

*Review*

## Public health, genomics and biopolitics - human security vis-à-vis securing 'exception'

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'Biopower' has been the building block to address human beings as global mass with liberal government practices. The sovereign power continuously categorizes the population between 'political life' and the 'other' mute bearers of 'bare life'. To ensure human security to all, threats to human security have been broadened beyond the realm of military security. Equitable health and development, therefore, should constitute a central goal of human security. Global health has always been economic opportunity and security -sensitive to United States .Genomics can explain the complex interactions of genetic and environmental factors in health and disease .The post-genome biology have been characterized by higher stakes, lower threshold and proven capabilities. If the dual-use Genomics is left without vigil and intervention by global governance since its very take-off, it may usher in an era of catastrophe, much more disastrous than that of genetic engineering. The cause of 'war against terror' has transformed biomedical research into a subset of weapons development. The military -industrial elites have been so powerful that opportunities for a counter veiling power has been precluded. The intrinsic nature of knowledge and its ever extending horizons have engendered the planetary arena.

**Key words:** Genomics, public health, human security, biopower, rule of exception.

### BIOPOLITICS AND SECURITY

With the emergence of biology, as Foucault observes, 'life' enters into history. Classical political theory, based on sovereignty, contract, right and duty, thus has been contested by Foucault with 'biopower' to discipline and control the individuals and their bodies. The study of hidden dynamic mechanisms of life, the knowledge and the expertise, termed by Foucault as 'biopower', is the building block to address human beings as global mass with liberal government practices. Foucauldian framework urges the passage from 'territorial state' to 'state of its population' capturing the nation's health and biological life as a problem of sovereign power (Foucault, 2003). The sovereign power, according to Agamben, continuously categorizes the population between 'political life' and the 'other' mute bearers of 'bare life'. Sovereignty's 'power over life' is exercised by the rule of the exception-a threshold of indeterminateness between factual situation and a situation of right (Agamben, 1998).

After the second World War, United States of America (USA) emerged as the most powerful in the Western World challenging socialist block led by Soviet Russia. The security studies community had become obsessed with the new sub-discipline 'cold war.' This virtual war continued for about long four decades till the socialist block had broken down in early 1990s. It was not surprising that the hotspots of cold war were different locations in the third world where teeming millions were aspiring for critical minimum basic needs in newly independent societies (Wenger and Zimmerman, 2003).

Brand Commission in 1979 had put forward a new defensive concept of security enlarged to capture 'hunger, disease, poverty, environmental stress, repression,' and terrorism, all of which endangered human security as much as any military provocation. In its report 'Common-Security', the Palme Commission suggested that military based notion of security be transformed through greater

international cooperation, transparency, disarmament, conversion, and demilitarization. "A global agenda for change"- this was what the World Commission on Environment and Development was asked to formulate. The achievement of common and mutually supportive objectives would take account of the interrelationships between people, resources, environment, and development. United Nations Conference on Environment and Development or Rio Summit, 1992 had been a great stride in this context.

United Nations Development Programme (UNDP) 1994 Report has outlined the concept of Human Security. According to this approach, security is an integral approach that covers peace, security, equality, human rights and development as interrelated and affecting each other. To ensure human security to all by 'protecting individuals and communities, a second influential report has been published in 2003 by the Commission on Human Security, co-chaired by Amartya Sen and Sadako Ogata. Threats to human security have been broadened beyond those traditionally considered in the realm of military security or nation state security. The definition human security includes any threat that challenge the security of an individual or people or population. Good health is "intrinsic" to human security, since human survival and good health are at the core of "security". And of many health problems, those considered most germane to human security are health crisis during conflict and humanitarian emergencies, infectious diseases, and the health problems of poverty and inequity. Finally, those health threats that generate "spillover effects" are also prioritized. A classical example of such crises with high externalities is transmitted infectious diseases. The securitization of health implies an implicit effort to argue for higher political and budgetary prioritization for health as a sector. The health problems confronting the world's poorest people, unfortunately, is the cluster to health challenges that encounters the greatest resistance of acceptance as security threats. Common childhood infections kill more than 10 million annually, most of which are preventable with simple and inexpensive vaccines. Childhood malnutrition among the poor is associated with at least half of the preventable childhood deaths on the world. Tuberculosis and malaria each kill about 2 million and 1 million people annually; nearly all of these deaths are entirely preventable. Equitable health and development, therefore, should constitute a central goal of human security (Chen, 2004).

The concept of human security has been welcomed as a 'new discursive formation' that blends and synergizes security, development and humanism. It also reveals the power relations within the community of security academics beyond the definitional debate in terms of agency, normalcy and the scope for intervention (Grayson, 2008). Thus it was doubted that with the widening of the concept, 'security' may diminish its political salience (MacFarlane, 2004). Convergence of international

security with social security and civil liberties may not provide a congenial atmosphere for normal politics (Buzan, 2004). All encompassing human security may pave a new form of biopolitics and means of control over 'bare life' betraying the "admirable intentions" of Human Security (Berman, 2007). Grayson, on the other hand, asserts that the concept of human security concerns with 'the value or non-value of life as such' by the rule of the exception (Grayson, 2008).

Buzan, Weaver and de Wilde (1998), representing the Copenhagen School, have provided with a new framework for security analysis. There may not be any real existential threat and still an issue may subjectively be presented as a threat by speech act. Health is defined in terms of diseases internationally spread through bioterrorism or originating from acute epidemic infections. Post-genome breakthroughs in life sciences have provided the knowledge for systematic weaponization of pathogens and natural toxins. Contemporary biowarfare is thus a deliberate public health threats which, along with natural pandemics, have potential to endanger human livelihood at a catastrophic scale transcending national borders. The theoretical stance of Copenhagen School thus justifies the exceptional emergency measures to ensure comprehensive health security at transnational level.

Thus one of the leading proponents of 'global health diplomacy' initiative, Thomas E. Novotny advocates strongly for vesting global health leadership in preparedness and health diplomacy to US Department of Health and Human Services (HHS). Global health has always been economic opportunity and security-sensitive to US. It is the moral responsibility of the USA government to address the global health challenges as public health preparedness transcends surveillance, war against terrorism and political policy and provide a much broader exposure to twenty-first century world (Novotny, 2006).

The Global Health section of HHS has many bilateral partnerships with countries such as South Africa, Mexico, and Egypt and multilateral partnerships with topical orientations that also serve USA domestic interests. Following 9/11, this move was further expanded to include preparedness of the public health system and a wide network of other agencies for potential terrorist attacks. It might be timely to embark on an open debate on the priorities and approaches and to analyze in detail the hegemonic power the USA in the global - health arena. The US has stopped its \$34 million contribution to the United Nations Population Fund as per the global accord reached at the International Conference on Population and Development in Cairo in 1994, in which USA was an active participant and signatory. It has demanded the setting up of "a new delivery system" rather than relying on UN agencies and the World Bank in connection with the Global Fund to Fight AIDS, Tuberculosis, and Malaria. These are illustrations of the present US tendency to move out of multilateral approaches and toward reinforcing global unilateralism. It has supported industry

positions during the negotiations on TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement, and it sided with a group of non-democratic governments at a UN Special Summit on Children on matters of reproductive health. Increasingly, it seems that the US domestic agenda is driving the global agenda (Kickbusch, 2002).

US Secretary of States, Ms. Condoleeza Rice, in her recent reflections on American realism for a new world, have highlighted the importance of human rights and democracy 'across entire societies, without exclusion, repression or violence (Rice, 2008). This declaration may navigate towards initiating an open debate on USA's priorities and approaches in the global public health initiatives.

### **PUBLIC HEALTH SCENARIO AND AVIAN FLU**

With proliferation of globalization the travel of human and freight poses a moderate 'on-board' risk. Health is not a primary objective in global trade agreements. Health concerns are used only to impose trade restrictions which may have heavy toll before World Health Organization (WHO) or national governments take steps. Accelerating pace of global trade demands, along with lower tariffs and other competitive incentives, more efficiency by consolidating processing. The consolidation of feedlots and slaughter houses brought and spread new infections. Doha Declaration on the TRIPs agreement, 2001 and public health 2001 has provided the governments with rights to grant compulsory license in the event of a crisis. USA and particularly Canada have frequently availed this clause while opposing its use by lesser developed countries. (Olivera, Bermudez et al., 2004, cited in Kimball, 2006: 153). The International Health Regulations (2005) has been adopted with effect from June, 15, 2007 by World Health Organization (WHO). Public health infrastructure of developing countries can not match the integrated surveillance by WHO. Thus WHO's new initiative seems to benefit mainly the industrialized nations through the provision of early warning information or scientific data (Calain, 2007).

Indonesia, at the centre of the avian flu storm, has stopped sending virus samples to the World Health Organization in February, 2007. Indonesia has blamed WHO of passing the samples to pharmaceutical companies to make vaccine from it and sell it to countries that can pay. Indonesia is not one of them, and neither are the other countries suffering badly from avian flu. Indonesia is treating this as a case of biopiracy. The effective antiviral agent Tamiflu is produced by Hoffmann-La Roche and Co. under patent protection in its only production facility situated at Europe and produces to demand. Thus emerging antiviral therapy production may not gear up capacity to cater the needs of Asian countries. Indonesia demands material transfer agreements that ban commercial use except by prior agreement.

Indonesia is essentially exercising its sovereign control and property rights over sample collected within its territory (Fidler, 2007).

Foucault's Governmentality theory is founded on political rationalities and a complex notion of power to study the practices of governing as an empirical phenomenon and the mentality integral to various modes of governing. The framework can be explored to reveal the power-politics centering round WHO's Global Influenza Surveillance Network (GISN). Indonesia, has stopped sending virus samples to the WHO in 2007 as the WHO collaborating centers are providing the samples to vaccine manufacturers through Material Transfer Agreements for surveillance of wealthy countries. These amount to biopiracy as flu virus have been patented. Some developing countries have called for a responsible global action for sharing of flu viruses and resultant benefits according to provisions of International Health Regulations, 2005. United States claim that flu samples should be shared rapidly without pre-conditions. The WHO's 2005 relevant guidance has been scrapped immediately and replaced by 'best practices' to legitimize United States' stance. Poor countries entangled with the catastrophe and primitive surveillance infrastructures have not been provided with required technology-transfer for vaccine self-reliance. This novel biocolonialism substantiates how institutions transform power-relations into stealth weapons of domination, as visualized by Foucault in national governmentality (Mukhopadhyay 2008a).

### **GENOMICS, INNOVATIONS, AND DIVIDES**

The 'Biopower' in contemporary context comprise of three elements-knowledge of vital life processes, power relations that aims at human and the modes of subjectification (Rabinnow and Rose, 2006). The politics of 'life itself' shapes how biopower organizes proliferating discourses and thus makes technologically mediated life contested politically (Rutherford, 1999).

Twentieth century has ushered in an era of biorevolution. Rediscovery of Mendelian heredity in 1900, Crick and Watson's publication on structure of DNA in 1953 and completion of the first draft sequence of the human genome in 2000 have provided human race with milestone scientific breakthroughs. The project revealed genetic programme of many organisms. Genomics, while often defined as the study of genomes, can in many respect be better understood as a high-throughput which refers to a technological capacity (usually automated) for rapid and extensive (global, or at least large-scale) identification and measurement of biomolecules in genomes.

Massive quantities of toxin agents are polluting the environment at the dawn of new millennium. But with the decoding of Human Genomes, required breakthrough have enabled the proper understanding of gene environment interactions involved in developing complex diseases. Thus, evidence has come out that the combined

impact of drugs and environmental hazards to which some 7000.00 gulf war veterans were exposed indicate a special part of genome shaping the immune system. Dr. Howard Urnovit has described the Dynamic Genome in 2003 to establish the correlation between nuclear and chemical weapons deployment for the last hundred years and associated occurrence of flu-like pandemics (Ho, --). Marked increases in the incidence of thyroid cancer have taken place over a relatively limited time span of observation across the republic of Belarus since the 1986 Chernobyl reactor accident (Mahoney et al., 2004).

Genomics can explain the complex interactions of genetic and environmental factors in health and disease. This now allows researchers to choose a panel of a few hundred thousand single nucleotide polymorphisms (SNPs) that ably represent variation across the whole genome began to signal that they were finding SNPs and filing patent applications. This was the situation that Michael Heller and Rebecca Eisenberg apprehended in their classic 1998 article on the "anticommons"-a situation when many an exclusive rights upstream needed to be assembled, thus thwarting the development of final products like drugs, vaccines, biologic (Heller and Eisenberg 1998). This threat awakened some companies and scientific institutions to forge an alliance to defeat patent rights in SNPs. SNP Consortium was established in US to search SNPs and file patent applications and thus to preempt the possibility of patents obstructing innovations. Genomics has immense potential to achieve the UN Millennium Development Goals (MDGs). But in reality, problems of access to knowledge encountered by developing countries' scientists have been related to neo-mercantilist policies of developed countries concerning scientific knowledge and information and also to the social dynamics centering round scientific enterprises in developing countries (Forero-Pineda and Jaramillo-Salazar, 2002).

Inability to implement even known solutions is the main reason for the failure to achieve access and equality in public health initiatives (Kruk 2007). Biotechnology and eventually, genome science had emerged early in the US, primarily because of state-patronage attuned to capital's need. The ultimate objective is to secure US competitive edge in global market (Loeppky 2005a). A survey of patent and literature on SNPs, as on 2001 confirms the dominance of US scientific research institutions and prolific patenting of SNP technology by a handful of US companies (Caronini et al., 2003). The treasure of genetic history and make up of population are becoming an attractive research target for biomedical researchers and pharmaceutical corporations. Fast mobility of pathogens may interact with very slow transfer of knowledge and therapies in the global arena. Life becomes the subject and not the object of enquiry. The bio-centric perspective affects the social structure and social relations. Mode of subjectification may consider genotypes and phenotypes as global categories. Big

Parmaceuticals may initiate market segmentation strategy accordingly (Mukhopadhyay, 2007). Eugenics may flourish in a novel way. The triumph of biotechnology capitalism under neo-liberal globalization has engendered extreme anxiety about our 'post human' destiny (Fukuyama 2006). Bio-power and necro-politics have been observed as two sides of the same coin (Mbembe, 1997).

## DUAL-USE DILEMMA IN BIOMEDICAL RESEARCH

Though science and technology have always been dual-use in nature, advances in biology, especially in post-genome era, have been characterized by higher stakes, lower threshold and proven capabilities. Thus the underlying mechanisms of human health can be investigated as the interplay between genotype, environment and nutrition (Cangelosi et al., 2004).

Breakthroughs in human and pathogen genomics have positive benefits to global health. But it is also a fact that as more is known about the genomes of pathogens also increases the possibility of deploying the knowledge in malign purposes. This raises significant questions about how to limit freedom of scientific research and more broadly about what governance tools can mitigate against the risk of bioweapon development and bioterrorism (Suk, 2006). The discovery and genetic definition of virulence factors indicating pathogenic properties of a microorganism could manipulate those properties to enhance their impact or transfer those properties to benign microorganisms. The sequencing of entire human genome may be able to create genetic markers in a particular population and thus can provide a robust, molecular base physiology and medicine and the marked population may be vulnerable to genetic weapons as well.

The scientists at State University of New York at Stony Brook had built a poliovirus from scratch in 2002 by using genomic information available in the internet and custom – made DNA material through mail order. The journal 'Nature' had published an analysis of full genome sequence of the 1918 influenza virus which killed about 50 million people (Von Bubnoff, 2005). The University of Pennsylvania researchers similarly engineered a small pox protein from vaccine and found how small pox evades human immune system. In 2003, The United States National Institute of Health (NIH) has initiated a multi component grant to create an encyclopedia' of innate immune system. This has immense advantage in developing therapies for infectious diseases. The information could pave malign attacks on the innate immune systems (Steinbruner and Harris, 2003). In 2007 scientists are able to cause severe disease and death in mice by infecting them with an influenza virus strain available from published sources that caused the 1918 influenza pandemic (Kobassa et al., 2007).

The series of experiments and their publications describing the modifications and improvements in disease causing agent has been facilitated by a more fundamental transformation that the life-sciences are undergoing. The decoding of human genome and its sequencing paves a new scientific sub fields, like system biology. Breakthroughs in post genome biology has changed the focus of proliferation problem from biological or chemical warfare agents as the object of malign manipulation to the physiological target in the human body as the object of attack (Nixdorff, 2005).

Synthetic biology enables rational adjustment of genes beyond naturally occurring sequences. It can design and rewrite the complex networks of genes inside the cell. Eventually, synthetic genes could replace recombinant technology in a very cost-effective manner. Synthetic biology has opened up immense possibilities for vaccines, drugs, hydrogen fuel, etc. and parallel tensions for abuse or inadvertent disasters. Post-Genome advances in high-throughput automated DNA sequencing has established that specific genetic variation among populations contributes appreciably to differences in gene expression phenotype. (Spielman et al., 2007) The drug 'BiDil' exclusively meant for Afro-American cardiac patients has been developed. Thus synthesizing ethnic bioweapons may not be far behind.

In April, 2007, the US National Science Advisory Board for Biosecurity issued a draft report on Biosecurity that did not address explicitly, concerns to synthetic biology. In a Commentary published in 'Nature Biotechnology', a panel of scientists and representatives from DNA-synthesis industry in the US Federal Bureau of Investigation present their views and recommendations on oversight of DNA-synthesis activities. Two major sources of concerns are expressed by the authors with regard to the combination of facile DNA-synthesis, very short delivery time and internet-based communication: 1) the processes of design, assembly and use of engineered genetic material can be 'decoupled' and performed in a fragmented way across different locations, rendering tractability of the overall process difficult; 2) DNA-synthesis may provide a workaround strategy to circumvent the existing physical barriers and containment strategies that currently regulate access to pathogens. The framework should promote and later compel responsible behavior on the part of users of DNA-synthesis technology. It should be sufficiently simple and robust and promote sharing of operational wisdom throughout industry and government. The framework should foster and support international transparency and cooperation (Bügl et al., 2007).

Sometimes there is no dual use issue. Many projects possess 'homeland security' objectives. This is most clearly illustrated by non-lethal weapons – such as pharmacological calmatives that could quell a riot or pulsed energy projectiles intended to cause debilitating pain without long-term injury. Moreno observes that the "military-academic complex" has a long and profitable

future (Moreno, 2002).

## **SMALLPOX BIG STAKES**

It is alleged that Synthetic Biology has paved a robust and strategic platform of synthesizing viruses like small pox in a much simpler way. In 1994, WHO Ad Hoc Committee on orthopoxvirus infections had banned genetic engineering of virolo, the insertion of variola genes in other orthopoxviruses, and had required that variola DNA only be provided to non responding laboratories with WHO approval in tightly limited quantities. But this protection will be very limited if synthesis of variola genes is carried out elsewhere.

USA has been all along against restrictions of variola research. Its National Science Advisory Board on Biosecurity has proposed for lifting ban on such research in USA in 2006. USA has sought to weaken the framing the deadline for destruction of variola virus stock and WHO's efforts towards control over variola research (Tucker, 2006). WHO Board in January, 2007 has adopted draft small pox resolution. The resolution totally prohibits any research involving genetic engineering of the variola viruses. However, the clarification on synthetic genes is lacking. However, the US and Russia, which hold the remaining virus stocks in WHO-authorized repositories, have refused to destroy the virus stocks despite previous World Health Assembly (WHA) resolutions that have called for its destruction and have instead engaged in research involving the virus, without always sharing the outcome with other countries. In particular, the US persists in wanting to continue retaining the virus as well as distribute for certain purposes, fragments of the virus. It would be alarming if the US government interprets the previous WHA resolutions (which subject all smallpox research to WHO agreement and places it under WHO control) to exclude WHO control over synthetic smallpox DNA. This could easily give rise to synthesis and use of variola genes outside WHO knowledge and control.

Third world countries have been in favour of such ban and urged for destruction of living variola virus. With the development of various diagnostics and therapies, pox vaccine needs not to depend on variola virus. In the meantime, Variola Advisory Committee (VAC) 2006 meeting has started a process that may modify the rules set in 1994 concerning possession of and use of variola virus and its genes, by setting up a technical sub committee. This move supports allegation that VAC has been captive to US and, to a lesser extent to Russian interests. VAC has been lax in the exercise of its overnight and favoured small pox research agenda rather than to implement its mandate to build consensus on timing of destruction of virus stocks. WHO Executive Board, in its January, 2007 Meeting, has expressed anxiety over variola virus experiments with synthesized genes outside WHO approved repositories.

During the 59<sup>th</sup> WHA, a deep concern about control of variola virus has been heightened by Sandia National Laboratory's experiments with such virus within the public health bounds enforced by WHA Resolution 52.10. The laboratory is a part of US Department of energy with the historical mission of designing and testing nuclear weapons. Sandia's Clarification is that WHA has no jurisdiction over synthetic small-pox viruses (Hammond and Lim, 2005). The 60<sup>th</sup> WHA, May 2007 has resolved for a comprehensive review of all research undertaken on the variola virus in the beginning of 2010, and observations be presented in the 64<sup>th</sup> WHA in 2011. If the process results in a relaxation of the 1994 rules and the USA have already previously attempted to do so, this may result in a loosening of control over smallpox DNA possession. An effective process for the review and oversight of dual-use research in the life sciences requires a mechanism that is insulated from powerful political interests. In addition, the oversight process must be based on a common set of guidelines for identifying and assessing dual-use experiments and results that could pose serious risks for international health and security (Tucker, 2006).

After the eradication of small-pox in 1980s, there arose a great optimism about future. But the global public health scenario shocked the world with a reporting of first AIDS case in 1981. Since then, AIDS has been one of the cruelest challenges to human civilization along with emergence of more than 30 new infectious agents. The London Times on May 11, 1987 had published a report entitled "Smallpox Vaccine triggered AIDS, subsequently circulated in internet by Science editor Pierce Wright. The report suggests that AIDS appeared in Africa via accidental or deliberate vaccine contamination with the AIDS virus.

## **POSTGENOME BIOLOGY, WEAPONS AND PUBLIC HEALTH**

Historically, security from bioweapons and security from diseases had been addressed by two different types of actors both on domestic and the international level. Both WHO and BWC 1972 have overlapping responsibilities centering round this ultimate challenge to humanity.

During and after Second World War, biological weapons were developed by the leading Western powers. By 1960s, US, and former Soviet Union had large and active bioweapons programmes and as cold war tensions started to fade, Biological weapons (along its chemical counterpart) became serious concern for 'proliferation'. Bush Senior, administration in the same period was in search of a pretext to continue the massive military appropriation of cold war. The 'threat blank' was filled in April 1990, when Iraq became post- cold war threat. Rogue-state doctrine provided USA the opportunity to follow a double standard with respect to BWC- one

standard for the 'responsible self' and another for 'irresponsible other' (Wright, 2003). 'Biomania' has provided United States ample opportunity to yield bio-shield and provided a 'material foil'..... to bolster innovation-driven US economic clout" (Loeppky, 2005b). BWC had been initiated in 1972 amidst the bipolar diplomacy centering round 'turn-key' nuclear arsenal. But world changed radically in 1990s when USA became the strongest power in a unipolar world. Thus USA could lead the end of negotiations on BWC protocol in 2001. It has also been successful in influencing its allies to be concerned about controversial 'new terrorism' by non-state groups. Power and interests of US have shaped the new policy environment on global insecurity (Fidler, 2006).

A pandemic disease, maybe a natural outbreak or transmitted through a bioweapon programme, health security is essentially a transnational challenge. In the context of flu epidemic in Singapore in 2003, an 'ideal' bioweapon has been described as easily transmittable, difficult to detect, severe in consequences, overshadows the society with massive fear psychosis and sucks huge public resources (Enemark, 2005).

If the dual-use Genomics is left without vigil and intervention by global governance since its very take-off, it may usher in an era of catastrophe, much more disastrous than that of genetic engineering. In comparison to atom bomb, synthetic bio-weapon is easier to develop and deploy at a lower threshold. Thus the galloping advances in life-sciences and enabling technologies have given rise to broadening of threat-spectrum of same magnitude. BWC's traditional arms control approach has been proved to be inadequate. Biosecurity demands comprehensive deliberations into the unique transformations that are reshaping international community's trust with biological weapons and infectious diseases. Since the collapse of fifth Review Conference in 2001, policy efforts to have a new biosecurity governance have been initiated outside BWC. Thus monitoring of developments in biological sciences in the post-genome era, criminalization of development and deployment of biological weapons and up-to-date adoption of public health and surveillance network are being addressed by UN Security Council. US have strategic interests in clandestine bio-laboratories with scientists' self- management and the code of conduct (Fidler, 2006).

During the sixth Review Conference of BWC 1972, held in December, 2006, state-parties have deliberated how to re-orient the BWC process in the emerging scenarios of biosecurity governance. The synergic efforts of states, intergovernmental organizations, and non-state actors to protect the humanity and the ecology from pathogenic microbes whether abused, inadvertently released or occurred naturally. The collapse in 2001 of the Ad Hoc group's efforts to negotiate a legally binding verification protocol reveals the inherent weakness of BWC. The US biotech-pharmaceutical industry's concern for protection

of trade secrets is said to contribute towards US rejection of a verification protocol (Winzoski, 2007). Due to the failure to negotiate a Final Document during the Fifth Review Conference, these interpretations by BWC state-parties concerning scientific advances of relevance to the BWC have not been recorded in a consensual document. Sixth Review Conference in November, 2006 has achieved a modest progress. A significant agreement has been forged on the form and content of annual meetings to be held during 2007 - 2010. But some pertinent issues, such as transparency of biodefense activities, and inquiry of non-compliance, are not featured (Pearson, 2006).

The treaty-based regimes have thus been failed to capture many an emerging issues like, dissemination of breakthroughs in post-genome biology to produce drugs, vaccines and pathogens along with manipulation of physiological traits to activate therapies/pathogens more efficiently. Apart from states, various inter-governmental organization, non-state groups, block of states, etc. have emerged crucial stake-holders in biosecurity governance. The major world power including the US started securitizing naturally-occurring epidemics and thus prioritizing public health capacities. A variety of US Government agencies contemplating 'bioterrorism' with the possibility that it has already violated BWC. Development of offensive capabilities in the pretext of biodefense, risks undermining norms set by the convention. This ultimately risks accelerating bioweapons proliferation (Enemark, 2006). Bioweapon research and development in the US could trigger an arms race that it preaches to forestall. Security Dilemma was said to be root-cause of escalating cold-war. Security Pretence may make the planet more dangerous.

The power of military industrial elites of USA had been so widely spread through all sectors of society and government that opportunities for a counter veiling power were precluded. Globalisation had intensified this feature and US has emerged as the uncontested global force of protecting corporate expansion (Pilsuk 2006). Fordist production system was an integral part of military security during cold war as the material base for military power. Post-Fordism is congruent with globalization process implying greater interdependence among nations along with operations of individual production organizations. But in the long run security of globalisation depends upon military power with a territorial basis (Cox, 1996).

American Congress had christened the 1990s as the 'decade of the brain' from the vantage point of American realism for the new century. Subsequent Decoding of human genome has engendered focus of proliferation to physiological targets in the human body, including brain and nervous system. Epigenomics studies have discovered links between environment and mental health. A 2008 WHO report has called for global initiative towards neurological burden about to be an unmanageable threat to public health. Global health provides USA with both business opportunity and policy environment for security

pretence. US National Neuro-technology Initiative (NNTI) Act, 2008 has been introduced to promote research and development of drugs, diagnostics and devices relating to brain and nervous system injury/ disorder. Massive economic payoffs will have long-lasting implications for employment, infrastructure development and global leadership.

But America's public health preparedness extend from preventive approaches to preemptive strategies of trans-border counter-terrorism in the name of humanity. The technopolitical enterprise illuminating the strategic brain-self-society pathways integrates neuronal individuality with neurodiversity and neurosociality. Thus, US Defense Advanced Research Project Agency (DARPA)'s Defense Sciences Office, with multibillion dollar budget and various projects, many of them being in the pipeline, has been engaged in exploring and manipulating brain-behavior relationships in the pretence of homeland security. DARPA's 'operational neuroscience' agenda is to explore and enrich 'a laboratory discipline' to revolutionize the 'capabilities important to our war fighters'. The unethical CIA and Army research into colonizing minds of enemy agents and 'other' populations has engendered horror stories of current interrogation and torture practices by the CIA, the military and their "outsourced" partners. The potential of neurology-derived technologies to enhance/retard human capabilities is to invade the privacy of human thought and infringe on the independence of human minds. The pathologization of suspected terrorists imprisoned at the US military base in Guantanamo Bay, Cuba is to subject a group of 'bare-life' as mad, deviant and dangerous by coercive measures in the name of security and democracy (Howell, 2007). The cause of 'war against terror' has transformed biomedical research into a subset of weapons development (Burghardt, 2008). 'Neuropower' encompasses knowledge of vital life processes, the power relations aimed at humans, including shaping the courses of neuroscience and neurotechnology and the mode of neuronal subjectification.

## **ASSEMBLING SECURITY IN AN ECOLOGY OF EXCEPTION**

The intrinsic nature of knowledge and its ever extending horizons have engendered modern risk society, as Luhmann (1993) observes. More science engenders more options for harmful uses. Berkley anthropologist Paul Rabinow, following Luhmann (1998), has cautioned against 'assembling ethics in the ecology of ignorance'. Ethics is a question of power and rhetorical skills as examples of Asilomar, Monsanto and Decode corroborate (Rabinow, 2004). But, the concern is far more critical, rather than mere ignorance. (Asilomar Conference, 1975), California had apparently under-scored the genetic engineering which ultimately spawned serious concerns,

including potential accidental or intentional release of Genetically Modified (GM) organisms in the environment. The objective of Asilomar Conference was to frame 'a set of beliefs' for American people and Congress to entrust scientists to pursue genetic manipulation under a system of self governance. Simultaneously, it propagated for initial self sacrifice on the part of the scientists for ultimate benefits (Wright, 2001). There were warnings from scientific lobbies even before the conference that if the genetic engineering be viable, it would have immense potential for drug discovery and military technology (Wright and Wallace, 1999). The regulatory laxity was to make America the nerve-centre of global Agri-biotech Industry. The corporate leaders, through various committees and sub-committee were successful in titling the multilateral agreements (Andree, 2005). In a 2002 paper, Barry Commoner has observed that studies of Human Genome Project in between 1990 and 2001 refuted the 'Spurious Foundation' of genetic engineering and thus nullified 'the biotechnology lobby's widely advertised claim that its methods of genetic modifying food crops are "specific, precise, and predictable" and therefore safe (Commoner, 2002). Monsanto, originally a chemicals company producing biowar agents deployed in Vietnam War, became the global leader of contentious GM seed industry by the turn of the century (Bowring, 2003).

The unipolar global order manifests security pretension and exceptionalism. During the Westphalian era, Great powers have special rights to set international order and manage international affairs. The malign deployment of knowledge-power may be meant for justifying the 'rule of the exception' by pathologizing 'others' as the bare life of homo sacker. The burgeoning bio- and neuropolitics to subject humanity's body and psyche have become crucial in the context of gradual ethico-juridical blurring of human rights regimes (Mukhopadhyay, 2008b). Human security threats to teeming millions of 'bare life' in real world are very much existential and thus are not 'included' by the dominant security studies circles like Copenhagen School. Foucault's reflections on power/knowledge can explain the genesis of the discipline 'international relations' along with its policy-relevant sub-discipline 'security studies'.

Powerful nations may pursue their security pretence through dreadful weaponization and thus compound risks of catastrophic threats in the global arena.

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