 2015 where TB prevalence and death are reduced by 50 per cent relative to 1990—could still be a daunting one. A major challenge is that by 2050, TB is expected to be eliminated as a public health problem (namely, one case per million population). In short, the issue of equity, accessibility, availability, affordability, and quality is of paramount importance to be embraced in its totality, without being biased to just one or a few of them.

Fortunately, according to the WHO (2), given the current trend, global TB control with respect to surveillance, planning, and financing, will see the MDG 6 being achieved well before the target date of 2015. Reportedly, four regions are on track to halve the prevalence and death rates by 2015 compared with 1990 levels, in line with targets set by the Stop TB Partnership. Both Africa and Europe are not on track to reach these targets, following large increases in the incidence of TB during the 1990s. At current rates of progress these regions will prevent the targets being achieved globally (3).

Overall, however, there are several signs that global progress in TB control is slowing and that there are parts of the world where much more needs to be done to achieve the global targets that have been set. In China and India, progress in case detection reportedly decelerated globally in 2006 and then began to stall. The 2008 Report suggests that we require a renewed effort to increase the rate of progress in global TB control in line with the expectations of the Global Plan, backed up by intensified resource mobilization from domestic and international donors.

In the 12th annual WHO report on global TB control (4), Dr Margaret Chan, WHO Director-General, suggested that in order to make progress, public programmes must be further strengthened, as well as to fully tap the potential of other service providers. She declared: ‘Enlisting these other providers, working

in partnership with national programmes, will markedly increase diagnosis and treatment for people in need.⁷

In fact, the report reasserted that the epidemic could further slow down the progress of TB control. Two important barriers were highlighted—firstly, MDR-TB has reportedly reached the highest levels ever recorded, whereas, only an estimated 10 per cent of people with MDR-TB worldwide in 2008 were provided with treatment. The other barrier is the fatal combination of TB and HIV, which is fuelling the TB epidemic in many parts of the world, especially in Africa. It is claimed by the report that almost 700,000 TB patients were tested for HIV in 2006, up from 22,000 in 2002—a sign of progress in the plan to control the disease, albeit still far from the 2006 target of 1.6 million set by the Global Plan to Stop TB 2006–2015.

‘The report tells us that we are far from providing universal access to high-quality prevention, diagnostic, treatment and care services for HIV and TB,’ said Dr Peter Piot, Executive Director of UNAIDS, the Joint United Nations Programme on HIV/AIDS. ‘Clear progress has been made but we must all do more to make a joint approach to reducing TB deaths among people with HIV a reality.’

Indeed, according to the HIV/TB Global Leaders Forum (9 June 2008) at the United Nations in New York, with the emergence of drug resistant strains of TB, which are particularly lethal in populations with high rates of HIV infection, HIV/TB has become a global security issue. And, every three minutes a person living with HIV dies of TB, made worst by the fact that drugs, diagnostics, and vaccines currently available are not appropriate for people with HIV/TB coinfection. In short, these are major constraints for the achievements of the relevant MDGs as discussed below.

Furthermore, TB budgets remained flat in 2008 in almost all of the countries most heavily burdened by the disease. In light of the 2008 targets set by the Global Plan to Stop TB, the funding shortfall for these 90 countries was about US\$1 billion. Given the impact of the deepening financial crisis around the world, this figure may not even be realized, as the numbers of competing interest for ‘bailouts’ increase tremendously.

WHO estimated that US\$4.8 billion was needed for overall TB control in low- and middle-income countries in 2008, with US\$1 billion for MDR-TB and XDR-TB (extensively drug-resistant TB). But there was a total finance gap of US\$2.5 billion, including a US\$500 million gap for MDR-TB and XDR-TB, according to a WHO release (26 February 2008) based on drug-resistant TB survey (5).

Appropriately enough, during the 2008 World TB Day on 24 March, Dr Jorge Sampaio, former President of Portugal and the UN Secretary-General’s Special Envoy to Stop TB, called for enhanced leadership to address TB/HIV.

Indeed apart from MDR-TB, addressing TB/HIV, MDR-TB and other challenges require much greater action and input, they being part of the United Nations MDGs relating to TB (Goal 6; Target 8).

It is in this context that this compilation is undertaken jointly and generously by renowned experts and foremost authorities on TB research worldwide. Through the evidence-based opinions, well-articulated arguments and up-to-date information presented in this compilation, it is hoped that they will be compelling to persuade more leaders to make a firm commitment to halt and reverse the global TB epidemic as expressed in MDG 6: Combat HIV/AIDS, malaria and other diseases, including TB. More significantly, there is barely five years left before the conclusion of the MDG in 2015, and unless there is a firm political will demonstrated across the globe, any approaches, no matter how well thought of they are, cannot bring about any sustainable solution to the prevailing pressing problem. Here is where leaders should be resolute to act in finding new strategic vision to combat the growing TB menace in view of the WHO Stop TB Strategy and the Stop TB Partnership's Global Plan targeted for completion by 2015.

In short, the overarching purpose of this compilation is to generate sufficient debate on key issues in order to set the scene on what needs to be done swiftly so as to meet the 2015 MDG TB-related control targets, even indirectly. It is important to keep in mind that the World Health Assembly in 1991 planned to achieve the target set then—a TB case detection rate of 70 per cent and a treatment success of 85 per cent among detected cases—by 2000. Unfortunately, it was later deferred to 2005 in recognition of the fact that more time was needed to meet the set global targets. This is despite that, between 1991 and 2005, there were allegedly many chances available to put TB under control. Data on progress towards achieving the TB targets, collected and evaluated since 1995, were presented to WHO in May 2007. However, many more issues emerged making it more difficult to sustain whatever has been achieved to date. The prevailing deterioration in the socio-economic situation worldwide can be expected to widen the gap of access and equity due to the increasing cost of treatment. With the changing climatic conditions and global warming, additional constraints are bound to influence the provision of health care all round putting further impediments on available resources.

Against such uncertainties, the global TB strategy must embrace the notion of sustainable development aimed at ensuring efficient control of TB far beyond just the present generation. In other words, it must be sustainable well beyond the MDG end point in 2015. Through the numerous relentless mission-oriented efforts undertaken thus far, we must be ready to further enmesh in the new as well as emerging challenges to solve local issues for global problems with the confidence to make a lasting difference at all levels.

The catch-all term *sustainability*, intended as a platform to create a better future, denotes the ultimate overarching concept of meeting ‘the needs of the present without compromising the ability of future generations to meet their needs’ as contained in the Brundtland Report of 1987 (World Commission on Environment and Development) (6). This would also mean that in order to sustain the implementation of a successful effort, it is important to consider the wider context of the health system for example (7). One of the six components of the Stop TB Strategy, for instance, emphasizes on contribution to the strengthening of health systems where national TB control programmes can significantly contribute to overall strategies to advance financing, planning, management, information and supply systems, and innovative service delivery scale-up. At the same time, its intent is to enable and promote research to improve the current tools used to control TB, including practices and disease elimination, which will depend on new diagnostics, drugs, and vaccines. In a sense, it is about engaging all care providers, not confining to public sector and practitioners alone.

In other words, for the TB control programme to be sustainable, the health system will need to be improved in tandem to enable the relevant services to be reconfigured so that incentives are created to reward improvements in efficiency and outcomes as suggested by the Russian experience (8).

Sustainability, broadly defined thus, breaks down the silos around disciplines, be it economic development, environmental and natural resources management, food and energy production, and sociocultural dimensions and lifestyles (namely, the social sciences and humanities, including the arts, as illustrated in this compilation)—in ways that makes transdisciplinary engagement possible—to allow the highest level of interactions and cross-fertilization of ideas. It would even be better if it can serve as a basis for policy decision-making (9) by promoting the appropriate level of incentives for others to seek out, research and innovate on the use of TB-related diagnostics and treatment services. Like Pasteur’s revolutionary work on microbiology, we must equally inspire to lay the foundation of new ‘sustainable science’ in the era that requires knowledge to converge as an integrated whole so that it can offer better alternatives and solutions.

It is within this framework that USM (Universiti Sains Malaysia) focuses its vision of a sustainable tomorrow on the back of higher education reform, while keenly promoting values such as quality, equity, accessibility, availability, appropriateness, and affordability (QE4A) as the universally accepted optimal end points. Concomitantly, USM will comprehensively embrace the protection of the multiple ecosystems, the conservation, restoration, and development of dwindling resources—natural, human, and socio-economic—as well as many others for the same purpose.

In fact, USM is poised to facilitate the meeting of existing (e.g. Millennium Development Goals, Education for All, Education for Sustainable Development) and other future global and universal aspirations towards the upliftment of the billions trapped at the bottom of the quality of life pyramid (10). They, without doubt, are the most vulnerable groups who, if not comprehensively engaged, will tend to derail the health programme no matter how much success has been achieved thus far, just because of the sheer number that is involved—an estimated 4 billion, or two-thirds of the world population. Otherwise, it poses a variety of barriers that will make the programme unsustainable.

As most critical success indicators are linked to factors such as mortality rates, life expectancy, disease prevalence, nutritional indicators, income and education levels, each of these can act as additional barriers if not appropriately catered for. Some even regard these as basic human rights that must be met before the problems related to TB can be totally solved. This in turn calls for a defined criteria or standards, so basic that the chances of eradicating TB are greatly enhanced. Ultimately, this is why we and others are interested in solving issues related to diseases like TB, or more generally neglected tropical diseases, to uplift the quality of life of the majority of the population.

Moreover, by practising transdisciplinary approaches, the locus of measurements, and thus definition, takes into account inherent factors not only of health, but also the ecology and socio-economy, such that it provides a more comprehensive and effective alternative solution towards improving the quality of life of the so-called 'bottom billions'. It is also more empowering when health is intricately linked to education as well as to the socio-economic and ecological imperatives.

Otherwise, the implications can be even more serious considering that the 4 billion people is said to be living on less than US\$3 a day. By focusing on curative approaches alone, they can remain a vulnerable population. Furthermore, from 1975 to 1999, only about 1 per cent (or 13 out of 1,393 drugs) of new chemical entities (NCE) marketed were for neglected tropical diseases. From the 1556 NCEs launched till 2007, only 21 against TB and 18 for malaria treatment would be developed. One major reason is that neglected tropical diseases in general do not represent a lucrative market for pharmaceutical companies and are underfunded as far as new drug development is concerned.

With such a trend, therefore, the emerging concept of sustainable health (11) should be given due importance more specifically. This could be as straightforward as maintaining good nutrition, since the link between nutrition and TB has been clarified recently. Malnutrition can increase the risk of developing TB, according to Dr Soumya Swaminathan of Chennai's Tuberculosis Research Centre (TRC) in India (12). It is therefore suggested that nutritional supplementation be added to TB treatment, recognizing the likely multiple

beneficial effects that food and nutritional support can give during TB treatment, resulting in better TB treatment outcomes. A survey carried out by TRC showed that the incidence of TB was fourfold higher in populations with the lowest standard of living in the community as compared to those in the highest income bracket. Although there appears to be sufficient evidence to suggest that improving the nutritional status of people reduces TB incidence, this has never been given priority as an infection control measure. Seemingly that danger that we often fall into is the overemphasis on mono-factorial measurement in a very limiting way.

A case in point (12): a study in Harlem in the 1940s further illustrated the importance of nutritional well-being. Family members of half of the TB patients studied were found to develop TB less frequently when given vitamin and mineral supplements as compared to those families without the supplements. Given that globally about 8.8 million new cases and 1.7 million TB-related deaths occurred in 2007 (India alone accounted for one-fifth of the global TB burden and 400,000 deaths), improving nutritional status could prove to be a worthy strategy to complement all other existing efforts (e.g. DOT—directly observed therapy, short course as part of the Stop TB Strategy).

Conclusion

The World Health Report 2008 has duly noted that many health systems have lost their focus on providing equitable access to care and in their capacity to meet the needs and expectations of people, especially the poor and marginalized groups, more so the bottom billions. This compilation serves as a timely effort on the control of TB to illustrate and highlight the many issues involved, and the resulting complexities that must be faced in seeking new solutions and alternatives as in the case of the concept of sustainable health. Dependency on any one mainstream approach is no longer tenable as we further appreciate the multidimensional aspects of the problem in an increasingly ailing planet. Through empowering people with TB, the support services and communities showed that they can undertake some essential TB control tasks, especially when networked to mobilize civil societies and political will towards a sustainable TB control programme.

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