

Transforming Public Health Discourses in Relation to Infectious Diseases and the Corresponding Ideas of Selfhood

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Abstract

This paper is devoted to sketching an account of historical transformations of the social or cultural responses to infectious diseases resulting from their biomedical management mainly from the nineteenth century to the new millennium. The moments of paradigmatic shifts which roughly divide the history of public health into three stages correspond to those of the introduction of prominent technoscientific innovations or developments. The ways in which biomedical ideas characteristic of each stage shape the logic through which health practices are organized and modes of self-other relationship are established will be explored separately. Roughly speaking, the first stage was characterized by logic of quarantine/sanitation which was backed up by the imperative to separate clean from dirty; the logic of contagion in vaccination featured the second stage and gave rise to both the possibilities of rethinking selfhood and the military metaphors which finally gain supremacy in cultural imagination; the most recent stage witnessed the inefficiency of biomedical efforts in eradicating infectious diseases and therefore especially call for a concept of contagion which acknowledges that instead of being certain closed-off entity, a living being is engaged in an ongoing process of relating and becoming.

Key words: public health measures, selfhood, quarantine/sanitation, vaccination, contagion as capacity

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I. Introduction

One significant event which has attracted considerable attention over the past few decades is the explosion of “emerging infectious diseases,” which is a phrase coined by Lederberg, American microbiologist and Nobel Prize Winner, to designate infections “that newly appear in [a] population, or have existed but are rapidly increasing in incidence or geographical range.”¹ The eruptions of newly discovered pathogens such as HIV, Ebola viruses, the prion causing mad cow diseases, and the novel corona virus inducing SARS, and the resurgence of old diseases such as tuberculosis and cholera, are both processes that have received extensive media coverage and induced overriding concerns among many researchers and theorists.² Public health bureaucracies such as World Health Organization and the US Centers for Disease Control and Prevention issue warnings of the rise of numerous infectious agents which might amount to a global crisis, hold conferences on this subject, and launch action programs to promote control and prevention of epidemics.³ The contemporary era is in a sense,

¹ This definition of “emerging infectious diseases” is cited from Morse’s “Factors in the emergence of infectious diseases,” *Emerging infectious diseases*, 1, no. 1., published electronically on the INTERNET and available at: <http://www.cdc.gov/ncidod/EID/vol1.no1/eid.html>.

² More information about emergent pathogens nowadays can be found in “List of NIAID emerging and reemerging diseases,” which is available on the INTERNET at <http://www3.niaid.nih.gov/research/topics/emerging/list.htm>. Literature on emerging infectious diseases ranges from studies of biomedical researchers to those contributed by sociologists or cultural critics, among them Emerging infections, microbial threats to the United States edited by Lederberg, et al. (1992), Garrett’s *The coming plague: Newly emerging diseases in a world out of balance* (1995), Farmer’s *Infections and inequalities* (1999), Hatty & Hatty’s *The disordered body: Epidemic disease and cultural transformation* (1999), Price-Smith’s *The health of nations: Infectious disease, environmental change, and their effects on national security and development* (2002), Van Loon’s *Risk and technological culture: Towards a sociology of virulence* (2002), Bollet’s *Plagues & poxes: The impact of human history on epidemic disease* (2004), and so on

³ For example, WHO estimates in *The World Health Report 1996: Fighting disease, fostering development*, which is available on the INTERNET at <http://www.who.int/whr/1996/en/index.html>, that up to half of the world’s population is at risk of contracting, and perhaps dying from, endemic diseases” (p. 245). In reports of this kind, WHO keeps reminding people that microbes and other pathogens have won the supremacy in their race with human beings. Plans aimed at combating infectious diseases include that of CDC which is described in *Preventing emergent infectious diseases: A strategy for the 21st century overview of the updated CDC plan* (1998), which outlines major goals of the plan, including surveillance and response, applied research, infrastructure and training, and control and prevention.

in the words of Hatty and Hatty, an age of epidemic with the logic of contagion as its central thesis (1999, p. 237). While whether the claim of rising pathogens has any objective reality remains in contention⁴, it is generally accepted that the phenomena of infections definitely rank among the most hotly-discussed issues of our time, being approached from various angles in a wide range of disciplines.⁵ Among them I am particularly interested in those which address how the biomedical or public health discourses arising in response to emerging contagious diseases can be utilized to define selfhood and to shape identity.

Commentators of miscellaneous traditions have noted that the concept of health has gained entry into the spectrum of identity politics in the modern period. In such model of self-declaration, certain biologically healthy set is conceived as core property that defines the self while diseases and deaths constitute interrelated sets of oppositions and thereby the unhealthy others. Ill-health accordingly, in Bashford and Hooker's words, amounts to "loss of self into some sort of other" while the processes of loss of self "have often been conceptualized through metaphors of infection" (2001, p. 7, italics added). As contagious diseases, following such line of argument, have been considered to be especially "tainted with otherness," contagion and its management turn out to be made central to the formation and subversion of the notion of self (Crawford, 1994, p. 1348). Biomedical explanations of the etiology of infectious diseases, public health

⁴ Some critics who dispute the assertion of growing infections argue that the apparent increase should be understood as nothing more than an increase in information, knowledge, and public concern about them. For example, Tomes (2002) calls into question the prevailing sense of urgency toward coming plagues by attributing what she calls "national hypochondria" to certain highly selective hype of media (625). Another observation is made by Waterson and Wilkinson (1978), who think that the growing list of disease agents results from improved analytic capacities in identifying pathogens more than from a sheer increase in their numbers as such.

⁵ Van Loon argues that being listed as one of the risks of our age, emergent pathogen virulence has become "real enough." "[W]hether one is more inclined to side with a dismissive or affirmative response to the question whether or not emergent pathogen virulence is 'real,' the most important aspect remains that its discourse is real enough for public health authorities to invest considerable amounts of resources and credit into increased security and regulation, not to mention the commercial interests in pharmaceuticals as well as the entertainment" (2002, p. 130). Therefore, instead of determining which side to take in the debate on the reality of rising pathogens, this paper will rather be dedicated to examining the effects of certain related discourses on, as will be discussed at greater length, particular notion of selfhood.

discourses on how epidemics can be contained, and popular narratives generated around these scientific ideas are therefore highly relevant to the processes of identity-formulation or subjectivation conceived in terms of certain assumed sets of health.⁶ It should nevertheless be noted that these accounts have undergone a series of transformations in accordance with the related technological developments over centuries. Transforming biomedical perceptions of contagion have largely contributed to the emergence of practices of intervention governed by different logics, which in turn play a significant role in setting parameters from which corresponding conceptions of selfhood are defined.

In this paper, I will give a detailed account of the historical transformations in these discourses mainly from the nineteenth century to the new millennium and reflect critically on their separate implications for self/other relationships. By exploring the ways in which prevailing biomedical ideas have shaped the logic through which contemporary health practices have been organized and modes of embodied subjectivity have been established, I will demonstrate that the latest situations in biomedical intervention especially ask for a more sufficient conceptualization of contagion which throws into doubt the notions of selfhood asserted in earlier models and eventually brings our attention to the

⁶ In spite of the distinction thus made between biomedical discoveries, the public health measures they back up, and the public's understanding of the science, I am fully aware that the relationships between these terms are actually convoluted. The overall picture assumed in the present day, as Martin argues, "is that knowledge of the natural world is produced by scientists doing proper science" (1994, p. 5). It is often feared that such "purest" form of scientific knowledge is at risk of becoming distorted as it filters out to "other professional groups or the general public" (Martin, 1994, p. 5). However, sociological observers find that as many practices in the laboratory actually "share more with daily life outside the lab than with the strict edicts governing knowledge in science," the institution of experiment-based findings as facts accepted by the broader community might turn out to be certain social process in large measure (Martin, 1994, p. 6). Moreover, social and political factors are found to play a role more powerful than would be expected in determining whether and how the products of the lab will continue to exist in the wider society. The discursive dimension of the science, such as the rhetoric used in textbooks, actually has certain connections with the general social "environment" of the age, reflecting the prevailing opinions or cultural sentiments despite the shock presented by scientific ideas to large sections of the public. We should therefore be more sensitive to how the inevitable connection of technoscientific research with public representation might delicately influence the use of metaphors in scientific narratives which might represent the "real" in particular ways. It will be made more explicit in later discussion that while biomedical assumptions have generated certain narratives which affect the recognition of formulation of related social or cultural issues, the public's understanding of biomedicine has also made its way into the scientific discourses.

real condition of life in which heterogeneous bodies are grouped together and thereby come into a wide range of relations. While the cultural, social, and even theoretical investments which have led contagion, having originated as visceral infection from the field of biomedicine, to be connected with the question of self-other relationship tend to highlight the picture of self-boundary or self-other confrontation to declare the concept of certain closed-off, individual self, which proves to be inadequate to capture the way life works and even induce harmful effects of social and cultural stigma, the experience of infectious diseases in our time actually articulates a new way, relatively ignored by related literature, to recast contagion as exemplification of the way bodies, instead of certain unified self, engaged in complex processes of relating and becoming. In so doing, the harmful effects on certain social groups or geographical areas resulting from the assertion of healthy self might be reduced.

The time scale covered in this paper might invite questions since human beings have started to deal with the eruptions of infectious diseases long before the nineteenth century. While many scholars have equated the nineteenth-century public health reform which had the control of epidemics as its major parameter to the invention of public health⁷, it is undeniable that collective actions attending to infectious diseases had been exerted even in ancient and pre-modern societies. Since the “modernized” form of public health, according to Porter, “[has] been preconfigured in technological developments stretching back through time,” certain long-standing hygienic measures which are still in use nowadays actually originated in ancient times (1999, p. 2). The most well-known instance is quarantine, which was first adopted by Italian port authorities in 1347 as a response to the plague of Black Death.⁸ Besides, the two main strains of theoretical bases of the nineteenth-century public health movement, the germ theory and the miasma theory, could respectively trace their origins back

⁷ It has been commonly argued that the invention of public health in the nineteenth century, highly related to the processes of rapid urbanization that resulted in environmental degradation, was primarily a social endeavor to handle contagion. Related discussion can be found in Peterson & Lupton (1996) and Porter's *Health, civilization and the state: A history of public health from ancient to modern times* (1999).

⁸ See Porter (1999, p. 34) and Bollet (2004, p. 22).

to certain archaic medical notions. What characterizes the ancient institutional intervention of contagion is, however, its main objective of serving the good of elite community health. Moreover, religious explanations about the etiology of infectious diseases were prevalent in pre-nineteenth century times, having an effect on health programs of the age. Critics find that before the early modern period, God's wrath or moral depravity had been proposed as the causes for contagion and certain physically punishing treatments had been utilized as the primary coping strategies.⁹ In contrast to its predecessor, the "modernized" form of public health practices which began in the nineteenth century were directed toward the general public and appealed to the powers of science and rationality to fight diseases. The field of epidemiology has since then started to provide empirical "facts" about epidemics, serving as the database on which public health authorities can develop policies; new technological developments, such as the invention of new tools of measurement, have been heavily relied upon to contain infectious diseases and improve the health of population.¹⁰ I will confine the discussion of this paper to the relatively recent development of more "systematically science-based" public health projects in the modern western society since it is in these measures that the influence of contemporary biomedical ideas can be explored critically.

The examination of historical transformation of public health practices and the underlying notions of selfhood in this paper will proceed by tracing the moments of paradigmatic shifts which roughly divide the history into three stages. In the earliest period, hygienic models prevailed and much attention was focused on addressing the distinction and confrontation between clean self and dirty other. The rise of bacteriology in the late nineteenth century encoded such self/other confrontation in military metaphors which described a picture in which the human body was invaded by pathogens and biomedicine was resorted to as the savior of human beings. Military accounts have since then dominated popular imagination and even permeated related biomedical discourses, which would lead to overwhelming stigmatization of the infected with extremely harmful effects.

⁹ Hatty & Hatty (1999, p. 38).

¹⁰ Related discussion can be seen in Rosen's A history of public health (1958).

And then we witness in contemporary era the phenomena of emerging infectious diseases as well as the way modern biomedical technologies, especially the use of antibiotics, which have been largely relied on to “fight” and to “vanquish” pathogens lose their efficacy. An articulation of contagion which breaks away with the self-other war is therefore called for badly so that we can engage in the “risks” posed by infectious diseases in a more adequate way and ultimately get an insight into the way living beings, which should be approached in a mode radically different from the one declaring a unified self, have been situated in the complex webs of life.

It should be clarified at the outset that although my discussion engages in the study of the evolution of public health narratives over the past two centuries, it will not side with the so-called “grand narrative” of technoscientific progression which features most of the related literature.¹¹ The real historical processes are actually characterized by what DeLanda calls the dynamics of nonlinearity.¹² While the appearance of different forms of biomedical intervention does mark different phases of public health history, the successive emergence of technological changes do not, following DeLanda’s arguments, reveal a linear process of enlightenment but rather result in the enrollment of more medical or social forms. Conflicting views and various structures coexist in every phase, interacting with one another. My examination of related historical narratives will therefore trace what DeLanda calls “a line of development” instead of a line of gradual perfection while much of the effort will be put to critically appraise the effects of these transforming biomedical ideas (and the public health policies they sustain) on the cultural formulation of self/other relationships (1997, p. 15).¹³ Actually, such historical

¹¹ Petersen and Lupton observe that much reflection on the modern public health history shares a strong sense of “nostalgia for the ‘golden age’ of reform” which was supposedly made possible with “a series of scientific or technological ‘breakthroughs’” (1996, p. 2).

¹² DeLanda designates the notion of nonlinearity as follows: “[I]f the different ‘stages’ of human history were indeed brought about by phase transitions, then they are not ‘stages’ at all—that is, progressive developmental steps, each better than the previous one, and indeed leaving the previous one behind. On the contrary, much as water’s solid, liquid, and gas phases may coexist, so each new human phase simply added itself to the other ones, coexisting and interacting with them without leaving them in the past” (1997, p. 15-6).

¹³ DeLanda argues that the idea of following a line of development speaks to a style of presentation and do not contradict the nonlinear conception of history (1997, p. 15-6).

examination of public health discourses is meaningful rather because of the moments of failure which remind us of the insufficiency of existing models. It should also be noted that while my discussion has the objective of looking into the underlying logic of biomedical discourses and their cultural or social effects, I am not arguing against the efficiency of any public health practices as such. If any practice ceased to be dominant in certain period, such as the temporary replacement of pasteurization, or did not fulfill the purpose it promised, such as the “failure” of antibiotics to eradicate bacteria-caused diseases, the condition of insufficiency usually resides in the supporting biomedical discourses instead of in the practices themselves. Moreover, as will be revealed in later discussion, although specific discourses often give rise to certain public health measures, one public health strategy can be utilized to “serve” different biomedical theories with different orientations. In a word, instead of claiming the most or the least efficient and justified public health practice, I will rather focus on exposing the inadequacy of certain theoretical models which have brought out certain far-reaching but harmful consequences.

II. The Sanitary Reform and the Logic of Quarantine

Due to the high mortality they caused, infectious diseases constituted the predominant focus of the early public health activities in the nineteenth century. The medical explanation of disease causation was still a subject in contention then. Competing views of contagionist/germinal and anti-contagionist/environmentalist theories determined different preventive strategies; however, the division between these two traditions was not clear-cut and the hygienic measures used by their practitioners were not mutually exclusive.¹⁴ Briefly put, the theory of contagion

¹⁴ The tightening effect of quarantine restrictions on socio-economic activities, such as trade, had been an issue of much concern which gave impetus to the urge to abandon these regulations. Besides, some cases of disease outbreak in the early nineteenth century, such as the two cholera epidemics, appeared to defy quarantine strategies and hence resulted in what Porter calls “anti-contagionism’s greatest moment of triumph” (1999, p. 83). The use of isolating measures was for a time largely reduced while environmental improvement movements were considered to be more effective. As will be demonstrated in subsequent discussion, quarantine and sanitary strategies basically convey the same logic of differentiating between healthy/clean and pathological/dirty and together constitute the most long-standing preventive practice in western cultures.

proposes that diseases spread through contact while anti-contagionist views suggest that miasmata were responsible for propagating illness.

Fracastoro provided a clear narrative of contagionist ideas in *On Contagion* in 1546, asserting that all diseases were generated by certain invisible, living seeds that could be transmitted through contact with infected bodies and contaminated materials or spread from a distance.¹⁵ Practices of quarantine, sequestration, and fumigation were highly recommended to prevent the spread of infections. These restrictions were therefore often set up by states along their borders when infectious diseases struck. The measures of confinement and banishment which had been adopted since earlier centuries were also related to the logic of quarantine. The infected people or those who were suspected of being infected were “confined within their homes, within barricaded and guarded districts, or in hospitals” (Hatty & Hatty, 1999, p. 160). While the germ theory apparently shared the belief of bacteriologist or microbiological explanation by referring to some living materials as the causes of diseases, it “had never been developed into a coherent and consistent hypothesis” in the way microbiology did in late nineteenth century (Hatty & Hatty, 1999, p. 208). Fracastoro’s depiction of the “seminaria” of disease was close to present-day biomedical theories, but some of his key ideas had been forgotten by the end of the 16th century “mainly because of the lack of scientific communication during the 17th century” (Gest, 2003, p. 120). It should also be noted that the seed or germ in question could not be simply equated with the notion of pathogens in a modern sense. Pelling observes that nineteenth-century writers applied the germ theory to disease causation “particularly in terms of the evolution of bodily products (including cells) into discrete entities capable of causing disease in a second person” (2001, p. 29). Certain process of germination outside of the body was still necessary in order to develop the disease. The contagionist views of the time, despite the hypothesis about germs, therefore overlapped with environmentalist theories in some aspects, especially in their applications in public health activities.¹⁶

¹⁵ Related discussion can be found in Hatty & Hatty (1999), Porter (1999), and Gest’s *Microbes: An Invisible universe* (2003).

¹⁶ Related discussion can be seen in Porter (1999), Pelling (2001), and Bashford’s “Foreign bodies: Vaccination, contagion and colonialism in the nineteenth century” (2001).

Anti-contagionist proponents claimed that contaminants of the physical environment, such as filth and odor produced from decaying organic matter, brought about all diseases. Such perception gave rise to what is known as “sanitary science.”¹⁷ Sanitary reformers like E. Chadwick, whose *Report on an inquiry into the sanitary conditions of the laboring population of Great Britain* in 1842 was distributed free (Stallybrass & White, 1986, p. 125), mapped out “dirty” areas of the city that needed to be cleansed with the aid of health projects, including “sewerage and water purification systems, garbage removal and Nuisance Acts, Poor Law reforms” (Hooker, 2001, p. 130). The miasma theory would be later debased as unscientific since the triumphs of bacteriology in the later nineteenth century; its division of clean and unclean and the resulted metonymic associations nevertheless have a significant cultural resonance. If practices guided by contagionist views resorted to a logic of quarantine which was meant to avoid contact with and to eliminate disease-causing germs, sanitary movement followed a logic of sanitation and was directed to separate cleanliness from dirt and to remove filth from the environment. Bashford observes that the logic of quarantine of the early nineteenth century was actually intertwined with principles of sanitation; governed by these two logics which were similar in nature, the contemporary concept of public health came to mean “the ordering of categories of clean and unclean, normal and pathological, healthy and unhealthy, self and other” (2001, p. 39). The frequently-used technologies included isolation, containment, barriers, the policing of spaces, and the maintenance of lines of hygiene. As the most intuitive preventive response to infections which are still in use today, the quarantining/sanitary strategies are governed by the imperative to separate purity and danger.

Striving to know and control infectious diseases, people came to believe that a contaminated object was something to be avoided or, to be more specifically, kept at a safe distance, lest they also became infected. Carrying this guiding principle to the extreme, the lives and well-being of people would supposedly become dependent on, according to Shildrick, the maintenance of “a self-

¹⁷ Related discussion can be seen in Porter (1999), Bashford (2001), and Hooker (2001).

protective detachment, an interval...between ourselves and evidently dangerous others—be them microbes, parasites, or infected human bodies” (2001, p. 155). While the protective barriers erected to control and besiege the threat of the others become tighter and tighter, contagion as a contaminatory hazard gains more and more cultural implications and starts to epitomize any disruption of the categories of cleanliness/normality/sameness and dirt/pathology/difference. A classification system came about to define the notion of clean self by creating certain objects, sites, and groups as pathological others to be avoided. For example, the division between cleanliness and filth was readily associated and ultimately equated with the binary terms of virtues and moral depravity. Actually, Chadwick, the pioneer of early public health movements, as observed by Stallybrass and White, made connections between disease and moral degradation, claiming that a dirty environment such as slums gave rise to a population prone to commit crimes. Such metonymic associations will eventually be “displaced by a metaphoric language” in which filth stands in for the diseased and the poor (Stallybrass & White, 1986, p. 131). This sliding between the metonymic and the metaphoric described by Stallybrass and White gave the discourse of cleanliness and avoidance more complexity and more strength. Certainly, as the self/other distinction implied in the logic of quarantine/sanitation got tighter by drawing on all the available resources of discourse formation, these discourses in turn gave rise to stigma and stereotypes.

III. The Assertion of the “Self and Clean” against the Dirty Other

The early public health practices were as such backed up by the discourse of cleanliness and avoidance, which gave rise to a configuration of self-other relationship basically governed by anxiety about certain ontological contamination. We will have more insight into the notion of selfhood thus emerged by examining the compulsion sustaining the paradigm of purity and danger which is highly correlated with the logic of quarantine/sanitation. Douglas’s *Purity and danger*:

An analysis of concept of pollution and taboo and Kristeva's *Powers of horror* both provide excellent analyses on the issue. Douglas draws attention to the social need to erect boundaries against defilement, focusing her analysis on dirt as “matter out of place” or a disruption of an ordered system (1996, p. 36). She asserts first and foremost that the taboos of primitive cultures, which some anthropologists find irrational and bizarre, should be understood as a device of classification for ensuring the distinctive categories of the universe and reducing the threat of social disorder. Ambiguous things, for example behaviors and matters that violate or confuse the organizing principles of the universe and therefore seem threatening, are first excluded as a filthy element and then shunted into the category of the sacred defilement to protect the primary distinction. Observing that ancient people tabooed what modern society denounces as dirty and dangerous, Douglas reminds us that “[t]he concept of dirt makes a bridge between our own contemporary culture and those other cultures where behavior that blurs the great classifications of the universe is tabooed” (1996, p. xi). An ingenious idea in Douglas' analysis is that the purity/danger paradigm consists not simply of movements of avoidance but also of activities of construction. She emphasizes that while the initial recognition of anomaly leads to anxiety and from there to suppression or avoidance, it is a kind of more energetic organizing principle that do justice to the elaborate cosmologies revealed by pollution symbols (Douglas, 1996, p. 6). Reflection on dirt therefore “involves reflection on the relation of order to disorder, purity to danger, integrated being to formless non-being, life to death” (Douglas, 1996, p. 7).

Kristeva states more clearly that certain dividing lines were built up in purification rites “on the basis of the simple logic of excluding filth, which, promoted to the ritual level of defilement, founded the ‘self and clean’ of each social group if not of each subject” (1982, p. 65, original emphasis). Therefore, the main objective of the symbolic structure which emerged from tabooing was to demarcate the boundary between this and that group, self and other. Since Douglas juxtaposes contagion with dirt, the concept of hygiene is in this sense a modern version of classification system. Petersen and Lupton also point out that

Douglas's argument about the symbolic load of cleanliness "is readily applicable to understanding the discourses of environment and health" (1996, p. 91). Practices of hygiene accordingly amount to activities of cleansing "filthy places" and separating contaminating substances produced by an "other" (Petersen & Lupton, 1996, p. 91). In the effort put to separate and purify the pollution and hence danger resulted from contagion, certain dualist system categorizing clean self and threatening other emerges. The basic logic of quarantine/sanitation, governed by such urge of classification, therefore operates by rejecting contagion as dirt to be avoided, drawing a borderline of hygiene to ensure certain unified form of collective as well as, as we will see in later discussion about Kristeva's theories, subjective identity. It should be emphasized again that Douglas brilliantly argues as the distinction between self and other depends on the erection and maintenance of the self and clean of the social group, dirt or contagion is actually not dangerous by nature but rather gets debased for the disorder it caused. It is in the anxiety about the dissolution of self-boundary that such disorder comes to be connected with ontological contamination.

III.1 Anxiety of Being Polluted

Douglas keeps emphasizing that the imperative of dirt-avoidance is not inspired by fear. Early anthropological views hold that taboos are merely sustained by the beliefs that certain calamity befalls those who violate the forbidden line or create some conditions of impurity. Dominated by such fear which inhibits reason, primitive religions are therefore separated from "the great religions of the world" (Douglas, 1996, p. 1). Douglas proposes that this hypothesis prevents us from appreciating rites of chasing dirt as a positive action of imposing symbolic patterns: "[t]here is nothing fearful or unreasoning in our dirt-avoidance; it is a creative movement, an attempt to relate form to function, to make unity of experience" (1996, p. 3). I want to supplement her criticism of primitive religious fear by proposing that while the behavior of shunning dirt is not merely a negative movement governed by terror, the feelings of anxiety, being approached in terms of "awareness" of human vulnerability instead of irrationality, play a crucial role

in guarding the social rules. Danger-beliefs or pollution ideas are indeed called upon to intimidate transgressors of classification systems.

I argue that the sense of threat is necessary for the maintenance of a classification system and such sense is often addressed in certain hybrid grotesque. Reflecting on the formation process of the bourgeois Imaginary, Stallybrass and White draw attention to certain “complex hybrid fantasy” coming about as the side products of the identity-formulation process:

We have had cause...to reflect on an unnoticed slide between two quite distinct kinds of “grotesque,” the grotesque as the “Other” of the defining group or self, and the grotesque as a boundary phenomenon of hybridization or inmixing, in which self and other become enmeshed in an inclusive, heterogeneous, dangerously unstable zone. What starts as a simple repulsion or rejection of symbolic matter foreign to the self inaugurates a process of introjection and negation which is always *complex* in its effects. (1986, p. 193, original emphasis)

The point of the preceding argument is that certain hybrid identity-in-difference emerges out of the mechanism of identity formation, featuring the shared Imaginary of the collective in question. What is warded off is “internalized under the sign of negation and disgust” and turns out to constitute the contents of social desire (Stallybrass & White, 1986, p. 191). In other words, “[t]he very drive to achieve a singularity of collective identity is simultaneously productive of unconscious heterogeneity” (Stallybrass & White, 1986, p. 194). The two writers then conclude that the anthropological exploration of the ordering mechanisms of social classification inevitably reaches the question of filth, which functions as a hybrid figure in the Imaginary (Stallybrass & White, 1986, p. 193-4). My focus is that in addition to providing the symbolic material of the political unconscious in a paradoxical way, the hybrid grotesque in which the categorical self-identity and the rejected other have been mixed assumes the vulnerability of selfhood to the unpleasant influence of other. It is conveyed that the distinction between self and other is not watertight; the clean selfhood is always under the threat of being polluted by the dirty other. Hence the claim that “which is marginal is always

located as a site of danger and vulnerability” (Grosz, 1994, p. 195). To prevent the collapse of self-identity implied in the hybrid fantasy, the ancient classification system had to be maintained regularly with the aid of purification rites, such as bans on certain foods.¹⁸ The notion of “self and clean” “needs to be continually hedged in with prohibitions” (Douglas, 1996, p. 27).

Following this line of argument, contagion, which is the modern version of dirt, provokes anxiety about the unwelcome condition of corporeal vulnerability. Although the recognition of certain microorganisms as pathogens was not fully articulated until the time of Pasteur, the question of infectious diseases had been thought of as a challenge posed by certain harmful influences to the concept of a closed body. Outlining Fracastoro’s serpent metaphor which describes the “attack” of syphilis as being induced by “the fine seeds of the invisible contagion” whose habit was to “snake inside the body in astonishing ways,” Hatty and Hatty notice that such way of conceptualizing contagion gives rise to an idea of “the body under attack:”

This construction challenged the concept of the “sealed body,” the ideal body impervious to external influence. Now the body was vulnerable to this sinister condition, “snaking” into the body through orifices which both medicine and theology were anxious to guard, and then wreaking havoc within the body envelope. (1999, p. 203)

Contagion is thus theorized through the trope of intrusion in which human bodies are invaded by vicious, poisonous germs. The miasma theory is also built on the assumption that the physical systems of human beings are vulnerable to the deleterious influences of adverse circumstances. Hygienic practices and medical intervention are in this sense meant to block the invasion of diseases and regain certain ideal physical autonomy implied in the notion of health. The feature of permeability, which will be later perceived in postmodern discourses as the potential for corporeal becoming that should be welcomed, evokes anxiety about categorical uncertainty for the moment and calls for social or scientific effort to secure at any cost the clean body that is supposed to be sealed. Hence

¹⁸ Related discussion can be seen in McAfee’s Julia Kristeva (2004).

the significance of fear and sense of threat in the concept of dirt: such feelings maintain the momentum of guarding classification systems in defense of the self and clean which is prone to be contaminated by others. It will be made explicit in later discussion that such aspiration to an ideally closed-off body results in the way of perceiving contagion as transmission of single direction. To sum up for now, as contagion connotes the polluting forces of otherness in the self/other distinction, it is furthermore connected with what is assumed as corporeal vulnerability at which the self might collapse into such forces of other. Anxiety about ontological contamination is primarily anxiety about such vulnerability.

III.2 Abjection and the Border

Articulating the internal relations between pollution theory and social organizing principles, Douglas believes that the so-called primary order of the universe is based on exaggeration of difference rather than any on solid ground (1996, p. 5). It can be argued that for her contagion and dirt may not look nice but are not dangerous in essence. Succeeding in theorizing the so-called danger as a label rather than a given, Douglas does not go further to study the capacity of being contagious. Kristeva's discussion of the abject and the process of abjection, which owes a lot to Douglas' argument, also stops at the point of revealing the dirt as certain cultural construct. Kristeva's contribution to the agenda of dirt is to expand the range of discussion by encompassing the classifying imperative on the subjective level (Grosz, 1994, p. 192-5). Fully aware that Douglas has as her main objective describing primitive religious taboos as endeavors to instituting social divisions, Kristeva observes that at the second stage of her thinking, the anthropologist "introduces willy-nilly the possibility of a subjective dimension within anthropological thought on religions" by using the human body as the prototype of "that translucent being constituted by society as symbolic system" (1982, p. 66). She accordingly forges the supposition that "a (social) symbolic system corresponds to a specific structuration of the speaking subject in the symbolic order" (1982, p. 67, original emphasis). The notion of symbolic order here is certainly used in its psychoanalytical sense, suggesting the structuring of

the speaking subject in the signifying process. The advent of the speaking subject as well as its psychosomatic functioning, such as abjection, is firmly connected with the classification system of a given society.

Three general groups of abjection consist of the pure/impure mechanism, which include abjection toward food, abjection toward bodily waste, and abjection toward the indications of sexual difference. Kristeva refers to the identity strategy of the Jews as an instance and claims that for a social group to constitute oneself, there is a harsh combat which involves “*a series of separation* that are oral, corporeal, or even more generally material, and in the last analysis relating to fusion with the mother” (1982, p. 94, original emphasis). The continuum of such struggle can be found in the individual lives, which will last for the entire length of one’s personal history for the speaking subject to come into existence (Kristeva, 1982, p. 94). Moving from the macrocosm of human civilization to the microcosm of human psyche, her reflections reveal that in both cases the oppositions or symbolic patterns enacted in a classification system are exaggerated constructs which need to be continually invested in the processes of “sorting, segregating, and demarcating the body” (Grosz, 1994, p. 193). On the subjective level, the point of abjection is the demarcation of the self’s universe and the founding of the boundaries that define and confine “a clean and proper body” (Kristeva, 1982, p. 101). The ideal body aspired to is nevertheless not a given and has to be maintained with efforts. McAfee suggests that Kristeva’s abject differs from Freud’s repressed in that the latter can be kept well out of sight as long as it does not return while the former is violently rejected but can never be banished once and for all. The abject keeps hovering at the periphery of one’s existence, constantly posing “both a conscious and an unconscious threat to one’s own clean and proper self” (McAfee, 2004, p. 46). The process of abjection is therefore not a passage which a speaking being needs to negotiate only in the early stage in its development; it will persist throughout one’s whole life. Such ongoing private struggle brings our attention again to the condition of vulnerability explored in the preceding paragraph. A sense of threat is similarly summoned in the process of structuring the subject: “[t]here looms, within abjection, one of those violent, dark

revolts of being, directed against a threat that seems to emanate from an exorbitant outside or inside, ejected beyond the scope of the possible, the tolerable, the thinkable” (Kristeva, 1982, p. 1, italics added). Hence the horrors that haunt the subjects, especially those called by Kristeva as “borderline patients.” Shildrick vividly describes such imagination of constant menace as follows: “On the one hand there is the potential of internal leakage and loss of form, while on the other, it is at risk from the circulation of all those dangerous bodies—of women, of racial others, of the sick, of the monstrous—who both occupy the place of the other and serve to define by difference the self’s own parameters” (2001, p. 155). The abject serves as the hybrid grotesque which threatens to engulf the clean self.

Being designated as a border element in social analysis, defilement assumes the meaning of abject in the subjective structure. As the polluting power of those jettisoned by the social system as filth is in positive proportion with the efficacy of taboos, the question of abjection also relates to the margin or boundary of the structure. Kristeva thus claims that it is “not lack of cleanliness or health that causes abjection but what disturbs identity, system, order” (1982, p. 4). The abject “signifies the other side of the border, the place where I am not and permits me to be” (Kristeva, 1982, p. 3). Besides, the abject is a hybrid or borderline figure since it is comprised of polarized terms of the subject/object and inside/outside oppositions but remains irreducible to any of the categories (Grosz, 1994, p. 192). The state of intermixture which poses threat to self-identity, as have been mentioned, is inscribed within the conception of impurity in both social and subjective registers. So once more we see that if contagion draws much personal and cultural attention, such “appeal” is not absolutely due to hideous symptoms of diseases or any quality in itself. It is rather all the ambiguities it imposes upon the self-other distinction that makes contagion that disturbing. Douglas’ analysis of anthropological tradition and Kristeva’s psychoanalytical examination of abjection both cast suspicion upon the purity/danger paradigm by stripping away the values of dirt and the abject. However, providing a new way to replace the dichotomous structure distinguishing clean self from contagious other is not their primary concern.

III.3 The Need to Move beyond the Structure of “Self and Clean”

Actually, Kristeva asserts that each society has its abject and I think such claim has to be treated with much caution in case the dark side of humanity finds its excuse. Since abjection is described as one of the most fundamental processes constituting subjectivity, it is implied that for Kristeva the symbolic/classification system is somehow inevitable and inescapable. Challenging Freudian-Lacanian exclusive valuation of the paternal metaphor in their understanding of the psyche and culture by describing the missing mother, Kristeva does not argue against the importance of separating the child from the mother. It is true that the abject, repulsive yet irresistible, points to the weak spots of the symbolic order and calls into question the boundaries upon which both society and subject are constructed (Oliver, 1993, p. 56). Abjection nevertheless shows up as the painful effort of an infant to separate itself from others, primarily the maternal body, so that boundaries that separate “I” and other and provide the society with a sense of unity can ultimately be developed. Kristeva delineates abject and abjection as the guardians of the subject and the initiation of its culture. The symbolic order on which the subject and the society depend therefore seems to be untouchable. The danger of carrying such an observation to its extreme is that anxiety over contagion seems to be thus unconditionally legitimized and violent purging rites might be exerted to cast out what is considered to be non-self.

To avoid such regrettable reasoning and practices, it has to be kept in mind that as pointed out by Lechte and Margaroin, Kristeva also designates the speaking being as a subject in process (2004, p. 22). A subject that remains vigilant to keep hold of its own sense of self which is unstable is certainly a subject on trial. But the notion also has a positive dimension since it gives rise to, as McAfee points out, the key idea that “subjectivity occurs in an open system” (2004, p.40). An analogy is drawn between subjectivity and a living being which grows and recreates itself in the process of opening up to its milieu and other systems. Instead of being or rather having to be settled and consistent, the self keeps being affected by the influence of others, especially that of our beloved ones. In this sense, the “non-self” does not always have to be repelled and there can be a

diverse range of interactions between “self” and “other.” Although shattering the Western ideal of a detached being, this model of subjectivity deals mainly with the exchange of energy in the love relationship between people, and therefore human beings. To address the agenda of contagion more adequately, the notion of subject in process should turn to its biological source to include cross-species communication. To conclude the analysis of the relevance of Kristeva’s discussion of abject to the issue of contagion, I propose that in theorizing contagion the boundaries between self and other should give way to the idea of territory, which according to Deleuze and Guattari, “encompasses or cuts across the territories of other species, or intercepts the trajectories of animals without territories, forming interspecies junction points” in order to prevent brutalities against what is deemed foreign (1994, p. 185). I am not suggesting that borders should be banished altogether. My concern is rather that while overemphasis on the notion of a clean and proper body readily gives rise to anxiety over collapse of subjectivity, the formation of territory moves beyond the dichotomous structure and allows for more connections between entities.

IV. The Rise of Bacteriology and Measures of Immunization

So far I have examined the distinction of clean self and dirty other which emerged out of the logic of quarantine/sanitation which governed the practices of hygiene and avoidance in the early nineteenth century. I have also looked into the paradigm of purity and danger which such notion of clean self serves as an exemplar of and even gains much strength from. It can be found that the configuration of selfhood and the self/other relationship thus arose implicated the autonomous existences of certain unchanging, integrated unities which confront one another. Although critics such as Douglas and Kristeva insist that the categories of cleanliness and dirt should not be regarded as addressing any inner properties, the boundaries between clean self and dirty other was established as something essential (in a sense, even in Douglas’ and Kristeva’s arguments) and these categories soon became rigidified and closed-off. However, since the self-boundary was not watertight and therefore in need of constant maintenance, the

clean self was thought to be under the threat of being polluted by the dirty other. Contagion thus provoked anxiety about the condition of vulnerability, which was portrayed as a shortcoming. Such discourse was powerful and its effect on the notion of selfhood never really faded away. However, a drastic paradigmatic shift to which the notion of clean self had to respond soon came about. The onset of bacteriology in the late nineteenth century and the ensuing normalization of immunization as a new form of infectious disease prevention measure have constituted a consequential shift in public health in terms of its logic and language, which on the one hand inspire some theorists to deconstruct the notion of clean self in a brilliant way while on the other hand give rise to the “modernized” version of military metaphors of which the effect proves to be far-reaching.

As have been mentioned, Fracastoro had developed the ancient notion of disease being caused by certain seeds into a coherent postulate described as a “germ theory.” The physical reality of the disease-causing agents in question, however, could be revealed to the human eye only with the later development of medical technologies. It was not until 1674 did A. Leeuwenhoek provide the evidence of the existence of tiny creatures, which would eventually be known as microorganisms or microbes, with a primitive microscope. Moreover, the first definite proof that a microbe brought about an infectious disease of an animal was published by A. Bassi in 1835. Gest states that the term microbe, meaning “extremely minute living beings,” was first adopted in 1878 to refer chiefly to the bacteria (2003, p. 1). The early developments of microbiology therefore mainly consisted in discoveries in bacteriology. L. Pasteur, one of the pioneering figures of modern infectious disease research, performed a series of innovative experiments demonstrating that bacteria were responsible for processes of fermentation. He accordingly developed the practice of killing microbes with heat, which is named after him as pasteurization. Gest describes Pasteur’s contributions as “epoch-making:” “[f]ermentation was the first bioenergetic process to be understood from the standpoint of molecular chemistry, and the resulting clarification of the details of the fermentation process had a great impact on later developments in modern biology and medicine” (2003, p. 197). The

study of multitudes of fermentation processes enabled Pasteur to state definitely the germs of microbes did not emerge spontaneously but came only from the outside, a conclusion which, according to Birch, opened the way “to proving the germ theory of disease, that much disease is caused by the invasion of the human, animal, or plant body by microbes which overwhelm and weaken it” (1990, p. 15, origin emphasis). Pasteur, along with other contemporary scientists, henceforth set out to work on ways of catching, destroying and preventing microbes.

However, further breakthroughs in the modern germ theory of infectious disease occurred only after R. Koch, another giant in bacteriology, and his colleagues found the primitive techniques for isolation of pure strains of microbes. Koch observed that one microbe caused one disease, a tenet which would serve as the fundamental in designing vaccines. The last period of Pasteur’s career was devoted predominantly to developing vaccination procedures. The concept was not so original since inoculation to activate immunity to smallpox had been widely used for centuries. E. Jenner was the one who had worked on reducing failures of traditional inoculation procedures and, in Gest’s words, “had reinvented vaccination as a scientific procedure” (2003, p. 127, original emphasis). However, Birch claims that Pasteur’s method was significant in that unlike Jenner, who had used a disease not harmful to people to produce protection against a dangerous disease, he adopted weakened microbes of the disease itself to induce the body’s defense (1990, p. 52-3).¹⁹ Thus began the era of immunization.

IV. 1 The Risk-avoidance Logic

Immunization is a preventive measure which operates with certain logic very different from the logic of quarantine/sanitation on which early public health practices were based. However, Hooker notices that although historians and sociologists tended to contrast “older” and “unscientific” sanitation practices with “modern” and “objective” bacteriological public health, the “cleaning up” ideas continued to inform the earliest attempts to adopt the germ theory in public health.

¹⁹ Smallpox is actually a disease caused by virus. Virus was not rendered visible, however, until 1899. The work of bacteriology thus drew the most attention in the earliest phase of microbiology.

Vigarello remarks that the legacy of cleanliness persisted for quite a period of time in post-Pasteurian age while its perceptions was transformed by discoveries of bacteriology: “To be clean meant primarily to be free of bacteria, protozoa and viruses. To cleanse was to operate on these invisible agents” (1988, p. 207). The imagination of dirt extended to include microbes which could “deceive” the naked eye. Frequent baths and vigorous washing with the effect of disinfection were quickly adopted as treatises of hygiene. Since the new dirt could not be detected with sight, protection measures were predominantly invested in preventing transmission resulting from touching.²⁰ The hands thus became the bodily zone of primary concern. Another practice pertaining to this changed meaning of cleanliness was certain “individuated, ‘microbe-hunting’ policy” which was predicated on controlling danger and “preventing disease that lay latent in healthy, hence almost undetectable, sources” (Hooker, 2001, p. 130-1). The invisibility of dirt encoded in the poor had been deemed a weak spot in the actions of sanitation. Vigarello mentions that impoverished, “dirty” people were thought to “carry with them everywhere the germs of every disease, to the detriment of themselves and everyone they [came] into contact with” (1988, p. 207). People believed that with the aid of bacteriological techniques these circulating dangers could now be rendered visible, put under surveillance, and eventually eliminated. The measures of intervention thus consisted of those designed to notify, isolate, and disinfect dangerous individuals or other unsuspected transmitters of disease. Hooker argues that the underlying logic of these strategies basically kept in with the sanitary ideas of cleanliness and dirt. Taking the regulations of milk control carried out in Moorabbin during the interwar years as an example, she finds that the actions were rhetorically built on the terms of sanitation and purity.

However, since it was impossible to keep track of all bacteria all the time, the

²⁰ The fear of touching has had a long-standing resonance in European culture. The sense of touch had been associated with (sexual) infection and the fear of contagion tended to migrate to become attached to minority groups of each society, the Jews, the poor, and so on. Sennett vividly describes the general aversion toward touching the body of a Jew in Renaissance Venice because “Jewish bodies were thought to carry venereal diseases as well as to contain more mysterious polluting powers” (1994, p. 215). The uneasiness about touching was restated with the lexicon of bacteriology and given new strength in the modern era, but the apparition of scapegoating certain groups does not go away.

sanitary framework of safeguarding the healthy from contamination by locating and then cleaning up possible locations of disease transmission was critically shattered together with the medical fantasy. Pasteurization and immunization were practices called into play at the moment when the effort of locating danger was found to be unsuccessful. Both, according to Hooker, were constructed through logic different from that of dividing clean and dirt. J. Lister, a doctor in Scotland, was one of the forerunners who applied the germ theory in the hospital, using the antiseptic system to reduce infection. The principle of pasteurization was also widely adopted in the dairy industry, as a result of the perceived failure of sanitation policies, to produce germ-free milk or yogurt. The central ethos would be to set a unitary standard of safety. Hooker thus argues that pasteurization, which aims at killing germs and in a sense seems to be an action of removing danger, is primarily a technique structured through the logic of risk-reduction at a public level. Pelling states more clearly that “Lister was...not promoting cleanliness, but practices which could prevent infection by Pasteurian germs even in the absence of cleanliness” (2001, p. 31).

Immunization was another blanket measure that pursued protection across the population and made the hygienic conditions of individuals almost irrelevant. Hooker gives an account on how mass immunization was conducted to treat diphtheria:

Instead of locating the carriers of diphtheria, mass immunization was pursued by first locating all the “susceptibles” by the Schick test. Where the carrier was “dangerous,” the susceptible was “at risk.” Individuals were treated according to their immune status...Aside from the biological property of immunity, the policy made absolutely no social distinctions at all. Instead, immunization was the first truly population-level policy. It aimed to achieve a single biological standard across the entire population. Focused on each individual, it sought a goal for the whole social body. By creating a unitary biological standard at the level of population, the eugenic threat posed by the sickly carrier disappeared. (2001, p. 139)

Hooker thus claims that pasteurization as well as immunization was the

earliest risk-based public health strategy which broke away with the cleaning-up model addressing contaminating dangers. It has to be stated that sanitary strategies and assumptions were not totally replaced by risk-reduction techniques. The actions committed to secure cleanliness were still in use and the moral implications intrinsic to the logic of sanitation were never lost. Principles of guaranteeing safety, however, did gradually alter the picture of public health.

IV. 2 Vaccination and the Logic of Contagion

Historically related with pasteurization and sharing with it the ideal of achieving a unitary standard of safety, immunization also operated through still other logic which is called by Bashford as “the logic of contagion” (2001, p. 40). As have been mentioned, vaccination against smallpox as the earliest instance of this preventive measure had been practiced for centuries and was improved by Jenner in the nineteenth century. While immunization is now normalized as an effective way of preventing diseases, smallpox vaccination had been historically accompanied by controversies configured in various ways. Bashford notices that historians who analyze these disputes usually “make some reference to the sense in which the vaccine matter was understood as a contaminant and the procedure itself contaminating: ‘a compulsory pollution of our veins’” (2001, p. 39). The mechanism of immunity existed only as an unsettled concept in the nineteenth century. How immunity from smallpox resulted from vaccination was not really the concerns of most practitioners of the period. E. Metchnikoff brought forth a theory of immunity which was close to modern understanding of the system in 1883, proposing the ideas of active host defense against foreign bodies. His arguments were, however, largely ignored at the time. Most of the researchers of immunization thus developed vaccines on a crude theoretical ground. For example, Pasteur designed vaccines on the grounds of the assumption that “the invading organism exhausted an essential nutrient during the first infection and was thus unable to survive in a host depleted of the substance,” a model workable but far from meticulous (Bashford, 2001, p. 43).

However, while many of the major issues of immunology did not become matters for discussion until the twentieth century, people did notice that the

procedure of vaccination involved a process of “pollution” across various boundaries. Deliberately introducing a foreign matter into the integrated body, vaccination defied commonsensical perceptions of the time that the clean self and the dirty other should be separated. Bashford thus contrasts vaccination with what she designates as “quarantining strategies” which were structured through dividing cleanliness and filth, arguing that “far from working on a preventive model of separation and the maintenance of lines of hygiene, vaccination was precisely about contact, mixing, and dissolving the foreign ‘other’ within the self” (2001, p. 40). This contagious logic of preventing illness by getting sick confused the categories of self and other, clean and unclean, normal and pathological. Nineteenth-century opponents of vaccination basically felt uneasy about such boundary-confusing as they voiced their worries about the insertion of diseased matter into the human blood, especially when the vaccine lymph used in their time largely came from animals. Smallpox vaccine was composed of the microbes of the mild disease of cowpox; Pasteur’s most remembered treatment of rabies used fragments of the spinal cord taken from infected rabbits. The inter-species exchange involved in the procedure of vaccination gave rise to anxiety about “the as-yet unknown results of unnaturally crossing diseases between species” (Bashford, 2001, p. 45).

On top of concerns about vaccine diseases engendered by animal lymph, the very fact that an unhealthy foreign body was incorporated into the frame of self in the process of vaccination was sufficient to induce uncomfortable responses in a culture that had been keen to ensure unambiguous boundaries. Practitioners of vaccination, countering the opposing voices, strived to promote the ideas that “‘health’ or at least ‘immunity’ could be achieved through a process of infection and cross-infection across multiple boundaries” (Bashford, 2001, p. 44). The vaccination scar was gradually taken as a symbol of security, and the individual bearing the mark was permitted to cross lines of hygiene, going into and out of both “clean” and “dirty” spaces. Vaccination ensured safety if not cleanliness. Those who did not have scars at all turned out to be more suspect considering the threat of an incubation period. Bashford concluded that even purity itself became

the danger in this scheme because only the bodily evidence of vaccination “was the real marker of safety and security” (2001, p. 48). Not only the separation of clean and unclean but also the hierarchical opposition of purity/clean and danger/contamination was thus brought into question with the development of immunization.

IV. 3 The Productive Breaching of the Self-Boundary

Both advocates and opponents of the measure of immunization focused much attention on its underlying logic of contagion. Some theorists found that the efficacy of vaccination in both individuals and populations facilitated a positive understanding of contagion, which could now be explored as certain capacity. Providing certain protection to enhance the chance of survival, the contagious mechanism involved in immunization gave rise to a new meaning of the concept of human vulnerability. As have been mentioned, corporeal vulnerability has been figured as a highly unwelcome condition in a discourse in favor of an ideally closed-off body. Contagion is referred to as an assault of the integrated body by certain poisonous other in this framework. Vulnerability to infection becomes a reminder of the precarious status of the unified self, inducing both corporeal and ontological anxiety. Shildrick argues that seeing from a different perspective, this quality can be revalued as something necessary and profitable instead of being a deficiency that should be disavowed. If the process of opening oneself to an engagement with certain irreducible and unforeseeable strangeness renders the self vulnerable, such openness inevitably generates a sense of ontological uncertainty but does not necessarily result in bodily disasters. The encounter with a contagious otherness in vaccination serves as biomedical evidence supporting such claims to mutual engagement.

Shildrick refers to poststructuralist insights and the deconstructive approach to demonstrate that the threat of contamination is as phantasmatic as the notion of bounded self. Stepping back from the “relentless binaries of western epistemology that set health against illness, ..., the self against the other,” it would be found, she argues, that the question of contagion resides “not in the supposed materialities of bodies, but in the structure of discourse itself” (2001, p. 161). Reading the body

as a discursive construction, Shildrick suggests that “the inherent leakiness of meaning in the logos is paralleled by a necessary uncertainty about bodies” (2001, p. 164).²¹ Such account follows a familiar argument of poststructuralism shattering the borders of both concepts and bodies is that instead of having any mutually exclusive properties, the binary terms that are defined against each other are always already tainted by each other. In addition to this primary move, Shildrick maintains that the structure of iterability, which is understood as a process of resaying, speaks especially to the question of contamination and vulnerability:

[I]nsofar as the constitution of the subject and the materialization of the body are performative, the process is never complete, but must be repeated constantly: it must be re-iterated. There is in consequence no way of securing the purity of the subject, not least because in the mode of becoming, in the iterative structure itself, there is always slippage such that the “standard” effects its own internal othering. In other words, iterability is not simply the repetition that “fixes” what is performed, but the scene of its difference from itself. As Derrida insists: “Iterability alters, contaminating parasitically what it identifies and enables to repeat ‘itself’.” (2001, p. 164)

While Douglas observes that hierarchical oppositions are exaggerated notions which need to be secured repeatedly in purification rites, Derrida declares that this effort of repetition paradoxically troubles the very structure it seeks to maintain. The claims to purity are doomed to fail since the sovereign self pursued in the binary system is basically an illusion. Hence no need to fear contagion. We have been, and will always be vulnerable. Theorizing contamination of self by other mainly in the linguistic register, Shildrick looks into the same trajectory at work in bodies, describing “a radical undoing of the very notion of embodied being as something secure and distinct from its others” (2001, p. 165). What is at issue for her is the revaluation of vulnerability as “an inalienable condition of becoming” (2001, p. 165). The monstrous hybridity that used to be disavowed in order to

²¹ By this claim, Shildrick draws attention to the fundamental entanglement of the material and the discursive rather than address the body as a completely abstracted concept (2001).

maintain certain closed and complete boundaries is now regarded as attesting to what Shildrick calls “the very possibility of a fully corporeal becoming” (2001, p. 166).²² Vulnerability to contagion entails physical transformation that is not always dangerous.

IV. 4 The Benefits and Limitations of the Logic of Contagion

The logic of contagion in vaccination thus serves as the point of departure for exploring the possibility of reformulating the notion of self-hood and self-other relationships by thinking of contamination more as an exchange than as a threat. The boundary of the self has fractured or been fractured in a productive way; the connection between living bodies in the process of transmission is also welcomed as something rewarding. Exploring the infectious activity within the pregnant body performed through placenta, Maher (2001) also finds another biomedical evidence for the statement that the subjective and corporeal confusion in contagion is a process both unavoidable and profitable. For Maher, the placenta is understood as a locus of contagion where communication of material between the maternal and fetal entities takes place:

The crossover occurs here...It (the placenta) is a materialization of contagion itself...It offends and refigures bodily integrity and boundaries, it allows for at least two to work together at the site of one, while preventing against a collapse into singularity. The placenta operates as a border, but only a porous and provisional one. It enacts contamination and it insists contamination, seepage and crossover are constitutive of embodied subjects, rather than threatening to them. (2001, p. 202)

The conditions of maternal-fetal transmission are extended by Maher to include the possibility of a permeable interpretation of subjectivity. Being situated at the point of birth, the placenta signifies the locus “at which each embodied subject, despite its apparently bounded nature, is located in a relation of connection and interdependence through its origin” (Maher, 2001, p. 203).

²² The significance of this claim in will be spelt out more explicitly when theories of virology and immunology oriented to molecular biology become available.

The embodied subjectivity is therefore not only without closure but also communicative by nature. Besides, contagion is once again refigured not as something to be feared but as certain precondition for the production of (human) bodies. Maher accordingly argues that the self-other relationship is renegotiated profitably in the process of mutual engagement while the categories on either side of the hierarchical opposition are complicated by each other.

Both Shildrick and Maher recall the deconstructive approach to subvert the notion of the bounded selfhood built on the notion of cleanliness. While in their arguments the binary terms are radically confounded and the productivity of vulnerability to contagion is made explicit, their focus of attention remains certain mixture of the two terms and do not pursue further. They juxtapose the two, blurring the boundary between the two, but do not really explore the possibilities beyond the binary pair. Therefore their conclusions do not respond to the rhizomatic connections which have been continually established among all the registers involved in contagion and thereby precede the principle of dichotomy. Besides, although the two theorists successfully open up the boundaries circumscribing the notion of unified self in their way, more details about the processes of mutual engagement should be mapped out to see exactly how contagion is not the result of unilateral imposition. Finally, more has to be said to differentiate between the notion of boundary and that of territory so that the mutual engagement of the hierarchical oppositions proposed by them can be reinscribed in terms of deterritorialization and reterritorialization. Therefore, finding the poststructuralist way of conceptualizing contagion proposed by Shildrick and Maher interesting and inspiring, I will add to the pictures they have brought out some details so that an even more sufficient model can come about.

V. The Rise of the Military Metaphor

The public health measure of vaccination inspired some theorists to think of the process of contagion as something beneficial; however, the success of pasteurization and immunization in dealing with infectious diseases was

interpreted by most people as the victory of the bacteriology-informed germ theory and related technologies, as human efforts, over pathogens. For them, the objective of vaccination was after all to immunize against infectious diseases. Besides, the discipline of immunology, asserted by Tauber as “the sibling of microbiology,” would gradually establish the immune reaction as a host defense to infection (1997, p. 4). Pelling claims that “[b]acteriology created a new source of scientific authority for medicine, and made an enormous difference to its reputation for effectiveness in both prevention and cure” (2001, p. 32). Biomedical concepts of contagion have been henceforth centered upon the hypothesis of disease specificity, proposing a one-to-one relationship between certain infectious disease and certain invasive pathogen. Since the presence of a disease was defined by the presence of the microbe exclusively responsible for it, the ideas of cleanliness and filth ceased to dominate the biomedical explanations of diseases. It should be noted, however, that contagion was reiterated as an invasion of the self by certain menace out there in a “scientific” way. Researchers of bacteriology observed that these disease-causing agents were certain self-willed living matters equipped with certain ability of self-multiplication that was beyond human control. The bacteriological accounts of contagion thus basically consisted of the description of the confrontation between human beings as victims of infection and disease-causing microbes as sly invaders.

What Sontag designates as the military metaphor reached maturity with the development in microbiological science.²³ Contemporaries of Pasteur felt upset about invisible, tiny attackers which rendered the human body all the more vulnerable than ever: “It was an invasion by the infinitely microscopic, a case

²³ Sontag (1989) notices that the military metaphor applied to illnesses and their treatment had emerged long before modern medicine. However, it was not until the advent of bacteriology that it was formally asserted that illnesses were caused by certain “intruding” organisms: “It was when the invader was seen not as the illness but as the microorganism that causes the illness that medicine really began to be effective, and the military metaphors took on new credibility and precision. Since then, military metaphors have more and more come to infuse all aspects of the description of the medical situation. Disease is seen as an invasion of alien organisms, to which the body responds by its own military operations, such as the mobilizing of immunological “defenses,” and medicine is “aggressive,” as in the language of most chemotherapies” (Sontag, 1989, p. 9).

of the invisible undermining the strong” (Vigarello, 1988, p. 205). Hence “the constant possibility of attack and the repeated exhortations” (Vigarello, 1988, p. 205). The boundary between human self and microbial other was beginning to be encoded in the imagery of body at war. Waldby’s account perfectly describes such military metaphors, which, according to her, “also motivates the rhetoric of the most sober microbiological and immunological textbooks:”

Declarations of epidemic are declarations of war. In the biomedical imagination, epidemics are crisis points in the Darwinian evolutionary struggle between the microscopic, inhuman world of bacteria and viruses, and human populations. The microscopic world is on a mission to colonize the human, to render the human body an extension of bacterial and viral interests...Infectious disease is the product of successful microbial propagation in a particular body, when a viral or bacterial population overtakes a single body’s population of healthy cells. (1996, p. 1)

Warfare analogies have prevailed in a multitude of descriptions about the “harmful” effects of microbial activities on human bodies, including the most professional scientific characterization. Infectious diseases have been henceforth mentioned as one of humanity’s most perennial and most frightful adversaries. The task of scientists has been to provide essential knowledge and technology to vanquish the little creatures responsible for the pestilence.

This battle against the microbial world reaches a climax at the declaration of the AIDS epidemic in the early 1980s. Several critics, such as Sontag (1989), Waldby (1996), and Treichler (1999), notice that the field of AIDS teems with the language of militarism. Due to the HIV virus’s ability to impair the immune system, the battle extends beyond the fields of biomedicine and encompasses the whole biopolitical situations. War on AIDS is understood not only as the war on virus but also the war on those who have already or probably been infected with the virus and are accordingly considered to “have passed irrevocably over onto the side of the inhuman, the side of the virus” (Waldby, 1996, p.4). The commentators also mention that violent biomedical and public health practices are approved and authorized as military campaigns so that human beings can win the battle. As

SARS, a lethal form of pneumonia caused by a new strain of virus, appeared in 2002, practices of isolating patients, quarantining suspects and imposing travel sanctions on affected areas were utilized extensively. One of the most well-known examples is certainly the action of sealing off Taipei Municipal Heping Hospital. The government and public health experts did not actually intend to hark back to the logic of sanitation, though. The lines drawn against this unfamiliar disease are military rather than hygienic ones.

V. 1 The War between the Human Self and the Viral Non-self

Within the core of military accounts lies the anxiety or even paranoia about the human self being invaded by certain microbial, viral, and even pathological other, which once again points to certain unwelcome state of vulnerability. The greater the anxiety, the more tightened the self-boundary has to be. The immune system has accordingly been understood as certain internal military machine which draws out and defends at any cost the boundaries separating self and non-self, which is mostly viewed as dangerous to the self and readily assumes the position of the threatening other. The “intrusion” of pathogens will be responded with the counterattacks of the immune system so that the self/other distinction can be maintained and the self can remain bounded. Moreover, while it is expected that each cell or component of the human body bears certain signature which can be recognized by the immune system as the essential property of the self, the selfhood thus declared becomes one that is not only closed-off but also “singular, homogeneous, integrated” guaranteed at the molecular and cellular level (Hatty & Hatty, 1999, p. 249). The self-boundary is thus supposed to be marked off unequivocally and be made concretized by immunological activities. One more thing to be pointed out is that the way war metaphors postulate the self against a wide range of invading others correlate with the picture depicted in what Tauber call spatial disorientation or spatialization (1997, p.183). He finds that metaphors of spatialization, keeping with people’s intuitive perceptions that their bodies are circumscribed bound and separated off from the outside environment. Our body is accordingly conceptualized as “a container with an in-out orientation” (Tauber, 1997, p. 183). Such “embodied” way of organizing the body and the “rest” of the

world can be applied readily to military accounts featuring outside-in invasion and definitely plays a critical role in sustaining the warfare imageries. Finally, it has to be said that such imagery of body at war is easily transformed into the assertion of the society and even the human world at war. The military metaphors powerfully contribute to enabling any repressive practices to be put into effect in the name of battle against contagion and stigmatizing the infected while the stigma tends to combine with and furthermore strengthen existing social prejudices. The language of war-makers thus applied is so consequential and really should be got rid of in no time.

If the warfare analogy applied to infectious diseases, because of its seductive power, has been so overwhelmingly accepted that so far few related critiques have been advanced, the latest development in the way pathogens respond to biomedical treatment which has been designed with the objective of fighting against and eliminating them actually serves as one of the reminders of its insufficiency. As have been mentioned, the military metaphors have permeated popular imagination as well as related biomedical discourses. Since the advent of bacteriology, microbes and viruses have been mostly represented as human beings' "main competitor for supremacy on Earth," and biomedical knowledge has since then been much drawn on to fight these tiny enemies (Hatty & Hatty, 1999, p. 245). Following Pasteur's work, a series of scientific discoveries and developments in microbiology were made to improve the quality and longevity of human life in this "battle" waged against microbes. The intensive efforts invested eventually led to the "golden age" in the mid-twentieth century when people believed that human beings were finally able to defeat infectious diseases. The applications of various antibiotics in disease cure marked the first peak of such optimism. For example, P. Ehrlich was believed to offer an effective answer to infection by developing specific drug treatments for syphilis in 1912. Discovered by A. Fleming in 1928, penicillin became available for everyday use in the 1940s. Ryan maintains that the Second World War especially ushered in "a new era of enlightenment that [had] been termed 'continuous evolution'" (1997, p. 5). The invention of the two antituberculosis drugs in 1943 was instantaneously followed

by a continuing avalanche of antibacterial discoveries. People became convinced that they had contrived the “magic bullet” so that every known bacteria-induced disease could now be treated. Besides, there was also a proliferation of significant breakthroughs in biological and medical researches on viruses. Viral infection which was previously deemed untreatable seemed to become amenable to early treatments with the aid of a range of antiviral drugs.

These “triumphs” of human species over the microbial world were so promising that, according to Price-Smith, “prominent experts in medicine frequently spoke about the eradication of infectious disease and the subsequent need to close public health programs and training facilities during the mid 1970s” (2002, p.4). With a solid understanding of microbes, the new front-line antibacterial drugs, the most advanced vaccine development, and programs of epidemiology, it was widely held that a complete conquest of these minuscule enemies was just a matter of time. Sparse occurrences of infections of the period were thought to be restricted to regions with poor medical conditions and would definitely be drastically improved with advanced biotechnological interventions. Ryan referred to this prevailing spirit of celebration of the postwar years as a sort of delusion.

VI. The Collapse of “Miracles of Science” and the Lesson of Becoming

However, if biomedical knowledge has been called upon as the salvation of the human world, the most recent development is that those “miracles of science” seem to eventually fail human beings. The emergence of AIDS as a global pandemic was agreed upon by many theorists to raise the alarm for populations around the world that they are going to contend with resurgence in infectious disease.²⁴ As the WHO announced a worldwide health crisis in 1996, the spread of various emerging infectious diseases had become “an urgent situation:”

Far from being over, the struggle to control infectious disease has become increasingly difficult. Diseases that seemed to be subdued, such as

²⁴ Related discussion can be seen in *AIDS: The burdens of history* edited by Fee and Fox (1988), Ryan’s *Virus X* (1997), Price-Smith (2002), and Van Loon (2002).

tuberculosis and malaria, are fighting back with renewed ferocity. Some, such as cholera and yellow fever, are striking in regions once thought safe from them. Other infections are now so resistant to drugs that they are virtually untreatable. In addition, deadly new diseases such as Ebola haemorrhagic fever, for which there is no cure or vaccine, are emerging in many parts of the world. (World Health Organization, 1996, p. 1)²⁵

Arresting episodes of disease emergence have accented the past decades and what makes the condition “worse” is that many of them seem to become untreatable. New zoonoses, such as HIV, SARS, and avian influenza, “beat” vaccine projects with their ability of rapid mutation. Lethal diseases once regarded as under control are coming back while the effectiveness of many of the formerly powerful antibiotics is largely reduced because of increased bacterial resistance to them. One of the most conspicuous examples is the return of tuberculosis in even developed countries. The dream of hygienic containment has been seriously crippled. Human beings are now facing the global spread of infections and no effective medical prevention and therapy seem to be available. The contagion discourse has thus taken on an apocalyptic dimension in popular imagination, motivating the construction of what Ryan calls “the doomsday scenario” in related literature (1997, p. 363). Hatty and Hatty note that while millennial change or turn-of-the century always engenders anxieties about the future, such fears are condensed into HIV/AIDS at the close of the twentieth century (1999, p. 236). Although medical and social interventions have been intensely deployed to combat the disease, the struggle with pestilence depicted as one of the Four Horsemen of the Apocalypse seems to prove to be a sustained and harsh one.²⁶

For theorists of risk society such as Beck and Van Loon, emerging infectious diseases which break the myth of the victory of biomedicine should be viewed as part and parcel of the “wider productive assemblages of modernity”

²⁵ This report is available at <http://www.who.ch/whr/1996/press1.html>.

²⁶ The phrase “Four Horsemen of the Apocalypse” originates from the *Holy Bible*, designating four disasters, War, Famine, Pestilence and Death, that will befall human beings as the world is approaching its end. In addition to Hatty & Hatty (1999), Van Loon (2002) also uses this expression to specify the position of infectious diseases within the apocalypse culture of our generation.

(Van Loon, 2002, p. 23).²⁷ Along with other modern projects launched to do people good, the large use of antibiotics enables certain new strains of infections to emerge. Beck furthermore argues that the risk thus generated brings our attention to the very inability of a highly developed form of reason which used to guarantee human mastery of the world. Fully appreciating the contributions of Beck and Van Loon in mapping out how risks might emerge out of the process of industrialization and modernization, I would focus my analysis on two perspectives implicated in their arguments. First, the variety of ways infectious diseases arise point to the fact that there is no way for human beings to get rid of and even to live without microbes and viruses since they obviously constitute a part of life which can not be reduced. Besides, it is also made explicit that the measures based on the rationale of ensuring the supremacy of human beings by

²⁷ The notion of modernity used here is designated by Beck (1992) in *Risk society: Towards a new modernity* as second modernity in which “bads” are no longer considered as lack of goods or obstacles to be overcome but take the new meaning of “manufactured side-effects of [the] very attempt at overcoming” (Van Loon, 2002, p. 23). He argues that contemporary life is replete with new hazards produced by a modernity that knows no limits in pursuing progress. For instance, it has been acknowledged that conditions of modern life, apart from the environmental factor, are also consequential determinants of the appearance and circulation of infectious diseases. The construction of industrial projects, such as highways or water reservoirs, as well as the rise of mega cities draw together human beings and microbes and thus create “perfect” disease pools in which pathogens rapidly increase. Increased circulation of people, goods, and information closely connected with the process of globalization is another significant, and perhaps the most prominent, force that contributes to the spread of infectious diseases. Travel with unprecedented speed across the globe is facilitated by technological progress in transportation. From the perspective of epidemic management, large-scale and accelerated international movement presents a grim challenge since diseases once confined to certain areas of the globe can now easily cross geographical barriers and spread worldwide within very short time. Lederberg vividly describes such situation in “Infectious disease as an evolutionary paradigm,” which is available at <http://www.cdc.gov/ncidod/eid/vol3no4/adobe/lederber.pdf>, that “[a]ffluent and mobile people are ready, willing, and able to carry afflictions all over the world within 24 hours notice” (1997, p. 6). Besides, more access to potential hosts, according to some researchers, increases the virulence of pathogens. In “Globalization, development and the spread of disease” available on the INTERNET at <http://www.converge.org.nz/pirm/lurgi.htm>, Goldsmith uses the phrase “pathways for disease” to designate the way immense movement plays a crucial role, alongside the effects of ecological crises, in releasing microorganisms and viruses from their natural habitats, enabling them to transfer to new host populations or to become more virulent in immunocompromised hosts. Such novel “mobility” and “efficiency” of disease distribution made possible in the very process of modernization renders the hygienic prevention and containment of diseases a very difficult task. And the last but not the least condition which contributes to the emergence of new strains of infectious diseases is certainly the overuse of antibiotics.

eliminating pathogens do not work out and moreover miss the point. Not only is it impossible to eradicate infectious diseases with any biomedical efforts, which has been implicitly based on warfare descriptions and is supposed to constitute a form of reason, but there is no need to fight against pathogens in certain paranoiac battle. The swarming populations of microbes and viruses actually have coexisted with human beings and will remain our symbiotic partners on the Earth. The way they have interacted with human beings is far beyond the scope of the stories describing desperate struggles for life.

Therefore, instead of justifying the doom-day imagination, the impossibility of eradicating infectious diseases urges us to acknowledge the way life works in which bodies are situated within complex webs and think about how we can engage in, in Shildrick's words, "an ethics of risk" with which we explore the possibilities of interacting with and collaborating new associations with pathogens (2001, p. 166). The remaining part of this paper will be devoted to proposing a new model of contagion which, instead of tracing how the self collapses in a disaster caused by the other, addresses the way heterogeneous bodies are grouped together and thereby come into a range of relations. In this different picture, contagion brings our attention to the body's capacity rather than certain unwelcome vulnerability and therefore points to a notion of subjectivity which is engaged in processes of folding and unfolding in relation to the "outside." In other words, contagion could be understood as a lesson of becoming and relating which breaks away with the familiar assumption of a consistent self and thus renders the tradition notions of self/other relationship irrelevant. Due to the prominent interest in viral infection in our age²⁸, I will recast the concept of contagion primarily by going through certain ideas in modern virology. Actually, the latest findings in virology prove to be rich resources in recasting the issue of contagion.

²⁸ Viruses have played the part of "superbugs" in the relatively recent apocalyptic imagination about incurable diseases for years. The strains causing hemorrhage diseases, usually serving as the prototype of killer viruses, have featured a range of epidemiological science fiction and films. Other publications that might be termed as popular medical science deal with Ebola, which has occupied public attention for its disturbing symptoms. Three of them are Preston's *The Hot Zone* (1995), William Close's *Ebola* (1995), McCormick and Fisher-Hoch's *Level 4: Virus Hunters of the CDC* (1996). Viral transmission is therefore made the most "eye-catching" contagious pathways in modern society.

VI.1 Body as a Conglomerate Consisting of Diverse Elements

As have been demonstrated in the preceding paragraphs, the traditional conceptualization of contagion gives rise to an idea of “the self and clean under attack” which nurtures certain cultural obsession with the possession of a “clean and proper body” as well as the maintenance of a well-defined and stable self-boundary. To effectively counter such model so that certain space can be opened for new understandings of contagion and subjectivity, I propose to first formulate a notion of body which does not have to be clean and proper and to make explicit that contagion is not necessarily a unilateral invasion. We can start from recognizing that instead of being certain sanitized self with a well-defined boundary, our body is actually a conglomerate consisting of diverse elements. It has been observed in a subfield of biology that the phenomena of symbiotic associations, many of which have originated as cases of bacterial or viral infection, pose a challenge to the notion of integrated and unified body by addressing a condition of existence which is composite and mobile²⁹. Evidence collected by a group of symbiosis researchers has launched what Sapp calls a “quiet revolution” in which what has been thought of as a self-contained organism is found to be “a merger of two or three more different kinds or organisms living together” (1994, p. xiii). While most people might dream of a sanitized world in which no microbes and viruses exist, these scientists learned that the world actually teems with microbial and viral life; moreover, microbes and viruses are integral to all life on earth. Salyers and Whitt observe that at every single moment people experience directly and indirectly the effects of microbial and viral activities without realizing the fact (2001, p. 1). The bodies of humans and animals, generally classified as eukaryotic organisms, actually carry at least ten times more prokaryotic cells than eukaryotic cells:

Prokaryotes are smaller than human cells, so the human cells account for a

²⁹ There is no universal definition of symbiosis among biologists. I use this term in the sense which follows the description of A. Bary that includes a wide range of complex associations, such as parasitism, mutualism, etc., under the rubric of symbiosis (see Sapp, 1994, p. 1). It should also be noted that symbiotic interactions, according to Werner Reisser, occur between not only distinct species or organisms but also “between dissimilar genomes” (see Ryan, 1997, p. 307).

far greater volume of tissue than the prokaryotic cells, but the prokaryotes are still a significant component of the body. These prokaryotes are not just contaminants; they play an important protective and nutritional role. The microbial populations that begin to develop in various body sites shortly after birth and remain in these sites throughout life are called the microbiota of the human body. (Salyers & Whitt, 2001, p. 219, original emphasis)

Such observation of what Salyers and Whitt call our “prokaryotic side” has already profoundly contested the postulated integrity of human body. Instead of being certain sanitized self enclosed within a well-defined boundary, our body is actually a conglomerate consisting of diverse elements, which forms a territory that engages in the complex movements of unfolding and folding in relation to other territories.

Moreover, symbiotic alliances which cut across genetic lines of species and group together the most heterogeneous elements, according to Margulis and Sagan, account for the creative forces of evolutionary innovations and therefore the emergences of new life forms in a more adequate way than natural selection does (1995, p. 115). Since most of the cases of symbiosis originated from infectious diseases³⁰, Rackham claims that biological evolution amounts to events of contagion: “We become, we evolve with our symbionts, our most intimate partners, and we cannot survive without them” (2001, p. 222, original emphasis). Contagion thus brings our attention to dynamic processes in which the human being, the pathogen, and even the vector, neither of which claims a unified essence, form cross-species connections, collaborating possible bodies that have never been seen before. Viral traffic which involves the horizontal passing of genetic particles between different species especially makes explicit how innovative associations are formulated.³¹ Once the obsession with certain sanitized

³⁰ Researchers like Sapp believe that there is no absolute distinction to be made between phenomena of symbiosis and cases of diseases (1994, p. 79). The pathological effects of microorganisms in “higher” animals are thought to be at the root of symbiotic associations.

³¹ Deleuze and Guattari give an account of how viral infection renders “the old model of the tree and descendent” invalid: “Under certain conditions, a virus can connect to germ cells and transmit itself

self and the correlative notion of self-boundary has been got rid of, contagion could be thought of as the body's capability of relating and becoming. Besides, as it has been made explicit that the apparently self-contained body of the individual should actually be approached as certain synthesis of diverse registers which groups together different components, the notions of clean and proper body and an integrated selfhood turn out to be both illusions. What we have now is rather certain connective syntheses which connect a little bit of this and a little bit of that and engage in a dynamic process in which potentially unlimited number of connections can be continually made in all directions.

VI.2 The Function of Virus Receptor

Having broken away with the notion of human body as a self-contained unity by declaring contagion as one of the core events of life, I will now delve into the process of viral infection to make it more explicit that instead of coming about as a result of unilateral imposition, contagion requires interaction between the bodies involved. We can even map out in the process certain vector of inside-out, in the language of those preaching the threat of certain (outside-in) intrusion, by which the human cell asks for contagion as well as certain motivation to contagion on the part of the human cell. Such reflection is significant since it serves as the key for us to really break away with the idea of human beings as victims to infectious diseases and to fully appreciate the condition of existence in which instead of asserting certain autonomous self, living beings "enjoy only a precarious form and are a site for the transmutation of forces" (Pearson, 1999, p. 221). Far from being a closed-off entity which should be defended at any cost, what we recognize as human body should be understood as certain threshold to multiplied routes and connections which proceed in more than one direction. Medical textbooks generally describe the process of viral infection as starting with its attachment to a

as the cellular gene of a complex species; moreover, it can take flight, move into the cells of an entirely different species, but not without bringing with it "genetic information" from the first host (for example, Benveniste and Todaro's current research on a type C virus, with its double connection to baboon DNA and DNA of certain kinds of domestic cats)...Transversal communications between different lines scramble the genealogical trees." (1987, p. 10).

cellular receptor.³² The initiation and spread of viral infection depends on whether the virus can find the “right” cells to infect:

Viral infection is initiated by a collision between the virus and the cell, a process that is governed by chance. Therefore, a higher concentration of virus increases the probability of infection. However, a virus is not able to infect every cell it encounters. It must come in contact with the cells and tissues in which it has evolved to replicate. Such cells are normally recognized by means of a specific virion-cell surface receptor interaction, a process that can be either promiscuous or highly selective, depending on the virus and distribution of the cell receptor. The presence of such receptors determines whether the cell will be susceptible to the virus. However, whether a cell is **permissive** for the replication of a particular virus depends on other, intracellular components found only in certain cell types. Thus, *cells must be both susceptible and permissive if an infection is to be successful*. (Flint, et al., 2000, p. 102, original emphasis, italics added)

It is revealed in the above account that what is popularly imagined as malign invasion of the virus involves a degree of participation on the part of human cell. The interaction between viruses and cell receptors plays a significant role in determining whether the viruses will be able to enter the cells and thereby start their life cycles.

The infection process of the virus begins with its attachment to a virus receptor, which is defined as the cellular molecule expressed on the surface of a susceptible cell. Since binding to the appropriate receptor is essential for virus entry, cells that do not express such molecule can not be infected by the virus. Generally speaking, each virus requires a specific primary receptor or a particular set of receptors. But for most viruses, binding to one cellular receptor is insufficient to initiate replication and a supplementary cell surface molecule,

³² Related discussion can be found in Virology by Levy, Fraenkel-Conrat, and Owens (1988); *Principles of virology : Molecular biology, pathogenesis, and control* by Flint, et al., (2000); *Viruses and human disease* by Strauss and Strauss (2002); Basic virology by Wagner and Hewlett (2004).

which is called coreceptor, is required in such cases. I think that the fact that more than one receptor is called for in viral infection furthermore suggests that contagion should be understood as certain process of interaction rather than invasion. It is true that most medical experts would think of the condition as attesting to the ability of the virus to take advantage of the cellular resources of the host for the purpose of its survival. After all, the virus has been “notorious” for leading a borrowed life. Some of the researchers also argue that the cellular functions of virus receptors are really for purposes other than viral attachment, such as antigen presentation, T-lymphocyte functional marker, etc., which means, these “innocent” cell surface proteins are “hijacked” by the virus to attack the human body (Wagner & Hewlett, 2004, p. 61-3). Contagion is thus construed as certain effect exerted unilaterally by the virus on the human body which passively receives the viral infection. It is undeniable that the virus is capable of entering, fusing with, and using the cellular resources of the host cell. But there can be different pictures in which the human cell is seen as actively participating in and in a sense even inviting contagion if we start to accentuate some details which have been relatively ignored.

VI. 3 Radiating Effects of the Human Cell

To elaborate how the virus and the human cell literally interact in the process of contagion, I would advocate a way of looking at contagion as resulting from certain effect “radiating” out of the human cell, which is a hypothesis inspired by Dawkins’s (1982) arguments in *The extended phenotypes*. He makes use of the technique of “thought experiment” in this book, bringing out a new way of looking at life although there might be neither experiment that could be done to prove his claim nor observable realism in his reasoning.³³ The book casts doubt on the notion of individuated organism, which has been assumed to be a given feature of the life and therefore become the focal unit for discussion in related disciplines. While in the orthodox views the individuated body is taken as the unit of action which is of

³³ Dawkins designates thought experiment as a technique of “[p]laying with an imaginary world, in order to increase our understanding of the actual world” (1982, p. 3). He thinks that thought experiments are “not supposed to realistic” but are supposed to “clarify our thinking about reality” (1982, p. 4).

adaptive significance, Dawkins argues that it should be upon the smaller unit of “the active, germ-line replicator,” among which the gene is the most important kind, that we fix our gaze upon (1982, p. 4). Being selected by proxy, these replicators are judged by their phenotypic effects. Dawkins proposes a new perspective, what he calls “the mental slip,” to see the replicators as having extended phenotypes which exert their effects on the world at large: “The individual bodies are still there; they have not moved, but they seem to have gone transparent. We see through them to the replicating fragments of DNA within...Fundamentally, what is going on is that replicating molecules ensure their survival by means of phenotypic effects on the world” (1982, p. 4-5). Each replicator is thought of a center of a field of influence where certain power radiates out, traveling beyond the individuated body “to touch objects in the world outside, inanimate artefacts and even other living organisms” (1982, p. 238). Dawkins thus postulates a scenario in which genes or small genetic fragments, seeking every way to maximize their fitness so that they can be passed on more effectively to the future generations, exert certain effects on the world at large. Similar to the line of thought pursued by Bateson (2000) which says that life is not bounded by “skin” but includes “all external pathways along which information can travel,” his innovative and daring hypothesis subverts the view of packaging life up into the discrete entity called individuated organism and makes us aware of the human body as a composite assemblage emitting certain influences (p. 290).

Disagreeing with the way he treats the gene as the site where flows of life originate³⁴, I would nevertheless utilize the technique which Dawkins calls thought experiment and extend his view of extended phenotypes to include other molecular or submolecular factors which “happen to” be sitting in the individuated body but have the capacity to reach out beyond the organism (1982, p. 4). The expression of virus receptors on the surface of cells will be understood as an example of the kind. What medical experts think of as the yielding or succumbing of the host cells to the power of the invaders, in a mental slip, can be seen as an interacting

³⁴ In so doing, Dawkins locks the intensities and singularities of life in another molar norm in spite of its tiny magnitude.

process in which the cellular receptor in a sense permits, facilitates, and even invites the connection with the virus. In other words, the virus receptor acts as a field of influence from which the effects of affinity radiate out. The encounter between the virus and the human cell reveals how the former is to a certain degree drawn by the effect radiating out the latter and even captured by the latter. As have been mentioned, medical textbooks describe the encounter of the virus with the host cell as certain collision governed basically by chance. The concentration of both free virions and host cells will enhance the probability of virus attachment. Generally speaking, viruses have no means of locomotion; they can at most engage in Brownian movement. But there are several common routes through which the virus can be introduced into the human body. The sites which are not covered by the skin and consisting of layers of living cells offer easier pathways for virus entry. For example, the respiratory tract, according to Flint and other researchers, is the route taken the most often (2000, p. 39). Many viruses enter the site in the form of aerosolized droplets released by an infected person via sneezing or coughing. While some of which are “swept away by mucus, neutralized by immunoglobulin A (IgA), or destroyed by alveolar macrophages,” the others are attached to the surface receptors expressed on the airway epithelial cells (Flint, et al., 2000, p. 596). These viruses are not necessarily winners that escape the defensive responses of the human body; they might as well be drawn by certain influences to the receptors.

As pointed out by Flint, et al., it is very likely that certain electrostatic forces are involved in the initial interactions between virions and cells (2000, p. 111). For subsequent high-affinity binding to occur, certain “hydrophobic and other short-range forces whose strength and specificity are governed primarily by the conformations of the interacting viral and cellular interfaces” are furthermore required (Flint, et al., 2000, p. 111). It is therefore asserted that cell receptors are one of the major determinants of the tissue tropism of the virus, which is defined as the predilection of a virus “to invade and replicate in a particular cell type (its biological niche)” (Flint, et al., 2000, p. 102). The usage of “invade” in this quotation is certainly an exemplar of how warfare metaphors permeate

the biomedical descriptions of contagion; however, even the most “hard-core” military accounts in the textbook has to acknowledge the fact that the effects of virus receptor determines whether the virus can get attached. Therefore it might not be simply a metaphorical way of speaking when we say we “catch” the cold. The virus might be in a sense and to certain degree, in their contact with human cells, captured by the effects exerted by the receptors. Finally, it should be noted that coreceptors are required for viral entry in many cases of viral infection. Coreceptors consist of proteins which increases the sensitivity of the primary receptors to their specific antigens. Pillai defines the material as certain signaling receptor which directly associates with the virus recognized by the virus receptor and thus may play the role of “turning on” the primary receptor (2000, p. 100). It is thus made even more explicit in the action of coreceptors that human cells develop some cellular operations to facilitate the attachment of the virus. By exerting certain effects on the virus at the level of particles, receptors and coreceptors illustrate a possible way of understanding how an organism “[turns] to other ‘more foreign and less convenient’ materials that they take from still intact masses or other organisms,” grasping in its pincers “a maximum number of intensities or intensive particles which it spreads its forms and substances” (Deleuze & Guattari, 1987, p. 51-4).

VI. 4 A Composite, Mobile Mode of Individuated Existence

Instead of being victimized by viruses, the human body, by developing certain cellular mechanisms to exert effects on the virus and thereby triggers corporeal becomings, in a sense actively engages in the process of making connections with the most heterogeneous elements. The assumed dichotomous structure asserted via self-other confrontation can hardly sustain in “wilder field of forces, intensities, and durations” in which an individuated body is actually

³⁵ These two quotations are cited from the passages in which Deleuze and Guattari (1987) describe how an organism is formulated. More detailed discussion will be done in next chapter. Suffice now to know that any organism or stratum, including the human body and its infinite set of parts, will reach out to capture foreign particles or materials. It should be noted that the grasping should not be thought of as a conscious decision or action of an organism as a whole; rather, it involves molecular perceptions and molecular reactions (Deleuze & Guattari, 1987, p. 51).

implicated (Pearson, 1999, p. 154). It is therefore made explicit again that the real condition of existence should be approached as a composite, mobile mode of individuation rather than certain autonomous selfhood. However, a question might still be raised. While the extended phenotypic effects, according to Dawkins, are to maximize the survival chances of genes, why does a human cell ever want to reach out for contagion that might bring destruction to itself? First it should be noted that the long course of evolution, which is supposed to select mechanisms or features that are good for the organism's survival, does not wipe out the function of virus receptors to introduce viruses into the cells. Using Zimmer's (2007) expression in "Evolved for Cancer," natural selection has favored certain defenses against contagion but does not eliminate the possibilities of getting infected altogether.³⁶ Maybe the interaction of the virus with the cellular receptors remains not because these surface molecules have other functions of maintaining the individuated organism so that they cannot be eliminated; they might be kept and even "selected" because contagion has played such an important role in life, as have been mapped out in the preceding paragraphs, and at the same time has served as the way to novel experimentation.

The routes by which the virus getting access to the "interiority" of the human body and the receptors with which the virus getting attached to "enter" the human cell constitute the function of deterritorialization by which "'one' leaves the territory" (Deleuze & Guattari, 1987, p. 508). Deleuze and Guattari contend that living beings will "compensate for their individuating closure by an openness created by modulation, repetition, transposition, juxtaposition" (1994, p. 190). Virus receptors act as certain lines of flight, introducing novel elements and thereby opening the individuated organism to creative involution. It is thus

³⁶ Zimmer points out a fact about cancer which is very similar to the conditions of viral infection in this article: "Natural selection has favored certain defenses against cancer but cannot eliminate it altogether. Ironically, natural selection may even inadvertently provide some of the tools that cancer cells can use to grow" (2007, p. 70). He thinks that the reason why it is so difficult to eradicate the disease is that cancer is, citing Breivik, "a fundamental consequence of the way we are" since, as mentioned by J. Campisi, "[e]very time a cell divides, it's going to be at risk of developing into cancer" (Zimmer, 2007, p. 75; 71). Zimmer concludes his article by saying that cancer is a disease endemic to the very condition of reproduction; the ultimate solution to cancer, therefore, is that "we would have to start reproducing ourselves in a different way" (Zimmer, 2007, p. 75).

very likely that it is not that what is known as natural selection cannot rule out various types of infection but that contagion is required as one of the significant dimensions of life. If, as emphasized by Van Loon (2002), it can be detected in the strategies adopted by the virus its motivation to replicate itself, the persistence of the function of binding viruses thus implicates the motivation to contagion on the part of the human cells. What is traditionally seen as human vulnerability to infection might be the capacity to reach out for connection, or in the words of Deleuze and Guattari (1987), monstrous couplings. If the familiar description of contagion as invasion conveys the direction of outside-in, by extending the reaching influences of human cells this phenomenon gets another vector of inside-out. The human body constantly opens up to various bodily connections as such, problematizing the self/other distinction and pointing to mode of mobile existence.

Zoonoses such as SARS and the swine flu tend to give rise to cross-species relationships and therefore serve as examples of how human bodies, instead of being certain self-contained entities, have been engaged in a range of transversal communications. A zoonosis is, as defined in medical textbooks, “a disease or infection that is naturally transmitted between vertebrate animals and humans” (Flint, et al., 2000, p. 739).³⁷ In the process of cross-species infection, zoonotic viruses, having been connected to the germ cells of certain animals, never jump horizontally to another host of different species without carrying with them the genetic materials of the first host. The transmission of zoonotic viruses among animals and humans therefore constitutes multiple forms of anti-genealogical communications which will eventually disrupt barriers among species taken for granted. Mapping the spread of a zoonosis like the SARS makes it clear that horizontal transfers of genetic material by viruses involve an exploding of at least two heterogeneous series and trigger “a veritable becoming” of human beings, animals, and viruses. In the block of becoming formed in the SARS outbreak, the SARS virus causes humans to become civet cats to become raccoon dogs to become hares to become badgers to become certain unknown animal populations.

³⁷ Researchers find that most novel emerging infections are zoonoses (Osterhaus and Peiris, 2005, p. 252).

Situated within such network composed of multiple routes, the bodies involved, including those of human beings, experience exchange of particles at molecular levels instead of being polluted by threatening others.

VII. Conclusion

Living in an age in which it has been repeatedly confirmed that there is no way to eradicate contagious diseases, human beings, always already situated in complex webs of life, should start to look for new ways of engaging in the associations with pathogens. As have been demonstrated in the preceding paragraphs, despite the lasting anxiety about the loss of self into some sort of viral or microbial other, the human body is not a battlefield where the self and non-self fight for sovereignty and there is no unified essence or self-contained entity to be guarded. The process of viral infection is characterized by the exchange and fusions of particles emitted from the bodies involved. Rather than a struggle for life between self and other, contagion amounts to certain line of flight following which novel complexes can be sought. By dismissing the notion of self/other confrontation and recasting contagion as certain capacity of the body rather than outright danger, it becomes possible for us to think beyond the level of subjective anxiety about losing its autonomy or supremacy to certain contaminating force of other and acknowledge that encounters with “others,” ranging and extending from pathogenic ones to those lower terms of any binary oppositions, actually have the potentials for bringing out novel becomings, which means possible new bodies in the field of biomedicine and means in cultural politics the invention of new trajectories which release the subject in its traditional sense from the grid of rigid categories so that real creations and real differences can take place. Instead of sticking to the notion of integrated selfhood, we are now looking at a condition of existence in which “living beings enjoy only a precarious form and are a site for the transmutation of forces” (Pearson, 1999, p. 221). If there is any “subject” beyond the familiar conception of autonomous self, it would be one that is engaged in processes of folding and unfolding in relation to the “outside,” which

is exemplified explicitly in contagion.

Finally, it should be noted that the latest experience of contagion has made it explicit that public health practices oriented toward the outright separation of healthy self and dirty other or the complete eradication of viral enemies not only fail to serve the purpose but also miss the point. Anxiety about contagion inherent in these models of action has often led to unprofessional public health decisions which trigger more unnecessary anxiety and even stigma toward those who have been imagined as unhealthy and dangerous others. By dismissing the notion of self/other distinction and reconceptualizing contagion as certain capacity rather than certain outright danger, I hope to reduce such harmful effects imposed by politics of pollution on particular social groups and geographical areas. Public health experts should break away with the traditional, comfortable habits of attributing the etiology of epidemics to certain point of origin, which often amounts to certain groups or areas, and acknowledge the complexity of molecular traffic which involves the association among the most heterogeneous elements, including human cells, viruses, animals, etc. In so doing, we might stop blaming certain entities as the source of threat and become more willing to engage in the life of becoming and relating.

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傳染病防治之相關公衛論述的歷史演變 及其相應之自我概念

林宛瑄*

摘要

本文旨在追溯十九世紀至今與傳染病防治相關的醫學或公衛論述及所衍生的主體概念之歷史演變。相關科技的發展往往使傳染病論述產生重大變化，其防治史因此可粗分為三階段。每一階段皆有其主流的醫學論述，防治傳染病的公衛政策援引這些論述作為其理論依據，而醫學論述及公衛政策又呼應著，甚或是衍生出一種想像自我與他者的模式。大體而言，第一個階段是前疫苗時代，遵循分隔清潔與髒污的邏輯；第二階段起始於疫苗的問世，對多數人而言，疫苗及抗生素的降臨宣示人類對傳染病的勝利，軍事隱喻為其代表性的思維；而抗生素失效的當代則顯示出抗病原戰爭之概念的無效，直指一開放連結的主體模式。

關鍵詞：公衛政策、自我概念、隔離/環境衛生、疫苗、感染的能力

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