

# **Parallel Evolution: Applying Biological Evolutionary Mechanisms to the Evolution of Culture as Depicted in Jeff Chang's *Can't Stop Won't Stop: A History of the Hip-Hop Generation***

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In the field of biology every organism is thought to possess its own specific evolutionary pathway that is able, when analyzed, to document the events leading up to and the appearance of every morphological and molecular characteristic unique to that species. The occurrence of evolution is fact; it is the specific mechanism of evolution that is so frequently the topic of debate. Thus, evolutionary theory is a structure of ideas that explains and interprets the facts of evolution while relating them to the organization and operation of the natural world.

The mechanisms and components of evolution are many, though by far the most common is Charles Darwin's theory of evolution via natural selection. Darwin developed his model of evolutionary change based upon previous ideas, specifically the theory of Uniformitarianism developed by Sir Charles Lyell, which suggests, "the present is the key to the past." Darwin's theory of natural selection has been used in the development of other important models of evolution such as descent with modification and the theory of punctuated equilibrium developed by Niles Eldredge and Stephen J. Gould.

Though developed for the study of biological evolution, many methods of evolutionary change, as well as observed patterns of evolutionary change within populations, are applicable as models for the evolution of culture within a society. Before applying the methods of biological evolution to situations of cultural change it is first important to recognize that the two basic questions evolutionary biologists ask when studying the evolution of a population are transposable to the questions one would ask when preparing to study the evolution of culture.

The two important questions asked by evolutionary biologists are: "How do populations change through time in response to modifications in their environments?" And "How do new species

come into being?" These questions, altered negligibly, are also necessary inquiries in the study of cultural evolution. When applied to cultural evolution they ask, "How does culture change through time in response to modifications in its environment? And "How do new developments in culture come about?"

The means of answering the questions pertaining to evolutionary biology may also be applied in analyzing cultural evolution. In order to create a more thorough analogy between biological and cultural evolution one should first view society as a living, breathing organism with an infinite number of lives. Society is constantly changing, each day, each year, and each subsequent period of time alters the development of the societal self. And what is the "societal self"? It is that which not only encompasses human activities, but also gives those activities significance and meaning – it is culture.

Now consider the role of the individual person in society and the impact of each person on the growth and development of culture. To continue the analogy of society and culture as a living, breathing organism one can consider individual persons as DNA, more specifically, as the nucleotide bases A, T, G, and C that comprise the genetic make up of every organism. If each individual corresponds to a specific base pair, then a group of individuals, such as a specific geographical community, can be viewed as a gene. In this way, each community of individuals contributes certain customs and traits that influence the growth and evolution of culture just as each gene that comprises an organism's genetic make up controls the expression of certain traits within the whole of the organism, thus affecting the biological evolution of the organism.

Using this analogy of society as a living organism one is able to use specific examples of evolutionary mechanisms and models as well as specific examples of cultural evolution to depict the application of biological evolutionary models to the

evolution of culture. The two mechanisms of biological evolution that are most applicable in this study of cultural evolution are Darwin's theory of natural selection and Niles Eldredge and Stephen J. Gould's mechanism of punctuated equilibrium. The applicability of descent with modification, Uniformitarianism, and gene flow as mechanisms of biological evolution successfully applied to cultural evolution will also be developed in relation to the two main models of evolution being studied.

In order to fully and succinctly support the application of the models and mechanisms of biological evolution to cultural evolution, focus will be placed on a single evolving culture: the evolution of hip-hop culture in the United States of America. Evidence of cultural evolution will be predominantly drawn from Jeff Chang's work *Can't Stop Won't Stop: A History of the Hip-Hop Generation*. To direct this endeavor in a more methodical approach, rather than rushing hastily toward comparisons and examples, it is essential to first look in more detail at the processes and theories of biological evolution.

The very nature of this study of growth and change suggests that this examination of the specific methods and forms of biological evolution that will later be applied to the evolution of culture should proceed, as all periods of growth do, chronologically. In this case, the first significant mode of biological evolution that will be addressed is the doctrine of Uniformitarianism that was first introduced into the scientific field in 1785 by James Hutton in his work *Theory of the Earth* and later expounded upon and popularized by Sir Charles Lyell in 1830. The principle of Uniformitarianism may be best recognized by its succinct speculation that "the present is the key to past." This doctrine was originally created in response to observations made of geological processes which indicate that the current geological processes are the same as those processes that occurred millions of years ago, thus implying that present processes are able to explain past events.

Though Uniformitarianism has been virtually disproved by modern scientists, it is important to acknowledge the great contribution Uniformitarianism made to the study of biological evolution. What resides at the base of Uniformitarianism's claims is the principle of

gradualism—the theory that change occurs through the accumulation of slight modifications over a period of generations. Another important tenet of gradualism is that every individual is the same species as its parents, thus no definite line of separation may be made between old species and new species. Therefore gradualism suggests that a species is not an unchanging type and that it is a population and not an individual that evolves. These tenets of gradualism, that evolution occurs over long periods of time and that it is the population not the individual that is evolving permeate all of evolutionary theory, whether in contrast to more modern principles of development, or as building blocks for other mechanisms of evolution; gradualism's importance in the field of evolutionary biology is undeniable.

The principles of Uniformitarianism, and thus gradualism as well, played a significant role in the development of what is likely the most well known theory of evolution: evolution by means of natural selection. The theory of evolution through natural selection is the result of years of study by the scientist Charles Darwin who is largely recognized for placing the theory of evolution within public domain. It was the publishing of Darwin's tome *The Origin of the Species by Means of Natural Selection, or the Preservation of Favourable Races in the Struggle for Life* in 1859 that first made evolution the target of many moral and ethical public debates. Darwin was influenced by the work of Sir Charles Lyell which led to Darwin's formulation of the evolutionary process of descent with modification, a variation on Uniformitarianism's slogan "the present is the key to the past."

Darwin remained loyal to the tenets of gradualism in generating his mechanism of evolution, this tie between gradualism and Darwinism is most notable is his stipulation that evolution occurs by descent with modification. Darwin states that all life shares a common ancestor and that through the process of descent with modification results the apparent biodiversity of all living things. Drawing from the principles of gradualism, descent with modification holds that the diversity of life results from slight changes and modifications within a population that over an extended period of time lead to the diversification

of a population. The mechanism that Darwin employs to elucidate the process of descent with modification is the theory of natural selection. In his proposed model for evolution Darwin again draws from gradualism to explain his mechanism of evolution, citing gradual change as the origin of evolution by natural selection.

To succinctly state Darwin's theory of evolution through natural selection one would say that heritable traits that lead to survival and reproduction will spread in a population. To further develop this idea it is important to recognize the four postulates of natural selection: that individuals within populations vary, that variation among individuals is passed, in part, from parent to offspring, that some individuals are more successful at surviving and reproducing than others, and that survival and reproduction are not random, the traits that those individuals carry will increase in frequency. Natural selection is a significant mechanism of evolutionary change because it is the basis for the evolution of the ways in which an organism's traits adapt in response to the surrounding environment. Natural selection's unique ability to lead to adaptive divergence of populations explains the appearance of myriad species rather than just one species with all positive traits.

In addition to natural selection, other mechanisms of evolutionary change significant in the study of cultural evolution are mutation, migration, and genetic drift. Each of these mechanisms helps explain the differences in patterns of genetic variation, and more importantly, each of these mechanisms offers insight into the occurrence of genetic variation across specific geographic ranges. The mechanisms elucidating genetic variation are important in the application of genetic variability to specific locations. Of particular importance in the application of the models of biological evolution to cultural evolution, particularly concerning geographic location is the mechanism of migration; and particularly significant in the mechanism of migration is the role of gene flow. Gene flow by definition is the change in gene frequencies due to the movement of individuals or gametes from one population to another. Important evolutionary consequences of

gene flow include its role as a homogenizing force, a creative force, as well as a constraining force.

As a homogenizing force, gene flow accounts for the blending of separate populations: explaining the disappearance of one species and the apparent increase in size of another geographically close population. Populations may be homogenized in the assertion of dominance by one population over another as well as the subsequent inbreeding of two separate populations. As a creative force, gene flow allows new combinations of traits to be acted upon by natural selection, thus giving rise to new adaptations. Finally, as a constraining force, gene flow is capable of hindering populations from adapting quickly to their local environment due to limited diversity within the population.

Progressing from the advent of evolutionary theory in the 1700s that is predominantly based upon visual observations and years of single species study, to the modern study of the role of genetics in the evolution of a population, places this examination of biological evolution's main models and mechanisms at the foot of one of the more controversial theories of evolution, punctuated equilibrium. The theory of punctuated equilibrium first appeared in 1972 as a result of a critique on the Darwinian model of evolution through natural selection by two scientists, Niles Eldredge and Stephen Jay Gould. Punctuated equilibrium suggests that evolution occurs quickly with long periods of little change in between. These long periods of little change are referred to as "equilibria" which Eldredge and Gould suggest are punctuated by brief phases of evolution, thus giving the theory its name: punctuated equilibrium.

The theory of punctuated equilibrium as a mechanism for biological evolution emphasizes the power of the majority in creating change within a population. Gould writes in his work *The Panda's Thumb*, that "Large, stable central populations exert a strong homogenizing influence [on the gene pool]. New and favorable mutations are diluted by the sheer bulk of the population through which they must spread. [...] But in small, peripherally isolated groups that are cut off from their parental stock ... selective pressures are usually intense because peripheries mark the edge of ecological tolerance for ancestral forms. Favorable variations spread quickly" (Gould 183-184). Gould's emphasis on

the quick rate of evolution via the mechanism of punctuated equilibrium would appear to refute Darwin's theory of evolution by natural selection which heavily incorporates the principle of gradualism mentioned earlier. However, rather than opposing gradualism, punctuated equilibrium should be viewed as a form of gradualism.

Punctuated equilibrium appears to deviate from the tenets proposed by gradualism because of its emphasis on periods of rapid evolution. However, though the changes are thought to be occurring comparatively quickly, they are still happening gradually with no significant changes from one generation to the next. Gould remarks that the theory of punctuated equilibrium does not counter gradualism, but instead introduces the ideas of catastrophism and stasis to the theory. It is important to understand that gradualism and punctuated equilibrium are not in contradiction of each other, but are instead variations on the same theme. In fact, the relationship between gradualism, including Darwinian evolution, and the theory of punctuated equilibrium, particularly the addition of the ideas of catastrophism and stasis, is essential in the understanding of the application of the mechanisms of biological evolution to the evolution of culture.

Now, understanding the prevalent models and mechanisms of evolutionary biology, including their relationship to one another and the order in which they were first introduced, one is able to study the applicability of these theories to a new subject, the case of cultural evolution, in hopes of successfully determining a model for cultural evolution that will aid in explaining the patterns and methods in which culture changes over time. Examples of cultural growth and change will be drawn from the hip-hop culture of the past thirty to forty years and will be explained using the information on biological evolution and its patterns and mechanisms that was presented in the previous paragraphs. In this way a mechanism may be developed to help elucidate the seemingly volatile and baffling nature of the living, breathing organism known as culture.

First it is beneficial to utilize the earliest doctrine of biological evolution, Uniformitarianism. By examining the earliest principles and mechanisms comprising the study of evolutionary

biology one is able to observe the building blocks of evolutionary theory. In applying these earlier models of biological evolution to the development and change of culture one is able to create a stable foundation for the mechanism of cultural evolution.

In examining the principles of Uniformitarianism in biological evolution it is suggested that change occurs uniformly over an extended period of time, thus suggesting that the growth and changes viewed in the present time closely resemble the same methods of growth and change that were in operation in the past. Applying this principle of evolution to a cultural scenario one would expect a relatively static culture in which younger generations do not deviate significantly from the cultural norms of the older generation. An example of this is depicted in Chang's *Can't Stop Won't Stop* in which rapper Ice Cube remarks in an interview with Angela Davis that, "Since the sixties, and even before that, we've moved. But we still ain't gained. We are still in the same situation as before, as far as getting a piece of the rock is concerned" (Chang 345). In this scenario Davis and Cube represent two generations within hip-hop culture, Davis, an activist and Black Panther party member in the sixties, is a member of the older generation and Cube is a member of the younger generation. Cube refers to previous generations, specifically targeting the sixties, and remarks that though things have changed over time, there is no significant difference between his generation and Davis' generation. This situation is representative of Uniformitarianism because the same minute changes that are occurring in the younger generation previously appeared in the older generation, yet these changes have not culminated in the greater growth of the culture in which they occurred thus supporting the slogan associated with Uniformitarianism, that the present reveals the methods of the past. The principles of Uniformitarianism are closely related to those of gradualism and descent with modification. Therefore it is possible to transpose Ice Cube's statement onto these methods of evolutionary biology as well, placing emphasis on the common tenet of each principle, that evolution is a gradual process, in order to show the connectedness between cultural and biological evolution.

Understanding that significant change occurs gradually in both cultural and biological evolution one may proceed to better understanding the diversification of cultures based on the evolutionary principle of descent with modification. The diversification of culture is best represented in the evolution of Rastafarian and reggae culture in Jamaica in the sixties and seventies to the formation of hip-hop culture in New York in the late seventies and early eighties. Reggae culture, originally based in Jamaica, grew as a surge of national pride in response to years of civil war. The popularization of reggae music and culture worldwide through the music of Bob Marley and the Wailers played an integral part in spurring the diversification of reggae culture. In New York the oppressed minorities living in the Bronx rapidly embraced the message of Black-liberation and freedom that defined reggae culture. However, a notable change occurred: in the Bronx, the beats were sped up and looped repeatedly, giving the same message a new sound. This led to what is now recognized as the birth of hip-hop culture. One can see through this example that it is the same catalyst, oppression by an unjust majority, which led to the formation of both reggae and hip-hop culture. The common catalyst that sparked the development of these cultures is comparable to the single common ancestor in evolution's descent with modification that spawns descendants of different species.

In the development of evolutionary theory, the principle of descent with modification makes up a portion of the mechanism of Darwinian evolution known as natural selection. Evolution by natural selection states that heritable traits that lead to survival and reproduction will spread in a population. These heritable traits are also present in culture as characteristics of society that allow the community to grow and flourish. One such trait appears in *Can't Stop Won't Stop*. When describing the plight of Korean Americans in the late eighties, their oppression by whites as well as by other minorities, Chang writes, "When compared to Korean Americans, African Americans are a numerical and political majority. Ice Cube does not realize that as a member of the majority, he wields real power against the Koreans" (Chang 349). Chang implies here that the position of any culture as a majority can be correlated to a rise in power.

Chang's statement indicates the importance of race in determining a cultural majority. This trait, having a high number of racially similar individuals, controls many of the aspects of society that allow it to thrive. The community that is a member of the majority has a greater ability to control political, business, and economic interests which often leads to prosperity, thus promoting the preservation and spread of the majority's culture. Therefore the culture that possesses the majority trait will be more likely to succeed via increased political and economic control and is thus also more likely to "reproduce," or in other words, exhibit significant cultural expansion within a population.

In elucidating the role of natural selection in cultural evolution one is able to better explain the effect of location on the diversification of culture by comparing it to the biological patterns of genetic variation that exist across a geographic range. In evolutionary biology genetic variation based on location is often due to migration or different selective pressures present within the population. The same factors that effect genetic variation in a specific geographic region also cause variation in culture according to location. The dichotomy of east and west coast rap existing simultaneously within hip-hop culture is comparable to the evolutionary concept of genetic variation across a geographic range. The presence of different selective pressures according to location plays a large part in both cultural and genetic variation based on location. Chang remarks that on the west coast the rap is more "cartoony" and "raunchy" compared to the more serious and violent rap style coming from east coast rap groups. This variance within the same culture is best explained by the presence of different selective pressures according to location. New York's history as the birth place of hip-hop culture and the city's long history of riots and gang violence place certain constraints on what form or style of hip-hop will be accepted in the community. More light-hearted lyrics are not as likely to be warmly embraced by members of the hip-hop culture in New York because the community cannot easily relate to them. However, the opposite is true if one observes the carefree beats originally made on the west coast in Los Angeles. Hip-hop culture's presence on the west coast is significantly shorter than on the east coast and is lacking the history of

gang violence and riots that hip-hop culture was born into on the east coast. Therefore, the pressure on west coast rap artists is to produce rhymes that are more upbeat and direct unlike the sinister “damn the man” raps of the east coast. Thus one can see that the dichotomy of east and west coast hip-hop culture corresponds to the homogenizing, creative, and constraining forces associated with the evolutionary concept of gene flow.

The final and most recent mechanism developed in biological evolution, the theory of punctuated equilibrium, successfully ties in the principles of both gradualism and gene flow while incorporating catastrophism and stasis to cultural evolution. In culture there are notable periods of artistic explosion, followed by peace, then by violence. Punctuated equilibrium is best represented by this cycle of cultural change. The growth of hip-hop culture in Los Angeles after the race riots of the eighties depicts this cycle. Chang chronicles these events quoting writer Odie Hawkins as saying, “Watts, post outrage, was in a heavy state of fermentation. Everybody was a poet, a philosopher, an artist, or simply something exotic” (Chang 310). Chang calls Watts a hotbed of political and cultural activity during a time of new beginnings. It is during times of “peace” that culture is able to flourish. The cultural growth that the race riots sparked in African American communities surrounding Los Angeles also suggests that for culture to evolve there must be periodic change that often occurs during times of violence. Therefore, when cultures do not have to worry about survival, as in times after a battle has been fought, like the L.A. riots, times of peace occur and encourage cultural growth, but for growth to continue it is necessary for the cycle to repeat itself and thus spur the culture into periods of rapid development; this cycle successfully mirrors the concept of punctuated equilibrium.

By applying the basic principles of biological evolution to the history of the growth and development of hip-hop culture one is able to see that just as the growth and changes of a biologically defined population are best explained by the principles of evolutionary theory such as gradualism, natural selection, and punctuated equilibrium so can the growth and development of a culture be explained. The application of the mechanisms and

models of biological evolution to the evolution of hip-hop culture suggests that like biological evolution, the evolution of culture occurs through the accumulation of changes over multiple generations with periods of rapid change punctuating the gradual development of the culture.

## References

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