

GENETICS, IDENTITY AND THE FUTURE OF URBAN CULTURE

DIEN VIDIA ROSA

Lecturer at Department of Sociology, University of Jember.

dien_ros@yahoo.com.

Introduction

Since Darwin's theory of evolution changed human and science perceptions about creation, the development of human, biologically, has given such an important influence in social construction toward identity and behavior. Technology with all its materials, inventions and knowledges has developed a new form of life, a new human. This evolution of transforming self as the complex body is a long journey to find out what is inside of human body which decides them to own such an identity and behave or take an action in social world. Such as X-Rays and microscope inventions, lead to the next step of future. This writing, then, intended to explore the new human as sophisticate creature living a world.

The first part of this writing traces the human genes along before genetics deterministic changes the perspective about life, until the day when genetics engineering technology comes and plays the vital role in human. Second part begins to explore the discourse of sociobiology and radical behavior approach analyzing human's identity and behavior. The third part is a turn how technology takes place in every structure of human body through genetic engineering and put it out as new form of social identity and behavior. And the last part will try to established new understanding of social relation between urban culture and how the triumph of genetics will rebuild our insight in perceiving human conditions in the future.

The Journey of Human Genes

In ancient time, when the term of genetics had not been found yet, the story of living creatures mentioned in many ways in beliefs of pre-historic man. Such stories kept in myths for years. Until then, scientists or particularly, philosophers discovered which they believed that the origins of all in this universe known as elements. This is a conclusion made from explanation of Edmond Perrier (2009: 2).

Perrier noted, most of the philosophers of the ancient world still had a confused concept of organized life. For Thales and Anaximander, all things have been derived from water; Anaximenes and Diogenes preferred to have everything come from air. For Heraclitus, everything is a simply a transient form of fire. Xenophon wanted everything to come from air and water, while Empedocles believed that, in conjunction with two universal driving force, love and hate, all things have been produced from the four elements, earth, water, air, and fire, which, until modern times, have been the basis of all scientific concepts.

But it was still too far to coined the word genetics, remained there were Aristoteles with the animal kingdom, another old evolution concept by Lucretius (it is mentioned to be an old evolution concept because long time before Darwin, Lucretius notes on creatures productivity and quality of survival), and creatures living classification from Carl Linneus. For Perrier, Lucretius believed that when living creatures were produced in nature the simplest forms were the first to immerge and any that were imperfect were destined to disappear and be replaced by new ones that continued to appear (Ibid, 16; Beer, 2008: 63-64).

Further, Linneus found a way how creatures were classified based on he called *system* (Ibid, 29-30). According to Perrier, Linneus argued that everything in nature appeared to be rigorously ordered, that all creatures are related in a logical fashion, much as our thoughts are linked to one another in an uninterrupted chain. He was also in accord with the aphorism that Leibnitz had stated: *Natura non facit saltum* –Nature never moves by leaps.

That line above, in the way creatures are defined and classified, had most influential effect on the next understanding about the structure of human

body. It is become a new paradigmatic view and extends branches of biology, such as cell biology, medicine biology, molecular biology, evolutionary biology, developmental biology and so on as a study of living creatures. This revolutionize paradigm in biology science brought some of consequences related to the rest of human sciences perspectives, include the rise of genetic as a discipline (science).

The route begun, first, before genetics inventor Gregor Johann Mendel being acknowledged for his research on pea plants. It was Jean Baptise de Lamarck (1744-1829), the first who identified about Heredity in his coined term *Acquired Characteristic*. Lamarck is the pioneer in inventing the heredity of organisms. Lamarck believed, the necessity of an organism will determine on how that organism will grow and develop, that its necessity will be determined also by its environment. He used the neck of girrafes as the example to describe his idea. His theory, then, reincarnate into new idea of “directed mutation” which simple organisms can directed its own evolution (Brookes, 2005: 40-41).

According to Ho (2008: 77) as first comprehensive in evolution and an earlier in using epigenetic approach, Lamarck gave tension in tranformation which arose from organisms own activities and experiencing the environment as long as their epigenesis. Later, Ho argued that Lamarck’s theory needs a conception about organisms as an active and autonomous which open to environment. Epigenetic approach assumed any experience of organisms about their epigenesis as the center of their evolution, is potentially subversive for status quo. That is why, it is rejected by orthodoxs today (Ho, 2008: 73-74).

Next, Rudolf Virchow (1821-1902) who is a german physician, proposed the theory that every cell arises from an existing cell. In 1858, he carried out research related to fundamental question about cells and tooked Schleiden and Schwann’s observations as step further with his statement of the doctrine *Omnis cellula e cellula*, “Every cell originates from a similiar, previously existing cell” (Hodge, 2010: 43). This was a fundamental discovery that continued by Robert Koch’s finding of *Mycobacterium Tuberculosis* also Louis Pasteur and Edward Jenner for the cures. And soon, Charles Darwin and Alfred Russel Wallace went on with natural selection. Especially for Darwin, it was tremendously highlight theory which had its triumph until today.

Darwin is a naturalist who still controversy in spite of his origin of the species that blasts off the world with creation theory versus moral and religious's point of view. He offered evolution theory which stated that variations of organism occurs in both organic and inorganic conditions of life which have strong principle of inheritance with improvement. This what he called natural selection, that it is also lead to divergence of character and how during the modification and struggle of all species to increase in numbers, the more diversified these descendants become, the better will be their chance of succeeding in the battle for life (Darwin, 2008: 98-99; Hodge, 2010: 11).

Hodge concluded that evolution was based on a few logical principles that could be observed nearly everywhere: *variation, heredity, natural selection*. The theory become fundamental but still remains question on how those divergences or features transmitted to the next offsprings. Eventhough Darwin mentioned the pangensis or gemmula there was not enough proof to explained heredity.

Until Gregor Mendel, Francais Galton and William Bateson made significant breakthrough in genetic. Mendel is acknowledged as genetic founder through his work in putting the basic heredity of pea plants. According to Mendel, in most species, each males and females have hereditary units might contribute to the offsprings named *alleles* that might be a *dominant* or *recessiv* ((Ho, 2008: 98). 40 years after his finding, Hugo de Vries, Carl Correns, and Erich von Tschermak gave the same results on plans heredity experiments, then being a new start of genetic.

The next experiment by Thomas Morgan on fruit fly until the discovery of chromossomes and DNA (*Deoxyribose Nucleic Acid*) structures by James Watson and Francis Crick also its sequences by Fred Sanger went into branches of genetic, such as cytogenetic, molecular genetic, and so on. And genetic engineer plays an important role on human life because of the widely range used that has great impacts, especially, this new application on such issues like sustainable foods and biomedicine. And another chance that lead by eugenics comes as a fascinating moments, the born of new human. It is have a great possibility in order of The Human Genome Project.

Human in Sociobiology and Radical Behavior Sciences

The prior in concerning the identity and behavior in human culture is the defining of man, behavior, and culture itself. This section comes from discussion between sociobiology and behaviorism perspectives in conjunction to human behavior and social world. Although, it is such challenges that sociobiology try to anticipate by including some of social sciences's perspectives to corporate what is deal inside a human and his environment. Hence, it is a complicate and controversy science along with social darwinism. But, although a remarkable insight provided by sociobiology, it still a battle of discourse and debate on cultural and social behavior of human. Moreover, there was radical behaviorism perspective which is assumed to elaborate in such aim.

Edward Osborne Wilson, the founder of sociobiology, had concerned that it needs more broader aspects and perspectives. In his book titled *On Human Nature* (1982), Wilson stated:

“Because the guides of human nature must be examined with a complicated arrangement of mirrors, they are deceptive subject, always the philosopher’s dead-fall. The only way foward is to study human nature as part of the natural sciences, in an attempt to integrated the natural sciences with the social sciences and humanities. I can conceive of no ideological or formalistic shortcut. Neurobiology cannot be learned at the feet of guru. The consequences of genetic history cannot be chosen by legislatures. Above all, for our own physical well-being if nothing else, ethical philosophy must not be left in he hands of the merely wise. Although uman progress can be achieved by institution and force of will, only hard-won empirical knowledge of our biological nature will allow us to make optimum choises among the competing criteria of progress. The important initial development in this analysis will be the conjunction of biology and the various social sciences –psychology, anthropology, sociology, and ecomonics” (Wilson, 1982: 7).

Later, he argued that sociobiology as a subject based largely on comparisons of social species. Each living form can be viewed as an evolutionary experiment, a product of millions of years interaction between genes and environment. By examining many such experiments closely, we have begun to construct and test the first general principles of genetic social evolution (Ibid, 17). In this view, Wilson position was

to draw upon culture through genes heredity selection by environment. He also pointed out that

“...general sociobiological view of human nature, namely that the most diagnostic features of human behavior evolved by natural selection and are today constrained throughout the species by particular sets of genes” (Ibid, 44).

In the same way, King (1981) noted that sociobiology is a broader formulation that adds several other theoretical concepts, the most important of which are kin selection and inclusive fitness... All action of consequence in social or interpersonal behavior, since it is adaptive, has an important genetic basic (King, 1981: 89-90).

Another work by Paul Naour (2009) explained human sociobiology as the essential work of E. O. Wilson (Naour, 2009). Wilson begin with term *sociobiology* and *gene-culture coevolution*. In term of sociobiology and the new synthesis, Naour stated what Wilson argued as modern synthesis as the answer of conjunction between biology and social sciences. Furthermore, the words modern synthesis, according to Wilson (Naour, 2009) refered as “the elucidation, through excellent empirical research, of the nature of genetic variation within species and of the means by which species multiply.”

Thus, in his *Sociobiology: The New Synthesis*, Wilson extended the synthesis outside the boundaries of biology and include social sciences to, according Naour, “reformulate the foundation of the social sciences in a way that draws them into the Modern Synthesis”. And as Wilson passed through Konrad Lorenz’s work, Konrad Lorenz and others are ethologists who develop “species specific” behavior (King, Ibid, 89; Wilson, Ibid: 16), he concluded that sociobiology as “the systematic study of the biological basis of all forms of social behavior” (Wilson in Hawkins, 1997: 294).

Especially for Hawkins (1997), most sociobiologist acknowledge the importance of culture as a determinant of human behavior and even concede a dialectical interplay between genes and culture, with the latter having a selective impact on the former (Ibid, 307). Here, Hawkins also underline what had been rejected by sociobiologists. Meanwhile, Wilson was also seeking for an appropriate explanation of cultural transmission along the offsprings, he refered to

Theodosius Dobzhansky's work related to culture. Dobzhansky stated:

“Culture, in contrast to biological heredity, is not transmitted through chromosomes and sex cell. We learn to speak the language or languages which are spoken by those around us, regardless of whether they are our parents or biologically unrelated persons. Then we begin to learn from books, often written by persons whom we never saw or who died long before we were born. The Transmission of cultural heredity is so efficient that people are able freely to acquire any one of the variety of culture which exist in the world (Dunn and Dobzhansky, 1952: 36-37).

From this turning point, for Wilson, there was another idea in his sociobiology to be expanded. With Charles Lumsden, in 1981, he published *Genes, Mind and Culture* as a more conceptual basis for sociobiology. Together, they constructed the genetic basis of social behavior and culture which called *gene-culture coevolution* that must be finalized by giving sets of theoretical background which they had attempted to fill. Lumsden and Wilson argued that there are sophisticated understanding related to social behavior and culture that are not prescribed in genes but implied by gene-culture evolution through what they called, *epigenetic rules*.

Here, Lumsden and Wilson (1981) explained epigenetic rules as direct the assembly of the mind. It works according to the predispositions coded by gene ensembles inherited by an organism. Ultimately genetically based, they are set of biological processes that are both gene dependent and context dependent – context provided by information “derived from culture and physical environment.” The human species is not immune to those epigenetic rules. We are as much a product of the coevolutionary processes as all primate species, “each adapted in idiosyncratic ways to particular environments” (Naour, 2009).

For Naour (2009), noticed to Lumsden and Wilson, epigenetic rules described a mind as a system that tends to organize into certain forms in preference over others, while the combined action of many minds seems to lead to the emergence of patterns in culture that become statistically predictable. And this lead to biology of cultural transmission that achieves its ultimate result in the emergence of the human mind is driven by the behavioral attributes of learning and teaching (Naour, 2009: 34). This is a way which Lumsden and Wilson developed in order to bridging the genes inside and culture outside human

by fulfilling three possible worlds of behavioral etiology toward culturegens (Ibid, 36).

In a conclusion, Wilson established a theoretical foundation toward sociobiology to attempt in understanding how culture and genetics connected through coevolution where the mind and brain plays the vital role. As Wilson (1998) stated:

“Culture is created by communal mind, and each mind in turn is the product of the genetically structured human brain. Genes and culture are therefore inseverably linked. But the linkage is flexible, to a degree still mostly unmeasured. The linkage is also tortuous: Genes prescribed epigenetic rules, which are the neural pathways and regularities in cognitive development by which the individual mind assembles itself. The mind grows from birth to death by absorbing parts of existing culture available to it, with selections guided through epigenetic rules inherited by the individual brain.”

But the remaining of those, still needs Skinner’s works to make further explanation toward how could it be, the real thing being observed in human mind and genes? So, in another chance, Wilson met and discussed with B. F. Skinner. And it was a possibility to elaborate their works concerned with genes, behavior, and culture (Naour, 2009). In spite of Skinner rarely included genes and biological factor as his main works, it was an optimist view in seeing Skinner’s work as a bridge and supporting theoretical perspective. It is behavior that transmittes what is inside and outside human, between human and his environment.

According to Skinner (1953: 257), behaviour is a function of the environment, the term “environment” presumably means any event in the universe capable of affecting the organism. But part of the universe is enclosed within the organism’s own skin. In this sense, what Skinner pointed out is the action of organism through what are provided and becomes private for that individual and environment. It makes such an explanation how the individual adapts and make decision upon the bahavior.

But this is also an awkward, a contrary of social behavior, which Skinner defined as “the behaviour of two or more people with respect to a common environment”. It is often argued that this is different from individual behaviour

and that there are “social situations” and “social forces” which cannot be described in the language of natural science. A special discipline called “social science” is said to be required because of this apparent break in the continuity of nature (Ibid, 297).

Later, Skinner’s work emphasized the discussion about what man is. He came to criticize scientific psychology which regarded the autonomous man as objectively determined by necessary laws, hence, cannot have an intentional behaviour and a purpose. He argued that even necessary laws derived from intention and purpose that can be formulated in selective consequences. Strengthen the idea for purpose, Skinner back to Jacques Barzun who argued that Darwin and Marx both neglected not only human purpose but the creative purpose responsible for the variations upon which natural selection plays (Skinner, 1971: 200).

Moreover, Skinner noted that As some geneticists have argued, that mutations are not entirely random, but non-randomness is not necessarily the proof of creative mind. Mutations will not be random when geneticists explicitly design them in order that an organism will meet specific conditions of selection more successfully, and geneticist will then seem to be playing the role of the creative Mind in pre-evolutionary theory, but the purpose they display will have to be sought in their culture, in the social environment which has induced them to make genetic changes appropriate to contingencies of survival (Ibid).

Those, Skinner offered his analysis of behavior in two dimensions, the operant conditioning and selection by consequences (Naour, 2009: 97). The overall then become technology of behavior. In his *Beyond Freedom and Dignity*, Skinner argued that behaviour is shaped and maintained by its consequences. There are two important result between organism and environment interactions.

First, concerns the basic analysis. Behaviour which operates upon the environment to produce consequences (‘operant’ behavior) can be studied by arranging environments in which specific consequences are contingent upon it. The contingencies under investigation have become steadily more complex, and one by one they are taking over the explanatory function previously assigned to personalities, states of mind, feeling, traits of character, purposes, and intentions.

Second, the result is practical: the environment can be manipulated. It is true that man's genetic endowment can be changed only very slowly, but changes in the environment of the individual have quick and dramatic effects (Skinner, 1953: 23).

In another explanation of human behavior, Skinner stated that man may be controlled by his environment but this environment both physical and social, are man making by his own. The evolution of a culture is in fact a kind of gigantic exercise in self-control. As the individual controls himself by manipulating the world in which he lives, so the human species has constructed an environment in which its members behave in a highly effective way (Ibid, 201).

For Skinner, man has 'controlled his own destiny', if that expression means anything at all. The man that man has made is the product of the culture man has devised. He has emerged from two quite different processes of evolution: the biological evolution responsible for the human species and the cultural evolution carried out by that species (Ibid, 203). From this stand point, it is an obvious endeavor that Skinner drew human being as autonomous and had a free will (it is described in another chapter of his book) to design his own environmental living.

By arguing such analysis of behavior, Skinner attempted to place human as well as, for several scientist, being connected with Wilson because of his work in describing the relation between genetic heredity environment and culture. Later, he emphasized it as men have already changed their genetic endowment by breeding selectively and by changing contingencies of survival, and they may now begin to introduce mutations directly related to survival (Ibid). This could be a highlight with the work of Darwin and Wilson related to the heredity of survival mechanism toward environment as man own creation.

Moreover, Skinner noted, the origin and transmission of a cultural practice are thus plausibly explained as the joint product of natural selection and operant conditioning. A culture, however, is the set of practices characteristic of a group of people, and it is selected by a different kind of consequence, its contribution to the survival of the group (Naour, 2009: 97). And by doing so, this point of view also gave insights to a new field of behavioral science researches, behavioral genetics.

Human Genetics and Urban Culture Now and Then: Identity and Behavior in the Age of Genetics Engineering Technology

As been explained above, the history of human genes gives a basic fundamental and key phase in developing discourses of human identity and behavior. This becomes such an important challenge due to history of genetics which had impacted biologically and socially in constructing human. For instances, the rise of eugenics by Francis Galton (1883) which divides in two different purposes, lead to a long debate and leaves a dark history to human rights. The positive eugenics to improve human qualities and capacity (such as through the up-grading of foods and medicines, preventing from any kinds of diseases, physical disability, mental illness) where in practical, some becomes negative eugenics or eugenics disorder in the name and interest of the state. There was also an interesting debate whether eugenics might be regulated by state, which finally propagandis and political, or it was absolutely a privat business of people regarding personal choice.

As being recorded by history, how British, USA, Germany, Russia, China and Japan ever had a straight struggle and nightmares to overcome negative eugenics. British had survived from such a shocking propagandis in disappearing experiments of many “lower class” race that fortunately never came true (Kelves, 1985; Brookes, 2005). This was quite different with had hapened to USA, Germany, Russia, Japan, and China where eugenics are used for political and ideological interest of the state. In 1924, in the USA, eugenics passed the immigration laws to obscure imigrants entering the country whereas part of those are who escaped from Nazi in Germany. This was based on government political will of Calvin Coolidge, the president of USA who stated that “America must be kept American. Biological laws show that Nordics deteriorate when mixed with other races” (Ibid). At least, in 1930s there were about 20.000 people sterilized.

The same event also happened in China, in 1994, where the government prohibited their citizen with certain disease for procreating. Japan was another example for bad eugenics when, during world war II, the Imperial Japanese Army’s unit 731 acted experiments on more less than 10.000 civilians and soldier from China, Korea, Mongolia, and Russia. Unit 731 used human subject

to conduct experiments such as vivisection without anesthesia, infection of victims with diseases or removal of organs while subjects were still alive, impregnating women against their will and then removing the fetus for examination, and amputating limbs and even reattaching them to other parts of the body (Peacock, 2010).

In Germany, negative eugenics attained its triumph when Hitler held a program of race purify, in which he believed that the real Germany race is the Aryan. By such an argument, he started to jailed everyone suspected the lower class (disable, mental illness, jews and gypsies, and so on) which also meant to be killed.

Another black story related to genetic was happened in Russia when Stalin ordered. Against Mendelism, he believed in Lamarck for it fitness with Marxist philosophy for his political agenda. Trofim Lysenko is a biologist who tried to develop oat vernelization, and one of Stalin's adherent. Together, they made Russia's biologists, who stayed with mendelism, sent away to Siberia to be forced labour. It was a vague time for Russia's genetics but finally got back to normal in 1950s.

For now on, how can we face (soft) eugenics in this new genetic engineering technology era? What does genetic engineering technology give and how it will change the entire world? These questions bacomes such a rich discourse related to biotechnology and genetic engineering which have given more sophisticate method called cloning. More questions arise in conjunction to human identity and "dicipline bodies" of the state have attacked an understanding of a new human (others called *posthuman*) form because of radical changing in human body. There are issues toward technology, globalization and genetics which lead to genetic screening, bioweapon, bioterrorism, cloning, robotic and cyborg that will also effect culture in our civilization Fukuyama in Hodge, 2010: 125; Pepperell, 2009).

Therefore, there is a consequence toward genetic screening and others genetic technology equipments. The identity that human has and the behavior related to it construct the essential humanity position in both nation and private space. As Ridley noted that there is a world of difference between genetic screening and what the eugenists wanted in their heyday – and it lies in this: genetic screening is about giving private individuals private choices on private

criteria. Eugenics was about nationalising that decision to make people breed not for themselves but for the state. It is a distinction frequently overlooked in the rush to define what “we” must allow in the new genetic world. Who is “we”? We as individuals, or we as the collective interest of the state or the race? (Ridley, 1999: 298).

Everything which started from genetic technology and make up what human today is learned from the tradition of heredity which through a very long debate about *nature* and *nurture*. It allows the combination of genetics and technology in creating who is human now. Not only in a sense of philosophical, but economically, human becomes commodity for markets in their own request. It is quite possible when refer to human organs and tissues trading that flow to the *machinization of human body*.

Richard Dawkins (Pepperell, 2009) claimed DNA as former life machine, that all of the living creatures are machine who survive that are programmed to multiply digital database which doing the program. Compared to Skinner’s argument that man is a machine in the sense that he is a complex system behaving in lawful ways, but the complexity is extraordinary. His capacity to adjust to contingencies of reinforcement will perhaps be eventually simulated by machines, but this has not yet been done, and the living system thus simulated will remain unique in other ways.

Politically, who defends and protects human citizenship is only the state. Who will, in this sense, realize what is right or wrong, except laws and regulations? But in a new situation of this genetic engineering technology environment, it might be confusing to decide what the role of the state is and what the duty for citizen is. In spite of new identities derive from the choices of people in their physical appearances and their preferences in culture, it also difficult to maintain national identity because it is blurring by unboundaries life.

For instance, a *baby-design* and embryo digital issues, cause parents to select the baby whatever they want, for sex and colors, eventhough parents might be from different skin color. Otherwise, when the child become an adult, he or she has right to change his or her own body. And when it over all the boundaries of race, ethnicity or even nation, it will be a really new world.

Thus, the important of identity has a conjunction with behavior of a new human. It related then to the structure of urban culture construction in

spite of how the city is built. The city which provides all the necessary needs of its citizen is changed for another level and sometimes left behind, depend on citizen's behavior. Whether it grows or not, whether it is good or bad, when genetic engineering technology could change everything, it might also change the urban.

In other days, it will full of hospitals and beauty clinics or even the new space underground inside of the city which could be dark or shine. As was described by William Gibson in his novel *Neuromancer*, Japan has already forgot development of neuron surgeons, while China is in struggle to conquer it. Dark clinics in Chiba is the most sophisticated. The overall surgeons technics come and go every month¹.

Conclusion

A long journey to find human genes created a new form of human which had important influence to environment. It also gives clues to trace culture and behavior of human. In many events and such histories, it helps to constuct a new understanding to sciences on how genes in human body in had connected with the environment outside. And the last, it change perspectives about what human is.

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¹ (Gibson, 2010).

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