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## Punctuated equilibrium theory represents shifting balance theory (of macro and quantum evolution) and invalid Darwin's theory

**Md. Abdul Ahad**

### Abstract

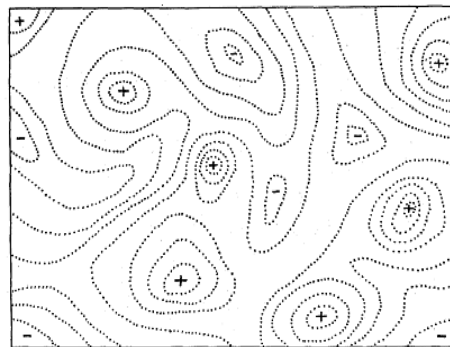
The objectives of this article are that to prove punctuated equilibrium theory represents shifting balance theory and these two theories declared invalid Darwin's theory and Neo-Darwinian theory and those are true fact: Because all features of both theories are same- i) Genetic drift play the key role of both theories. ii) Both theories advocated evolution progresses rapidly in a small and isolated population with rapid evolution after long period of stasis without the help of Darwin's theory. iii) Both theories advocated allopatric speciation, macroevolution, quantum evolution and species selection. iv) Fossil is the only evidence of both theories. Additionally, those theories declared invalid Darwin's theory and Neo-Darwinian theory. As a result, if anyone proves that genetic drift unable to produce new species or rejected shifting balance theory and fossil does not support macroevolution but support gradual evolution; then punctuated equilibrium theory even allopatric speciation theory would be invalid automatically.

**Keywords:** Macroevolution and quantum evolution, abrupt change, small population, evolutionary biology

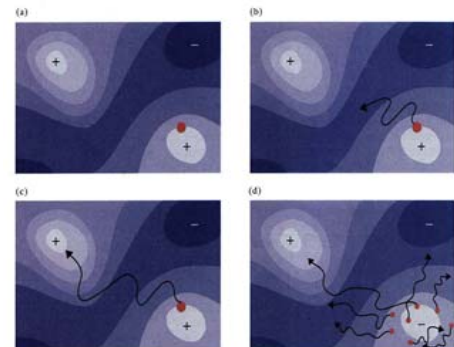
### 1. Introduction

Evolution suggests that life arose by natural process from non-living materials and achieved its present diversity including man [1]. Darwin defines evolution as descent with modification through natural selection from a few common ancestors [2]. However, the entire evolutionary flowchart may be as follows: unicellular organism/bacterium → invertebrate → lung fish → amphibian → reptile → placental mammal → higher mammal → human [3, 4, and 5].

However, from time to time, various theories have been proposed to explain the mechanisms of evolution. These theories are: Lamarckism, Darwinism, mutation theory, shifting balance theory, synthetic theory/Neo-Darwinism, sociobiology and punctuated equilibrium [6].



**Fig 1:** Adaptive landscape [7].



**Fig 2:** Adaptive landscape [8].

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Sewall Wright (an American geneticist; Professor, Chicago University) invented shifting balance theory of macroevolution [9]. In 1932, Wright provided its diagram as 'adaptive landscape model' (Fig.1 and 2) [7]. In 1982, Wright again published an article entitled "Shifting balance theory and macroevolution" and declared "From time to time, however, a species is represented with vacant niches. This precipitates evolutionary change of a different order of

magnitude, those that constitute macroevolution<sup>[10]</sup>. Nonetheless, the shifting balance theory of evolution is perhaps the most well-known of Wright's contributions to evolutionary biology and also helped many biologists to think about the evolutionary process in real populations<sup>[11]</sup>. This theory is regarded by many as a cornerstone of modern evolutionary thought<sup>[12]</sup>. This theory is a very complex systems model that was never developed beyond that of a metaphor of evolutionary biology<sup>[13]</sup>. However, the key force and the evidences of this theory are not so clear and about its literature are scanty.

In 1972 and 1977 two American paleontologists, Stephen J. Gould (Professor, Harvard University) and Niles Eldredge (Professor, Natural History Museum) developed the punctuated equilibrium theory<sup>[14, 15 and 16]</sup>. They declared that the punctuated equilibrium theory is a general theory, valid throughout the biological science<sup>[15]</sup>; even the 20<sup>th</sup> century is for the punctuated equilibrium<sup>[17]</sup>. The punctuated equilibrium has brought much excitement to modern evolutionary biology<sup>[18]</sup>. Gould and Eldredge frequently used the terms the "genetic drift" and "Wright's rule". But what they meant Wright's rule? Are they mean it shifting balance theory? What is the key element and evidences of their theory? Is there any relationship with genetic drift/ the shifting balance theory? Those are not so clear. So, to find out those are necessary. This article would be very helpful to the student of evolutionary biology and also who dealing with evolution. So, to work on the objective is essential.

## 2. Genetic drift plays the key role of both shifting balance theory and punctuated equilibrium theory

The following statements proved that genetic drift plays the key role of both shifting balance theory and punctuated equilibrium theory:

a) Wright exploited drift/drifted 8 times in 1931<sup>[9]</sup>; 10 times in 1982<sup>[10]</sup> for the rapid evolution of new species in small and isolated populations. For example (in Wright's words): i) Merely by chance one or the other of the allelomorphs may be expected to increase its frequency in a given generation and in time the proportions may drift a long way from the original values<sup>[9]</sup>. ii) The random drift from causes other than accidents of sampling (referred to in 1931) was treated mathematically in 1948. The last phases of the shifting balance process, the spreading of a favorable interaction<sup>[10]</sup>. Moreover, in 1982, Wright wrote an article entitled 'the shifting balance theory and macroevolution'. In this article Wright declared: "Because of persistent misunderstandings, the shifting balance theory, which was proposed half a century ago (in 1931), primarily in connection with microevolution, is reviewed here at some length before discussing its relation to macroevolution"<sup>[10]</sup>. The same opinion is also given by the editor of the journal "Annual review of genetics"<sup>[10]</sup>.

This declaration of Wright and the editor confirmed that the genetic drift means the shifting balance theory. Consequently, if one proves genetic drift unable to produce new species then the shifting balance theory would be invalid.

In addition, the shifting balance theory is based on the role of genetic drift<sup>[19]</sup>. Genetic drift plays a crucial role in the shift one equilibrium to another in shifting balance theory<sup>[8]</sup>.

So, genetic drift plays the key role of shifting balance theory. Similarly, Eldredge and Gould exploited the genetic drift/drift four times in 1977<sup>[15]</sup> and five times in 1980<sup>[16]</sup> for macroevolution of new species in small and isolated populations. For examples (in Eldredge and Gould's words):

i) In fact, it is so weak that the change could easily be accomplished by genetic drift, even in large populations (the smallest population size for which such change could occur by drift at least 5% of the time is only 10,000)<sup>[15]</sup>. ii) Evolutionary biologists must now take seriously the suggestion that many, if not most, changes in structural genes drift to fixation in the neutral mode, do not affect phenotypes, and are therefore both unrelated and indistinguishable to Darwinian processes<sup>[15]</sup>.

So, Gould and Eldredge used genetics drift as key force of punctuated equilibrium theory. So, genetics drift as key force of both punctuated equilibrium theory and shifting balance theory i.e. genetics drift represents punctuated equilibrium theory and the shifting balance theory.

In addition, Gould and Eldredge exploited "Wright's theory/Wright" 2 times in 1972<sup>[14]</sup>, "Wright's rule/ Wright's analogy/Wright's grand analogy" 10 times in 1977<sup>[15]</sup>, "Wright break/Wright" 10 times in 1980<sup>[16]</sup> to support their theory punctuated equilibrium. For example (in Eldredge and Gould's Languages): i) The species selection depend upon the validity of "Wright's rule"—the claim that speciation is essentially random with respect to the direction of a macro evolutionary trend<sup>[15]</sup>. ii) Test Wright's Rule as a precondition for species selection<sup>[15]</sup>. iii) Wright's Rule also requires that speciation be common in order to provide enough raw materials for species selection<sup>[15]</sup>. iv) "All movement from micro to macroevolution must be translated through the level of species by Wright's grand analogy, not merely extrapolated up in continuity"<sup>[15]</sup>.

Here Gould and Eldredge utilized the "shifting balance theory" as the "Wright's rule"; Gould and Eldredge admitted directly:

"We choose *Wright's name* for our designation because he (1967, p. 121) explicitly suggested that speciation might by truly stochastic with respect to the direction of evolutionary trends. But we wish to record our debt to Ernst Mayr who has so forcefully and consistently supported the idea that speciation is the stuff of evolutionary change"<sup>[15]</sup>.

The above statements of Gould and Eldredge confirmed that Gould and Eldredge used shifting balance theory as the "Wright's rule" in punctuated equilibrium, which again proves that genetic drift represent shifting balance theory, the Wright's rule, the punctuated equilibrium and vice-versa. Consequently, if one proves genetic drift unable to produce new species or rejected shifting balance theory then the punctuated equilibrium would be invalid.

## 3. Both shifting balance theory and punctuated equilibrium advocated evolution progresses rapidly in a small and isolated population:

### a) Documents from Wright's article about use of small and isolated populations for evolution progresses rapidly

In 1931, Wright exploited isolation 14 times and also small population 14 times<sup>[9]</sup>; in 1982 he exploited small/small colonies 10 times for the macroevolution of new species in small and isolated populations through genetic drift. For examples (in Wright's words): i) Complete separation of the species into large subspecies should be followed by rather slow more or less closely parallel evolutions, if the conditions are similar, or by adaptive radiation, under diverse conditions, while isolation of smaller groups would be followed by a relatively rapid but more largely non adaptive radiation<sup>[9]</sup>. ii) The most likely precipitating cause of the origin of a macro evolutionary step is thus presentation of a vacant ecological niche (small population) to a species with a population

structure that is favorable for both incipient speciation and operation of the shifting balance process<sup>[10]</sup>.

Therefore, the shifting balance theory produce new species due to small and isolated populations; so, if one proves of small and isolated populations unable to produce new species then the shifting balance theory would be invalid.

**b) Documents of use about small and isolated populations from Eldredge and Gould's article**

Like Wright, Eldredge and Gould also exploited small population 3 times, small 22 times, isolation 7 times and isolate fourteen times in 1977<sup>[15]</sup> and small 11 times and isolation 13 times in 1980<sup>[16]</sup> for macroevolution of new species in small and isolated populations. For examples (in Eldredge and Gould's words): i) Small numbers and rapid evolution virtually preclude the preservation of speciation events in the fossil record; in any case, speciation does not occur in local sections inhabited by abundant ancestors<sup>[15]</sup>. ii) Most evolutionary change, we argued, is concentrated in rapid (often geologically instantaneous) events of speciation in small, peripherally isolated populations<sup>[15]</sup>.

Consequently, punctuated equilibrium produces new species in a small and isolated population; so, if anyone proves that small and isolated populations unable to produce new species, then the punctuated equilibrium theory would be invalid.

Additionally, greatest change may occur in small and isolated populations that invaded new habitat. This view of evolution called punctuated equilibrium because it supposes large populations are generally equilibrium with their environment and change little (Stanely and Andrykovitch)<sup>[20]</sup>. About more or less similar opinion are also given by Birdsell<sup>[21]</sup> and Arms and Camp<sup>[22]</sup>.

In addition, peripheral isolates are likely to represent a small number of individuals, meaning their gene pool is more susceptible to the effects of genetic drift (random chance)<sup>[23]</sup>.

At last, it might be concluded that as both punctuated equilibrium and advocated that evolution progresses rapidly in a small and isolated population, which indicated punctuated equilibrium represent the small and isolated population as well as the sifting balance theory and vice-versa. So, if anyone proves that small and isolated populations unable to produce new species, then both theories would be invalid.

**4. Both shifting balance theory and the punctuated equilibrium theory advocated long period of stasis after rapid evolutionary change**

a. Wright noted that: i) the amount of variability in the population may be great, maximum in fact, but if the distributions of gene frequencies are closely concentrated about single values, the situation approaches one of complete equilibrium and hence of complete cessation (stasis) of evolution. Furthermore, it should be added that a relatively rapid shift of gene frequencies can be brought about in this case by vigorous increase in the intensity of selection. The rapid advance has been at the expense of the store of variability of the species and ultimately puts the latter in a condition in which any further change must be exceedingly slow<sup>[9]</sup>. Additionally, Purves and Orians noted: according to Wright's model, if the adaptive landscape is held constant, all populations climb their nearest peaks and remain there once they arrive. Therefore, a period of rapid evolution is followed by a stasis. However, if the environment changes (that is, if the landscape is altered), many populations find themselves in adaptive valleys. This initiates a new

periods of rapid evolutionary change, leading to another time of stasis<sup>[24]</sup>.

b. So, shifting balance theory advocated long period of stasis after rapid evolutionary change.

Gould and Eldredge use stasis 7 times, rapid change 9 times in 1972<sup>[14]</sup>; and stasis 36 times and rapid change 32 times in 1977<sup>[15]</sup>. For example (in Gould and Eldredge's words): Though we cheerfully admit our prejudices, we find it hard to view Kellogg's pattern as anything but a series of three plateaux, periods of stasis interrupted by very rapid rates of change, all admittedly in the same direction<sup>[15]</sup>.

Therefore, the punctuated equilibrium theory advocated long period of stasis after rapid evolutionary change.

Additionally, the punctational equilibrium model may still be inferred/assume from both the observation of stasis and examples of rapid and episodic speciation events documented in the fossil record Alan *et al.*<sup>[25]</sup>. Punctuated equilibrium model is long period of stasis and rapid evolutionary change Tamarin<sup>[18]</sup>.

So, both the punctuated equilibrium theory and the shifting balance theory advocated long period of stasis after rapid evolutionary change, which claimed that punctuated equilibrium theory represents the shifting balance theory.

**5. Both shifting theory and punctuated equilibrium theory works without the help of Darwin's theory**

**a) Shifting balance theory works without the help of Darwin's theory:**

i) There remains one factor of the greatest importance in understanding the evolution of a Mendelian system. This is the size of the population. The constancy of gene frequencies in the absence of selection, mutation or migration cannot for example be expected to be absolute in populations of limited size<sup>[9]</sup>. ii) The present discussions have dealt with the problem of evolution as one depending wholly on mechanism and chance<sup>[7]</sup>. The most likely precipitating cause of the origin of a macro evolutionary step is thus presentation of a vacant ecological niche to a species with a population structure that is favorable both for incipient speciation and for operation of the shifting balance process<sup>[10]</sup>.

Hence, evolution progresses in shifting balance theory without the help of Darwin's theory.

**b) Punctuated equilibrium theory works without the help of Darwin's theory**

It is previously proved that evolution progresses in punctuated equilibrium model due to genetics drift/shifting balance theory and genetics drift plays the key role of punctuated equilibrium theory.

Thus it is proved that punctuated equilibrium works without the help of Darwin's theory.

In addition, it is noted that the most thoroughly established is genetic drift, isolated populations are often small and the first step of speciation may occur by pure chance without the action of any selective force<sup>[9, 15, 26 and 27]</sup>.

Hence, evolution progresses in punctuated equilibrium without the help of Darwin's theory.

Finally, it is documented that evolution occurs both in the punctuated equilibrium theory and in the shifting balance theory without the help of natural selection, which proves that the shifting balance theory represent the punctuated equilibrium and vice-versa.

## 6. Both punctuated equilibrium and shifting balance theory advocated allopatric speciation

a) Eldredge and Gould quoted "Allopatric speciation" 11 times in 1972 [14], "Allopatric" 15 times in 1977 [15], "Allopatric speciation" 2 times and "Allopatric theory" 3 times in 1980 [16]. For examples (in Eldredge and Gould's words): i) The theory of allopatric speciation suggests a different interpretation of paleontological data, if new species arise very rapidly in small, peripherally isolated local populations [14]. ii) The central concept of the allopatric speciation is that a new species can arise only when a small local population becomes isolated at the margin of the geographic range of its parent species. Such local populations are termed peripheral isolates. A peripheral isolate develops into a new species [14].

Consequently, punctuated equilibrium model means the allopatric speciation theory. Hence, if anyone proves that punctuated equilibrium model invalid then allopatric speciation theory would be automatically invalid.

b) Similarly, Wright noted that "Of course, differences in the condition of selection among the subgroups may greatly increase this divergence. It appears, however, that the actual differences among natural *geographical races* and subspecies are to a large extent of the nonadaptive sort expected from random drifting apart. An interesting example, apparently nonadaptive, is the racial distribution of the 3 allelomorphs, which determine human blood groups [9].

Therefore, the shifting balance theory designates the allopatric speciation.

In addition, allopatric speciation (from the ancient Greek *allos*, meaning "different", and *patris*, meaning "native land") means geographic speciation. Allopatric speciation is generally considered major route to diversity. It has well documented in virtually all groups of sexually reproducing organisms in all types of habitat [28].

Thus both Wright's theory and the punctuated equilibrium theory indicate the allopatric speciation/geographical speciation. Hence, it proves that the shifting balance theory represent the punctuated equilibrium and also the allopatric speciation and vice-versa.

## 7. Both punctuated equilibrium and shifting balance theory advocated macroevolution and quantum evolution and also Species selection

Both punctuated equilibrium and shifting balance theory advocated for macroevolution and quantum evolution as well as also the Species selection and the documents are place here:

**a) Gould and Eldredge noted:** i) The classical view of speciation holds that it is a gradual microevolutionary process. Thus, the genetic events which lead toward speciation are considered to be individually trivial or simple. Changes, such as a shift in gene frequency, may accumulate slowly in a population. This view does not invoke any unusual or Quantum set of changes for the origin of interspecific differences. Most theories of speciation are thus wedded to gradualism, using the mode of origin of intraspecific adaptations as a model. Even so convinced, a gradualist as G. G. Simpson (1944) invoked quantum evolution and inadaptive phases to explain these transitions [15]. ii) Species selection depends upon the validity of "Wright's rule" - the claim that speciation is essentially random with respect to the direction of a macroevolutionary trend [15 and 29].

Thus punctuated equilibrium theory advocated for

macroevolution, quantum and also the Species selection.

Wright noted: i) Adaptive orthogenetic advances for moderate periods of geologic time, a winding course in the long run, nonadaptive branching following isolation as the usual mode of origin of subspecies, species and perhaps even genera, adaptive branching giving rise occasionally to species which may originate new families, orders, etc.; apparent continuity as the rule, discontinuity the rare exception, are all in harmony with this interpretation [9]. ii) Sewall Wright recognized the hierarchical implications of viewing species as irreducible inputs to macroevolution [29]. iii) Another way in which a species may be presented with vacant niches is by surviving a catastrophe that has destroyed forms in niches related to its own. The world underwent extinction of many forms, including the dinosaurs at the end of the Mesozoic period, which opened the way for the enormous expansion of the mammals during the Paleocene and later [10].

Thus the shifting balance theory advocated for arising of higher taxa/macroevolution and quantum evolution.

In addition, Dodson acknowledged that due to catastrophe large number of populations become extinct and produces small and isolated populations, which produce higher animal/higher taxa/quantum evolution progresses [30]. Furthermore, general conclusion reached by some workers is that much evolution proceeds by a series of quantum jump, perhaps often in quite small population, whose divergent characteristics have allowed them to occupy a new niche or to re-occupy one left by an environmental change. According to this view, is called by Stanley (1975) the "species selection". In this higher level process species become analogous to individuals, and speciation replaces reproduction Stanley [31].

Lastly, macroevolution and quantum evolution and also species selection occur in both punctuated equilibrium and in shifting balance theory, which fairly proved that punctuated equilibrium theory means the shifting balance theory.

Additionally, as both punctuated equilibrium and the shifting balance theory advocated macroevolution and quantum evolution and also the Species selection, which also indicated these two theories rejected all theories of gradual evolution such as Darwin's theory, modern synthesis and sociobiology theory and the neutral theory.

## 8. The fossil is the excellent and only evidence of both punctuated equilibrium theory and the shifting balance theory

The fossil is the excellent and only evidence of both punctuated equilibrium theory and the shifting balance theory. The documents are mentioned here:

### a) Documents from Gould and Eldredge's articles

Gould and Eldredge [15] exercised fossil of *Hyopsodus* (13 times), *Haplomylus*, *Pelycodus* and horse to support macroevolution under their model punctuated equilibrium theory. For example:

i) We concentrate on Gingerich's data for *Hyopsodus* and argue that it provides an excellent example of species selection under our model [15]. ii) It is a theory about speciation and its deployment in the fossil record [15]. iii) On a positive note, Gingerich's data for *Hyopsodus* offer the finest confirmation now available for the most important implication of the punctuated equilibrium theory [15]. iv) Fossil of *Haplomylus* and *Pelycodus* to support punctuated equilibrium theory [15]. v) Evolution of horse supports the punctuated equilibrium model [15].

Hence, the fossil is the excellent and only evidence of

punctuated equilibrium theory.

#### **b) Documents from Wright's articles:**

Wright also uses the fossil records as the evidence of his shifting balance theory. For examples (in Wright's words):

i) The more indifferent ones drift about through a wide range of frequencies in the course of geologic time<sup>[9]</sup>. ii) The fossil of horse holds up macroevolution through genetic drift<sup>[7]</sup>. iii) The morphological differences between many higher taxa, as seen in the fossil record, are such that those could only have arisen abruptly. This issue has recently been raised again by Gould and Eldredge Wright<sup>[10]</sup>.

So, the fossil is the excellent and only evidence of shifting balance theory/Wright rule/the genetic drift.

#### **c) Documents from other literatures**

The punctuated equilibrium theory can be discovered from an almost fossils record<sup>[18]</sup>. This model fits well with geological evidence<sup>[32]</sup>. Punctuated equilibrium is borrowed from the field of paleontology<sup>[33, 34]</sup>.

Hence, it is verified that the fossil is the excellent and only evidence of both punctuated equilibrium theory and the shifting balance theory, which indicate punctuated equilibrium theory represents the Wright's shifting balance theory.

Additionally, it would be also declared that Gould and Eldredge basically did not formulate any new theory but provided strong support in favour of macroevolution and quantum evolution for Wright's rule/shifting balance theory/genetic drift by showing the fossil evidences only.

### **9. Both shifting balance theory and punctuated equilibrium rejected the Neo-Darwinism/the modern synthesis**

#### **a) Rejection of the modern synthesis/Neo-Darwinism by Wright**

Wright declared that mutations are unable to produce a new species. In Wright's languages: i) New favorable mutations should arise from time to time and gradually displace the hitherto more favored genes but with the most extreme slowness even in terms of geologic time and have no evolutionary significance<sup>[9]</sup>. ii) The great majority of mutations are either definitely injurious to the organism or produce such small effects as to be seemingly negligible<sup>[9]</sup>.

As combination of mutations and natural selection known as Neo-Darwinism/the modern synthesis<sup>[8, 35, 36]</sup>. so Wright rejected Neo-Darwinism. Additionally, Wright<sup>[29]</sup> wrote an article that was published in a symposium book entitled *Mathematical Challenges to the Neo-Darwinian Theory of Evolution*. In this article he completely rejected any evolutionary function of Neo-Darwinism.

Consequently, the shifting balance theory rejected the Neo-Darwinism/the modern synthesis.

#### **b) Rejection of the modern synthesis/Neo-Darwinism by Gould and Eldredge**

Eldredge and Gould declared that: i) We do not see how, point mutations in structural genes can lead, even by gradual accumulation, to new morphological designs<sup>[15]</sup>. ii) Species become the raw material of macroevolution: they play the same role, at their level, as mutations do in local populations<sup>[15]</sup>.

But we know previously that combination of mutations and natural selection known as Neo-Darwinism/the modern synthesis<sup>[8, 35, 36]</sup>. Furthermore, "We therefore challenged the

central assumption that secured the admission of paleontology into the modern synthesis of evolutionary theory<sup>[15]</sup>.

Thus the punctuated equilibrium model rejected the Neo-Darwinism/the modern synthesis.

As both Wright and Gould rejected any evolutionary function of Neo-Darwinism, which reasonable proved that punctuated equilibrium theory means the shifting balance theory.

### **10. Both shifting theory and punctuated equilibrium theory rejected of any evolutionary function of Darwin's theory/invalid Darwin's theory**

#### **a) Wright rejected any evolutionary function of Darwin's theory/invalid Darwin's theory**

**Wright noted:** i) Johanssen's study of pure lines was interpreted as meaning that Darwin's selection of small random variation was not a true evolutionary factor<sup>[9]</sup>. ii) The extraordinary synthesis of data from all fields of biology achieved by Darwin (1859 and 1868) in his theory of evolution by natural selection had one serious gap: the absence of a real understanding of heredity. Natural selection would have to operate with inconceivable effectiveness to have an appreciable effect. Mendelian heredity applies to individuals, whereas Darwinian evolution happens to populations<sup>[10]</sup>.

So, it is confirmed that Wright's shifting theory rejected of any evolutionary function of Darwin's theory i.e. declared invalid Darwin's theory.

#### **b) Gould and Eldredge rejected any evolutionary function of Darwin's theory/invalid Darwin's theory**

**Gould and Eldredge declared:** i) We believe that "species selection" represents no more than the operation of natural selection at higher levels. Phyletic gradualism is, itself, an insufficient picture to explain the origin of diversity in the present, or any past, biota<sup>[14]</sup>. ii) Invalid claims of gradualism made at the wrong scale—the model of punctuated equilibria does not maintain that nothing occurs gradually at any level of evolution<sup>[15]</sup>. iii) Invalid claims of gradualism based on inadequate data—we have been struck by the extreme ambiguity (to our admittedly biased eyes) of several cases advanced as contrary to our model. The data are consistent with a variety of evolutionary schemes, and exclusively gradualistic interpretations can only arise from fervent desire<sup>[15]</sup>. iv) When Darwin cleaved so strongly to gradualism ignoring Huxley's advice that he did not need it to support the theory of natural selection—he translated Victorian society into biology where it need not reside<sup>[15]</sup>. v) It is remarkable how Darwin recognizes among beasts and plants his English society with its division of labor, competition, opening up of new markets, 'invention,' and the Malthusian 'struggle for existence.' It is Hobbes' 'bellum omnium contra omnes,' [war of all against all] and one is reminded of Hegel's Phenomenology, where civil society is described as a 'spiritual animal kingdom,' while in Darwin the animal kingdom figures as civil society<sup>[15]</sup>.

Hence, it is confirmed that punctuated equilibrium theory declared that invalid Darwin's theory i.e. rejected any evolutionary function of Darwin's theory.

So, both the Wright's shifting balance theory and Gould and Eldredge's punctuated equilibrium theory rejected any evolutionary function of Darwin's theory/invalid Darwin's theory, which fairly proved that shifting balance theory represent the punctuated equilibrium theory

In addition, both Wright and Gould rejected any evolutionary function of Darwin's theory; as a result, nobody claimed that

natural selection has a function in shifting balance theory and in punctuated equilibrium model as well as Gould and Eldredge was a Darwinian. In addition, nobody claimed natural selection has a function in punctuated equilibrium or Gould was a Darwinian.

However, some biologist claimed evolution occurs in shifting balance theory with the help of natural selection. For example, Purves and Orians declared that “adaptive landscape model natural selection will cause organism to climb the nearest adaptive peak” [24]. So, it is not a true fact.

It astonished that in the “The Return of Hopeful Monsters” Gould claimed that he was Darwinian. He claimed (in his own languages): “As a Darwinian, I wish to defend Goldschmidt's postulate that macroevolution is not simply microevolution extrapolated, and that major structural transitions can occur rapidly without a smooth series of intermediate stages” [37].

Furthermore, both shifting balance theory and punctuated equilibrium oppose Darwinism and Neo-Darwinism. Consequently, Darwinists and neo-Darwinists normally oppose both shifting balance theory and punctuated equilibrium. Moreover, Sociobiology is the study of the effects of natural selection on social behaviors [38, 39]; So, Sociobiology's also opposes shifting balance theory and punctuated equilibrium.

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