



One-health approach as counter-measure against “autoimmune” responses in biosecurity



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ARTICLE INFO

Article history:

Available online 14 October 2014

Keywords:

Immunisation response
Autoimmunity
Biosecurity
Pre-emption
Peter Sloterdijk

ABSTRACT

This Swine flu pandemic of 2009 and the potential Avian flu threat of 2011–2012 have revived a most challenging debate on protection against infectious diseases. The response to the Swine flu pandemic has been ambivalent, both on the societal (political) and the scientific level. While some scientists warned against potential massive loss of human lives and urged for immediate and large-scale vaccination, others accused them of unnecessary scaremongering, arguing that the pandemic would not be that severe. The lab-created virulent Avian flu virus – which has been created in order to ‘fight’ a potential Avian flu pandemic – sparked a fierce debate on the dual-use risks of such a pre-emptive strategy. This article involves an analysis of the medical-political response to these recent viral threats using Peter Sloterdijk’s immunological framework as diagnostic tool. In his trilogy *Spheres* Sloterdijk uses immunological concepts to analyse and assess the contemporary biopolitical situation. It shows how drawing a parallel between the functioning of the biological immune system and “immune responses” on socio-political level enables to assess and reconceptualise biosecurity.

It demonstrates that ideas such as “nature is the biggest terrorist” – as advanced by many virologists – sometimes result in exaggerated “immunisation responses”. This strong *defensive* attitude sometimes brings about collateral damage. In other words, fierce biosecurity measures sometimes risk developing into “autoimmune” responses that actually destruct the body politic they are meant to protect. By drawing on recent insights in the functioning of the biological immune system it is shown how a One-Health approach that incorporates a broader and nuanced “immunological” repertoire could act as counter-measure against “autoimmune” responses in biosecurity.

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1. Introduction

Throughout history, humankind has repeatedly fallen victim to dreadful epidemics or pandemics that have claimed the lives of millions over the centuries; from the ‘plague of Justinian’ dating back to the Roman empire, via ‘the Black death’ in the Middle Ages, to the ‘Spanish flu’ in 1918, the ‘Asian flu’ of 1957 and the ‘Hong Kong flu’ of 1968 (Zanetti and Zappa, 2010). By the 1970s it had become common to believe that infectious diseases were declining and would be soon eliminated through medical progress. This optimistic view appears to have been naïve. In recent decades the

world has been confronted with an ever-increasing number of novel or re-emerging infectious diseases, some of them causing true pandemics. Striking examples were the emergence of Acquired ImmunoDeficiency Syndrome (AIDS) in the early 1980s and the more recent Severe Acute Respiratory Syndrome (SARS) in 2003 (Zanetti and Zappa, 2010). It has been widely accepted in modern science that new viral strains will emerge and continue to pose challenges to public health and the scientific communities of future societies (Cohen, 2000; Medina and Garcia-Sastre, 2011; Sasseti and Rubin, 2007).

In April 2009, a new influenza virus emerged in the United States and Mexico. In the weeks that followed, the ‘Mexican flu’ (later called the ‘H1N1 Swine flu virus’, named after the subtype numbers of its hemagglutinin (H) and neuraminidase (N) surface antigens) spread rapidly around the world. On 11 June 2009, the World Health Organization (WHO) officially declared the first flu pandemic of the 21st century (Butler, 2010b; Chan, 2009). This

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outbreak and its rapid spread across the world revived the debate on protection against infectious diseases.

The response to the Swine flu pandemic is characterised by substantial ambiguity, on the socio-political as well as the scientific level. In various publications, in mass media, and in scientific journals the severity of the threat, and of the accompanying protection measures considered necessary have been stressed by referring to the dreadfulness of the 1918 Spanish flu pandemic (Barry, 2009). At the same time, other people (including scientists) were much more reluctant and argued that the pandemic would not be that severe (Editorial *Nature*, 2009; Reporter *BBC News*, 2009). This article analyses and problematises the biosecurity measures taken in response to viral threats (see also, Collier and Lakoff, 2008, p.27).

The second event that will be assessed is the disturbance caused by the fabrication of a mutant Avian influenza virus (Butler, 2011). In view of a potential future Avian flu pandemic, virologists have succeeded in fabricating a mutant version of the Avian flu that is capable of transmission between humans, in order to get more insight in flu evolution, and to prepare the production of future vaccines and antiviral medicines. This preventive approach has the downside that such lab-bred viruses could escape from the lab or be abused by terrorists.

To come to terms with the biosecurity measures in response to these recent viral threats Sloterdijk's trilogy *Spheres* (1998, 1999, 2004) may serve as an instrument to analyse and assess the "immunisation responses" to both the Swine flu pandemic and the Avian flu threat. In his 'Immunology of Spheres', Sloterdijk uses immunological concepts to analyse and assess the current biopolitical situation. He draws a parallel between the immune system on the biological level and immune systems on socio-political and cultural level. By building on this analogy between the biological immune system and "immune responses" on socio-political level, this article shows how an immunological framework can be fruitful for grasping (assessing and reconceptualising) biosecurity. This mode of inquiry into problematisations of biosecurity is that of a second-order observer (Rabinow) (Collier and Lakoff, 2008, p.12). The analysis will be illustrated with quotations from *Nature* and *Science* articles (News and Opinion articles & Editorials) that deal with these two threats. The 'Sloterdijkean' analysis will be supplemented with the views of the American cultural critic Susan Sontag (1933–2004), notably her notion of apocalyptic discourse as reflected in her commentary on the AIDS pandemic in the late 1980s (notably in *AIDS and its Metaphors*, 1988).

The analysis will show how rather defensive "immunisation responses" against viral threats sometimes bring about considerable collateral damage. Biosecurity measures sometimes risk evolving into "autoimmune" responses. Autoimmunity is a biological concept that refers to an immune response directed against a body's own cells and tissues. In its metaphorical use as diagnostic tool, autoimmunity refers to a situation in which the protective measurements are more destructive than the original threats themselves and immunisation becomes a major threat to social (political) life itself. In the final part, it is shown how a One-Health approach could mitigate and act as counter-measure against the tendency towards "autoimmune" responses (whether caused by virological research, industrial animal agriculture or other institution). It will be shown how on the biological level the immune system does not simply operate as 'defence army' against all possible intruders of the body. Whether a virus or a microbe is 'seen' as something that must be attacked and destroyed is very dependent upon the context in which the immune reaction takes place. Immunological processes like tolerance ('silence' of the immune system upon encounter of a pathogen) and autoimmunity have proven that the immune system is far more complicate than a

protective army against destructive invaders (Tauber, 2008, p.272). In this article, it is defended that such biomedical insights on the functioning of the immune system enable to assess and reconceptualise biosecurity.

2. Peter Sloterdijk's immunological framework

In his trilogy *Spheres* [*Sphären*] (1998, 1999, 2004), Sloterdijk argues that humans are essentially sphere-building and sphere-dependent beings. Human life has always been lived within what he calls protective 'immunising spheres' (Sloterdijk, 1998). For Sloterdijk, culture as such revolves around a process of immunisation (Sloterdijk, 1998, 2001, p.346). Spheres are spatial environments that function as protective immune systems. They defend us from looming threats coming from outside and create an ambiance, a place that humans can inhabit and that allows them to live their life in the immensity of the world. Humans are beings that have built and build caves, houses, villages, cities, nation-states, cultures, world-views etc., which act as *immune systems* or *immune responses* against possible threats from the outside world. This capacity to build protective spheres is not restricted to material environments such as villages, cities and, eventually, the metropolises of today, but it also involves protective ideological and symbolical structures such as metaphysical and religious views.

Sloterdijk argues that with the development of science and technology, formerly implicit aspects of the world (such as viruses) have become increasingly explicit. Sloterdijk's notion of 'explication' is akin to Heidegger's notions of 'unveiling' [*Entbergung*], which for both of them constitutes the core of science and technology. Sloterdijk refers to the 20th century as the "age of explication" [*Explicationszeitalter*] (Sloterdijk, 2004, p.228). In this century, science and technology have developed rapidly. From the time of Pasteur and Koch onwards, for example, human beings suddenly had to take explicit measures to protect themselves against the thus far unknown microbes. Sloterdijk shows how new knowledge also results in the corollary explication (and thus perception) of new risks and threats. Indeed, in Sloterdijk's view, 'immunisation' (as cultural phenomenon, including its biomedical forms) has nowadays become a focus of concern, due to forces of globalisation. This is illustrated by a profound desire for protection by means of insurances, security measures, vaccines, and so on. However, these 'immunisation' measures simultaneously (and paradoxically) entail a growing sense of more and deeper insecurity, which, in its turn, entails more and more emphasis on immunisation and so on. In the following, Sloterdijk's immunological framework will be operationalised. The Sloterdijkean concepts of 'immunisation' and 'explication' of Sloterdijk will be applied as *diagnostic tool* to analyse and problematise the biosecurity measures taken in response to successively the Swine flu pandemic and the Avian flu threat. However, this article extends Sloterdijk's immunological framework. It also employs other immunological concepts, such as the notion of autoimmunity. By drawing a more complete and precise parallel between the functioning of the biological immune system and "immune responses" on socio-political level some contemporary biosecurity measures are further assessed and problematised. In the third part, it is shown how a One-Health approach could 'cure' some of the 'pains' (i.e. "autoimmune" responses) of contemporary biosecurity.

3. The immunisation paradox in recent viral threats

In April 2009, the emergence of a new strain of H1N1 influenza virus took the world by surprise. It first emerged in Mexico and the United States, but in the weeks that followed, it spread rapidly to countries worldwide. As it turned out, the surface proteins of the

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