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Microbiopolitics: *Security Mechanisms*, the *Hela Cell*, and The Human Strain

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This paper examines the notion of the biopolitical body from the standpoint of Foucault's logic of the security mechanism and the history he tells of vaccine technology. It then investigates how the increasing importance of the genetic code for determining the meaning and limits of the human in the field of 20th century cell biology has been a cause for ongoing transformation in the practices that currently extend vaccine research and development. I argue that these transformations mark the emergence of a new kind of medical subject – the stabilized and infinitely reproducible human cell line – and that the practices and markets exploiting this new form of organism have had a destabilizing effect on the very biopolitical structures that engendered them and, in fact, mark a new way of conceiving the possibilities of cellular life. I call these new ways of organizing power that intervene in the logic of the security measure by mediating the relationship between populations and persons the *microbiopolitical*.

Keywords: Microbiopolitics, security mechanism,s, the hella cell, Foucault, biopolitics

I. Introduction: Biopolitics and the History of *HeLa*

Between 1977 and 1979, Michel Foucault (1997; 2004) delivered a series of lectures analyzing the development of strategies for intervening in the

characteristics of populations. Over the course of these lectures he identifies in these techniques an approach to governance called *biopolitics* whose origins reside in the 18th century campaigns against contagions. Foucault identifies early vaccination campaigns as the first European *dispositifs de sécurité* (*mechanisms of security*) deployed to affect masses of people at the level of populations. The techniques of the early vaccination campaigns were *bio-political* in that, through them, the State for the first time directly assumed responsibility for the care of the biological life of its citizens as one of its principal tasks.

Foucault's analyses describe the first applications of vaccine technologies as a way of modifying the risk of contagion for whole populations. The efforts of virologists against polio in the 20th century were supported when these technologies were further refined through developments in the field of cell culture research. Cell culture research had as one of its first objectives growing and organizing individual human cells into sustainable cell lines for testing and developing vaccines. One of the first cell lines to be successfully grown in culture was the *HeLa* cell line crucial to the development of the first polio vaccine. Rebecca Skloot's (2010) book, *The Immortal Life of Henrietta Lacks*, tells the story of Henrietta Lacks, an African-American woman from Baltimore who died from cervical cancer when she was thirty and whose cancerous tissues served as the origin for this now ubiquitous *Hela* cell line. The history Skloot tells clearly shows that the peculiar properties of these cells were one of the principal causes for the spectacular growth and transformations that have occurred in the

fields of cell culture research and vaccinology from the 1950s to the present.

In this paper I read Skloot's history of 20th century vaccinology through Foucault's analysis of the notion of vaccine technology as a security mechanism. I argue here that Skloot's history, viewed through Foucault's biopolitical framework, describes a period of recent transition between two notions of the medical subject from one based on disciplinary approaches to contagion to one informed by the power of specific security mechanisms – principally those of inoculation and vaccination; I also suggest that Skloot's story describes the emergence of a new, third kind of medical research subject – post 1948 – one that exceeds the matrices of technico-practical power organizing 19th century security mechanisms like vaccinology. I argue here that through contemporary advances in the field of cell biology a new kind of human 'strain' has emerged that currently parallels, counters, and even converges with our judicial, disciplinary and normalized selves. In its encounter with contemporary techno-economic structures, this new form of ambiguously human, manufactured life is one where new ways of organizing and sustaining biological life at the level of 'bare life' have emerged (Agamben, 1998, 6). I term the principles and practices structuring this new field of techno-economic inquiry the *micro-biopolitical* (Paxson, 2008; Latour, 1988). (1) In clarifying this argument, I first outline Foucault's discussion of the emergence, meaning, and structure of inoculation and vaccination campaigns as security mechanisms targeted at the behavior and characteristics of populations. (2) I then read the history of the fields of cell culture research and vaccinology as told by Skloot and others through the

framework of the practical power of this security measure. (3) Finally, I indicate how the notion of genetic identity, in its convergence with market forces like the patenting regime, have begun to mediate disruptively the relationship of population to case, implicit to the logic of the security mechanism.

II. *Les dispositifs de sécurité*: From Exile to Inoculation

During the 1978 lectures Foucault describes how the response to contagion shifts from a disciplinary to a security approach in the transition between the Middle Ages and the 19th century and how the medical techniques of inoculation and vaccination played a key role in forming the notion of population that emerged in the 18th century. In these lectures, Foucault first explores the difference between two forms of governance, that is, 1) the governance of subjects through *disciplinary techniques* and 2) governance as a set of strategies for intervening in the behavior of populations, which he terms the *security mechanism*. Thus, during the Middle Ages, the response to outbreaks of leprosy and the plague was very different from the way outbreaks of smallpox came to be handled in the 19th and early 20th centuries (Foucault, 2004, pp. 9-12 and Foucault, 1972, pp. 15-66). For Foucault the treatment of lepers during the Middle Ages exhibits a disciplinary approach in that the use of exclusion was a primary practical principle here. The techniques of exclusion and isolation of the diseased occurred through a regime of laws and regulations that relied on a sharp, binary division between those who *were* and those who *were not* lepers. The objective in the

treatment of leprosy was, "first of all to treat the disease in each patient, insofar as they could be cured, and then to prevent contagion by isolating the sick from the healthy" (Foucault, 2004, pp. 57-89).

The measures developed to contain the spread of plague also involved a set of disciplinary regulations formulated during the Middle Ages. By the 16th and 17th centuries responses to outbreaks of plague imposed a partitioning grid on the affected regions and then determined:

> …when people can go out, how, at what times, what they must do at home, what type of food they must have, prohibiting certain types of contact, requiring them to present themselves to inspectors, and to open their homes to inspectors (Foucault, 2004, 11-13).

Despite being deployed differently, each of these disciplinary approaches – *exclusion* and *partitioning* – proceed according to similar principles (Elden, 2003). Their objective was to eliminate the disease in each affected person and to prevent spread by isolating affected individuals, putting physical space between them and the healthy.

III. Populations and Vaccination

However, Foucault describes the emergence of the security measure as a new form of governance that appeared in the field of health care as a new way of responding to outbreaks of smallpox in the 18th century. In the case of smallpox, medical practices had already

shifted away from the kinds of problems involved with the separation and containment of diseased individuals. In Foucault's (2004) estimation, the central problem here had become that of knowing the population:

> …how many people are infected with smallpox, at what age, with what effects and with what mortality rate, lesions or after-effects, the risks of inoculation, the probability of an individual dying or being infected by smallpox despite inoculation, and the statistical effects on the population in general. (pp. 47-48)

These early campaigns of inoculation and vaccination did not suspend use of the disciplinary techniques developed in the fight against leprosy and the plague; they shifted the focus of those techniques from individuals to *populations*. Still, Foucault (2004, p. 12) argues that the earliest uses of vaccine technology cannot be explained away as simple adaptations of existing frameworks. They marked a genuinely new approach to the phenomenon of disease, a new approach he calls the *security measure* (Foucault, 1997, pp. 214-216).

So what then is the security measure in the context of vaccine technology? Foucault (2004) relates how, in Western Europe during the 18th century, smallpox was an endemic disease affecting 2/3 of children with a mortality rate of nearly 1 in 8. Further, outbreaks were frequent. London at the start of the 18th century experienced an outbreak every five or six years. At that time, inoculation and vaccination were new techniques, Lady Mary Montagu having only just brought the practice of inoculation back from Turkey to England in 1727

(Maitland, 1872). As ways of responding to contagion, these new measures exhibited three characteristics: The first difference was an understanding, implicit to the techniques themselves, of being capable of being generalized to everyone without great material or economic difficulties. Through these measures, the collectivity *as a whole* could be protected from contagion. Second, unlike many medical strategies during this time, these techniques were certain of attaining their objective in that their deployment absolutely prevented the occurrence of an outbreak and made it possible to consider the real possibility of one day eradicating it entirely (Foucault, 2004, pp. 59-60 and Plotkin, 2008, 1-16).

Thus, the certainty of the treatment's success and the prospect it held for one day entirely eliminating smallpox epidemics made these mechanisms acceptable despite the fact that they had the unusual additional third feature of being unthinkable in terms of the medical consensus of the time (Plotkin, 2008, p. 2). These techniques were deployed entirely on the basis of their practical, empirical success and *despite* the fact that the medical community of the time could not account for this success and was often hostile to adoption of these practices (Durbach, 2000, pp. 45-62; Plotkin, 2008, p. 6; Williamson, 1984, pp. 1195-1196; Wolf, Sharp, 2002, 430-432). For Foucault (2004, pp. 107-109), vaccine technologies were integrated into existing medical practices not because they were backed by existing medical authorities but because inoculation and vaccination *as techniques* had much in common with other newly emerging security measures that were being deployed and taking root at that time.

Disciplinary regulations were established ways of responding to epidemic outbreaks like the plague or to endemic diseases like leprosy. These measures aimed to treat the occurrence of the disease in each individual patient and then to prevent contagion through isolating the sick from the healthy. On the other hand, inoculation and vaccination did not make separation and isolation their objectives. Rather, these measures took the sick and the healthy *as a whole*, conceiving their subject for the first time to be, specifically, a *population*. The newly emerging field of statistics would be crucial to the political acceptance of vaccination as an effective technique for responding to disease at the level of populations, with statistical analysis and measurement becoming the new modes for publicly presenting medical rationality (Foucault, 2004, pp. 107-109). What it meant to know 'the normal expectation in the population of being affected by the disease and of death linked to the disease' depended entirely on this fact being statistically expressed (Foucault, 2004, p. 59). Thus, the very first instances of the use of statistics in medical practice occur in this context and determined, for example, that the rate of mortality from smallpox in 19th century London was roughly 1 in 7.782. The fact that the threat posed by disease could be statistically expressed established the *normal mortality* for the population taken as a whole.

With finer and finer statistical analyses it became possible to tease out other "normalities" having a relationship to one another and to the whole. Thus, for the first time one could know the rates of infections and mortalities for different ages, different regions, different occupations, different zones of habitation (i.e., town

versus country), and even for different neighborhoods within towns. Knowing this range of variations made it possible both to target those groups most unfavorably affected and to employ policies to bring them more into line with the overall normal levels of morbidity and mortality for the entire population. If there existed a high level of morbidity in children under 3 years of age living in towns in the neighborhoods close to a river, then specific measures went into effect to reduce the occurrence of smallpox within that carefully defined group.

Because those statistical outliers were dynamically related to the average rates of morbidity and mortality for the whole population, bringing them more in line would then register an immediate change in the average. Thus, as security mechanisms, the practices of inoculation and vaccination no longer relied on a sharp separation drawn between normal and abnormal, the healthy and the diseased, so essential to disciplinary responses to contagion. Unlike those techniques, security measures were organized to bring about an *operation of normalization* for the whole population that would increasingly lead all the distinct groups within it to reflect the normal trend-line. (Foucault, 2004, pp. 57-60).

Unsurprisingly, for mechanisms of security the details – i.e., the specific characteristics being examined in the population – were considered neither good nor bad in themselves. In fact for the successful functioning of security measures it was considered all-important to allow the noteworthy variations within the population simply to show themselves and 'to let things happen.' Further, these variations were not to be eliminated nor directly targeted. Rather, implicit to the logic of these

new measures was the understanding that characteristics of the population could be changed by *indirectly* affecting those who composed it. Thus it clearly followed that vaccinating someone against smallpox did not treat their infection when the disease had already presented itself any more than getting a preventative flu shot is useful when someone is already suffering from fever and nausea. As a security measure, the vaccination campaign was understood to support and strengthen over time the most favorable normality without directly targeting or otherwise separating out diseased individuals within the population.

IV. Populations and the Individual – The *Medical Case*

So what then happens to the status of the individual person in this shift between disciplinary and security related techniques? In disciplinary techniques, affected individuals are conceived relative to the sharp divide drawn between normal and abnormal. For Foucault, one can still speak and think meaningfully in this context of an individual person who has been affected and requires direct treatment. Though the person afflicted with leprosy or the plague do, strictly speaking, fall within the category of abnormality it is through this categorical determination that the person in question is singled out from others, i.e., the *healthy*, for precisely *individual* treatment. On the other hand, what does it mean to be an individual within the framework of the security measure? As a possible entry point for and bearer of contagion, the individual becomes a fractional contributor to the statistical coefficients determining the morbidity and

mortality of the occurrence of the contagion in the population taken as a whole. However, the logic of the security measure *as security measure* only considers the characteristics of *populations*. Security mechanisms do not operate by *directly* treating individuals. Thus, in their relationship to the population the individual – the living person with a proper name – disappears into the life and mass of the population in the very process of making their statistical contribution to it. It is only the population – now as *itself* a subject for research and intervention – that serves as the target for the strategies and techniques that make up the security measure.

From the standpoint of the security measure the concern with individuals is *as cases*, which are important only insofar as they manifest the features attributable to *populations*. From the standpoint of the population, the individual is a quantifiable vector for universal factors that bear the processes or characteristics of that feature of the population being examined. Thus, these newly emerging forms of medical rationality translate the individual into a *case* whose relationship is now conceived to be with the population taken as a whole. The case is *not* the individual person. The case is the individual conceived as a member of a population. As Foucault (2004) describes it:

> There is the appearance of this notion of case, which is not the individual case, but a way of *individualizing the collective phenomena of the sickness, or of collectivizing it but as quantified, rational and identifiable. Collectivizing the phenomenon occurred by integrating individual phenomena within a collective field [d'intégrer à*

l'intérieur d'un champ collectif les phénomènes individuels] (p. 62, my emphasis).

Mainly through the deployment of statistical practices, the security measure is organized around mechanisms for translating a person's characteristics and history into the range of variations exhibited by populations.

V. The *Case* of Henrietta Lacks

The distinction between disciplinary and security approaches to contagion continues to articulate the history of vaccine research and deployment through the late 20th century. Following closely the details of that history suggests that new forms of organization have begun to develop where the fields of cell culture research and variology intersect with a rapidly expanding market in human tissues. These changes have grown so pronounced that it may now be possible to speak meaningfully of a kind of politics – or *microbiopolitics* – emerging disruptively within the circuits of power organizing populations and individual persons, one that takes place fundamentally at the level of cell functions themselves (Paxson, 2003, p. 18; Latour, 1988, pp. 90-93). Rebecca Skloot's book, *The Immortal Life of Henrietta Lacks*, is in large part a history of vaccination as a security measure in its ongoing tension with notions of personal identity founded on discourses involving civil rights that emphasize the importance of consent. The book relates the personal-historical narrative of Henrietta Lacks, who, as both an African-American and a woman, encountered a set of complex racial and gender-related

barriers in seeking access to effective medical treatment in the United States during the 1940s. However, Lacks is also the source of the *HeLa* cell line, and her tissues to this day sustain an entirely new industry and market in wildly diverse human products that range from the cell-subjects necessary for effectively testing the first polio vaccine to the manufacture of *victimless leather* – the first leather-like jacket grown out of immortalized cell lines (Guertin, 2012, p. 25).

The history Skloot tells involves two narratives that at times parallel each other, at others run counter, and at still others converge. Henrietta Lacks is important to this story in two ways: both as an legal individual whose tissues, having been used as a research subject and source of medical profit without her consent, have provoked multiple judicial interventions in an effort to adjudicate this rapidly forming, but legally ambiguous, area of the law; and as the source of the *Hela* cell line which, as the most viable cell line to date, has continued to serve as the subject of ongoing medical research for countless researchers in countless research labs worldwide for over sixty years. Henrietta Lacks continues to figure in this story in at least three ways: (1) as an individual at the center of civil rights litigation whose story continues to raise the issue of the importance of patient consent in the employment of human tissues for purposes of medical research; (2) as a case study important to the ongoing development of more effective techniques for making vaccine interventions at the level of populations; (3) and as patient 0 for a new human strain – the *HeLa* cell – whose highly distributed medical existence in labs worldwide has entirely eclipsed the importance of Lacks's judicial and medical selves. Thus, at an

important point in the book, Skloot (2010, ch. 23) describes the task of researchers engaged in the project of reconstituting the genotype of Henrietta Lacks 25 years after her death from studies of the phenotypes of her descendants and the *HeLa* strain itself (Landecker, 2007, ch. 4). This retrieval of her genotypic identity was made necessary following discoveries in 1967 that the *HeLa* cell line had contaminated and overtaken nearly all other cell lines recognized at that time, invalidating or at least throwing into question thousands of studies in the field of cell culture research whose conclusions were based on the characteristics of these other cell lines. The importance of the difficulties this had, and still has, for researchers in that field cannot be overstressed. However, by relating this story, Skloot shows how these apparently distinct and different aspects of the same person – Henrietta Lacks as a historical person whose civil rights may have been violated by the actions of medical researchers and Lacks as a subject of science and source of the *HeLa* cell line – remain tightly linked even after her death.

Much of Skloot's story, in fact, is about the clash between Lacks' descendants and the community of medical researchers grown dependent on an indefinite supply of *HeLa* for conducting research and synthesizing new therapies from it for profit. The core legal issue at stake in the clash between researchers and Lacks' descendants concerns the requirement for the consent, and potential reimbursement, of patients on the part of researchers engaged in the task of developing therapies based on tissues harvested during routine medical procedures. Researchers argue that requiring patient consent before utilizing these tissues will act to inhibit

scientific developments. However, the increasing commercialization of tissues over the last century, and the patenting regime that has accompanied this process, has already inhibited scientific research from an entirely different and unexpected angle. Now the *researchers*, upholding their individual patents, have clearly become obstacles to scientific advancements. For instance, the 1990 landmark case, *Moore v Regents of the University of California*, decided against John Moore whose spleen tissue had served to establish a new cell line subsequently patented by and profiting researchers without his knowledge. As Skloot (2010) quotes Lori Andrews, a lawyer working pro bono on most of the important biological ownership cases to date:

> It's ironic…the Moore court's concern was, if you give a person property rights, it would slow down research because people might withhold access for money. But the Moore decision backfired – it just handed that commercial value to researchers (p. 324; also, chapters 13, 25 and Afterword).

The decision of the Moore court effectively took patients out of the equation, and its later affirmation in *Greenberg v Miami Children's Hospital* has emboldened scientists to commodify tissues in increasing numbers through the powerful allure of substantial profits (Evans, 2006). Even the recent decision to include two members of the Lacks family on a committee to oversee N.I.H. funded research using *HeLa* only partially addresses the privacy and consent concerns involved in the Lacks case and does nothing to address the profit issues raised by the

market in human tissues in general or for *HeLa* in particular (Boffey, 2013).

However, the legal battles over the contemporary commercialization of human biological materials are themselves entirely a consequence of the still relatively new notion of human genetic identity, conceived through the now routine capability researchers have for reliably *individualizing the human somatic cell*. This notion of genetic individuality is based on the simple historical fact that after 1948, and for the first time, the intact human body was not the only place for the large-scale generation of human cells (Landecker, 2007, ch. 4). The latter half of the twentieth century saw an explosion of developments in the field of cell culture research. These developments depended intimately on the perfection of techniques for cloning individual cells, the creation of standardized media for sustaining them, and the development of freezing techniques that made it possible to both store and easily transport somatic cells. The *HeLa* cell line was crucial to the development of each of these techniques. Moreover, this work allowed for the emergence of a notion of genetic identity for the human somatic cell rooted in clonal cell lines with distinct, heritable (and manipulable) characteristics. Cloning and freezing techniques made it possible to conceive of single somatic cells as individual entities in their own right and organized into 'strains.' Because cell lines were prone to change over the course of subsequent generations (Piotrowska, 2009, pp. 839-844), suspended animation techniques made it possible for the identity of individual strains to be stabilized through time by freezing samples from the first generation as a snapshot for comparison with successive ones (Landecker, 2007, ch. 4). This

means that the peculiar kind of *immortality* commonly ascribed to Henrietta Lacks both in the popular press but also among researchers simply due to the continued persistence of the *HeLa* cell line was theoretically a possibility open to anyone. A tissue sample taken from my body could now go on to have an independent and ongoing life as a biomedical subject, and it could do so indefinitely.

However, with this new notion of genetic identity rooted in *the individuality of the human somatic cell* has something entirely new emerged yet again? Has the logic of the security mechanism Foucault describes, reliant as it is on the relationship between populations and the cases they manifest, effectively been displaced? It is important to remember that for Foucault the security mechanism is a response to the problems of governing *populations*. In his analyses the security mechanism is essentially linked with this specific kind of subject. But with these advances in cell culture technology and their connection to cloning and freezing techniques are we seeing here the emergence of a set of techniques and a field of inquiry rooted in both cell culture research and the market in human tissues in which we are no longer concerned with the life of populations composed of autonomous persons *but a distinctly different kind of human existence that has recently acquired its own kind of autonomy*? As Landecker (2007) makes this point:

> First through polio research, and then through the use of HeLa to figure out all kinds of tissue culture techniques, autonomously living human matter became widely used biomedical research material. More than that, it became possible for the first time

> for one specimen, taken from one body, to be present simultaneously in thousands of laboratories and thousands of experiments as well as diachronically and repetitively across the lifetimes of the scientists themselves. The possibility of life being removed from the body and never returning to it was contained in this [Henrietta's] story, an arrow that begins in the point of an individual person and continues without ever looping back. (Chapter 4)

Landecker's description of the practical consequences of late 20th century developments in cell culture research points clearly in the direction of new structures of organization supporting and extending new, autonomous human strains with a new kind of human individuality defined through their distinguishable genetic identities.

Genetic identity figures as essential to the notion of human identity that emerges here for researchers working with the latest clonal iteration of an established cell line stabilized through advanced cell culture techniques. But does this relatively new form of technically produced human existence have implications for the claims Foucault makes about the shifts that have occurred in modern forms of governance? Foucault (2004) describes security mechanisms at the time of their emergence as new deployments of power that continued to act together with and alongside already established judicial and disciplinary mechanisms (pp. 31-45 and pp. 233-253). However, he is also clear that distinct security measures like the worldwide market in grain, vaccine technology, and the structure of the modern police mark a clear and decisive break from these other forms of organization and

in fact come to circumscribe, penetrate, extend and displace these earlier modes where they continue to persist.

Thus, during the 18th century, a series of transitions in traditional notions accompanied the first deployments of security mechanisms. The very notion of the family transforms at this time from being a model of and an apology for sovereign government to that of an instrument for intervening in the characteristics and behaviors exhibited by populations (Foucault, 2004, pp. 108-109). The progressive establishment of security mechanisms initiates a process where earlier forms of governance are circumscribed by newly emerging circuits of power. Even when judicial and disciplinary structures retain their place, they are effectively re-arranged, redeployed and rendered as different from their earlier functions as the 15th century *maréchaussée* (Foucault, 2004, pp. 343-344) differs from contemporary policing strategies for stopping gang violence.

Twentieth century cell culture research, together with closely related fields, would seem to be causing a similar process of dislocation and re-orientation. However, if these changes are read through Foucault's typology then these changes point to a process of reorganization occurring within the security mechanism of vaccine technology itself. They tend in the direction of kinds of organization that no longer rely on the population-case relationship. Given that this relationship is essential to the kinds of interventions security mechanisms perform, these new human strains emerging through the practices of late 20th and early 21st century cell culture biology can no longer be assimilated entirely within the framework of security mechanisms as outlined

by Foucault. And yet new forms of organization have emerged from the practices and techniques of cell culture research that routinely affect persons in a variety of ways. In fields as diverse as animal husbandry, crop development, law enforcement, tissue research and advanced health care the notion of genetic identity has long performed an organizational function. Further, the very legal conflict over who owns the rights to patents and profits arising from research into human tissues is itself the consequence of the way research and market forces have effectively organized the exploitation of these tissues for research and development. Human cell lines represent here a mode of existence defined entirely by the notion of genetic identity. They represent then a new mode of existence for human matter whose contemporary production often has no other purpose than to render them into small, entirely predictable, factories for generating specialized and exotic proteins or other synthesized molecules through feeding them precise diets of cell culture media. Clearly one would not think of attributing to this kind of human existence characteristics like self-awareness or consciousness. Nor could we speak of such research subjects as in any way engaged in 'technologies of the self' but, as Landecker points out, researchers insist on maintaining a connection between the individual cell lines, no matter how altered, and the individual persons from whom they were taken. As Landecker (2007) argues:

The importance of *reciprocal* identification of cell to person was in other words not merely fanciful. In the structure of reasoning behind the use of the cell line, there is an absolute necessity for a link between *in vitro* and *in vivo* life to be maintained; the information gleaned

from cells is useless unless it eventually is related back to the biology and then the pathology of the patient. Through the individual patient, the information then becomes applicable to humans in general. (ch. 4)

Thus, the very rationale for using cells in place of the whole patient depends on maintaining a practical continuity between the individual person and the altered cell lines. This continuity between cell line and historical person – between, for instance, *Hela* and Henrietta Lacks – is crucial to supporting arguments made by researchers for the ongoing relevance of the discoveries of contemporary cell biology using cell line research to develop therapies for the general populations their lines of investigation are at least hypothesized to serve. If vaccine technology originated as a set of practices for intervening in the life of populations through indirect treatment of individual cases, then the relationship between population and case, so central to the logic of the security mechanism, has itself come to be mediated by this new, ambiguous relationship between historical persons and the cell lines developed from their tissues, cell lines which now serve as the experimental subjects for developing and testing both new vaccines but also a whole host of other biomedical products that often have only the most dubious utility for promoting the well-being of persons.

Thus, the question re-asserts itself here: in the emergence of this new kind of medical subject are we seeing the effect of a new kind of bio-political power that now intervenes within the juridical, disciplinary, and security frameworks Foucault describes? If the answer to this question is, 'yes', then the late 20th century developments in cell biology form a new chapter in the

organization of power, the *micro-biopolitical*. These new organizational practices interrupt the logic of security mechanisms by mediating the relationship between populations and persons, breaking into the deployments of power organized by the practices and techniques of security mechanisms as these in turn were hypothesized by Foucault to have circumscribed the judicial and disciplinary structures of power that preceded them. A new kind of human identity emerged in cell biology after 1950, one that currently is in the process of rearranging both security and disciplinary forms of organization. The field of cell biology maintains both a theoretical and practical dependence on the ambiguities involved in treating stable cell lines as in fact a (new) kind of human individual. Here, perhaps, bio-power has generated a new kind of human strain sustained by the peculiar matrix of theoretical-practical power peculiar to contemporary cell biology. If this is the case we can no longer claim, as did Foucault (1976), that despite the absolutizing trends of modern biopower for administering life, "it is not that life has been exhaustively integrated into these techniques which dominate and manage it; it ceaselessly escapes them" (p. 188). Rather, remaining with Foucault's logic, with the progressive stabilization of this new kind of human individuality, we witness in fact a critical moment when techno-economic matrices have converged, emanating a mode of human existence with no subjective awareness whatsoever whose 'life' occurs only as object of research. Analysis of these new *microbiopolitical* structures clearly shows biological life to be still at the center of the process for modern extensions of power as was true, too, of security mechanisms. As Foucault

(1976) first described this process in one of his first formulations of the meaning of the *biopolitical*:

> If one can apply the term *bio-history* to the pressures through which the movements of life and the processes of history interfere with one another, one would have to speak of *bio-power* to designate what brought life and its mechanisms into the realm of explicit calculations and made knowledge-power [*pouvoir-savoir*] an agent of transformation of human life…modern man is an animal whose politics places his existence as a living being [*sa vie d'être vivant*] into question. (p. 188)

This description would seem to be entirely applicable even if the logic of power has changed. The logic of the security mechanism described by Foucault still aimed at promoting human well-being if only in the form of the health of the population and the progressive promotion of its 'normal' trend-lines. These new *microbiopolitical* structures identified here actively support and generate a new kind of genetic individuality based on the conception of human existence as a kind of infinitely manipulable matter in the aggressive pursuit of ends that may well be entirely detached from any notion of human well-being.

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