39 Evolution by trial-and-error, or opportunistic evolution by protection and cooperation

The contra-Darwinistic theory and why testicles seem to evolve much faster than any other organ

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I want to dedicate this book to my young grandchildren Margrete, Olivia, Erik and Audun with a wish that they in high school will be presented evolution theories that are logical, not confusing, as they are today.

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Preface

BEHE: “it-was-all-there-from-day-one”

NEW TITLE: Evolution by trial and error

TITLE Evolution by trial-and-error or opportunistic evolution by protection and cooperation

A contra-Darwinistic theory

The value of a college education is not the learning of many facts but the training of the mind to think.

– Albert Einstein

I think that only daring speculation can lead us further and not accumulation of facts.

– Albert Einstein

Nothing in Biology Makes Sense Except in the Light of Evolution

– Christian Theodosius Dobzhansky

Science is what you know, philosophy is what you don’t know - Betrand Russell

TTTXXX DETTE ER SKREVET FOR BRUK I Skeptic. Sjekk om forkortet variant kan brukes i Preface/Introduction. :

At the time (1930-40) evolution theories were mainly influencing two fields, biology and paleontology. Some microbiologists had special views of evolution, but only for a very early period, before multicellular life was a reality.

Biologists and paleontologists view evolution from very different perspectives. Biologists can only view the results of evolution within a few decennia, while paleontologists can view the effects in periods of millions to hundred of millions of years. KOMMITEE, GOULD. From around 1950 there has been a revolution in levels subordinate to the cellular level, and more details have been revealed about the cellular level. In addition to microbiology we now have subjects like biochemistry as a modern form of physiology, biotechnology and biophysics.

We are now using a lot of microbiological and bio-molecular(?) technologies that have been invented by nature. And the new subjects have given us new and more precise tools for studying evolution.

Based on the new knowledge old theories for cellular evolution was 1967 (?) relaunched. Lynn Margulis. Now less skepticism. But she has also posited that similar mechanisms influence evolution today, and that they are the answer to the speciation problem. This theory has been met with great

MOTSTAND (skepticism) from biological evolutionists. But among microbiologists there was a quite a few TILHENGERE. One of them is James Shapiro. Together with Raju Pookottil and Denis Noble he launched a website for TILHENGERE of her symbiogenesis theory. Their theories are called non-Darwinian because they are not strictly vertical, i.e. not just selection among inherited trait variants. These other mechanisms are called Lamarckian.

Although most of the members are microbiologists, there are also some molecular biologists. Both Denis Noble and Eugene Koonin are molecular biologists. I wonder why they want to look at evolution from a cellular perspective instead of seeing it as primarily molecular. We know that life is based on molecular processes, and it is the evolution of these processes that was the basis for life. I would therefore rather regard evolution from that perspective.

There are molecular biologists that have found the evolution of molecular systems too difficult to explain, and that have therefore concluded that there must bee some intelligence behind evolution. One of them is Michael?? Behe. MER?. But there are also molecular biologists who see evolution from the molecular level (EX. Nei). And they typically conclude that mutations should be regarded as primary for evolution, not as secondary as the committee posited.

TTTXXX HIT

START

There are major misconceptions about evolution and origin of life, and this book is a result of my attempts to find the right answers. My work with these questions has resulted in a new theory.

AVSN? Although it is not my profession, I have always been interested in origin of life, evolution, and especially the working of complex systems. In my profession I have been working with complex technical systems, and I see a lot of similarities, e.g. between computer controlled systems and life. These similarities have helped me understand living systems.

You may wonder why I bother writing a book about evolution by trial-and-error when Darwin has a theory of evolution based on natural selection, which is a kind of trial-and-error. But that is just **one** kind of trial-and-error. Trial-and-error is much more than natural selection.

Serwall Wright defined evolution as partly driven by changing conditions and selection, partly by a trial and error mechanism. I have adopted this terminology, but I use it more generally. I see the evolution that is driven by changing conditions and selection, which is often termed "population genetics", just as a special case of the trial-and-error mechanism. My evolution by trial-and-error is therefore a general theory. I have also called it "contra-Darwinism", because it in the most important phases of evolution contradicts Darwin's evolution mechanisms.

In school I got the impression that Darwin's theories, when combined with Mendel's laws of heredity, explains evolution; i.e. how life propagated from one ancient form to the modern multitude? of life has taken place. I was therefore very disappointed when I read Darwin's book and found nothing that could explain creation of new structures.

The book is a hypothesis that the mechanisms for adaptation within a species will eventually create new species. Based on the very conspicuous effect breeders have on organisms by selecting favored races of domesticated animals and plants he hypothesized that natural selection would somehow

change the reproductive organs to make cross-fertilization impossible. Thereby two species could originate from one. No such effect had however been observed under domestication, but it was speculated that there are different laws for domesticated and natural evolution. ((HUSK Wallace))

Darwin's theory is based on inheritance, variation and selection. His inheritance mechanism gave him a great challenge, but after his death Mendel's laws of inheritance were found to be a good solution. But it was the origin of variation that was Darwin's largest problem. He argued for the two mechanisms that were used in theories at his time, Lamarck's use/disuse mechanism and Buffon's direct influence from the environments.

Darwin's Natural Selection however works with any source of novelty, so even though Lamarchism and direct influence from the environments were disproved, that was not the end of Darwinistic evolution. Selection differentiates between beneficial and deleterious changes, and the source of the changes does not matter.

The effect of selection cannot be disputed, so unlike other theories at his time, his theory was future safe. He warned against believing that selection alone could explain evolution, however, and he was all his life trying to find other sources of variation. He predicted that future research on variation would find the solution.

We have to see Darwin's book from the way people were thinking at his time in order to understand how revolutionary it was. To a modern reader it seems to consist of two kinds of statements, some that are wrong, and some that are obvious. The obvious parts are the descriptions of the effect of selection and that all life is related and originate from one common form. The former was obvious also on Darwin's time. It had been proposed many times, although it had not been part of the writings of the most influential writers, Aristotle and Lamarck.

SKRIV OM: But the latter, that all life descend from a common origin, was far from obvious. It had been proposed by ???? in year???, but the opposition against such a view was so immense (??) that TA UT; FLYTT even though it was a quite natural explanation of Linnaeus's classification of organisms, nobody else had dared to propose the idea again before ???, Wallace (1858) and Darwin (1859) proposed it. Darwin had it in his manuscript already from 183?, but he had delayed publication until he had more proof.

But in 1859 the timing was as perfect as it could ever be for publication of such a dangerous idea. At this year Pasteur proved that organisms do not originate by "spontaneous generation". With no alternative for the origin of species there was no need for a proof. A hypothesis for common origin was enough.

FYLL INN SURVEY: The hypothesis has been definitely proved by DNA sequencing of organisms from all branches of life. But even before this proof the belief in the common origin of all species was overwhelming. In 195? SURVEY ???? 99.5 0f scientists??? . If Darwin had known what later happened to his theory, we would probably have been thrilled by its support and proofs.

He would probably have been less satisfied with the research on variation. A source of variation was actually found early in the twentieth century, in a period that curiously enough has later been termed "eclipse of Darwinism". But the research that has been performed on this source has not given the answers to how it works as a source of variation.

Mutations were discovered ?? 1916??. Any change is possible in a mutation, but the smallest?? are the most probable. Speciation has also been proven to result from mutations. There was a lot of interest in this versatile?? source of variation before 1930, but since then the interest in mutations has been rather low.

Darwin would have been very disappointed with the evolution???? since 1930, which has been dominated by reduction of Darwinism to a theory of adaptation That was the situation???? before Darwin issued his theory, a trend??? that he wanted to change. (SKRIV OM?)

A committee consisting of some evolution scientists had as an aim to find one theory of evolution that everybody could agree upon. They concluded that evolution based upon variation already existing in the genetics of every population was more than sufficient to explain the evolution that could be observed. They redefined Darwinism and evolution to mean the changing of allele frequencies that takes place under changing conditions.

This redefinition of terms has created great confusion. Most people however believe that Darwinism and evolution is still about Darwin's greatest idea. Even though the reduced theory can explain natural changes of allele frequencies like the dominance of a dark moths during the industrial revolution, it does not prove evolution in general.

SKRIV OM But it has been used as a proof, and it has not been clearly expressed that this proof is just for a reduced meaning of evolution. Modern molecular biology has given clear proofs that all life must have originated from one common origin. People combine these two kinds of proof, unknowing that they are for different meaning of evolution. The result is a misinterpretation that evolution by Darwinism has been proved. (((But that is only with the redefined meaning of the words.)))

SKREVET OVENFOR? JA The misinterpretation that selection alone could explain evolution existed already at Darwin's time, and he warned against it. The way his theory has been used by this committee is very far from Darwin's intention with his writing. He wanted to extend the existing theories for adaptation within a species to also explain speciation, and the series of speciations in a tree of life thereby also is an explanation of the origin of life.

The only element that is left from Darwin's thinking in the work of the committee is what Darwin warned against - natural selection. It was for Darwin just one part of a theory consisting also of inheritance and variation. Inheritance was a problem for Darwin, but it was correctly explained by Mendel. Variation was however Darwin's main concern, and he SPÅDDE that future research would find the source of variation.

All research performed to this day show clearly that there is only one source of variation, mutations. There was some research on the effects of mutations in the beginning of the twentieth century, and it was shown that it could explain speciation. But the work of the committee showed that there was no need for further research on mutations. People that had worked with mutations were called "mutationists", and it was ((nearly)) used as a SKJELLSORD.

This book is intended to fill the gap between the two meanings of evolution. It is an enormous challenge, and I have no intention to explain everything. It must be seen as a supplement to research

that is performed in areas like “evodevo”, the evolution of organism’s development program. I will try to make it as accessible as possible, but that is a challenge, because it is based upon “slow thinking”, not what appears to be the immediate truth.

Richard Dawkins´ excellent writing has explained the reduced version of evolution. His books are based on one version of the committee definitions, XXXXX Fisher’s version. My ideas complement the ideas that he has based his books upon, and the thinking that is the basis for this complement is partly contradicting the ideas that his writing is based upon. This is similar to the way Einstein’s ideas complement Newton’s ideas. Even though he could not prove it, Newton thought of his theory as general.

Newton assumed that mass and time are absolute, and that speeds can be added. Einstein however showed that at high speed, this is not true. Mass increases and time slows down with increasing speed. We are using Newtonian physics today because we know that the errors are not significant. In the same way we can use the reduced version of evolution when we are working with evolution in the short time span.

My amendment to the modern synthesis should in the same way as Einstein’s relativity theory move us loser to the target to explain how simple forms of life could have resulted in the forms of life that we have today. My theory is based on slow thinking, i.e. not the UMIDDELBARE immediate solution. But it is far from as complex as Einstein’s theory.

Jeremy England REF has also presented a theory that is an extension to natural selection, and he also compares it to Einstein’s theories. But the theory that he presents is about the physics of the origin of life. It is by no means in conflict with my theory, rather the theories UTFYLLER each other.

<- ER DETTE SLUTTEN AV PREFACE?

SJEKKET HIT 30. SEPT

NYTT SJEKK OM FJERN DET MESTE: Dawkins’s book “The selfish gene” is based upon one variant of the modern synthesis, the one that was first promoted by X Fisher. He has limited the use of the theory to just animal behavior, which is his profession. Still his books have sold in millions, ((so it seems that this kind of evolution is very interesting.)) I will instead extend the theory and look especially on the effects of these extensions, such as the origin of organs etc. With such an interest in animal behavior I hope there is also some interest in these aspects of evolution.

Most modern physics textbooks are entirely based on Newton’s physics, although they may mention Einstein’s relativity theory, but just as a curiosity. In the same way population genetics is treated in the textbooks not as adaptation, but as evolution. And the lack of a theory for the origin is not mentioned at all. In both cases the simplest mechanism can explain all easily observable cases.

In biology, we can only observe directly several generations, but population genetics can easily explain thousands of generations with high precision, so why should we bather with explaining evolution in even longer range?

Like Einstein’s theory for most of us is just a curiosity, the lacking theory is also mostly a curiosity, but I think it is a curiosity that is so relevant for us, because it will explain our origin. But knowing

the mechanism may be useful, maybe in other areas, such as computer science. Einstein's physics is useful in the design of GPS systems.

But even if a new theory will not have any practical use, the satisfaction for our curiosity is also very important. Daniel C. Dennett expresses it in this way:

If I were to give an award for the single best idea any- one has ever had, I'd give it to Darwin, ahead of Newton and Einstein and everyone else.

In his book "Darwin's Dangerous Idea", with subtitle "Evolution and the Meanings of Life", he points out what this means for the position of mankind in the world. But he has also committed the common fault of mixing adaptation with evolution. Darwin's great idea, to see that all life has a common descent is only linked to Natural Selection by being one of the mechanisms nature has used.

This book explains how the serious misconception that evolution is the same as adaptation could have made its way to the textbooks and …..

Contra-Darwinism HER!

HVOR? Dawkins knows the difference between adaptation and evolution very well. When he talks about how evolution works, he calls it "adaptational evolution". In other cases he is talking about the concept of evolution, i.e. that all life has a common descent, and then he is more vague about the mechanisms. (Like Darwin and Stephen G. Gould that there are other mechanisms than Natural Selection)

NYTT HVOR: Stuck on a top. It is generally believed that evolution has to wait for changes of conditions that will continue evolution. But that is not necessary.

HVOR: I suppose that a lot of evolution genetisists know the difference. If we assume that they constitute ?? %, then there are still ?? % that believe in evolution, but imagine that it is the same as adaptation.

Aristotle: teleology, saltations, Darwin gradual, also speciation, natural selection, my view: contra-Darwinism

FLYTT TIL INTRO ELLER Historical NYTT 23. MAI:

NEW START The origin of life and its evolution has triggered the curiosity of people at all times, but two persons have influenced the general thinking more than others, Aristotle and Charles Darwin. Aristotle was convinced that there is teleological control of evolution, i.e. there is a plan with it and it tends to reach a goal dominated by perfectness and harmony. In his view new species occurs spontaneously as they are needed, while the evolution within a species is not saltational, but rather gradual.

A species evolves e.g. due to the use or disuse of organs. Empedocles had a few years before explained the effect of differential survival, i.e. loss of the most deleterious variants. The result of this mechanism would inevitably be improvement of the surviving organisms, even if the changes are random. This was however in Aristotle's view in conflict with teleology, which directly avoids the deleterious variants and makes it much more efficient.

Darwin did not trust teleology, and he did not believe in spontaneous generation of organisms. Regarding adaptive evolution of the species he also saw the use/disuse mechanism as a source of changes, but in addition he also saw influence from the environments as an important cause of changes in the species.

Speciation, instead of spontaneous generation, was in Darwin's view a result of the adaptive evolution. He also saw differential survival as a cause of evolution, but in another way. He had seen the effect of selecting plants or animals for breeding, and he argued that nature used the same method, that he called "natural selection".

There are however some serious problems with the Darwinian view. This book will discuss the problem with reference to famous scientists, and a solution is proposed. I have called it "contra-Darwinism" because it in many ways is a contrast to Darwin's theories.

BRUK HER:

My background: Dawkins, Margulis, Behe

The origin and evolution of life has always fascinated me, and when I started studying life sciences by the late 1980es, that was my main interest. I was at the time already a senior engineer in electronics and computer science, which may have influenced my thinking. The origin of new features in life had a special appeal to me. I had in school learned that evolution is driven by selection, but organisms with high selection pressure, like STIMFISK do not evolve faster than other organisms. There had to be other explanations than pure selection. I read Richard Dawkins' popular books, just to find that they lack the explanations that I were searching for.

Lynn Margulis had at the time presented some new theories about evolution. The first books were about creation of eukaryotic[1] FJERN FOO NÅ? NEI features like sex and cellular structures. I did not find any good answers here, and her extension of the theory to include all novelty in life just added more confusion. The general assumption in her theories is that all new features and also new species originate in bacteria. Further she assumed that bacteria have a collective intelligence that is not only responsible for all novelty in nature, but also for regulation of the processes that maintain our Earth, the "Gaia hypothesis". I have however found no attempt in her literature to explain the origins of bacteria.

Dawkins and Margulis have been regarding evolution from their own points of view. Dawkins, as a behavior biologist, primarily looks at evolution of the mind and body structures, while Margulis as a microbiologist had more focus on cellular evolution.

To come to the basics in evolution, it is necessary to approach the molecular level. I searched for people engaged in origin and evolution of molecules, and came across Michael Behe. I was again disappointed, because he is also basing the creation of features on intelligence. In this case the intelligence is however of divine nature.

BRUK I FOO? Eukaryotes are essentially all types of organisms. Only bacteria and viruses are excluded. The latter are by most definitions not regarded as life at all, and bacteria are very different

[1] A eukaryote is a living organism that is not a bacterium. Examples are amoebae, yeasts, insects and humans. The name indicates that they have a nucleus, and they are much more complex than bacteria. Even though bacteria are quite simple, they are strictly also "organisms", but I will for short limit the term to eukaryotes. ((MEN SJEKK MOT DEN UNDER))

from eukaryotes. They are much simpler, and a comparison to them has to be interpreted more as a matter of origin than evolution. This origin is a complex case that cannot be UTLEDET from general evolution mechanics. It will be treated in an extension of this book.

SLETT Neo-Darwinism is based entirely on advantageous sexual recombinations and mutations.

FLYTTET TEKST TIL Three….

This book is written for those who are not satisfied with the present explanations of novelty in life. There are at present three main ways to look at evolution, based respectively on the **neo-Darwinian**, the **symbiogenesis** and the **creation** ideas. Symbiogenesis may explain transfer of genetics between species. Such transfers may in special cases create a new species. Creationism is an alternative to evolution and is thereby no explanation of evolution processes. The theory that I will present here, "**contra-Darwinism**" explains the novelty that is created, not transferred from another species.

FLETT INN NOE OM "evolution by trial-and-error"?

SJEKK MOT OVER When I compare contra-Darwinism to Einstein's relativity theory, it is just to show how one theory can complement another theory to make them appear as a complete explanation, in that case of moving objects. Einstein's theory is so complicated that only very few can understand it completely. My theory is by far so complex, and anybody may easily understand it. Therefore I have chosen to publish it in a publicly available book.

PREFACE SLUTTER HER

Terminology Implement Create

Use of special signs in this book: I use some special symbols in the book, that should help the reader get access to relevant literature. A general, a clickable link to the Internet is marked with (**#**). If it is not clickable on an e-book, e.g. if it is a video, then a QR code is used to make it playable on another device. These are marked with (**Q**) or (**R**). Pdf files, that/which?? may not be read on some Kindle e-books, are marked with (**@**).

All buyers of this book get a $10 bonus on the extended book ((bargain)), no matter the price they have paid for this book.

BRUK I FOO? Eukaryotes are essentially all types of organisms. Only bacteria and viruses are excluded. The latter are by most definitions not regarded as life at all, and bacteria are very different from eukaryotes. They are much simpler, and a comparison to them has to be interpreted more as a matter of origin than evolution. This origin is a complex case that cannot be UTLEDET from general evolution mechanics. It will be treated in an extension of this book.

I wanted explanations based on life itself, not some kind of intelligence. Main-stream Darwinian theories did not give me the answers that I wanted. Motoo Kimura had? a different view on evolution. He showed that not only advantageous mutations, but also neutral ones can propagate to the complete population, i.e. be fixed.

I was first confused by this, because it seemed to contradict Darwin's theories. SKRIV OM But I understood that if there is a conflict between Darwin and Kimura, then Kimura is the one that has

to be taken seriously, because his writing represents facts, while Darwin's writing is just theories. His "neutral theory" is the basis for modern phylogeny[2], but I think it is also important in evolution.

FRA Darwin "Natural selection" severe struggle for existence to which all living beings are subjected

(I will however mention bacteria as comparison, e.g. in horizontal gene transfer)

OGSÅ PREFACE?:

MÅ SKRIVES OM: Importantly, Contra-Darwinism is a theory for evolution, so this book discusses HOW evolution takes place, not IF it takes place. There is so great skepticism to evolution as a concept that I have chosen to include that as one of the alternatives.

SLUTTEN PREFACE If you prefer easy solutions, the this book may not be for you. If you however are looking for explanations to the most interesting parts of evolution, then it os definitely written for you.

SLETT HERFRA (??) DISP Trial and error

Organization: novelty genetic, selection organism, but working on many levels, selection on different levels possible due to inherited organization, novelty on higher levels possible through platform building.

Examples: Mind and MS (popular) But start from the simplest: molecular

Towards a general theory of evolution

MS: A misunderstanding that it should be possible to see the effects of evolution in a historical??/observable time frame. When the MOTH is used as a proof for evolution, it is just a proof of a short-term effect of a stabilizing mechanism.

SJEKK FOR BRUK HER: http://ryanmarciniak.com/archives/1583 Jeremy England: https://www.youtube.com/watch
f4 https://www.quantamagazine.org/20140122-a-new-physics-theory-of-life/

Steven Pinker David Buss https://www.edge.org/

http://howtostartablogonline.net/ http://www.toppfinans.com/blogg

HUSK: Evolution by natural selection is a special case of evolution by trial-and-error.

STIKKORD: PREFACE: Interested in evolution, Darwin old novelty, but common descent!, no other theories needed. Mendel, optimism, 1930 only selection. Population genetics. MER?

Book accessible, complement Dawkins in same way as Einstein SJEKK OM INTRO FØR? Einstein HER!

Old theories for novelty disproven, so HVIT FLEKK?

Darwin would not have been surprised?? Selection not enough. Future research on novelty.

Modern synthesis explains thousands generations (MER?)

Newton cannot explain origin, but Einstein does

[2] Analysis and classification of species based upon genetics

New theory needed

HVOR? Dawkins Fisher

My background HVOR

Margulis, Dawkins, Behe SJEKK om flytt til Introduction

Contra-Darwinism / Einstein but this theory not complicated

INTRODUCTION: Common descent fact Misconceptions evolvability

???

Neo-Darwinism, ID, Symbiogenesis,

Debate

Margulis strange ideas

NYTT 6. SEPT:

novelty-> change?

FORKLAR deleterious?

Introduction

BRUK I Introduction (NEI?)? Ard Louise: “the reason that an organism shows characteristic X rather than Y may not be because X is more fit than Y, but because physical constraints make it easier for X to evolve than for Y to evolve,”

, something BLOG Comlexity Was Gokuld right What is evlklutiokn egen blog Improvement beneficial complex

Simpson put it thus: ‘The point I want to make now is that all attempts to answer

UPDATED 14. JAN

“You can’t convince a believer of anything; for their belief is not based on evidence, it’s based on a deep seated need to believe”

– Carl Sagan, astronomist

contingency - tilfeldighet

holistic, reductionist view, reductionism

Carl Sagan a reductionist!

HUSK: Instead of

Trade book - Darwin

“It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change.” — Leon C. Megginson

“It is not the strongest or the most intelligent who will survive but those who can best manage change.” — Leon C. Megginson

BRUK DEN SISTE HER?

Husk, dekket?: Dawkins limited to animal behavior, I general, but especially building of complexity.

NYTT 10. SEPT Many levels of organization.

START HER:

Darwin’s main idea, that all life has a common origin is today regarded as a fact. But among people in general there is much confusion regarding **how** Darwin anticipated this could have happened. (?) Most people associate Darwin with “survival of the fittest”, and many have also heard about “Natural Selection”. But most people do not understand what this means. One misunderstanding

is that Darwin looked at adaptation as a characteristic that have evolved. This statement has often referred to as originating from Darwin:

In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment.

But it is from a book about world cultural history, issued in 1942: "Civilization Past and Present" by T. Walter Wallbank, Alastair M. Taylor and Nels M. Bailkey.

(((Darwin Center http://www.darwincenter.nl/Content/Downloads/def%20binnenwerkdarwin07%E2%80%A2.pdf has referred it as a Darwinian quote))) BRUK I BLOG?

But these misunderstandings are not limited to non-professionals. Even "Darwin Center for Biogeology", which intends to be a center of excellence for research, has in an introductory to their web site given Darwin the honor of this statement.

Another variant of the same logic is:

It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.

This is from a speech delivered in 1963 at the convention of the Southwestern Social Science Association by Leon C. Megginson, a business professor. He has various versions of this statement. But common to all of them is that they express something that we would like evolution to manage, and which probably also Darwin would have liked. But he had enough trouble finding mechanisms explaining the basics of evolution.

For Darwin, evolution was the same as adaptation, i.e. evolution **by** adaptation, not **of** adaptation. His supplement to the way of thinking was that this adaptation could also create new species and new organs, e.g. eyes. Based on the above statements we should expect that also adaptation can evolve, and that is certainly true.

Adaptability is the ability for a population to adapt to changes over a few generations (less than 1000). In the longer run there is also another tendency that must have influenced evolution; the evolution of evolvability.

SKRIV OM SLUTTEN: Evolution by trial and error has abilities that pure adaptation does not. Both evolution of adaptability and evolvability are possible with this way to view evolution. I have good reasons to call the theory "Contra-Darwinism". The suffix indicates that it explains what Darwin intended to explain. The prefix indicates that it supplements the remains???? of Darwin's theory i.e. essentially selection. In the same way as yin and yang together constitute a whole, this supplement is together contra-Darwinism. Contra also indicates that selection works in a rather opposite way in the supplement compared to the Darwinist "kernel".

ETTER Mutations deleterious or neutral: Mutations seem not to match well with selection. The deleterious mutations are filtered out by selection. This does not create any improvement, just unnecessary loss of organisms. And neutral mutations are not PÅVIRKET by selection at all. They are simply accepted by pure chance, and they do not make any difference to fitness (unless when they are dependent on each other).

I will in this book show how a single deleterious mutation or a deleterious mutation in combination with a neutral one may improve adaptability or evolvability or both at the same time. ((SNP making a new allele, copying may create a new gene))

SLETT? The former may be based on an unusual meaning of "fit", more in the direction of "flexible", not as a static characteristic, but as a dynamic one. The adaptation to change is not a characteristic that can be proven in one generation, so the statements express survival for a population, not for an individual. Darwin saw selection at work just on individuals, however, and he saw the changing environments as driving evolution by influencing life, not as a way nature could eliminate the least adaptable.

NYTT (SJEKK MOT MS): The only people that should be expected to know that neo-Darwinism is a theory for adaptation, not evolution, are those working with it. But they have generally had no intention to tell people this discrepancy?. There was one exception, however. Stephen J. Gould posited that there must be other mechanisms than Natural Selection at work to explain evolution in the long range. But he was mostly disregarded by the rest of the community. Nobody wanted to take his saying seriously, but they did not want to have a debate about it. They were afraid that creationists could use the discrepancy??? / UENIGHET as an argument for their view.

INTRO TIL 3 persons: I will use Dawkins to represent those that are satisfied with a theory for adaptation, Margulis for those that want explanations for novelties, and Behe for those that do not believe in evolution at all, and instead posit that there has been intelligent creation.

Margulis intended to explain all kinds of novelty, but her theory can only explain some special cases.

The citation from Darwin that best describes the struggle and who survives is this one:

Whatever the cause may be of each slight difference in the offspring from their parents - and a cause for each must exist - it is the steady accumulation, through natural selection, of such differences, when beneficial to the individual, that gives rise to all the more important modifications of structure, by which the innumerable beings on the face of this earth are enabled to struggle with each other, and the best adapted to survive.

at the end of chapter five, "Laws of variation". Note that it says "the best **adapted**", not "the best **adaptable**".

While Darwin saw evolution by selection of beneficial slight differences that added up to important modifications, evolution by trial-and-error sees evolution as accumulation of differences, not only slight ones, to entities that are given an opportunity until they, at the end of their lifetime, by becoming extinct, give those that survive a benefit, maybe an increased benefit, especially for the most opportunistic ones. (SKRIV OM)

There are some special cases for evolution by trial-and-error. One of them is the one that has been known as population genetics. Some entities have very short life time. Organism entities are among them, and even the organism has very short life time compared to the next level, the species. Population genetics is active during the lifetime of a species, or strictly only as long as there is no allele or gene creation.

Modern Synthesis (Wikipedia) The 19th Century ideas of natural selection by Charles Darwin and Mendelian genetics by Gregor Mendel were united by Ronald Fisher, one of the three founders of population genetics, along with J. B. S. Haldane and Sewall Wright, between 1918 and 1932.

VIDERE (WIKI): The modern synthesis solved difficulties and confusions caused by the specialisation and poor communication between biologists in the early years of the 20th century. At its heart was the question of whether Mendelian genetics could be reconciled with gradual evolution by means of natural selection. A second issue was whether the broad-scale changes of macroevolution seen by palaeontologists could be explained by changes seen in the microevolution of local populations .

The synthesis included evidence from biologists, trained in genetics, who studied populations in the field and in the laboratory. These studies were crucial to evolutionary theory. The synthesis drew together ideas from several branches of biology which had become separated, particularly genetics, cytology, systematics, botany, morphology, ecology and paleontology.

Julian Huxley invented the term in his 1942 book, Evolution: The Modern Synthesis. Major figures in the modern synthesis include, Theodosius Dobzhansky, E. B. Ford, Ernst Mayr, Bernhard Rensch, Sergei Chetverikov, George Gaylord Simpson, and G. Ledyard Stebbins.

Se https://en.wikipedia.org/wiki/Modern_evolutionary_synthesis FOR VIDERE om Dawkins

http://www.prchecker.info

WIKI HIT

I SUMMARY??? According to ??? there is two types of thinking, fast and slow. Fast thinking give the most obvious results, while slow thinking is often needed for progress. Progress can be the ability to explain something by defining general laws, but it may also be to extend the range for the laws. An example from physics shows this. Newton found laws for physics that he thought were general. Einstein showed that they are not general, and he also found the laws that cover the areas were Newton's laws are not valid.

Newton's laws made Aristotle's thinking e.g. about gravity obsolete, and they got immediate acceptance, because they are much more logical. And they are relatively easy to understand.

Darwin's achievement can be compared to Newton's. He also found laws that could substitute Aristotle's thinking. But he kept some of the laws from Aristotle's thinking, because he had no substitute for them. But the main thing for Darwin was to show that speciation was the result of the same laws as adaptation.

Darwin's thinking was a great success, especially because one of the main Aristotle laws were disproved the same year as he issued his book. But there should be further invalidation of Aristotle thinking.

Darwin pointed out clearly that evolution is based upon inheritance, variation and selection. Selection had been known since Aristotle's time, but Aristotle FORKASTET it because it was not needed when you had teleology, the constantly working force that worked towards an aim of perfectness.

Since Darwin did not want to relay his theory on teleology, he had to show that selection is a powerful mechanism. The laws that Darwin used for inheritance and variation were disproven during and shortly after his lifetime. But there were shortly found substitutes for them.

The improvement for inheritance was Mendel's laws. These were immediately accepted as a good substitute for Darwin's thinking about inheritance. But variation was a tricky part that Darwin used a lot of space for. He must have seen that his mechanisms for variation were not good, because he SPÅDDE that variation would be a major theme for future research.

A newborn organism is partly a product of inheritance, partly variation. Mendel's laws and the way we now know that traits are inherited constitute a lot of randomness through the random choice of chromosomes from farther and mother. For humans, this gives more than 8 million possibilities. (This number is large, but it means that there in the world is around ??? cases of siblings that have the same similarity as twins.)

This randomness should not be confused with the randomness that mutations represent. The inheritance part produces more than 8 million possible combinations based on each combination of parents, but there is no novelty in these combinations. Inheritance may be seen as a way to draw by chance a set of chromosomes from a common pool of chromosomes.

Assuming there is a large pool of chromosomes, there will through selection be an evolution of their frequency in the population. This is a type of evolution that is known as population genetics. It is essentially the adaptive evolution that was supposed to be active for each population also before Darwin wanted to use it not only for speciation, but also for the propagation from simple to complex organisms.

The confusion that has been produced through the definition of population genetics is that the same word, evolution, has been used for this special case, and most people use it for what Darwin had in mind.

MER OM NOVELTY?

Misconceptions are common in life and so also in evolution. Darwin showed that species can occur through natural process, but that did not rule out misconceptions completely. Even though at least the majority of scientists are now convinced that all living organisms have evolved from one common origin, Darwin's natural selection theory explains just some aspects of evolution. The origin of new organic features is not explained at all, even when combined with Mendel's laws of inheritance.

SKRIV OM: (gjelder non-adaptive evolution) My work with concepts of evolution has convinced me that the most important evolution does not take place **because** of natural selection, but **in spite of** it.

The most common variant of Darwinism is "neo-Darwinism". Although there is deviating nomenclature, neo-Darwinism(#[3]) is essentially a synthesis of Darwin's and Mendel's theories with addition of general knowledge about genetics and mutations. Most renowned among neo-Darwinists today is

[3] https://en.wikipedia.org/wiki/Neo-Darwinism

Richard Dawkins, with books like "Climbing Mount Improbable"(#[4]) and "The Selfish Gene"(#[5]). He is a British ethologist (studying animal behavior) and an evolutionary biologist. He has also become known as an atheist and for his criticism of the dominating alternative explanation, creationism or "Intelligent Design", ID.

This view seems to have become more and more popular, especially in the US. The idea is especially promoted in certain American Cristian sects, e.g. the Babtists??, but also Mormons seem to support the idea. Creationism do not have much support in Europe, so while the US has 40% evolution skeptics, e.g. Iceland has just 10%, although the religiosity is around 60% in both countries.(#[6]) (@[7]).

NYTT: Lynn Margulis proposed an explanation for some of the novelties and speciations. MER She claims that symbiogenesis evolution explains all that is not explained by neo-Darwinism, but that is not the case most novelties and speciations are the result of local processes with no influence from bacteria at all.

Overgang

There is also a third explanation, that has become known as "symbiogenesis". The symbiogenesis theory is advocated strongly by Lynn Margulis' books REF. It was first defined 1910 by Konstantin Merezhkovsky as a way symbiosis can work as a force in evolution. Lynn Margulis described it as any integration of two organisms. She extended the effect of it to also involve speciation and creation of new features REF BOK.

Margulis was an American evolutionary theorist and botanist, with advanced degrees in zoology and genetics. Her main subjects were taxonomy, bacteriology and protistology. She was at the start of her career married to the famous astronomer and founder of the SETI[8] Institute, Carl Sagan. He was a highly respected scientist, but it was his TV series, "Cosmos: A Personal Voyage", that made him known to the general public. Margulis may have been inspired by him, but I doubt that her ideas live up to his skeptical way of thinking. Anyway, she attempted to fill the holes in Darwin's theories by symbiogenesis, and posited that such processes explain all creation in life, which she said is impossible with neo-Darwinism.

There is actually no theory for evolution that is not adaptation and to symbiogenesis. The lack of any theory for this evolution has opened for speculation. Most common is the speculation that there is no natural explanation. Creationism and intelligent design has been launched as ideas to explain the remaining by some kind of intelligence that has full control and can create novelties when needed. This is similar to the old teleology, that was the common explanation before Darwin.

FÅ MED: A lot of textbooks are not clear about the distinction between adaptation and evolution, and Behe was initially of the impression that neo-Darwinism should explain evolution in general, i.e. also the creation of new organs, cellular systems and molecular machines. When he became

[4] https://en.wikipedia.org/wiki/Climbing_Mount_Improbable
[5] https://en.wikipedia.org/wiki/The_Selfish_Gene
[6] https://en.wikipedia.org/wiki/Level_of_support_for_evolution
[7] http://www.wingia.com/web/files/news/14/file/14.pdf
[8] Search for Extra-Terrestrial Intelligence

aware of this, by reading ???, he became a prominent talesperson (?) for intelligent design, and he is now representing the Discovery Institute (?).

Behe is an American biochemist. He became an intelligent design (ID) advocate after reading the book "Evolution: A Theory in Crisis" (1985), by Michael Denton REF.

(fine-tuned for life: https://en.wikipedia.org/wiki/Fine-tuned_Universe)

(((FRA wikipedia: Behe says he once fully accepted the scientific theory of evolution, but that after reading Evolution: A Theory in Crisis (1985), by Michael Denton, he came to question evolution.[9] Later, Behe came to believe that there was evidence, at a biochemical level, that there were systems that were "irreducibly complex." These were systems that he thought could not, even in principle, have evolved by natural selection, and thus must have been created by an "intelligent designer," which he believed to be the only possible alternative explanation for such complex structures. The logic is very similar to the watchmaker analogy given by William Paley in 1802 as "proof" of a divine creator.)))

(((((flytt selection: ???))))))) While all religions are dogmas, science is based on proofs or at least evidence. But there are areas that are full of dogmas. Evolution is such an area, and there are lots of scientists that base their thinking partly on dogmas. But as scientists they will change their thinking once there is evidence their ideas are wrong. FÅ MED DARWINS SITATT??? SKRIV OM (ID?) SLETT: Creationism is a dogma that is seeking scientific status, and its followers should change their mind when there is evidence for another idea.

HVOR? (WEB?) Behe is undoubtedly a believer. But is he also so much of a scientist that he should admit that evolution is a likely idea the day that the evidence is overwhelming?

Katolikk her mot creationism?

BRUK SITAT I PREFACE?

The true believers are found among hard core, young-Earth creationists, who also believe that the Earth is less than 10,000 years old. These may be difficult to convince that they are wrong. But they count less than 10% of all Americans(#[9]), which means that more than three quarters of the US evolution skeptics aught to be open for arguments. I assume evolutionists are generally open for arguments, but there may of cause also be Margulis or Dawkins followers that have a deep seated need to believe, in which case there will also be evolutionists who can't be convinced that they are wrong. With my theory followers of all the three points of view have a lot to learn. This book is written for non-believers of all these categories, which I assume is the majority.

HVOR A lot of confusion has resulted from different use of the word "evolution". I want to use it in the way Darwin defined it, for the whole process of life history, including creation of species, organs and molecular systems. Some people use a limited meaning of the word. They are using it just for the part of evolution that is controlled just by adaptation. It would have been much clearer if they had used the word adaptation instead. Dawkins makes it clearer by saying that he is working with "adaptive evolution".

[9] http://ncse.com/blog/2013/11/just-how-many-young-earth-creationists-are-there-us-0015164

NB!! SKRIV OM INTRO FOR BRUK I BOOK 1 !!!!!!!!!!! In the reevaluation of these established theories I will confront the opinions of both Dawkins and Margulis. These two most pronounced advocates of present evolution theories met in a video debate(#[10]) (Q) at Oxford University in 2009, 150 years after Darwin's "The origin of species" and two years before Margulis passed away. In this debate they did not have too much positive to say about each other's theories. The confrontation had however already started before the debate, e.g. by Margulis' characterization of neo-Darwinism: "a minor twentieth century religious sect within the sprawling religious persuasion of Anglo-Saxon Biology"(#[11]). She also characterized her neo-Darwinian opponents as: "wallow in their zoological, capitalistic, competitive, cost-benefit interpretation of Darwin — having mistaken him"(#[12]). It is no surprise that Dawkins, with his anti-religion opinions, disliked this. He responded to it in the debate, although in more diplomatic terms: "I thought I would talk to you about neo-Darwinism, which sometimes comes in for some stick [criticism], and in particular the gene's eye view which is one way of looking at neo-Darwinism"(@[13]).

Q Debate

Margulis has cooperated with James Lovelock on the controversial Gaia hypothesis, and she explains the 911 catastrophe on youtube by explosives placed in the buildings(#[14]) (Q). I will not comment further on the latter, but regarding the cooperation with Lovelock, she forced him REF????? to restate the Gaia postulates in this way: "The Gaia hypothesis postulates a planet with biota actively engaged in environmental regulation and control on its own behalf" and "Gaia is more a point of view

[10] http://www.voicesfromoxford.org/video/Homage-to-Darwin-part-1/74
[11] http://www.science20.com/gadfly/lynn_margulis_neodarwinism_and_kin_selection
[12] http://www.science20.com/gadfly/lynn_margulis_neodarwinism_and_kin_selection
[13] http://musicoflife.co.uk/pdfs/HOMAGE_COMMENTARY_Music%20of%20Life.pdf
[14] https://www.youtube.com/watch?v=O0fkDmi78Og

than a theory". This is much like Aristotle's teleological ideas(#[15]). And she uses such ideas also for the control of symbiogenesis: "bacterial components fused via symbiogenesis are already conscious entities"(#[16]). Her controversial theories have been summed up in "Real Clear Science"(#[17]). But she rejects all critics and maintains that she is right on every point(#[18]).

Q Margulis 911

SJEKK OVERGANG

I have no faith in any of Margulis' theories, but I fully support her skepticism to the explanation of feature creation by natural selection. I have another explanation, that do not involve organism cooperation. My hope is that using my ideas, the number of dogmas can be reduced. SLETT: SKRIV OM!!! There are enough of them, and I do not want with this book to add another one. I cannot point to one single proof for my theory, but evidence for it is found in a lot of indices?? .

I will show that evolution has taken place in much smaller steps through the invention of features (much like the technical evolution made possible through human inventions, where each new invention is based on all prior inventions). BRUK DETTE I INTRO!! OK

NOE generelt OM AT også andre "misconception", med henvisning til nucleus origin og bacteria first.

Generelt tatt ut fra introduction må inn her.

Se om det med nucleus kan vente til "origin of nucleus".

–> [Woese 2004]:http://mmbr.asm.org/content/68/2/173.full [Woese 2004pdf]:http://mmbr.asm.org/content/68/2/173

[15] http://www.oxfordscholarship.com/view/10.1093/0199285306.001.0001/acprof-9780199285303

[16] http://link.springer.com/article/10.1007/s12210-012-0187-z/fulltext.html

[17] http://www.realclearscience.com/blog/2013/02/mad-scientists-of-the-modern-age-lynn-margulis.html

[18] http://discovermagazine.com/2011/apr/16-interview-lynn-margulis-not-controversial-right

FRA 98:

The single cell eukaryotes that all higher forms of life originate…. ?

SKRIV OM Sex is a mechanism that lets new combinations of traits in an organism. SYMBIOGENESis is a mechanism that makes lets a species get a new feature, but I want a mechanism create a feature that is new to life.

FEATURES

Intelligence is needed with top down design. With bottom up design there is no need for intelligence. Organization of partial features can take place randomly. What is needed is a mechanism to connect features and a way to select good combinations. FINN EKSEMPEL FOR BRUK I COMPARISON.

Chapter 1 - Darwin

"Natural selection can act only by the preservation and accumulation of infinitesimally small inherited modifications, each profitable to the preserved being. ... 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."

– Charles Darwin, Origin of Species, Chapter 6.

There are confusing terminology in use in theories that are intended to explain evolution. This confusion has made people believe that evolution in the way Darwin defined it has been explained, but all the views on evolution are based on basic misconceptions. Contra-Darwinism is based on a new way of thinking which explains hitherto unexplained matter (?)

Evolution of life was defined by Darwin, but he could never prove how it could take place. We know a lot more about the molecular and cellular composition of life than did, but there is still no theory for how evolution takes place. One of the best known theories, the result of the modern synthesis or "neo-Darwinism" can explain adaptation, but not novelty. Symbiogenesis can explain some very special cases of speciation, but not novelty in general. Some scientists have given up the explanation of novelty by scientific means and instead posit that deistic/theistic explanations have to be sought (creationism, Intelligent Design). In this book I explain how scientific argumentation can explain the missing cases of novelty.

A new theory, "Contra-Darwinism", explains not only the adaptation that takes place between the creation of new genes, but also the gene creation process. Understanding creative evolution depends on non-obvious thinking. The fast way of thinking is the most obvious one, while slow thinking takes into account more information and does not draw too fast conclusions. The book points out too fast conclusions in neo-Darwinism, as represented by Richard Dawkins and in symbiogenesis, as represented by Lynn Margulis. Contra-Darwinism shows that creative evolution is a bottom-up design process, similar to processes involved in human inventions, and it shows how protection from selective processes is necessary in order to make critical improvements. Opportunistic trial-and-error in combination with removal of non-optimal variants on all levels of organization has produced the forms of life that we have today.

((Another popular view on evolution, again based on fast conclusions, is Creationism or Intelligent Design. The three views are based respectively on Natural Selection, bacterial intelligence and supernatural intelligence.))

BRUK DENNE? *A process which led from the amoeba to man appeared to the philosophers to be obviously a progress though whether the amoeba would agree with this opinion is not known* - Bertrand Russell

SKRIV OM! **Darwin revolutionized thinking about the origin of life by assuming that the present species have evolved from similar species that inhabited our planet in earlier times. Before Darwin the general belief was that there were two different and unconnected processes in nature, adaptation and creation of new species. Adaptation was seen as a gradual process, by which a species changed in response to the changing environments. People however believed that a new species occurred through spontaneous generation. Nobody had dared present in full detail the dangerous idea that speciation is an effect of the same gradual process that adapts to the environments. But Darwin could present this idea thanks to the proofs presented by Louis Pasteur the same year.

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                                                  while there for origin and ch\
ange of speciation was many different theories. All of them were quite creative \
and innovative. ..MER?** (fra Knowledge)
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FLYTTET FRA 1860: **Darwin's BIDRAG? (contribution?) to the understanding of how nature works was to see adaptation and speciation as two sides of the same thing. The innovative effect of the creative speciation processes that had earlier dominated was now difficult to explain (?).**

BRUK NOEN AV DISSE POENGENE HER? Selection has its limitations. Example coloration. White in winter is a feature.

FRA evol. mech: **The basic evolution mechanisms are based on Darwin's analysis: Inheritance, selection and variation. Darwin had severe problems with the latter, and these problems almost debunked his theory when it was proven that his variation mechanisms are not**

present at all. The theory got renewed interest after the discovery of Mendel's work. Although Mendelian inheritance avoids loss of variation, but it does not produce novelty. The discovery of mutations gave us a source of novel variation. As opposed to Darwin's proposed variation it is random. Due to selective adaptation it is very occasionally beneficial. Normally it is neutral or deleterious.

FRA INHERITENCE: That traits are inherited is a fact that nobody will deny. Eukaryotes have a complex system of inheritance, whereby traits are inherited randomly from both parents and mixed to a novel combination. Although Mendel did not know how it works, he described its effects very precisely.

FRA SELECTION: Selection is a fact, not a theory. What can be discussed is its importance of in comparison to other evolution mechanisms. Some foremost scientists, among them Dawkins posit that selection is not only the most important mechanism, but also the only one worth mentioning.

FRA VARIATION: Inheritance and selection can be easily described, and their effects in the short run can be proven. Variation, on the other hand, is much more difficult. Darwin had severe problems with variation, and the sources of variation that he proposed were later disproved. He supposed that traits are blended through sex, which would lead to diminished variation. Mendel showed that traits are not blended, but survive, as each new individual is a new combination of traits. But he did not find any creation of new traits. It was later shown that mutations introduce changes in the genetics, but Margulis was skeptical to the idea that mutations introduce improvements. Instead she proposed that novelty is introduced by symbiogenesis.

Chapter 2 - The Darwinian eclipse

Lamarchism had been MOTBEVIST. Thereby only influence from environments as producing variation. (and pangenesis) The problem with Darwin's ARV (pangenesis) was solved by Mendel. But another problem occurred (?): Mutations came as a solution.

Chapter 3: The modern synthesis

"The day I realized it can be smart to be shallow was, for me, a deep experience"

– Donald Trump

In the period 1930-1940 there was work going on to define evolution according to some standards, where many ideas were thrown away, and a streamlined theory resulted. The main idea was that it should explain observations in population genetics. A committee performed the necessary work, and the result was the "modern synthesis".

Chapter 4 - Trial-and-error

TEXT

Chapter 5 - Examples

HUSK SJEKK TEKST FRA ANDRE STEDER

TEXT

Chapter 6 - Bacterial evolution

TEXT

Conclusion

TEXT

FRA GAMMELT Conclusion:

Conclusion of book (first issue)

Natural selection is an important mechanism. But it is not as important for evolution as usually claimed. Its main effect is to avoid degradation and to adapt to changes in the environments.

In the normal situation, the necessary variation to select from is to a high degree present because it has been in use at earlier occasions. Novelty, on the other hand, is dependent upon creation of new variants. Sex produces new combinations of variants, but no *de novo* variants.

De novo creation is not only new traits, but also new features. It has been proposed that such variants can come from another species or even from another kingdom. Margulis has proposed that bacteria are the source of all novelty.

That is just to move the problem of novelty from the eventual user of it to a noninvolved organism. The eukaryote itself has much better evolution mechanisms than the bacteria, so it is much more likely that they can produce their own novelty.

Horizontal gene transfer is essential for evolution generally, but especially for creative evolution. Bacteria use horizontal gene transfer for their antibiotic resistance genes. Eukaryotes however use it more regularly and in much greater extent, as the complete genome is transferred horizontally to combine with another genome at each organism creation.

Organisms are so functional that they must clearly be the products of design processes. There are two kinds of design: top-down and bottom-up. Evolution has erroneously been compared to the top-down variant, which is always driven by a purpose. This belief is clearly a dogma, because there is no evidence that it is true. Quite oppositely, a comparison of the smallest building blocks show that they have a common origin, and that the biological design process is bottom-up.

The most advanced human products are also the products of bottom-up processes, as inventions are as a rule the results of bottom-up design. The difference is that top-down design is the result of a planned process, while bottom-up design is always full of surprises, as it is opportunistic, and the result depends on the randomly available components that the end result consists of.

Top-down design starts with a specification and the end result is precisely known in beforehand, although the detailed mechanisms needed to fulfill the specification are not known.

Bottom-up design is driven by intuition. Comparison to inventions is better for creative eukaryotic evolution than e.g. evolution of languages, that is better for comparison to bacterial evolution and to adaptive eukaryotic evolution.

While selection is essential to avoid degradation and to perform adaptational evolution, the “intuitive evolution that is needed for de novo creation (new features, not only changed traits), novelty is based on protection from selection to let random variants get their chance. Selection is the guaranty that evolution has the right direction by avoiding degradation and ensuring that the selected solutions are among the best possible.

The marked homology of basic features in eukaryotes is the result of extensive extinction at all levels of evolution. And that is also the explanation that the chosen solutions seem to be so perfect.

HUSK, bruk i part 2?: Extensive homology in bacteria is an evidence that they are new, because they do not have the same extinction as eukaryotes (MÅ SJEKKES).

Wolbachia, Moran L: http://www.ncbi.nlm.nih.gov/pubmed/15780005

E-coli, Moran L: http://www.ncbi.nlm.nih.gov/pubmed/2203735

HSP70, Moran LA:

http://www.ncbi.nlm.nih.gov/pubmed/2105497

http://www.ncbi.nlm.nih.gov/pubmed/6201852

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC370002/

Bacteria show by their present morphology that they do not possess evolution mechanisms that are suitable for creative evolution, as they seem to have been essentially unchanged for more than 500 mill. years.

SJEKKET HIT 17. MARS

Creative evolution takes place not because of selection, but in spite of it.

FLETT INN

Mutations are nearly always deleterious. Adaptation may be found among the few beneficial, but innovation found among deleterious.

Opportunism.

Features belong to different levels of organization. Features belonging to the highest level, the mind level, may depend on subfeatures at the subordinate levels, the body, cell, and molecule levels. The complexity is higher the higher the organization level. Evolution mechanisms are the same at all levels, although there may be different weight.

At the body level there are many quite conspicuous features, like flying etc. that are pure adaptations. But there are other ones, like hair, feathers, etc. that are difficult to explain. It is better to start with the molecular level.

GAMMELT: This book has argued that the three main ideas about the origin of novelties in life are all wrong. Evolution takes place on three levels: molecular, cellular and macroscopic. We must differentiate between short term and long term evolution. In the short term, macroscopic evolution is based on recombination of alleles, but long term evolution includes novelties, and these belong to the molecular level, even when they are expressed only on the macroscopic level.

Molecular evolution has its origin almost EXCLUSIVELY at the molecular level. Therefore novelties on the molecular and macroscopic levels have the same origin; it is in both cases molecular. Evolution on the cellular level does normally not differentiate essentially from macroscopic evolution. In the short term it is mostly an evolution of allele frequencies in a population, based on the survival of

organisms (or ?? vehicles). In the long term the evolution on this level is also mainly a product of molecular evolution.

There are however some exceptions to this rule. Cellular evolution may be triggered by cellular processes. The best known cases are the origin of lichens, as they are a symbiosis between two organisms. The resulting organism is usually regarded as a new one, but it could also be seen as intimate cooperation between two organisms, in the same way as microbes in the intestines(?)/stomach of animals cooperate with their host.

There are however also cases when bacterial organisms adapted for life inside eukaryotes (endosymbiosis) change partner. Such a process is a novelty to the new host, but it has been posed (??) that it is also a novelty to life. In these cases it has been proposed that a cooperation started by an initial endosymbiotic event, and that this endosymbiosis gave rise to a lot of molecular evolution. If this is the case, then it is a deviation? from the general rule, that all novelties in life are of molecular origin.

This is one of the cases that will be evaluated in the next part, which is still under work. It will argue that NUMBER ideas about specific parts of evolution are wrong. Many of them must be wrong, because there are conflicting theories. The next part will however evaluate them and argue, based on the principles of evolution presented here, which theories are most viable?.

As the short term evolution is only about reconfiguration (??) of alleles, some researchers, e.g. Dawkins, have argued that mutations are of no importance for evolution in eukaryotes, i.e. the ideal mutation rate is zero.

NYTT: I have tried to find other biologists that agree with Dawkins in this statement, but I have not could anybody that UFORBEHOLDENT accepts this as truth. But James F. Crow said in a 1971 symposium about family planning that “the ideal mutation rate for the human population rate is simply zero”. But he did not hesitate to say that he waited for the immediate reaction: “but if we had a zero mutation rate, we wouldn’t have evolved, we would still be amoebas or viruses or apes, or whatever we were when mutation stopped.” He agreed to this rhetoric by saying that he was only concerned with a few dozen generations. http://files.eric.ed.gov/fulltext/ED049991.pdf

Dawkins did not say that his statement was limited to a few generations of a human population. I see no other source of novelty than mutations, so in Dawkins’ ideal world novelties must originate where his main opponent, Margulis, also says that they have their origin.

SJEKK OM OVERFLØDIG NÅ: It is obvious that only mutations can produce the necessary variation in the long run, and if Dawkins holds that eukaryotes could manage without mutations, then it seems that he agrees with his main opponent Margulis in one thing: All novelty has its origin in bacteria. Nobody disagree that bacteria are best off by having a certain mutation rate, and only mutations can produce real novelty. In the long run variation in eukaryotes will disappear if there is no resupply, and if bacteria were the only creator of mutations, then that would have to be the source.

Sex is undoubtedly a good mechanism for short term evolution, i.e. adaptation to changing conditions. As it is only present in eukaryotes, it may seem that it has taken the role that mutations have in bacteria. And this is partly true. In the short term eukaryotic evolution without mutations is not only possible, but it would have been an advantage to all animals by avoiding a lot of abortions.

But it has also been proposed that eukaryotes are better off without sex. In the ultrashort term the males are just a BELASTNING because they cannot produce any off come (?). Matt Ridley has argued why sex is not lost, by showing that evolution is always needed, also in the very short term (range). According to him, sex is not lost due to the need for evolution to avoid new threats from deceases.

I have here shown that sex is not needed just as a substitute for mutations, and primarily in the short term, but that it is the most important evolution mechanism also in the long term. I also argue that mutations are as important for eukaryotes as they are for bacteria, and that novelty is produced in the ancestors of the possessor of it. Horizontal transfer of genes is important for bacteria, but not for eukaryotes.

It has been proposed that molecular novelties cannot be explained by present evolution mechanisms. This notion has given rise to alternative ways of thinking. Margulis has posited? that intelligence in bacteria are the creators of novelties, but she is still calling it "evolution". Behe is also basing novelty on intelligence, but instead of bacterial intelligence he is basing novelty on divine intelligence. With the mechanisms of evolution that are presented here, there should not be need for any intelligence, as life can create its own novelties.

FLETT INN: It is important to realize that long term evolution is not just an extension of short term evolution. In the short term, adaptations can take place based upon already existing alleles. In the long run new alleles must be created, and the mechanisms used for this are not the same as the mechanisms used for adaptation in the short run / term / range.

FLETT INN: It is nothing wrong with Dawkins' "gene's eye view" of evolution, i.e. to look at evolution primarily as an evolution of allele frequencies. But that holds only for the short run. For the long run there is a need for new alleles, and that is not possible without mutations and the other mechanisms that are not mentioned in his writing.

FRA SA: CONCLUSION

ID is not needed for evolution to work. Margulis' symbiogenesis has played a minor role in some special cases. Classical Darwinism has played some role in some phases of evolution, and Contra-Darwinism has been necessary for most of the innovative evolution. I will come back to what parts of evolution depend of what mechanism, but first I will comment on an observation: (MEN SE OVENFOR)

I have noticed that both of the persons that I have chosen to represent classical Darwinism are working with mind-related biology. Dawkins is a behaviorist and Dennett has consciousness as his specialty. We can ask why I have chosen two scientists working with the mind, but that has not been my intention. These two are the most profound Darwinists living today. But the reason is obvious. Mind-related evolution is probably the one that is most depending on Darwinism. It is also remarkable that every time a computer simulation of evolution is performed, it is behavior that is simulated. I am more interested in the evolution that resulted on the structures that behave than the evolution of behavior. Why is it that every time a Darwinist wants to to show that Darwinism is working they choose behaviorism? It is because…

Why was Darwin so bastant?? about gradualism??

MARGULIS: We know that intelligence can result from an association of a high number of cells, and a bacterial colony is such an association (ref Dennett), but to be of any use the association must be organized in a quite special way. Communication between the cells is quite essential. In our brain there is communication via neurons, up to NUMBER in one single cell. Bacteria have no known communication. If they cam communicate then it can only be to the adjacent cells.

Chapter X: Vertical vs Horizontal gene transfer

Genes are transferred vertically from parents to their progeny, but the mixing of genes from two parents is also a horizontal flow of genetic information. Genes are also transferred horizontally in other ways, e.g. when a viral gene is incorporated in the host's genome.

5 kB:

((Chapter X - Vertical vs Horizontal gene transfer))

NYTT KAP

Genes are transferred from one organism to its progeny by vertical gene transfer. This/It is by definition an intraspecies transfer. There is also another type of transfer: horizontal, which may be both intraspecific and interspecific. Eukaryotes have both vertical and horizontal gene transfer at each creation of a new organism. In bacteria all genes come from one individual, as they reproduce by cloning. After fission, there is just a doubling of the number of individuals, but no recombination of genes.

Bacteria have other mechanisms for horizontal transfer, however, and for these there may be less restrictions. In eukaryotes we use the compatibility of horizontal gene transfer to produce a vial progeny as a definition of the species (MAYR DEFINITION!!!!). If we had used this definition for bacteria, then we would have got a very wide species definition. And it may not have been ENSTYDIG, as we have many different gene transfer mechanisms that may have their own restrictions. For bacteria it is therefore customary (??) to use another distinction. They are usually divided in strains, which have almost identical genes.

The infraspecific gene transfer by eukaryotic sex is often not included in the term "Horizontal gene transfer". It is also called "Lateral gene transfer", LGT, and I will use the horizontal gene transfer that we see in bacteria. It is much more limited, as it is used only for some specific genes. Its primary used is as a way to avoid eukaryotic antibiotics. By LGT a bacterium may have an antibiotic resistance gene transferred from an adjacent bacterium via a plasmid, which is a gene package that is separate from the resident genome. Compared to the eukaryotic horizontal gene transfer, that involves all genes and takes place once for each individual, the bacterial gene transfer is much more restricted.

Plasmids may however be incorporated in the resident genome and vice versa. In that way any gene may in principle be transferred horizontally, and there has been a lot of speculation that LGT has played a great role in evolution. It has also been speculated that bacterial genes have been transferred to eukaryotes.

One of the LGT mechanisms in bacteria is via bacteriophages. As the transferred genes in this case are packaged in a protein "capsid", much like eukaryotic viruses, they have much longer reach than

the plasmids. Due to the similarities to eukaryotic viruses they have also often been termed viruses. In the same way as these they can only reproduce in a host organism.

All viruses may therefore be seen as just a gene package that is transferred from one organism to another. Viral genes have definitely been transferred to eukaryotic host genomes. In *Homo sapience*, there are probably NUMBER genes that have once been transferred via this eukaryotic LGT mechanism. REF?

The viruses have probably once been created by eukaryotes. As they do not have any autonomous reproduction mechanisms, that is the only possibility, unless we assume that they once had such mechanisms, and that they have been lost. REF Forterre?

FRA SA:

SOM INTRO TIL MUTATION As we have seen, inheritance and selection are facts that cannot be denied. They are important for evolution to work. There is a kind of evolution taking place even when there is no variation novelty, but that is not the kind of evolution that most people find interesting, although it is interesting for short term adaptation. What Darwin did was to assume that nature could use the mechanisms that humans use, and that is a fair assumption. But then nature must also work with the constraints that human do.

New combinations of traits are achieved through the horizontal gene transfer, i.e. due to sex, i.e within the species. The set of features cannot be changed. With modern biotechnology it is possible to transfer genes across the species boundary. E.g. EXAMPLE .

In the same way as Darwin speculated that nature could use the same methods as humans are using, Margulis have speculated that nature could have used this mechanism to introduce novelty in a species by transferring it from another species.

The mechanisms that are used are not human inventions. They are mechanisms that nature has designed for some purpose. And in this case the purpose is transfer of antibiotic resistance genes between bacteria, to overcome the ingenious antibiotic systems that eukaryotes are utilizing. As eukaryotes are using the same genetic code as the bacteria are using, the same genes may sometimes be used in eukaryotes. This is when the feature is a standalone feature. EXAMPLE LIGHT. And it seems that nature has used the same technology possibility. LIGHT. SA HIT