CEN Tech. J., vol. 5(1), 1991, pp. 48–52

Can Natural Selection Produce Complex Organs? The Problem of Organ Development

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It is difficult to mentally reconstruct the process of the evolution of complex body organs. Each one has hundreds of different complex parts, all working together functioning as a unified whole. A major concern of evolution is 'how can an eye, ear or kidney evolve by the accumulation of slight modifications of simple "primitive" organs or structures, or even "jumps", in the hopeful monster style of "punctuated equilibrium?"' An organ is almost always **useless** until it functions properly, which means that it must be completed and integrated. And, if useless, such organs would not confer any survival advantage to their owner and would likely adversely affect survival. In addition, the **principle of body conservation** would argue that a reduction in the level of food and oxygen distributed to less active organs, and lack of use would invite disease and atrophy of the organ.

In postulating his theory of syntropy, Szent-Gyorgyi[1] touches on one of the primary difficulties of evolution — the fact that a body organ is useless until it is functional, thus it must generally be completely developed to confer positive selection advantage. 'Survival of the fittest' theory predicts that **all** adverse and most less than beneficial mutations would be selected against, wherever expressed (they are not selected against if heterozygous recessive), and would favor a structure only after a large number has existed which were able to function together as a unit to produce a **complete new functional structure** that is superior to the older structure. Only after millions or thousands of mutations have produced a new and better working organ, could natural selection select the organism with the superior organ. The useless mutations would somehow have to be passed on for thousands of generations until the proper set occurred, one that was functional as a combination. This difficulty is summed up by double Nobel prize winner Szent-Gyorgyi[2] as follows:

> '. . . *Herring gulls have a red patch on their beaks. This red patch has an important meaning, for the gull feeds its babies by going out fishing and swallowing the fish it has caught. Then, on coming home, the hungry baby gull knocks at the red spot. This elicits a reflex of regurgitation . . . , and the baby takes the fish from her gullet. All this may sound very simple, but it involves a whole series of . . . complicated chain reactions with a horribly complex . . . underlying nervous mechanism. How could such a system develop? The red spot would make no sense without the complex nervous mechanism of the knocking baby and that of the regurgitating mother. All this had to be developed simultaneously, which, as a random mutation, has the probability of zero. I am unable to approach this problem without supposing an innate "drive" in living matter to perfect itself.'*

AN EXAMPLE — SPIDERS

In the posterior of web building spiders is located a highly specialized complex organ used to spin (actually manufacture) the omnifarious spider web. Without a working web organ, all of the dozens of accessory structures (such as nervous system components) and the program for the required behavioural traits, most kinds of spiders would not be able to secure their food. How did they survive for millions of years or so, as most claim, while their web spinning organs and accessory structures were evolving? As they obviously must have been effective in procuring food by other means during this long period of time, why did they develop these complex spinning organs? And what in the environment selected for the web system over the spider's old methods of procuring food? The web system is certainly far less effective than many hunting systems. It was also useless until a large population of flying insects existed. Actually this complex system of catching food was worse than useless **until** it was perfected to the extent that it was

highly effective. An organ that did not aid the animal would use up energy, nutrients and body space and, if not used, would be a prime site for infection. Also, nothing would select for it or cause it to develop until it was functional — and only then could micro-evolution and selection of normal pre-programmed variations, perfect the organ beyond mere functional effectiveness.

MAMMALS PRESENT EVEN MORE PROBLEMS

If the mammary glands, or breasts, of animals that nurse their young, evolved slowly over millions of years, how were the young able to survive until these extremely complex organs were perfected? Mammary glands will not produce milk until the whole complex system, which involves not only the local organ but the many supporting structures such as the pituitary gland, is complete.

The young were obviously effectively fed by some other method for the millions of years that the new system was evolving. Obviously useless until they could secrete the complex 'miracle' food called milk, nature could not select for this system until completely developed. Thus, why did they persist in developing? Science has found that mother's milk is almost always by far the best food for the animals' young. It is so perfectly formulated for the mothers' own infants that doctors consistently recommend mother's milk over the best that our nutrition experts can offer.

In another area, how could the male and female sex organs become perfect complements of each other if they developed independently, in a 'parallel evolution,' as is hypothesized? They could be functional as a unit only eons after they began to develop, yet evolutionists must show how animals could effectively reproduce during their entire evolution. Any half-completed, imperfect, non-functional system would render it unable to, which means the species' extinction. Darwin noted that 'any variation **in the least degree injurious** would be rigidly destroyed' or, in other words, cause the extinction of the animals with the less than functionally developed organ. The difficulty of having offspring until the reproductive system was perfected is no small problem. The chasm between sexual and asexual reproduction, and also between egg (as non-viviparous reptiles and birds) and live birth (as mammals) reproduction, is bridged by few, if any, good candidates for a 'transitional' form.[4] It is hard to even mentally create possible intermediate forms. Darwin[5] noted that:

> *'Natural selection acts **only** by the preservation and accumulation of **small inherited modifications** ... if it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down.'*

Although animal organs and structures differ greatly in size, structure, and function, they are all functional and every one, we are slowly learning, is perfectly developed for the animals' own needs. None are useless, half-developed or in the process of developing. Sight organs vary greatly — many different types of eyes exist — yet each is fully functional and compatible with their many complex support structures.[6] Each basic type of eye requires a special system of focussing, resolution, and brain interpretation structure so the viewer can make sense of the large mass of constantly changing signals sent by the retina via the optical nerve.

Even the so-called 'simple' and 'primitive' eye of a trilobite is an incredibly complex optical system.

Levi-Setti[7] notes:

> *'. . . the trilobites [were] first in developing highly organized visual organs, but some of the recently discovered properties of trilobites' eye lens represent an all-time feat of function optimization . . . Their optical apparatus raises very relevant questions as to why such perfection was needed.'*

Stanley[8] adds that he believed that:

> *'. . . through natural selection operating on chance variations — trilobites evolved a remarkably sophisticated optical system. For an optical engineer to develop such a system would require considerable knowledge of such things as Fermat's principle, Abbe's sine law, Shell's laws of refraction, the optics of birefringent crystals, and quite a bit of ingenuity.'*

To form these organs, it is postulated that many beneficial mutations occurred in unison to produce a superior structure which resulted in an improvement in the animals' place in the competition for life. Grassé[9] closed his discussion on *Myrmelion* anatomy with these words:

> *'Have you ever seen a mutation simultaneously affecting two separate components of the body and producing structures that fit one another precisely?*
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> *. . . have you ever beheld three, four or five simultaneous mutations with matching structures producing coordinating effects? . . . These are vital questions that demand an answer. There is no way of getting around them, or evading the issue. Every biologist who wants to know the truth must answer them, or be considered a sectarian and not a scientist. In science there is no 'cause' to be defended, only truth to be discovered. How many chance occurrences would it take to build this extraordinary creature* (Myrmelion formicarius)*?'*

Darwin[10] vividly recognized this problem and the serious impediment it created for his theory. In his own words:

> *'To suppose that the eye with all its inimitable contrivance for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems,*

I freely confess, absurd in the highest degree.'

Although some animals provide better examples than others, this same problem exists for **every** organ and structure of **every** animal. As Melnick[11] adds:

'The eye is such a marvel … Its immense complexity and diversity in nature, as well as its beauty and perfection in so many different creatures of the world, defies explanation even by macroevolution's most ardent supporters.'

To summarize, as Gould[12] admits:

'The argument still rages, and organs of extreme perfection rank high in the arsenal of modern creationists [and it seems that they always will.]'

One of the better examples is the bombardier beetle's 'gun'. Beetles are known for both their variety and their creative and ingenious ways of coping with their problems of survival. Bombardier beetles, commonly found near ponds under rocks and decaying trees, are easily recognized by their orange and blue coloration. As their name implies, when threatened or attacked, they eject a noxious, potent spray called benzoquinones which, to insure the victims' death or repulsion, is heated to about 212 degrees Fahrenheit. The beetle can shoot its hot vile spray at its enemy with a high degree of accuracy. It can even aim the barrel-like opening of its sac in the front, below, or behind its own body. Small predators, such as ants, spiders, insects and even frogs, are effectively repulsed by this hot, noxious spray.

To achieve this, bombardier beetles possess special glands which secrete a mixture of hydroquinones and hydrogen peroxide into the chambers or sacs (pygidial defense bladders) that lie side by side in their abdomen. A smaller outer chamber (chitinous chambers) on each gland contains a mixture of enzymes which catalyzes the reaction when the mixture in the inner chamber is squeezed into the outer one. The explosive production of oxygen gas provides the propellant for the benzoquinones. This intense chemical reaction also provides the heat. The waste products include quinine and water.

The spray is not continuous, but pulses like a machine gun. Each discharge can be heard as a distinctly audible 'pop'. The bombardier beetle also has a complex and elaborate support structure used to produce, aim and fire the poisonous mixture of unstable chemicals. The inner compartments contain the two potentially explosive chemicals. They must be designed in such a way so that they are isolated from the outer chambers, which contain the special enzymes that initiate the reaction at the correct time and in the proper amounts. So that the explosion is properly controlled and directed, timing and control are crucial. Otherwise, the bombardier beetle could literally have blown itself into extinction or, at the least, boiled itself alive!

The complexity and the necessity to mix very specific chemicals at the right time, and the complexity of the organs that produce the enzymes and reaction chemicals, as well as the storage compartments, reaction chambers, mixing muscles, expulsion nozzles, diaphragms and the many support structures, all argue against the view that slow changes in the beetle's anatomy produced this structure. The entire structure, of course, would be totally useless until both completed and perfected. If any part of the system did not work, the whole system would not function properly or, very likely, not function at all. Aside from skunks, which use their complex system to eject a strong smelling substance at will, no other animal has a structure even similar to the bombardier beetle. If the structure had evolved through slow steps, other animals would likewise have evolved similar, but less complex structures. Yet, this is not the case. The bombardier beetle is apparently completely unique, although it is by no means the only "unique" animal, but is so in this one way. Although Weber[13] tries to claim otherwise, the whole system is entirely useless until fully developed, and various aspects of it, unless fully functional as a unit, would not confer on the animal any survival advantage.

Another well-known example of this is the lightning bug or firefly. Although more than sixty types of fireflies are extant, and each one is unique, 'semi' lightning bugs do not exist, nor do bugs in the process of developing their lighting system. The bug either has the entire complex lighting system, or does not have any part of it. Although some types have what might at first glance appear to be similar structures, they are not, and are fully functional for other purposes. Its lighting system is also highly effective. A man-made incandescent light bulb is about ten percent efficient (ten per cent light, ninety per cent heat) but, in contrast, the firefly's system is over ninety per cent efficient, producing ninety per cent light and only ten per cent heat.[14]

Although all fireflies have an elaborate mechanism designed to produce light, the design varies considerably according to the type of firefly. The signals also vary as to the color of light, the timing, the temperature and the pattern of flashing. Other than mate attraction, the light has nothing to do with survival. If anything, it attracts predators, which the bugs are blessed with few of. Neither bats nor night flying birds usually will eat them. If they are caught in spider webs, the spiders usually free them. One of their few enemies are tropical frogs, who devour them in such quantities that their stomachs can glow! The firefly is disliked as food possibly because it has a bad taste (which is of survival value) but, as their enemies can't talk, we can only assume this. If the main protective mechanism of most fireflies is taste — and most animals 'know' not to devour 'the flies with the light' — how do their enemies know this? Limited evidence exists that they try to eat them and then reject them, and as a result learn in time to avoid them. The fact is, fireflies have few natural enemies, and thus survival is not affected much by being eaten by predators. We would expect, in view of this, that fireflies (which are beetles) would reproduce in

fantastic numbers and soon blanket large sections of the country. The world, though, is not becoming overrun with fireflies because they live only a few weeks — and most types don't eat at all during their brief adult life. Balance is maintained by this means.

Natural 'checks and balances' such as this exist everywhere in nature. Many of these are not a result of survival-of-the-fittest pruning, but the operation of internal self-regulating systems which effectively control their numbers.

CAN 'BETTER', MORE COMPLEX ORGANS IMPROVE AN ANIMAL'S SURVIVAL ODDS?

Balance in the natural world occurs by a wide variety of means, and it often cannot be accounted for by the theory of natural selection. Natural selection serves more to keep the animal numbers constant than to cause the development of mechanisms which serve to increase the population. In other words, if an animal has few predators, it often has a 'natural' short life span, few progeny, or both. If it has many predators, it often has a long life span, many progeny, or both.

An animal that is cursed with a large number of predators will also usually possess many complex protective/survival mechanisms. For example, many animals that cannot run fast often possess some means of protecting themselves, such as the quills for the porcupine, or the fierceness of some rodents. Animals which have a high mortality in their young also tend to have more offspring. But in the case of the **higher** animals, most of which have few offspring, relatively few animals exist for natural selection to select from to develop survival-facilitating organs and structures. The fact of **balance** in nature (unless humans upset it) has been repeatedly emphasized during the past several generations by writers and researchers. This balance is **opposed** to the logical outcome of Darwin's concept of natural selection. In his view, if carried to its logical outcome, animals would continue the 'struggle for existence' until sooner or later one super species would take over the world, then it would be forced to fiercely compete with its own kind for food. In time, when edible plants became extinct from lack of nutrients previously supplied by the balance of animal life, especially bacteria, they will be forced to eat each other until only one 'super animal' was left. This lone survivor would then die for want of food, forever ending all life on earth. If animals constantly developed radically more effective reproduction and survival techniques, **eventually** this balance must be lost, yet we do not see this occurring. If natural selection were a major force, balance in any sphere of activity would actually be a precarious situation, maintained for only a short period of time. Yet we find in the real world that, although some animals have become extinct, they are often **very much like those that have survived**. Often the reason for their demise can only be speculated upon. Balance, although it has moved and shifted, has existed for as long as life has been on earth. And the reasons behind most modern extinctions do not relate to fitness:

> *'Since life began on this planet . . . nothing . . . has approached the sheer destructiveness of the last 300 years. Since the killing of the last Dodo in 1680, there have been at least 300 extinctions of vertebrate animals, more than half of these being full species. Before the expansion of Western Man and his culture, the extinction of an animal species was a rare occurrence. Even during such cataclysmic processes as the 'Great Dying' of the dinosaurs, the rate of the dinosaurs' extinction has been estimated at not greater . . ,'*[15]

In addition, natural selection would select **primarily** if not totally, for (1) animals that produce the largest number of offspring, (2) had the longest fertility period (**not** lifespan) (3) survival until the animal could no longer bear offspring. These factors would be the long term result of a survival-of-the-fittest law, yet the number of offspring, longevity, and length of the fertility period of **almost all animals** have been remarkably **stable** for the past several hundred years and, according to current evidence, stable for the past several thousand years as well. Nature would not "select" to develop extremely complex structures or mechanisms, such as those on the bombardier beetle, the firefly, the archer fish, etc., but would select mechanisms that clearly and directly facilitated what is defined as evolutionary success, i.e., **the number of offspring** that survive and are able to reproduce themselves at any given time. Evolution would not select for complexity, or longevity alone, or even for quality of life, but primarily for long and fertile reproduction periods.

Actually, an inverse relationship is found between hypothesized evolutionary development and survival. Animals that are **higher** on the evolutionary scale are actually more vulnerable to extinction. This is illustrated by the fact that there are only six species of insects on the **U.S. Department of Interior Endangered Species List** out of over 800,000 types identified; but 33 species of mammals out of 4,400 identified types. Animal types that seem **least** likely to be bothered by predators, such as birds, have 67 varieties on the list. Although 29 types of fish are listed there are only 11 reptiles, 4 amphibians, 2 snails, 1 crustacean and ironically, 23 clams. Of those animals that have become extinct in recent times, a highly disproportionate number are vertebrates (supposedly the 'highest' type of animal) including *the Badlands Bighorn* (which became extinct in 1910), the *Eastern Elk* (1880) and the *sea mink* (1890). Among the birds which became extinct are the *heath hen* (1932), *passenger pigeon* (1914), *Caroline parakeet* (c. 1920) the *dodo bird (Didus Eneptus)* (c.1681), and the *solitaire* (c.1760).

The Red Data Books show the world data to be very

similar — of the over 500 listed the majority are birds and mammals. Thus, animals on the **higher end** of the evolutionary scale are actually often in far more danger of becoming extinct — and those lower on this hypothetical ladder are clearly in far less danger. This difference is especially great if the ratio is calculated; out of almost a million species of insects on this list, the six listed in danger of becoming extinct works out to .0006%, and out of almost 5,000 mammals, 33 (.66%) are in danger or over 1,100 times more! This information is the opposite of what the evolutionary model would predict. Day[16] argues that some animals do not become extinct because of 'lack of fitness' to their world, but because of a general weakness which is unable to deal with human changes:

> *'It would be quite wrong to use such misunderstood terms as "natural selection" and "survival of the fittest" as an explanation for extinction ... [of] the Dodo, Steller's Sea Cow, the Quagga and the Passenger Pigeon ... [to argue they] became extinct because of evolutionary faults that did not allow them to adapt to new conditions (which Man's technology introduced), is as plausible as explaining the collapse of the Japanese in World War II in terms of genetic flaws: the populations of Hiroshima and Nagasaki could not develop a biological immunity to atomic radiation.'*

The survival of the fittest force does not propel animals to a higher level of protection against extinction by developing more complex organs. Actually, as evolutionists argue, if viruses and bacteria have survived on earth the longest they must be the **highest** form of life on the evolutionary scale. As the so-called simple forms of life have lower rates of extinction, they are in many ways more fit than 'higher' life. For these reasons, the role and place of natural selection is being seriously questioned by natural scientists today.

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