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10 Scientific Discipline and the Origins of Race: A Foucaultian Reading of the History of Biology

Ladelle McWhorter

Introduction

Galileo, bound, is led to a chamber where he is shown the machinery of torture his inquisitors have at their disposal – wheels, racks, screws, caldrons boiling with acrid substances, branding irons, pincers, chains. In similar rooms across Europe, tens of thousands of men, women, and children have already died after hours or even days of unimaginable pain. The inquisitors are all but omnipotent, and Galileo, seventy years old, is virtually alone. At the sight of naked power spread before him, his will to truth is broken. Kneeling, he repudiates his life's work.

Truth, we are told, triumphs. Science emerges victorious over superstition. Power is checked by reason. And now, from the vantage point of modernity, we may look back and condemn the inquisitorial oppressors, regret Galileo's weakness, and solemnly reaffirm the moral of the tale – truth and power are mortal enemies, and vigilance is necessary if truth is to prevail.

But is that so? Michel Foucault, for one, suggests that it is not. His work directly contradicts the old and venerated idea that power and knowledge stand fundamentally opposed. Power and knowledge are mutually supporting, he claims, and must be analyzed in the complexity of their interrelations. To that end, he introduces his analytic notion "power-knowledge."

Foucault's "power-knowledge" is a controversial concept. Brought into English-speaking theoretical circles less than two decades ago, its meaning and range of applicability are still in dispute. While no one denies that some fields of social scientific knowledge (such as criminology) intersect institutionally with mechanisms of power, these intersections do not seem, to many, to constitute

any essential relation of "mutual reinforcement" between knowledge and power. If, in rare cases, politics and scientific research are admitted to be mutually constitutive, the results of their mingling are typically dismissed as propaganda or pseudo-science. A few thinkers are willing to allow the entirety of the human or social sciences to be dismissed in this way—thus leaving intact and untainted *science*, real science.

In the remainder of this essay, I will argue that at least one indisputably real science, biology, is analyzable as a series of structures of power-knowledge. I will contend that the science of life was both required and enabled by networks of power operating at the end of the eighteenth century. Further, once established as a distinct and reputable discipline, biology went on to create its own objects of knowledge whose management its researches were designed to perfect. One of those objects was race; much of nineteenth century biological research was aimed at categorizing what we would now call human phenotypes for the expressed purpose of managing and manipulating the current and future populations of the globe. Though some of this work can be dismissed as pseudo-science, much of it cannot. It was, quite simply, science. And it was, quite simply, completely entangled in the production of racist social structures. Biological science invented the concept of race as we know it today and so made possible the development of racial hierarchies in Western societies. Thus, natural scientific knowledge and power are not mortal enemies; they are partners.

Relations between power and knowledge: discipline

According to the modern account, Galileo was temporarily silenced by the Inquisition. His books were banned. His freedom of movement was restricted. Power acted as a limit on thought and deed, an agency of repression, a prohibition, a no. Many people believe that that is all power ever is, that power is always negative and never positively productive. But, in order to maintain that conception of power, one must make some very dubious distinctions. For example, one must draw a distinction between the forces of creativity and repression and reserve the name "power" for the latter alone, despite their obvious similarities. Further, one must insist that scientific activity is simply systematic discovery, not any kind of force at all. Since science discovers the truths that power would repress, on this view, science and power are oppositional; since science's objects are the creations of natural forces, science is not creative in itself. Thus one must posit a distinction between science, on the one hand, and art and humanistic pursuits, on the other, and also between science and technological creation.

Foucault does not leave this neat set of categories, oppositions, and

distinctions intact; he exposes it as arbitrary. There are repressive forces and creative forces, but both are forces, powers, and they are interlocked; production represses, and repression produces. There is no pure form of discovery distinct from the power to repress or to create. Thus Foucault rejects this common, but dubious, account of power and proposes a different, more inclusive characterization of it. Power is not to be understood as a commodity the possession of which enables one person to repress another. Power is something that happens between people; it exists only in its exercise. Rather than *something*, power is better understood as a multiplicity of relations that constitute their own organizations; as the support these relations give each other, which enables the formation of networks or systems; as strategies "whose general design or institutional crystallization is embodied in the state apparatus, in the formulation of law, in the various local hegemonies,"(Foucault, 1978, 92-93) but whose origins do not lie there. In other words, power is relation, events of relating, whose repetition generates organizational networks of force-events, within which relatively stable institutions, objects, personalities, etc., may sometimes form. Thus, on Foucault's view, power relations are productive as well as repressive. They are productive of institutions, laws and prohibitions, but they are also productive of theories, ideas, practices, methods, beliefs, ways of behaving, ways of being who we are. Power is event, and within networks of repeating events, truths are formed.

If we accept Foucault's conception of power, the next question is exactly how and to what extent does scientific practice interact with it. We must be slow to make generalizations, but we can get some sense of ways in which power and knowledge might interact by looking at regional studies of disciplines. One such study is Foucault's account of criminology in *Discipline and Punish*, where he describes the creation of a human type, the delinquent, within the interplay of knowledge and power. This study is particularly instructive for my purpose here, for, as we will see, the discipline of biology also produced various human types – races, categories generated, like the category of delinquency, from sets of developmental norms. In preparation for my analysis of the creation of race and racial theory in biological science, therefore, I will offer an overview of Foucault's account of delinquency's creation in and through the science of criminology.

Criminology, a field of knowledge, intersects with judicial and penal exercise of power. Contrary to those who hold that knowledge and power are enemies, this intersection is not mere coexistence. Rather, Foucault claims, knowledge and power are "entangled."¹ He goes so far as to assert:

[that] power produces knowledge (and not simply by encouraging it because it serves power or by applying it because it is useful); that power and

knowledge directly imply one another; that there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations. (Foucault, 1977, 27).

It is not just that criminologists and penal authorities happen to focus attention on the same people. Criminologists and penal authorities make each others' jobs possible. Knowledge extends the domains within which power-events can repeat themselves and produce effects; correlatively, power creates new objects of knowledge. This occurs in the carceral field through the dual processes of surveillance and normalization.

At the end of the eighteenth century, when imprisonment became the primary mode of punishment, surveillance as a technique of control was carried on within prison walls. At first its official purpose was only to help maintain order while the offenders did their penance, since the point of penitentiaries was, ostensibly at least, to give offenders occasion to reflect on their crimes, reflection supposedly leading to reform. But surveillance quickly gave rise to more interventionist mechanisms of reform. It made possible the rewarding or punishing of individuals for acts committed in prison, and, combined with the prison dossier, it made possible the modulation of sentences based on "good behavior" or its opposite. Thus, imprisonment and surveillance produced data, which could be turned into knowledge, which in turn enabled the extension of techniques of control. In this domain, knowledge and power are interdependent in that their conditions of extension include one another.

Foucault goes on, however, to make the more radical claim that not only are knowledge and power here reciprocally conditioned, but they are mutually constitutive. (Foucault, 1977, 183) To see his reasoning, we turn to his analysis of normalization.

The role norms play in structured processes of reformation is much the same as the role they play in medicine and pedagogy. By studying the dossiers of prisoners passing through a reformatory regime, scientists can generate norms and then classify prisoners according to their deviations from those norms. This is what Foucault calls "normalization."

Normalization does two things: It homogenizes, and it individualizes. Norms homogenize by enabling all difference to be understood and treated as deviation from the norm and therefore as essentially related to it. Everyone caught up in a normalizing system stands in some relation to the norm, for there is no outside to the classificatory system. At the same time, norms individualize, because they enable a precise characterization of each person who is to be classified. Exactly who a person is can be known by the intersection of all his or her deviations from relevant norms. One's individuality, then, is just the full set of one's

deviations.

Once normalizing power produces the classification systems needed to isolate something like a "dangerous individual" (Foucault, 1977, 252), the intersection of a particular set of deviations, the delinquent is born. The delinquent is a type of self who exists "before the crime and even outside it" (Ibid.) much as a homosexual can be said to exist in the absence of any homosexual experience.² At a given time, the delinquent may already be guilty of crime, or he or she may simply have a latent predisposition toward it. Whichever, what the criminal justice system must address is not only or even primarily the acts the delinquent commits but rather this individual's tendency to commit illegal acts; what must be addressed is the individual him or herself. All kinds of intrusions into people's lives then justified on the basis of the fact that a family member, say, is a delinquent personality "at risk" for delinquent behaviors (such as drug abuse). Family members and others surrounding the latent delinquent can be disciplined to respond to him or her and to each other in prescribed ways to "manage" the risk of overt manifestation of delinquency. In the process, lives are shaped; simultaneously, more data are gathered and concepts and techniques for identification and management are refined. The interdependent extension of power and knowledge continues, justified now by the figure of the delinquent, a category constituted within a regime of power and its correlative knowledge system.

Delinquency, as an object of knowledge, is produced, Foucault claims, by the carceral system. It is an epistemic object that is the product of the exercise of a certain form of power. Thus, power is in fact constitutive of knowledge, at least where criminology is concerned. Further, since penal institutions (along with the carceral system more generally) exercise power in relation to delinquent individuals, knowledge of such individuals is essential for the system's functioning. Power could not be exercised – which means it could not exist – in the absence of such knowledge. Therefore, just as power is constitutive of knowledge, knowledge is constitutive of power. In the discipline of criminology, Foucault shows us, knowledge and power are completely interdependent. But is the same true in *real science*?

The rest of this essay is concerned with showing how the concept power-knowledge can be applied to analysis of biology. I will draw on an early work, *The Order of Things*, to characterize biological science in its incipience. I will argue that the scientific debate over the origin and classification of variant human morphologies actually produced the epistemic object race and was instrumental in establishing nineteenth century racisms. This process of epistemic production parallels the production of delinquency in significant ways and serves similar purposes, such as the management and discipline of populations.

The origins of biological science

Biology is the study of life. Its predecessor, natural history, is the study of the orders of natural beings. It is a mistake, Foucault contends, to see the former as a simple outgrowth of the latter. He writes,

Historians want to write histories of biology in the eighteenth century; but they do not realize that biology did not exist then, and that the pattern of knowledge that has been familiar to us for a hundred and fifty years is not valid for a previous period. And that, if biology was unknown, there was a very simple reason for it: life itself did not exist. All that existed was living beings, which were viewed through a grid of knowledge constituted by *natural history*. (Foucault, 1970, 127-8)

Foucault sees an epistemic break between natural history and biology, a break that can only be understood upon examination of the broader epistemic grids that existed in the eighteenth and nineteenth centuries. Natural history is to be understood against the background of the "classical episteme," wherein knowledge consists of tables of identities and differences. This way of understanding the world precludes any concept of "life," because a tabular notion of reality insists that nature is perfectly continuous, whereas "life" names a qualitative leap in the order of things.³

Foucault locates this major epistemic break just at the end of the eighteenth century. If that is plausible, it is no surprise that the word "biology" was not introduced into scientific discourse until 1802.⁴ Biology, the science of life, was not possible until the category "life" had been formulated, a formulation inextricably bound up with notions of temporality, mortality, limit, sequential change. These are the ordering principles of a new episteme, one that does not view the natural world as a static, continuous tabular plane. Biology is essentially the study of processes and functional norms. It is a science wherein human being is primarily

a being possessing *functions* – receiving stimuli ... reacting to them, adapting himself, evolving, submitting to the demands of an environment, coming to terms with the modifications it imposes, seeking to erase imbalances, acting in accordance with regularities, having, in short, conditions of existence and the possibility of finding average *norms* of adjustment which permit him to perform his functions. (Foucault, 1970, 357, *Foucault's italics*)

Although Foucault wrote the above words years before he began studying

normalizing power, biology appears here in its similarity with psychology, criminology, and other disciplines whose aim is to discover the norms of function and development of a given type of being within a given context. What remains is to examine how specific developments within biological knowledge are related to developments in power.

Biology and bio-power

Concurrent with the rise of biology, at the turn of the nineteenth century, Foucault contends, disciplinary power was developing its techniques of normalization. Normalizing disciplinary power is a positive force; it is the power to posit, to shape, to cultivate, to create. Any limits it imposes are in the service of production and growth. Its primary concern is the generation, maintenance, and management of living human subjects. It is preeminently an administrative power.

The old power of death that symbolized sovereign power was now carefully supplanted by the administration of bodies and the calculated management of life. During the classical period, there was a rapid development of various disciplines – universities, secondary schools, barracks, workshops; there was also the emergence, in the field of political practices and economic observation, of the problems of birthrate, longevity, public health, housing, and migration. Hence there was an explosion of numerous and diverse techniques for achieving the subjugation of bodies and the control of populations, marking the beginning of an era of "bio-power." (Foucault, 1978, 139-40)

Effective management strategies presuppose knowledge of the objects to be managed. If the goal is to manage birthrates, longevity, health, and migration – processes – it is important to understand the physiological processes of human beings. Thus, by the beginning of the nineteenth century, a science of such processes, a science of something like life, was imperative; biological knowledge was absolutely essential for the effective exercise of disciplinary power.

Along with the emergence of this administrative imperative to manage the physiological functions of populations, the concept of life as physical, material organic finitude arose as a viable epistemic category. A science of life not only became necessary but also became for the first time possible, since its condition of possibility, the object "life," had been marked out within a field of power relations. Hence, biology is not only a necessary tool for disciplinary power; the very possibility of a science of biology is actually constituted by that power.

As a normalizing discipline, then, biology is an arm of bio-power. Once constituted and legitimated, biology aided (and still aids) the extension of bio-power in numerous ways. In the last century, one prominent way was the production of the population management tool, race.

Before the nineteenth century, the word "race," in both English and French, meant "lineage." To be a member of a race was to have a certain heritage; it was a matter of descent, though it was not yet linked to anything like a "genetic heritage."⁵ One could speak of the Greek race, the Jewish race, the Russian race, or even races of animals such as the Dalmatian race of dogs. Though race might incidentally correlate with morphology, its primary sense was that of breeding; it had some of the same connotations that the word "breeding" has in common English usage – designating both one's parentage and one's manners.

The term "race" was not reserved for human phenotypic variety until the nineteenth century. It is only during that period that race and racism as we know them today came to be. That fact is not obvious now mainly because we are used to understanding slavery as a product of racism, which means racism must have existed prior to the nineteenth century. However, as I will show, racism is an effect, not a cause, of slavery.

Prior to the nineteenth century, during the European expansion into Africa and the Americas, justification for conquest and slavery did not come from racial theory but rather from theology; the operative distinction between Europeans and others was religious: "we" are Christian; "they" are pagan.⁶ By the late eighteenth century, though, the large and growing number of slaves who converted to Christianity posed a problem for their owners; the requisite emancipation would constitute a serious financial loss and would produce a free and perhaps unmanageable underclass in colonial territories. A new, non-theological justification for slavery was needed.

Until that time slavery was not linked to skin color or body form as race is. What we now call "white slavery" was common in the fourteenth and fifteenth centuries when many Slavs were sold in markets in Italy, Spain, Egypt, and the Mediterranean islands. It was not until 1793, when the expansion of Russia, culminating in the annexation of the Crimea, cut off the supply of white slaves to Islamic markets, that "black" could become synonymous with "slave."⁷ Only then could morphology possibly be taken as the basis for slavery's justification. That possibility was realized through the creation of sciences of race within the new discipline of biology.

In 1799, Louis Francois Jauffret founded the *Société des Observateurs de l'Homme*. (Stocking, 15). Its members were to observe various groups of human beings and study the gradations in those groups from primitivity to modernity. (Stocking, 27) The *Société* called for classification of human groups based on comparative anatomy, comparative study of customs, construction of a typology

of France to determine the influence of climate on body form and habit, founding of a museum of comparative ethnography, and compilation of a comparative dictionary of all known languages. (Stocking, 16) The discipline we now call anthropology thus emerged as a subfield within the life sciences. It had two goals: to establish a classificatory system and to establish a hierarchy of development among the world's human groups.

Société members sailed to Africa, Tasmania, and New Holland (now Australia) in early 1800 in order to observe those regions' aboriginal peoples.⁸ Others continued the work that the Société began; later observers concentrated on various types of somatometry, with head-form becoming the main morphological trait studied, in part because of the possibility of comparisons between the skulls of living and pre-historic people. At first the study of head-form was undertaken in order to prove either polygeny (the view that humanity is a set of species with separate origins) or its opposite, monogeny.⁹ But as the century progressed, the question of whether *Homo sapiens* was one or several species gave way to the questions of how many races there were and how best to characterize them. Race became the preeminent object of bio-anthropological study.

Before we examine how the object race came into being, it is important to emphasize that Jauffret and his colleagues and successors were natural, not social scientists. What we would now call physical anthropology was part of biology, and its practitioners were anatomists, physiologists, zoologists, and medical doctors. Though anthropology became a separate department in many American universities between 1890 and 1910, until it ceased attributing most significant human variations to hereditary factors, it could not function as a discipline theoretically and methodologically separate from biology. It did not develop genuinely distinct theories and methods until the 1920s. During the period under consideration here, the theories and methods of anthropology were completely consistent with the theories and methods of other branches of biological science.

Exactly how type or race became an object of study at the same time that scientists were emphasizing temporal organic processes is difficult at first to understand; on the surface, the predominance of typology seems in direct conflict with biology's emphasis on function and process; the establishment of static identities seems in direct conflict with biology's emphasis on change through time. The key to understanding lies in the fact that nineteenth century scientists, from the very beginning of biological study, were interested in the history of human development. Developmental thinking, far from precluding typologies, made them all the more important, because development was seen to occur in stages. For example, the fact that a human being develops from a cluster of cells quite unlike any living person led biologists to see bodies as the culmination of a process that they might understand through study of the stages

of fetal development. While stages are of course merely transient formations in process, biologists tended to conceive of them as discrete – and *static* – moments in a developmental chain.

Thus, stages were easily construed as types; and, conversely, types, the morphological variations biologists observed, must be stages. If those stages could be isolated and studied, then perhaps the full process could be delineated. While this seems harmless enough in relation to comparative anatomical studies of dead fetuses, we must remember that the larger project was that of describing the development of human civilization. Adult "types" – races in particular – were believed to be stages – arrested and permanent, perhaps, but *stages* – that could serve as clues to the mystery of human development.¹⁰ Thus was biology a major force in the creation of the concept of race as graded type. Superior and inferior human types – races – became facts. Biology then set out to take account of those facts. Data on morphological groups were amassed and norms of development were established. Races were ranked according to how civilized (or uncivilized) their representatives were thought to be.

By 1850, the anatomist Robert Knox could argue successfully that races were the result of arrested or deviant development; race occurred when there was a retardation of normal developmental processes. (Knox thought Saxons were the only people who were not retarded; all other groups exhibited some form of developmental deviation.)¹¹ By Knox's time developmental thinking was deeply rooted in natural science. Typology was no longer a matter of classification as it had been in natural history. Type was a function of normalization, and the variations characteristic of types were deviations from norms. Though many people disagreed with Knox's particular racial hierarchy, his framework for understanding race – that it had to do with normed development – was perfectly consistent with the science of his time.¹²

Once race (meaning those morphologies that differ from the Saxons, or whichever group puts itself at the top) came to be understood as deviation, the old concept of degeneration found its way back into natural science. In times past, degeneration was connected to the metaphysical notion of a Great Chain of Being emanating from a divine source; beings further from the source were more degenerate than those closer. But degeneration's theological origins became irrelevant as the concept's medical and social utility became apparent for the management of populations.

A degenerate individual was defined as one who failed to advance appropriately along normal physical, mental, and moral developmental lines. Since degeneracy was believed heritable and progressive, steps had to be taken to control those individuals and groups who exhibited any symptoms of it. Many people judged degenerate were prohibited by law from marrying; those judged likely to propagate outside of marriage (namely, the criminal, feeble-

minded, and insane) were sterilized. Race itself was a mark of degeneracy, so entire races were judged more or less degenerate based on the marks of race alone. However, scientists usually found plenty of other marks of degeneracy in those whose race indicated its presence as well. For example, the U.S. medical establishment "confirmed," using faulty data from the eighth, ninth, and tenth census, that the Negro race was dying out due to "physical degeneracy." (Gilman, 39) It was only a matter of time before that race destroyed itself. Other signs of degeneracy, insanity and perversion, supposedly increased by 1000% in African-Americans between 1860 and 1890. Some of this increase was thought to be due to the sexual freedom that emancipation supposedly brought, but unrestrained sexuality, scientists believed, would only cause further degeneration of the race. The only outcomes possible were mass sterility or mass insanity, (Gilman, 39) the preludes to natural racial annihilation.

Since degeneracy is just another name for deviation from developmental norms, and since criminality is one type of deviation from those norms, degeneracy supposedly included and produced an increase in criminality. (At this point biology and criminology were interlocked.) While awaiting the natural final solution, white Americans and Europeans had to be vigilant lest the criminal tendencies of inferior races lead to the injury, and the corruption, of their own. Management of racially-marked criminal populations was necessary; fortunately, criminals bearing the marks of race were relatively easily managed, since surveillance was relatively easy.

Because degenerates (of all sorts) were deemed to be doomed anyway, many scientists believed it was morally permissible to use them as experimental subjects, even if such use endangered their health or their very lives. Thus were members of allegedly degenerate races, as well as mental patients and homosexuals, used as test subjects. In one infamous case, scientists injected African-American subjects with syphilis and allowed them to become terminally ill; they considered this permissible because, they claimed, degenerate Negroes would have contracted syphilis anyway. (Gilman, 45)

With the publication of *Hereditary Genius* in 1869, Francis Galton inaugurated the eugenics movement, a bio-political movement that flourished in Europe and Japan as well as in America into the 1930s. Historians credit this movement with racist anti-immigration laws in the United States and Europe and with the forced sterilization of thousands of people. The purpose of the movement was to rid humanity of so-called defects, deviations from the norms of biological and social function established by scientific research. These norms – having been established by the same sciences that produced the epistemic object race – inevitably followed racial lines and, hence, were inevitably racist.

Thus, biology created the conditions for the possibility of racism. While many people dislike associating with those whose customs, religious beliefs, or

political views differ from their own, are disturbed by what is unfamiliar, and feel challenged in unpleasant ways by people whose behavior they find difficult to predict, there is no necessity that these feelings of discomfort, dislike, or fear should develop into racism. For that to happen, it was first necessary to invent the concept of race as a way of categorizing and naming difference. Since races were conceived within biology as stages along a developmental continuum, they were hierarchized from their inception. Thus, differential treatment of members of "inferior races," whether punitive or condescending, was a possibility created by scientific discourse, a possibility whose realization was inevitable.

Conclusions

Just as power-knowledge gave rise to the epistemic object delinquency and then used that object to extend the grasp of power, biological science (generously funded by governments intent on gaining socially useful knowledge for the efficient management of life) produced the epistemic object race and then, using it as justification, participated in the extension of power through the racial management of populations and individuals. The concept of race was very useful. It justified slavery. It justified hundreds of wars. It kept apart underclasses who might have joined together against the classes that ruled them. And, of course, it served for decades as an object of well-funded study for many scientists.

Of course, that was the past. Now, though racism is far from declining in the West, the biological concept of race is in disfavor. Genetic theory posits gene pools and populations as its objects of analysis, objects to which morphological races do not correspond; anthropologists now speak of ethnic groups. Therefore, some would argue, since scientific theory and racist practice are separable, science cannot have been responsible for racism. The flaws in this argument are too obvious to require enumeration, but it does point to an interesting phenomenon. In fact, scientific texts and theories do seem to be abandoning the concept of race and doing so at exactly the same time that racial minorities are using the concept as a rallying point for political action on their own behalf.¹³ Perhaps the concept of race has outlived its usefulness as a population management tool and now poses more of a danger to the status quo than it obviates. At the end of *Discipline and Punish*, Foucault advances a similar speculation about the concept of delinquency; he suggests that the management of populations may no longer require the figure of the delinquent, who may be replaced with some other form of discipline or object of knowledge. (One might argue that in major American cities, delinquent populations, like racial populations, now pose a threat to the powers that posited them and so may have

to be dismantled if those networks of power are to maintain themselves.) In any case, one should be very cautious about assuming that science is more "progressive" than society and very circumspect about the managerial intentions embedded in any new theory of human variation or development. Despite the stories illustrating the contrary, power and knowledge are intertwined. Even Galileo did not contemplate the heavens with apolitical objectivity; he worked in an arsenal in Venice.¹⁴

If my analysis is plausible, then Foucault's notion of power-knowledge is a useful analytic tool for application to at least one of the natural sciences. Those who would argue that sciences like biology are fields of knowledge only externally related to power are mistaken. Power permeates and shapes biology in ways very similar to the ways in which it permeates and shapes criminology, psychiatry, pedagogy, and industrial psychology. It created the conditions for biological science to come into existence when it created the category "life." Biology, like criminology, generates new epistemic objects, such as race, which it then claims the right to observe. Through extended observation it establishes norms of development and functioning; based on those norms it allows and sometimes even arranges for the management of deviation. Therefore biology, like the fields of knowledge Foucault studies in *Discipline and Punish*, is a normalizing discipline that arises within and extends bio-power.

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Notes

1. Foucault (1977), p. 23.
2. For a discussion of the homosexual as a type of self, see Foucault (1978), p. 43.
3. The old Natural Historians believed all natural beings are locatable on one conceptual plane or table. Their tenet was "nature never leaps."
4. Stepan, Nancy (1982), *The Idea of Race in Science*, Macmillan, London, p. 5.
5. Banton, p. 51. Buffon had used the word "race" in a technical sense to refer to human variation as early as 1749, but his usage did not catch on. See Snyder, p. 11.
6. Benedict, pp. 108-9.
7. Davis, David Brion, "Slaves in Islam," *New York Review of Books*, Oct. 11, 1990. Davis goes on to say that racial slavery seems to have been a contribution of the Arabs to the Western world. We might also note that the English word "slave" derives from the name of a Slavic people enslaved in southeastern Europe.
8. Stocking gives a fairly detailed account of the expedition. "Observation" actually involved by a great deal of interference, including sexual assault and rape of native women. Within thirty years after the Tasmanians were "observed" by European scientists, they became extinct. This lent credence to the longstanding view that Tasmanians were the lowest race on the ladder of civilization.

9. Stepan, pp. 9-10. Joseph Camper seems to have started this, and Blumenbach tried to counter his work. Eventually craniometry was standardized with Retzius' development of the cephalic index in 1860. There were attempts to develop measures of skin color, but some, like A.L. Kroeber, objected that this could never be precise. The nasal index was also a popular measurement. See Snyder, pp. 14-17. Etienne Serres argued early in the nineteenth century that Africans are more primitive than Europeans because the distance their navels and penises (presumably only those of the males) remains shorter relative to body weight throughout life. See Gilman, p. 41, or Gould, p. 40. Craniometry was not fully discredited until Franz Boas' 1911 article showing that head shape varied with environment rather than being fixed by heredity; Boas also showed that stature varied with nutrition. Somatometry was largely replaced in the twentieth century by intelligence testing, but there are a few current attempts to revitalize it. Psychologist J.P. Rushton has argued recently that brain weight is an indicator of intelligence and that blacks and women of all races, having lighter brains than white males, are in fact less intelligent. See Rushton, "Race differences in behaviour: a review and evolutionary analysis," *Personality and Individual Differences*, 9:1035-40. For a discussion of Rushton, see Cernovsky, Z. Z., "Race and Brain Weight: A Note on J.P. Rushton's Conclusions," *Psychological Reports*, (1990), vol. 66, pp. 337-8, and Rushton's reply immediately following on pages 339-66. Cernovsky responds in "Intelligence and Race: Further Comments on J.P. Rushton's Work," *Psychological Reports*, (1991), vol. 68, pp. 481-2.
10. The change in the meaning of the term "race" in both French and English was clearly enabled by and reflected in the work of natural historians and biologists. Cuvier conflates the notion of type and lineage as early as 1817 in *The Animal Kingdom*. There he groups together beings with distinct similarities, thus positing types, some of which are also groups of beings with similar lineages. The notion of type, then, *seems* consistent with the older notion of lineage, despite the fact that it is not. See Banton, 51-2. Cuvier, of course, was not interested in suggesting that types are stages on a developmental continuum (since he feared such thinking would lead to the heresy of evolutionism), but his rival Geoffroy, who believed that God has only one (or a very few) architectural designs which he varies to produce species, was interested in just such a possibility. See Appel, T. A. (1987) *The Cuvier-Geoffroy Debate: French Biology in the Decades Before Darwin*, Oxford University Press, New York, for an account of these thinkers' work. That

developmental thinking led to the formulation of type as arrested stage is evident in Geoffroy's science of teratology, the study of monsters. Just as species might be seen as various stages of development of one divine organic architectural design, deformed individuals might be seen as the unfortunate results of arrested or disrupted development within one species. William Ripley – usually considered now as nothing more than a circus side-show aficionado – was a serious teratologist and a student of race. Along with many of his contemporaries, he thought racial types – like congenitally deformed individuals – represented arrested stages of development on one hierarchical continuum.

11. Stepan, pp. 41-44. I would like to note that this conception of race may account for the phenomenon often mentioned by those who charge white feminist and leftist theorists with racism. White theorists often treat non-white people as having a race, whereas they themselves are "race-less." If my claims about what race is are right, then in fact those white theorists *are* raceless, and their racelessness is one aspect of racism.
12. The *OED* lists R. Knox as the author of an 1831 article in *Coquet's Anatomy* that uses the word "organic" in its modern bio-chemical sense. I have not been able to confirm that R. Knox and Robert Knox are the same man, but Robert Knox was at the height of his anatomical career in 1831, when the article came out. If Robert Knox is R. Knox, then there is a direct and interesting link in England between the solidification of the dividing line between organic and inorganic structure, on the one hand, and normalizing thinking, on the other. See Gillispie, C. C. (ed.), (1973), *Dictionary of Scientific Biography*, Vol. VII, Charles Scribner's Sons, New York, pp. 414-16.
13. See Edlin, G., "Reducing Racial and Ethnic Prejudice by Presenting a Few Facts of Genetics," *The American Biology Teacher*, (Nov./Dec., 1990), vol. 52, no. 8, pp. 504-6, and Littlefield, A., Lieberman, L., and Reynolds, L.T., "Redefining Race: The Potential Demise of a Concept in Physical Anthropology," *Current Anthropology*, vol. 23, no. 6 (Dec., 1982), pp. 641-55.
14. See Harding, p. 30.