Adaptation and Environmental Interactions under Intelligent Regime seems a Road of Evolution – A Case Study

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Received: 5th October, 2022; Accepted: 15th November, 2022; Published : June, 2023

Abstract

There are several theories on biological evolution which give emphasis either on adaptation or environment or chance or genetics or necessity and so and so forth. As this aspect of exploration, however, provides a great foundation for the understanding of biological science, this subject has not been given enough attention, especially from the eastern wisdom prospect. If adaptation, contingency, chance, necessity, and so and so forth are combined and linked with the intelligent superpower behind the screen, then the explanation about evolution could be expected to be complete. Had not such power been there, the interaction of so many factors, yet leading all systems intact at the equilibrium since time immemorial would not have been possible what we see in the evolutionary processes. Hence there is indeed a need to incorporate the new parameter i.e. the significance of supreme intelligent power for regulating the whole of the phenomena of it so that it would be more convincing, complete, scientific, or at least logical. Although this study was not conducted with a very scientific design, we believe that it would at least provide some food for thought on the subject of evolution in a new light.

Keywords: Adaptation, Evolution, Environment, Chance, Contingency, Necessity, Supreme Intelligent Power,

Introduction

Several theories are postulated for the explanation of the biological evolution processes. The neo-Classical theory of Darwinism sees that organisms adapt themselves ever more perfectly to their environment moving toward an equilibrium state (Rafferty, 2022). However, the system theory of evolution shifts its focus from the independent evolution of organisms to the co-evolution of organisms along with the environment (Capra, 1984). While on other hand, Jacques Monod sees evolution as the strict sequence of chance and necessity (Monod, 1971). However, we see adoption, speciation, and environment along with chance, contingency and necessity all under the intelligent regime is the basis of evolution. Here we take a case of biological dynamism in a given site that occurred in three years period of time and tried to show how different forces like creation and adaptation as well as chance, contingency and necessity factors worked there. Finally, we attempted to attribute all those dynamism to natural intelligence as it integrates all of these forces and brings forward the intelligent movement of Nature since the time immemorial.

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ISSN No. (Print) 2705-4586
ISSN No. (Online) 2990-7772

Methodology

A 3-year general observation in about 20,000 sq. ft. area of land in Kalanki, Kathmandu, was chosen for observation of species-to-species, plant-to-plant, or plant-to-animal and environmental chance interaction with the developmental state of the species. As the study site was very near from the researcher's home place, general guidelines for observations was set. Following the general guidelines, observations sometimes from the close and sometimes from a little far distance were noted. When any of the new physical and biological events in the study site was observed, more attention was paid for recording the development so that the future analysis of the dynamism would be possible. Then, at least, logically it was attempted to link with any of the possible forces or actors which or who contributed for the dynamism.

Results Noted from the Natural Dynamism

As this study was of the three years period of time, each years' events of the natural dynamism whatever happened or occurred in the study site were explained as below, year-wise.

First Year

In the month of June of the first year of the study, we observed dense vegetation of different species of wild plants in the identified site besides flowing a small stream nearby. The vegetation composition during June-Aug included were *Cirsiumwallichii* DC. (Kande Jush), *Lantana camara*L. (Kande Banmara), *Sambucusjavanica* subsp. *chinensis* (Lindl.) Fukuoka (Kanke Phul), and *Canna indica* L. (Sarbada Phul), among which the former three were dominant, while *Canna*sp had a single colony. Whereas other plants like *Ipomoea purpurea* (L.) Roth. (Dhwang Phul) and *Polygonum perfoliatum* L. (Knot weed) which showed their appearance later were not prominent at that time. After one month, the dominant plant *Cirsiumwallichii* DC. (KandeJush) became old enough, but other plants like *Ipomoea purpurea* (L.) Roth. (Dhwang Phul) and *Polygonum perfoliatum* L. (Knot weed) and *Lantana camara*L. (Kande Banmara) came up exuberantly. Even between the two prominent species *Lantana camara*L. (Kande Banmara) and *Sambucusjavanica* subsp. *chinensis* (Lindl.) Fukuoka (Kanke Phul), the latter came into domination.

After August, *Ipomoea purpurea* (L.) Roth. (DhwangPhul) and *Polygonum perfoliatum* L. (Knot weed) grew so exuberantly that they dominated other species [like *Cirsiumwallichii* DC. (Kande Jush) and *Lantana camara*L. (Kande Banmara)] there. Their dominance was so intense in early September that there were no traces of other plants that were profuse previously. From September to October, they not only suppressed other plants but also became entangled with themselves too. By that time, the *Polygonum perfoliatum* L. (Knot weed) already started to dry out because of maturity and excessive competition among themselves. On some patches where

Ipomoea purpurea (L.) Roth. (Dhwang Phul) and *Polygonum perfoliatum* L. (Knot weed) were not so densely spread, the perennial *Lantana camara* L. (Kande Banmara) and *Sambucus*sp (Kanke Phul) were peeping out from underneath.

In the third week of October, another interesting event happened. All of sudden a flock of sheep and goats that were brought for marketing during the Hindu Dashain festival sales in the Kalanki Goat Market rushed in that place for grazing. Within one or two days, all the vegetation at that spot had been crushed by them and the land was flattened. By the end of October, as the land turned into a bed of dead plants, people found it an easy site in which people started to throw garbage, including kitchen waste. In November, that very spot turned into a garbage center; rats, birds, dogs, and insects started to come for food, as kitchen waste was there. This site remained almost in the same condition from October of 1st year to January of the 2nd year.

Second Year

At the beginning of January (i.e. of 2nd year), there was the first shower of rain, followed by a second shower in the 3rd week of this month. New greenery emerged from February to April because of rainfall. The plants that appeared again were *Cirsium* sp. (Kande Jush), *Lantana* sp. and *Sambucus* species, as in the previous year. In May-July, *Cirsium*sp. was comparatively better spread, while *Lantana* sp. and *Sambucus* sp. were a bit depressed compared to the previous year. Additionally, some new Hashish (*Cannabis sativa* L.) and Kuro (*Bidenspilosa* L.) plants were seen in that season – which had not been seen the previous year. All of these plants continued to grow until July.

During August, the owner of the land cleared the land by cutting the bigger plants, therefore all *Cirsium* sp., *Ipomoea* sp., *Polygonum* sp., *Lantana* sp., and *Sambucus* sp. were slashed down. After some weeks, when these plants were dried, the owner burnt all of the heaps of cut plants. In September, the *Colocasia esculenta* (L.) Schott (Karkalo), *Bidenspilosa* L. (Kuro), *Canna indica* L. (SarbadaPhul), and small succulent plants, *Phyla nodiflora* (L.) Greene (Kur kureJhar) which were hidden underneath, the bigger plants last year showed their face. In that very place where *Ipomoea* sp. was growing heavily,plants like *Polygonum* sp., *Lantana* sp., and *Canna* sp. did far better than the previous years. Because the bigger canopy occupied *Ipomoea* sp. was more heavily destroyed by human intervention.

Third Year

Till the month of September, almost the same trend of vegetation as that of the previous years followed. However, surprisingly a new species *Polygonum molle* D.Don (Thotne), which had never shown its presence in the last 3 years, was seen amidst all the other plants. This is how the charisma of nature having appearance and disappearance, human intervention and environmental interaction along with chance and necessity ran.

ISSN No. (Print) 2705-4586
ISSN No. (Online) 2990-7772

Discussion

This is a very small, plain and simple study of the interplay of adaptation of species and interactions of the environment with the species on a small piece of land over a short period (less than three years). We do not know what the fate of the vegetation will be in the future. Therefore, it is an infinite caravan of a journey of adaptation and chance effect intervened by environment and circumstances, where newer and newer phenomena appear, yet something new and genuine continues to appear looking the nature so beautiful with an everlasting thirst with never quenching urge.

In general, it can be argued that it is not only the activities of plant or animal species-to-species interactions that decide which to survive and which to be wiped out but also it is nature's chance factor (cutting, burning, human walking, etc.) which affected the growth and flourishing of species. Other affecting factors could be rainfall, humidity, temperature, disease and pest attack, spores and seeds blown by the wind, pollen grain introduced by birds and insects, consumption of seeds by rats, insects, or birds, and seed dispersion by wind or by birds. Additionally, there are other unforeseen accidental factors (like sudden grazing by goats and sheep) and other external sources (like the throwing of garbage and intervention by humans, dogs, and rats, the interplay of flooding, and sometimes burning of thrashes, etc.), which are unpredictable, and where 'chance' and ‘contingency’ seems to be playing a significant role in the setting of biological composition passing through different developmental stages.

The appearance or disappearance of those chance factors at a particular time, which could be at any developmental stage of a biological species also plays a role in the fate of the species. For example, a shower of rain, if it occurs at the time of sprouting, will enable those plants to grow more exuberantly than others that did not get it. But if the same does not happen for the same species but gets flooded at another time, its fate will be different.

What happened in the 1st year was different from what had happened in the 2nd year because of the unpredictable interplay of the chance factor, and this was true for the third year too. Although there was no specific track of nature, therefore; there is nothing but 'chance' as well as ‘contingency’ of which prediction is difficult. The chance factor is working alongside their competition and co-operation as well. The most competent one of the previous year may not have the same ability next year, and this year's competent one may not hold the same status in years to come. Although the adaptation itself is an intelligent mechanism that drives species where to move for survival, the chance effects intervened by the circumstances or environment temporarily poses a situation of uncertainty in the direction where the course of the dynamism is to be oriented. The chance and contingency seems random upon which selection operates, however, overall progression towards positivity presses to realize that they themselves have been bounded to be articulated for the intelligent processes in long run.

We know, to flesh out the Darwin's theory of evolution and speciation by natural election, American evolution theoretician Crow (1988) and British evolution theoretician, R A Fisher (1890- 1962) brought concept of 'genetic drift' and 'strength of the natural selection' respectively (Thompson, 1990). Crow (1988) said that, in a small population, random fluctuation of gene frequencies lead to sub division of population into smaller, particularly isolated subunits and it is the fundamental stimulus to evolutionary change by natural selection following the principle of 'genetic drift (Crow, 1988). However, almost contradictly, FA Fisher, by emphasizing large population character and by including quantitative genetics (Thompson, 1990), stated that population are large enough, therefore natural selection is strong enough to overwhelm the 'chance effect' so that evolution takes place (Feldman, 1986). In the same sequence, Xie, Pu, Metzger, Thornton, & Dickinson, (2021) by taking ancestral protein came to conclude that contingency generated over long historical timescales steadily erase necessity and overwhelm chance and thus evolution take place (Xie et al., 2021).Therefore, we see mixture of several ideas that seem working in the evolution and they are immensely very much complicated.

Although apparently, the work seems a phenomenon of random occurrences, the overall adjustment, and maintenance of continued equilibrium of nature all the time is intelligent work. Who is behind the intelligent work? Capra (1984) indirectly attributes it to something behind which is like Supreme consciousness. As he states "Individual human minds are embedded in the larger minds of social and ecological systems, and these are integrated into the planetary mental system – the mind of Gaia-which in turn participate in some kind of universal and cosmic mind (Capra, 1984). In Hindu scripture the three intelligent forces are described: Brahma for creation, Bishnu for maintenance and Shiva for destruction for maintenance of equilibrium of Nature. These conscious and intelligent energies cooperate so intrinsically and so integratedly that no randomness is permitted without purpose in long run, no matter how much chance, contingency, effects work there. Despite so many changes every time in the earth (as we have seen above year by year) and so much damages that occur in nature, we argue, three intelligent forces (Brahma, Bishnu, and Mahesh) work so leniently and so flexibly that they restore the beauty of nature and maintain its equilibrium. Had not there been such intelligent forces working for bringing into order and the evolution of nature from the time of emergence of the earth (4.5 billion years ago) to date, this order of evolution would not have happened. Therefore, this kind of approach seems to have a logical interpretation of the existence of billions of years' equilibrium in nature.

Conclusion

No matter what Charles Darwin stated in adaptation and natural selection and no matter what Sewall Wright and R A Fisher stated in flesh outing Darwin's theory of natural selection and; no matter what Jacques Monod said on chance and necessity, all are

ISSN No. (Print) 2705-4586
ISSN No. (Online) 2990-7772

revolving around their own terminologies like chance, contingency, necessity, adaptation, natural selection etc. Rather many of the times they themselves are contradicting each other. Of course, the phenomena undergoing in the nature that modern evolution scientists explained definitely address one or two aspects of evolution, but not the whole, therefore their explanation appear incomplete and contradictory. On the other hand, amidst such infinite chances and contingencies the fulfilling the necessity, building the quality of adaptation, and selection by nature for positivity so that nature remains everlasting beautiful and fresh cannot be expected from non- intelligent material entities. Therefore, we arrive to offer a food for thought that all those immense complicated interactions might have been progressed towards evolution in course of millions of years of time through supervision and regulation of super-intelligence.

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