RATIONAL UNDERSTANDING

Articles 1 to 42

The first year of posts at Rational-Understanding.com

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INTRODUCTION

"Humanity is a mystery. It needs to be unravelled, and if you spend your life unravelling it, don't say you've wasted your time." Fyodor Dostoevsky.

Most of humanity's problems, such as war, poverty, and climate change, are self-inflicted. Sustainable, long-term solutions can only be found by unravelling Dostoevsky's mystery of humanity. But this can only be done through an honest, rational, objective, and scientific understanding of human nature. I will post one article a week on a Wednesday morning (GMT). These articles will discuss human nature from the ground floor up. They include, therefore, articles on evolution and systems science. The topics that I have covered to date, and will cover in the future, are listed on the Index page. I would recommend reading them in the order listed, as each article builds on those previously published. You can also see the articles in my Quora space at rational-understanding.quora.com. If you would like to receive articles by email, please click the subscribe button. If you have any questions, comments or suggestions, I will be pleased to hear from you. My email address is email@johnachalloner.com.

CHAPTER 1 - EVOLUTION

Article 1 - Schrodinger's Other Paradox

(Posted on Website 5/6/21)(Posted on Quora 5/8/21)

There are significant features of living beings which distinguish them from all else in the known universe and which play a major role in human behaviour. To understand these, it is necessary to enter the realm of physics.

The explanation begins with the concept of time. Our human experience of time is that we move through it in one direction from the past to the present. This is known as "the arrow of time". However, with two exceptions, the fundamental laws of physics do not dictate the direction of travel. They apply equally whether it is from the past to the future or from the future to the past.

The first exception is the second law of thermodynamics. The first and second laws of thermodynamics were developed in the 1850's based on the work of Rankine, Clausius and Lord Kelvin. The first law states that energy cannot be created or destroyed and that the total amount of energy in the universe is constant. The second law states that, in a closed system, i.e., one into which energy cannot enter and from which it cannot escape, as energy is transformed from one state to another, some is wasted as heat. Importantly, however, the second law also states there is a natural tendency for any isolated system to degenerate from a more ordered, low entropy state to a more disordered, high entropy state.

An important feature of the second law is that it defines direction in time and, thus, the arrow of time. The degeneration from a low entropy state to a high entropy states takes place as we travel through time from the past to the future. Were we to travel from the future to the past then the reverse would occur.

In the late 19th Century, the Austrian physicist Ludwig Bolzmann explained that entropy was a measure of the ways in which atoms and the energy they carry can be arranged and the probability of that arrangement. If atoms are arranged in an organized system, for example a crystal lattice, then they are in a low entropy state. However, if they are arranged in a more random and unstructured way, for example in a gas, then they are in a high entropy state. However, the probability of atoms being arranged in a crystal lattice is much lower than the probability of them being arranged as a gas. Thus, an orderly system has low probability and low entropy, a disorderly system high probability and high entropy. Entropy and disorder always increase in the direction of the arrow of time because the probability of a high entropy system is greater than that of a low entropy system.

Professor Brian Cox gives an excellent example in this Youtube video https://www.youtube.com/watch?v=uQSoaiubuA0 . In summary, the random arrangement of sand particles in a heap is far more likely than an arrangement that forms a sandcastle. So, as time progresses it is far more likely that a sandcastle will decay into a heap of sand than a heap of sand will arrange itself into a sandcastle.

Boltzman also suggested that, at some time in the distant past, the universe was in a low entropy state. This was dubbed the "Past Hypothesis" by Richard Feynman. However, Boltzman was unable to explain why this is the case and, to this day, this remains one of the unsolved problems of physics.

The second exception among the fundamental laws of physics is causality. In the direction of the arrow of time, a cause always precedes its effect and not vice versa. Were it possible for an effect to precede its cause the world would abound with time-travel paradoxes.

Attempts have been made to link, entropy, probability, and causality into a unified theory, but they have met with little success. Most authors believe that there is an undiscovered law associated with the initial and final states of the universe. Others believe that the law is associated with the nature of time and this defines the initial and final states. However, as matters stand at present, we simply have no explanation.

In 1944, another Austrian physicist, Erwin Schrodinger, raised an apparent paradox in his book "What is Life" which can be downloaded at www.whatislife.ie/downloads/What-is-Life.pdf . This was not his famous "Cat" paradox. Rather it is the tendency for living systems to become more organized as time progresses, which appears to contradict the second law of thermodynamics. Schrodinger thought that the basis of living matter evading decay to equilibrium was a "code-script" in the chromosomes of the organism "which determined the entire pattern of the individual's future development and its functioning in the mature state". At that time, DNA was yet to be discovered but Schrodinger's work was significant in inspiring the necessary research.

There is no real paradox, however, because living beings are not closed systems. Rather they use free energy from the sun. In striving to maintain their integrity they increase entropy in their surroundings, and, in total, nett decay still occurs. Nevertheless, this anti-entropic behaviour is a distinctive feature of life.

Another distinctive feature of life, or of reasoning beings at least, is associated with causality. In the non-sentient universe, a cause must be certain and not merely possible if it is to produce its effect. It makes no sense to say "The traffic lights may turn green therefore the traffic moves off". Rather, the traffic lights must turn to green. However, it does make sense for a human being to reason that "It is possible there will be an accident therefore I will drive carefully". In this case the possibility of the accident causes careful driving. We are considering a possible risk and behaving in a manner which maintains our integrity.

So, in living beings there is also an association between entropy, causality, and probability but one which is significantly different from that seen elsewhere in the universe. The effect on human nature of this fundamental anti-entropic drive cannot be overstated as will be discussed in future posts.

Article 2 - The Basic Theory of Evolution

(Posted on Website 8/6/21)(Posted on Quora 14/8/21)

Mankind is a consequence of evolution through a combination of random mutation and natural selection. Charles Darwin first postulated this process in 1858 and published it in his 1859 book "On the Origin of Species". At the time, DNA and its role had not been discovered and Darwin referred to a more general principle of inheritance. DNA was first discovered in the 1860s by the Swiss chemist Johann Friedrich Miescher, but its central role in the evolutionary process was not understood for almost a century thereafter. In the early 1950s Rosalind Franklin produced an Xray photograph of DNA which, in 1953, enabled James Watson and Francis Crick to discover its double helix structure. This in turn enabled them to explain how it carries and replicates genetic information. Since that time, a substantial amount of scientific evidence has accumulated in support of Darwin's theory.

An organism's genes are sequences in its DNA which either directly or indirectly enable the manufacture of molecules whose function determines the organism's characteristics. These characteristics, in turn, determine the organism's ability to survive and reproduce within its environment.

Random mutations are changes in the DNA sequence and, thus, in the organism's genes. They are an example of the impact of entropy on life. They can be caused by errors in DNA replication, by exposure to damaging chemicals, by exposure to radiation or by the insertion or deletion of segments by mobile genetic elements such as viruses. Mutations are entirely random and are not in any way pre-determined to benefit the organism. Most mutations (about 70%) are, in fact, harmful and the remainder either neutral or weakly beneficial.

Natural selection means that organisms with hereditary characteristics most suited to their environment, i.e., the fittest, are most likely to survive and reproduce. Organisms which are poorly adapted to their environment are less likely to do so. Thus, the genes of the fittest organisms are those most likely to be passed on to offspring, to propagate through the population and, thus, predominate. It is through this selection process that life resists entropy.

It is important to note that mutations are not a consequence of changes in the environment. Rather, they pre-exist within a species' variable genome and cause diversity in its population. When the environment changes, most of a population may find itself unfit and die off. However, a small proportion carrying certain mutations may find itself to be fitter in the new circumstances and may, therefore, survive and propagate more successfully than it had in the past.

Most evolutionary biologists agree that, for the majority of species, natural selection operates at the level of the individual organism, i.e., inherited characteristics will cause the organism to behave in a way which maximises its own, and only its own, chances of survival and reproduction. However, there are a small number of species in which individuals display what has been referred to as "altruism". That is, they will suffer a degree of disadvantage to their own survival and ability to reproduce to improve that of other members of their species. This has given rise to a number of competing theories of natural selection that I will discuss in my next post. However, before moving on to that topic, I would like to mention three important points.

Firstly, there is a difference between the meanings of "altruism" and "co-operation". When an individual behaves altruistically, it acts in a manner which benefits the survival and reproductive chances of some other individual or individuals. This may disadvantage the former and there is not necessarily a payback. However, when an individual behaves co-operatively there is a payback. This is a subtle difference but of great significance in evolutionary theory. Do the small number of species referred to above behave altruistically or do they behave co-operatively? If the latter, then what is the payback?

Secondly, human beings differ from other species in several important ways. We have large brains with highly advanced cognitive skills which, among other benefits, enable us to identify opportunities and risks and to predict outcomes. We are also social animals and form groups. These groups have diverse cultures, i.e., ways of organising themselves, and we pass aspects of our cultures from one generation to another and from one group to another through social learning.

Finally, as systems grow ever more complex, they display emergent properties, i.e., properties of the system which are not held by its individual parts. Life is a collection of systems of increasing complexity, e.g., cells, multi-cellular organisms, groups of organisms, species, and eco-systems. As the level of complexity increases it can be expected that system properties will emerge. Thus, it is not necessarily the case that a property governing natural selection at the cellular level will be the only property governing it at more complex levels. Other, emergent properties may come into play.

Natural selection, particularly in the case of human beings, is not a straightforward process therefore, as will be discussed in my next post.

Article 3 – Individual Level Natural Selection

(Posted on Website 26/6/21)(Posted on Quora 20/8/21)

An understanding of natural selection is important to dispel the myth of Social Darwinism. This unfortunately named myth, which flourished in the late 19th and early 20th Centuries, was applied to human society. It held that the strong prosper whilst the weak founder.

Natural selection may occur at several biological levels: the level of the individual organism; the level of the kin group, i.e., a family of organisms related through reproduction; the level of the social group; at species level, or even at ecosystem level. These biological levels form a hierarchy with individual organisms at the bottom and ecosystems at the top.

Selection at each of these levels can be understood as competition between organisms, kin groups, social groups, species, or ecosystems for the resources in a particular environment. The one which best fits that environment is the one which will survive, propagate and, ultimately, predominate.

Biological selection levels can be understood as follows. Given two organisms, kin groups, social groups, species, or ecosystems in a particular environment, which is fittest and therefore the most likely to survive, propagate and predominate?

There are two main theories of natural selection. Firstly, that selection only occurs at the individual and kin levels. Secondly, that selection occurs at multiple levels. All theories accept that natural selection occurs primarily at the level of the individual organism, but opinions differ over whether it can also occur at higher biological levels and where the cut-off point is as we rise up through those levels.

Because the subject is complex, it will be split over five posts, one for each biological level beginning with individual level selection.

Darwin believed that natural selection occurred primarily at the level of the individual organism, i.e., that a trait in an individual organism which made it fitter in the context of its environment would enable it to survive and reproduce better than others without that trait.

An organism's environment comprises not only the physical world but also other members of its own species and members of other species. This can lead to more complex selection processes such as sexual selection and co-evolution. These processes take place at the level of the individual organism, nevertheless.

Sexual selection can occur in organisms which reproduce sexually. Generally, partners in procreation are chosen based on their appearance of health and success. This appearance suggests that they do not carry adverse genes which may prejudice the survival of any joint offspring. In many species this has led to the evolution of traits which overtly demonstrate health and success, for example the plumage of birds. Clearly, successful partner selection will propagate the genes on which an organism relies for its survival and will eventually become a species trait, therefore.

There are, of course, many other traits and ways of displaying them which improve an organism's likelihood of mating, an example is the support that one parent provides for the other while offspring are being reared.

The environment of any species includes other species with which it interacts. Thus, new traits in one species can evolve in response to new traits in another and vice versa. This effect is known as co-evolution, a concept first proposed by ecologists P.R. Erlich and P.H.Raven in 1964. One example is the evolutionary arms race between a predator, in the form of improving predatory skills, and its prey, in the form of increasing ability to avoid predation. Similarly, a

plant and its pollinator can co-evolve traits to the point that there is a clear interdependence between the two species. Examples of co-evolution are widespread in all natural ecosystems.

Article 4 - Kin Level Natural Selection

(Posted on Website 3/7/21)(Posted on Quora 28/8/21)

An early precursor to kin selection was the theory of inclusive fitness. This was proposed by J.B.S. Haldane in 1932 but developed and named by William Donald Hamilton in 1964. Hamilton's theory is the basis of Richard Dawkins famous book, "The Selfish Gene" and argues that it is the survival and reproduction of genes, rather than organisms, that is the principal driver behind evolution. As a result, an organism can display altruism if this leads to a greater propagation of the genes it holds than would be the case if it acted solely out of personal self-interest. This relies on the individual organism being able to identify those genes in others. There are two main ways of doing so. Firstly, by knowing its kin or related family members and, secondly, by recognising external characteristics displayed by others with the relevant gene. However, there are several difficulties with the latter, for example whether the gene does in fact express itself in the form of recognisable traits and whether the organism can see those traits. Because such traits are often only skin deep, there is the potential for imposters to display them to benefit from altruistic behaviour.

The more specific theory of kin selection developed from Hamilton's work. This theory states that an organism can behave in a way which maximises the propagation of its genes by behaving in an altruistic manner towards close relatives likely to hold the same genes.

Individuals in a species have approximately 99% of their genes in common. The remaining 1% constitutes their variable genome which accounts for physical variation within the species. The fitness of the 99% is well established and, thus, only genes in the variable genome, including any mutations, compete to propagate themselves. 50% of the variable genome is inherited from each parent. On average, therefore, an individual will share 50% with each parent, child, and sibling and, on average, 25% with each grandparent, uncle, aunt, nephew, niece, or grandchild. The theory of kin selection proposes, therefore, that it is advantageous in terms of the propagation of the variable genome to favour the survival and reproduction of three siblings over that of the self. Thus, genetically driven behaviour which facilitates this will propagate within the species.

Kin selection behaviour relies on the ability of an individual to recognise its kin. Nurture kinship, i.e., having raised, been raised by, or having been raised with another nuclear family member, is clearly an important factor, and can be observed in other species. However, the recognition of more remotely related kin, e.g., aunts, uncles, and other members of the extended family, requires considerable cognitive skill and, so, is probably limited to the more intelligent species.

As individuals become more remotely related, it only becomes possible to recognise kinship through physical appearance and, in the case of humans, cues such as language, dress, beliefs, etc. Thus, kin selection suggests that an individual is more likely to behave altruistically towards others of similar appearance and culture because these factors also suggest a similar variable genome.

Intuitively, kin selection operates within humanity. There is also a great deal of objective evidence for its presence. For example, research has shown that non-reciprocal help is far more likely to occur in kin relationships than non-kin relationships. It has also been shown that, when

wills are written, there is a close correlation between kinship and the proportion of wealth passed on.

A small number of species can be described as eusocial. These species co-operatively rear their young across multiple generations. They also divide labour through the surrender, by some members, of all or part of their personal reproductive success to increase the reproductive success of others. In this way they benefit the overall reproductive success of the group. Eusociality arose late in the history of life and is extremely rare. Only nineteen species are known to display this characteristic: two species of mole rat, some species of brine shrimp, insects such as wasps, bees, and ants and, of course, mankind. In eusocial species, group level natural selection takes place due to competition between groups. In the case of the eusocial insects, the group is the nest or hive. Individual workers will lose their lives in the interest of the hive as a whole. It can be argued that this form of behaviour in insects is entirely altruistic and an inherited form of kin selection. However, in the case of humanity, this argument does not hold true because human groups display both kin altruism and non-kin co-operation.

However, there remain doubts whether individual and kin selection fully explain natural selection and human social behaviour since natural selection may also occur at higher biological levels. This will be explored further in subsequent posts.

Article 5 – Group Level Natural Selection

(Posted on Website 10/7/21)(Posted on Quora 4/9/21)

There has been much academic debate between evolutionary biologists, such as John Maynard Smith, W. D. Hamilton, George C. Williams, and Richard Dawkins, who advocate individual level selection plus rare cases of kin selection, and others, such as David Sloan Wilson, Elliott Sober and E.O. Wilson, who advocate multi-level selection. However, a consensus is beginning to emerge that a process of natural selection occurs at each biological level, i.e.: the genome, cell, organism, family, group, species, and ecosystem. Due to emergent properties, i.e., properties held by systems which are not held by their component parts, the process of natural selection at each level can differ. However, the process at each level tends to be undermined by stronger selection processes at lower levels.

E.O. Wilson described multi-level selection using the analogy of Russian dolls. The various biological levels can be likened to nested containers for competing genes. To varying degrees, the genes rely on each container for their survival and propagation. Thus, higher level selection can be a significant factor in some species and has probably played a part in human evolution.

Selection at cell level does occur within an organism. For example, recent research has shown that, in certain circumstances, cancer cells can evolve from healthy cells under pressure from the organism's immune system. However, this form of evolution is normally a dead end. The cells act together to form the organism which is a container that they rely on for their continued existence. There may be billions of cells acting together over thousands of cell generations. However, evolution has shaped their genome to behave altruistically and, ultimately, the vast majority die out with the organism. Typically, only two or three carry the organism's genes forward through reproduction. Thus, natural selection operates at the level of the organism rather than at the level of the cell.

Group selection forms part of the theory of multi-level selection. It is a natural selection process whereby traits evolve due to the fitness of a group of organisms, who are not necessarily kin, to their environment. The theory of group level natural selection proposes that groups which co-operate are more likely to be successful than those which do not. An individual will see it as beneficial to its own survival and ability to reproduce if it supports the group through co-

operation. The concept has a long history. Darwin wrote on how groups can, but do not necessarily, evolve into adaptive units. This view was generally accepted until the mid-1960s. It was then criticised in favour of the view that evolution was based solely on the fitness of the individual. However, with advances in the science of multi-level selection, it is now returning to acceptability.

Both kin selection and group selection have, in a complex and inter-related way, had a part to play in governing human evolution. Kin selection has had a stronger influence on us than group selection. We will, for example, tend to favour a brother over an unrelated colleague. However, it is not the only factor which has determined our social behaviour. Charles Goodnight, in comparing the two, concludes that kin selection and multi-level selection should be considered complementary approaches which, when used together, give a clearer picture of our evolution than either can alone.

Together, kin and group selection explain some of the moral dilemmas that we face and how we handle them. There is often a conflict between the immediate interest of the individual, those of the individual's kin, and the interests of the individual and its kin via the group. These interests, all of which are inherited, manifest themselves both in the form of competition between members of a group, and in the form of competition between groups. The individual must balance individual level competition and group level co-operation in a way which optimises their survival and the propagation of their genes. The way that we do so is explained by Freud's model of the human psyche, i.e., the id, which is concerned with immediate personal interest, the super-ego which is concerned with group interest, and the ego which moderates between the two. However, because group selection is relatively recent, the super-ego is probably an inherited pre-disposition whose detailed contents are acquired through social learning. Freud's model is relatively universal in human beings and is probably an innate consequence of multi-level selection, therefore.

Politics provides another example which demonstrates the existence of multi-level selection in humanity. The ideology of right-wing parties is one of individualism whilst that of left-wing parties is one of collectivism. Thus, we have the same dilemma in our political institutions both at a national level and at international level. Multi-level selection pervades humanity, therefore, from our individual psyche to our highest institutions.

In my next post I will give further examples of the influence of ~~kin and~~ group level natural selection on humanity.

Article 6 – The Influence of Group Level Natural Selection on Humanity

(Posted on Website 17/7/21)(Posted on Quora 11/9/21)

One of the main criticisms of group level natural selection has been that we know relatively few examples in which group behaviour has led to biological evolution. However, among them is one now regarded as being a rare and significant evolutionary transition: the evolution of the human brain. Another objection has been that groups reproduce and die off at a far slower rate than individuals and, thus, biological evolution driven by group behaviour will take place at a similarly slow rate. However, this is contradicted by the relatively rapid evolution of our brain.

The human brain differs from that of our ancestors not only in size but also in attitudes and skills. Examples of the latter include our relative docility and reduced aggression, our language, the cognitive skills necessary for social learning, and the ability to internalise norms. Traits associated with human morality are automatic and emotional rather than conscious and deliberative and so are also likely to be inherited. All cultures enjoy artistic expression, and

this has all the hallmarks of a genetically evolved adaptation. Finally, Wilson, Timmel and Miller, in their study of cognitive co-operation found that groups perform better at problem solving tasks than individuals, and that the gap increases with the difficulty of the task. In other words, groups perform better than individuals when solving complex problems.

Large brains consume a great deal of energy, approximately 20% in humans. Their growth probably began approximately 2.6 million years ago, when our previously vegetarian ancestors shifted to a higher reliance on meat. At the same time, it became more efficient to occupy a campsite and send out hunters than for the entire tribe to hunt. In return, the hunters benefitted from the protection of the campsite in which their young were raised. Family based social groups did exist prior to the shift to meat eating but the changes brought about by meat consumption began a process of increasing co-operation between families, initiating a shift to less kin-reliant groups.

An important factor in whether a group forms is its ability to benefit its members. Unlike kin selection, each member requires reassurance that the others have a similar outlook and takes their reciprocal support as evidence. Co-operation requires the individual to have an understanding of other group members and their motives together with considerable negotiating skills. It also requires an ability to recognise exploitation of the group by individual members; this necessitates moral systems, and processes for dealing with intransigence. It is important to mention that competition between individual group members and families is not extinguished but merely suppressed.

Within groups a culture develops comprising several memes, i.e., agreed values, norms, beliefs, and symbols. Values are those things that we hold "good", norms are forms of behaviour expected from group members, beliefs those things that we hold true, and symbols are ceremonies, ornamentation, etc., which identify us as being members of the group. Memes are subject to a process like that of gene selection. They will survive and propagate if they are fit for their environment or fall into disuse if they are not. It is not necessary, however, for a group to become extinct for a culture to expire. Nor is a culture necessarily linked to an ethnic group as multi-ethnic cultures are also possible.

Culture propagates from generation to generation but, unlike biological inheritance, it can also propagate from group to group through social learning. If a culture is successful, it can be transferred by imitation or by coercion. Thus, cultural evolution takes place through the exchange of ideas and practices, with the most successful cultures surviving and propagating whilst the less successful ones expire. This process is far more rapid and adaptive to changing circumstances than biological evolution. Significant changes can occur within a few generations or less. This has, for example, allowed us to populate different environmental niches, from the arctic to the desert.

The evolution of our large brains has been very rapid and is thought to have been brought about by a process of positive feedback between cultural evolution and biological evolution with the former taking the lead. As groups became more complex and effective, they needed the greater skills and pro-social tendencies provided by larger brains. These, in turn, enabled groups to become yet more complex and effective. Because groups that co-operated well were more successful than those that did not, the individuals with the brains, skills, and attitudes needed to facilitate this were subject to natural selection and, thus, came to predominate. Although this process is speculative, mathematical modelling by Luke Rendell et al., of the University of St. Andrews, has shown it to be capable of producing strong selection pressures and the rapid evolution of biological traits.

Successful group co-operation relies on individuals knowing one another and maintaining stable social relationships. Limits on an organism's ability to do so mean that there is a

maximum group size which varies from species to species. In the 1990s, the anthropologist and evolutionary psychologist, Robin Dunbar, found a correlation, in primates, between brain size and social group size. From this he proposed a maximum social group size for humans of about 150.

In the last 5000 years, human society has become more complex. It now comprises numerous inter-dependent groups, each with its own specific purpose. They are not necessarily kin groups and are often based entirely on mutual co-operation. Some even prohibit nepotism. Most of us now occupy cities whose populations can be in the tens of millions. Cities are co-operative groups on a very large scale. We even describe them as organisms, using phrases such as "the beating heart" or "the veins and arteries". There is no doubt that urbanisation, and the greater specialisation and co-operation that it brings, have resulted in an explosion in our population. Although this is probably a result of cultural evolution, in time, biological adaptations may follow.

Biological evolution, even when accelerated by feedback, is a very slow process. We would, therefore, only expect to see culturally induced genetic changes after many generations and, only then, in response to stable and long-lasting cultural elements. The technology to detect such changes has only recently been developed and evidence from the past is scarce. Historical changes are difficult to detect, therefore, which may account for the relatively few examples of group selection.

Most of the changes arising from group behaviour that we can observe are cultural rather than biological. It has been argued that, for humans, cultural evolution has now replaced biological evolution. However, whilst cultural evolution is clearly important, there is no reason to believe that the feedback process, which also affects our biological evolution, has been broken. This raises many questions about our future, of course, such as "Is the process accelerating?" and "Where will it ultimately lead?".

Article 7 – Species and Ecosystem Level Natural Selection

(Posted on Website 24/7/21)(Posted on Quora 17/9/21)

Species Level Natural Selection

Natural selection at species level relies on there being a geographical separation between groups within a species so that they can follow their own independent evolutionary path. Eventually, the genomes of two groups will become so different that they have difficulty interbreeding. For example, a male donkey and a female horse will produce a sterile mule. Ultimately, they will become separate "child" species and incapable of interbreeding. This process is known as speciation.

Population pressure among successful "child" species can cause them to migrate and come into contact with "sibling" species. There can only be one species in each ecological niche. If there are more, then competition for the niche will result in the fittest species, normally the migratory one, prospering and the least fit one becoming extinct. It is theoretically possible for this process to take place but, because millions of years would be required and there is, therefore, relatively little evidence of it, not all evolutionary biologists believe that it does. It may, however, have occurred among hominins.

Hominins are human-like species that evolved after our predecessors and those of the chimpanzees speciated between 12 and 5 million years ago. Since then, there are believed to have been 15 to 20 species of hominins, all of which, apart from our own, have become extinct. The migration of homo sapiens from Africa, where we originated, into Asia may have resulted

in the demise of Homo Erectus, and our migration into Europe in the demise of the Neanderthals. Neanderthals were a sub-species, and some are known to have been subsumed by modern humans through interbreeding. This is confirmed by the existence of part of the Neanderthal genome in non-African branches of our species. However, most were probably outcompeted by modern humans. It is unclear whether Homo Erectus was an entirely separate species and became extinct or whether it too was subsumed in a similar way.

Presently, it is difficult to identify any behavioural traits which may have evolved in modern humans as a result of species level selection as this would require a comparison with other, now extinct, hominin species.

Ecosystem Level Natural Selection

The final level in the organisation of life comprises the world's ecosystems. These are the final, and largest, Russian dolls on which individual organisms depend for their survival and ability to procreate.

A natural ecosystem comprises all the non-living ingredients for life, e.g., a source of energy, water, minerals, atmospheric gases and so on. It also comprises numerous species, each of which has its own niche or role to play, and each of which interacts with other species to form a complex system. Each ecosystem is adapted to its own habitat, and these can be highly variable to include, for example, freshwater, marine, tropical, mountainous, and desert habitats.

The roles played by species are classified using the food chain. Generally, there are only up to 4 or 5 levels, which typically comprise:

(1) Producers: organisms that produce food for all other species in the ecosystem, e.g., green plants which convert inorganic substances into organic material through photosynthesis.

(2) Primary consumers or herbivores: animals that consume plants, e.g., sheep and goats.

(3) Secondary consumers or carnivores: animals that feed on others, e.g., the big cats and sharks.

(4) Tertiary Consumers. These are also carnivores but ones that consume other carnivores, e.g., polar bears and crocodiles.

(5) Decomposers: organisms which feed on dead organic material and help in the recycling of nutrients, e.g., fungi and earthworms.

The flow of energy in a natural ecosystem is largely unidirectional. Plants, which take their energy from sunlight, were the first to evolve and altered the environment, thereby permitting the evolution of herbivores, which take their energy from plants, followed by carnivores, which take their energy from herbivores.

Some species do not fit neatly into these classes. For example, humans are omnivorous, consuming both animals and plants. There are also parasites which feed on a living host. Nevertheless, the above classification is a helpful guide.

All levels of natural selection exist within an ecosystem: individual, kin, group, and species. However, for ecosystem level selection to be possible, there must be more than one ecosystem competing to control the same habitat. This is not apparent in the natural world. Rather, it appears to have been introduced by mankind, as will be discussed in the next post.

Article 8 - The Human Economy

(Posted on Website 31/7/21)(Posted on Quora 24/9/21)

When we speak of competition and ecosystems we speak of "competition within ecosystems" rather than "competition between ecosystems". In this post, I will argue that competition between the human economy and natural ecosystems can be regarded as an example of ecosystem level natural selection. I would like to emphasise, however, that this is purely speculation on my part, based on human history and anthropology.

Historically, human society has progressed through the following stages:

(1) Hunter/gatherers: small tribes which gather food and other materials from the natural environment to satisfy their needs. They may migrate permanently as resources become depleted or relocate temporarily to exploit locations of known seasonal abundance. Apart from their hunting and gathering activities, they do not greatly alter their environment. Such people can, therefore, be regarded as a part of the natural ecosystem.

(2) Pastoral communities: small tribes or groups that acquire their food and materials from a particular species of animal, usually flocks or herds of herbivores. Reindeer, for example, provide not only a source of meat but also pelts for clothing and shelter. Pastoral communities usually migrate with the herd and help to defend it from other predators. This stage sees the emergence of the human economy and, to a limited extent, modification the natural ecosystem.

(3) Agricultural communities: larger settled groups who cultivate selected species of plants and domesticate certain animals. In doing so, they significantly modify the natural ecosystem. Examples of modification include land clearance, and the selective breeding of favoured animals and crops. An agricultural community must also defend and protect these animals and crops from natural predators. Such communities have significant effects on the natural ecosystem, e.g., the depletion of soil fertility, overgrazing, etc.

(4) Industrial communities: these have undergone substantial reorganisation to enable them to meet their needs by manufacturing goods from non-living materials. In doing so they have, in part at least, bypassed the natural ecosystems upon which the satisfaction of their needs previously relied. Examples include stone and concrete building materials, the use of technology, and energy from fossil fuels.

This process has taken place over many millennia leaving very few truly natural, as opposed to human dominated, ecosystems. As this development progressed the following features have emerged:

(1) What might be described as "elimination of the natural middleman". Resources previously supplied by a natural ecosystem are being replaced by those acquired directly from the habitat. For example, the pelts, leaves and timber previously used for shelter are now replaced by industrially manufactured bricks and plastics.

(2) The hunting down and elimination of natural predators such as wolves, etc.

(3) Pollution and over-exploitation leading to a high rate of species extinction.

(4) Larger human group sizes together with increasing specialisation and complexity of organisation.

(5) Increasing population.

(6) Centralisation of the population in ever larger communities. The industrial revolution, for example, caused a significant movement of people from the countryside to the cities. This

process is continuing as industrialisation spreads across the world. The UN World Cities Report of 2016 stated that the number of mega-cities, i.e., cities with more than 10 million inhabitants, increased from 14 in 1995 to 29 in 2016.

There are similarities between the present human economic system and a natural ecosystem. This is reflected in the language we use, such as “niches” and “competition”, to describe both. Like natural ecosystems, our economy also has “specialists” acting as producers, consumers and decomposers and there is a complex interdependence between them.

There also exist significant differences. Energy flow in a natural ecosystem is uni-directional but in the human economy it is bi-directional. All groups are composed of human beings whose needs are fulfilled by the economy as a whole. Some organisations provide the energy and materials needed by others but there is also a reverse flow to satisfy the needs of the people who operate them. We also put effort into caring for our animals and crops. In that sense, the human economy is more co-operative and less exploitative than a natural ecosystem.

In natural ecosystems, population growth goes through a lag phase, a growth phase and a stable phase. This is dictated by the availability of resources. The same is true of the human economy. At each stage in our social development there was an initial spurt in population growth followed by a levelling off as constraints on resources came into play. However, a new growth phase has always been initiated by our ability to innovate and improve our access to resources.

Our economic system, although fraught with imperfections, is now essential for the survival of our large population and has priority in our psyche. Some elements of this economy function independently of natural ecosystems but inflict considerable pressure on them. Others comprise modified and subsumed natural ecosystems. The remaining elements are entirely reliant on natural ecosystems, for example, the air we breathe, gut bacteria to digest our food and the ability of natural ecosystems to regulate the climate.

Our present economy may be a transition between a natural ecosystem and something yet unclear. However, there is a need to place less burden on the natural ecosystems which gave birth to us and for greater co-operation within our economy. Recently, we have begun to speak of the “value” of ecological “goods and services” and it seems that the endpoint may be to subsume natural ecosystems into a highly co-operative economic system managed and controlled by humanity. The questions are, of course, whether the nature of evolution makes this inevitable or whether it is a peculiarity of the human species. Are we confident that we can make such a transition? If not, how can we ensure that sufficient natural ecosystems remain as insurance against failure?

In my next post, I ask the question “Is mankind still evolving?” and provide a summary of multi-level selection theory.

Article 9 – Is Mankind still Evolving? A Summary.

(Posted on Website 7/8/21)(Posted on Quora 1/10/21)

The question of whether we are still evolving can be answered if we look at multi-level selection theory. Our continued evolution relies on there being long-standing, not merely transitory, selection pressures which cause individuals with certain mutations to better survive and procreate than others. Because of our large population, any changes will take far more time to predominate than was the case when we numbered in the tens of thousands. Even when accelerated by feedback between cultural and biological evolution, biological change will still be very slow.

Individual level Selection. In recent years, social values, and norms, e.g., “thou shalt not kill”, have reduced individual level competition. Improved medical, agricultural, and economic practices have significantly reduced the external selective pressures on mankind. On the other hand, globalisation and increasing population density is leading to an increased risk from pandemic diseases. These are highly significant factors in natural selection at the individual level and, together with our reliance on vaccination and other medical technology, they are likely to lead to changes in our immune systems. An example of recent selection at individual level is the predominance of sickle cell anaemia in populations exposed to malaria. When the genes causing this disease are inherited from only one parent, they act as a defence against malaria but, when they are inherited from both, they result in anaemia.

On balance, therefore, it seems likely that natural selection at individual level does still exist but to a much lesser extent than in the past. If so, then natural selection may have shifted more towards the higher levels described below.

Kin Level Selection. We do of course continue to favour our kin, but it is notable that, in the West, the large extended families of the past are in decline and that families are now largely nuclear, i.e., parents and children. There have been several experiments involving raising children outside of nuclear families, e.g., Israeli Kibbutzim, but all have failed. Nuclear families exist throughout the animal world and are strongly established in our genetic inheritance. It is unlikely, therefore, that there will be any change in the future which might lead to genetic adaptation.

Group Level Selection. Global society is moving towards one in which destructive competition between groups is ever more unacceptable. Unfortunately, wars and the abuse of one group by another continue to take place. There also remains an element of cultural competition. However, due to increasing global organisation and centralisation, despite the existence of cultural differences between groups, based primarily and belief, there is also a process of convergence towards a monoculture taking place. We may still be evolving slowly due to group level selection, but again, not at the pace experienced in the past.

An example of human evolution due to group level selection is the gene that controls lactase production. This enables us to consume milk into adulthood. It emerged among tribes with a long history of cattle herding, and appears to be spreading through the global population alongside the consumption of dairy products.

Species Level Selection. Although species level selection may, in the past, have taken place between hominins, Homo Sapiens is now the only one remaining. Our closest relatives are the chimpanzees and bonobos, and we face no interspecies competition for our ecological niche. Different ethnic groups are currently experiencing different growth rates. However, they are all members of one species. Due to globalisation, the finite size of the planet, and ease of travel, there is ever less separation between them. We are almost certainly no longer speciating and, therefore, not subject to species level selection.

Eco-system Level Selection. The human economy is evolving culturally at a very rapid pace and competition between it and the natural eco-systems is fierce. However, it is only enduring changes that will lead to human genetic evolution. An example may be our ability to communicate using technology. Currently, this seems to be the strongest selection pressure on human evolution. Our economy or artificial eco-system is altering the natural environment and we, in turn, are adapting, first culturally, but ultimately genetically, to these changes.

Of course, if an existential catastrophe were to occur, then this situation would change. Those best suited, by random mutation, to the post catastrophic circumstances may survive and continue to procreate. Group separation, and thus speciation, would re-emerge and biological evolution would pick up speed due to new, stronger pressures and the dramatically reduced

population. Individual level selection is also likely to come to the fore, once more. We do not know the future nor the genetic mutations that we carry, and so, cannot predict the outcome. However, some of the risks that we face are clear. Climate change and failure of food supply are two examples. It would, therefore, be sensible to act now to eliminate these risks.

This is my final post on evolution. I hope that you have found it interesting. In my next post, I will begin a series on human needs and how they motivate our behaviour. This next series is underpinned by the evolutionary theory discussed so far.

CHAPTER 2 – HUMAN NEEDS & SATISFIERS

Article 10a – Maslow's Hierarchy of Needs

(Posted on Website 14/8/21 combined with 10b)(Posted on Quora 8/10/21)

Human needs are internal physiological or psychological states which can be satisfied by interaction with our environment. They form the basis of our behaviour. For example, if we are hungry, then we try to find food. In his 1943 paper, "A Theory of Human Motivation", the humanist psychologist, Abraham H. Maslow was the first to formally identify our needs and his suggestions are listed below.

(1) **Physiological Needs**. These are health and physical wellbeing and are satisfied by air, food, water, shelter, clothing, sleep, sex, etc.

(2) **Safety and Security**. A feeling of safety and security includes freedom from fear and can be satisfied by employment, social support networks, insurance, property ownership, financial security, family, and social stability.

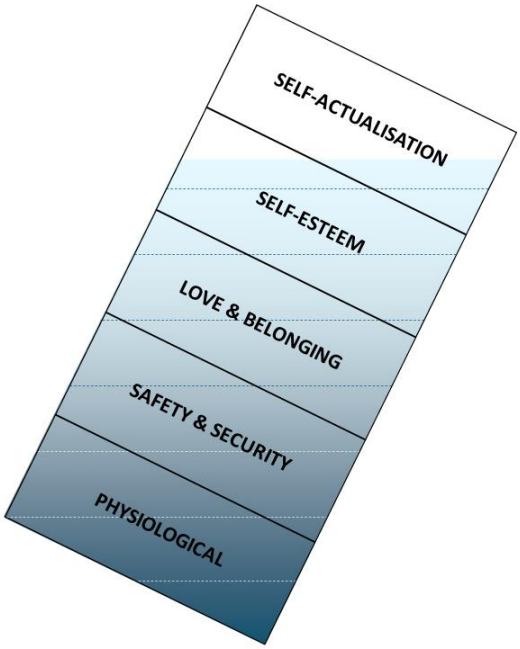
(3) **Love and Belonging**. A sense of connection with others which can be satisfied by being accepted as a group or family member, by friendship, and by intimacy.

(4) **Self-Esteem**, i.e., possessing a sense of personal value, confidence, self-regard, mastery and the feeling of being unique. It can be satisfied by achievement, recognition by others and the respect of others.

(5) **Self-Actualisation.** This means being fully oneself and possessing morality, creativity, spontaneity, acceptance, experience, purpose, meaning, and inner potential. Self-actualisers can appear in any field, for example Einstein in the field of science, Roger Federer in sport, Michelangelo in art and, if the myths are true, the Buddha in spirituality.

Maslow explained that human behaviour is motivated by a requirement to satisfy these needs. Without them behaviour would not exist, and we would be unable to function.

According to Maslow, these needs form a hierarchy with physiological needs at the bottom and self-actualisation at the top. People must satisfy needs lower in the hierarchy and ensure that this satisfaction is sustained before effort is expended on higher needs. He does, however, qualify this by referring to degrees of relative satisfaction. It is not the case, he argues, that a need only emerges when those lower in the hierarchy have all been fully satisfied. Rather people are usually in a state where all their needs are, to a greater or lesser degree, only partially satisfied. Furthermore, the level of satisfaction of their needs tends to decrease as we ascend the hierarchy. A higher need may not be apparent at all if lower needs are not adequately satisfied. However, it will emerge by degrees as their level of satisfaction increases. The diagram below represents an analogy in the form of a drinking glass. Our needs are represented by the bands around it. Water, which represents the effort put into satisfying our needs, steadily fills the glass. At first, all the effort goes into satisfying physiological needs. However, as these are close to being fully satisfied, some of the effort goes into safety and security needs. As these begin to be fully satisfied, some goes into love and belonging, and so on. Once a need is satisfied, however, we do not ignore it but continually return to it to ensure that it remains so.



Maslow's paper was instrumental in changing the focus of psychologists from aberrant to normal behaviour. Unfortunately, it was largely speculative and based on personal observation. Furthermore, subsequent research does not support the position of each need in a hierarchy. Not all psychologists agree with his theory, therefore. It is probably too detailed and fails to recognise inherited and learned individual differences and those arising from culture.

In my next post I will, therefore, describe how Maslow's original concept has been developed by others.

Article 10b – The Hierarchy of Needs Reviewed

(Posted on Website 14/8/21 combined with 10a)(Posted on Quora 15/10/21)

Several alternative models to Maslow' hierarchy of needs have been suggested, for example, the ERG (existence, relatedness, and growth) model proposed in 1972 by Clayton Alderfer. Alderfer's existence needs correspond to Maslow's physiological and safety needs, his relatedness needs to social belonging and self-esteem, and his growth needs to self-actualisation. He proposed that individuals can be motivated by several levels of need at any one time, but that their relative priority can change according to circumstances and the individual's way of thinking.

Based on the evolutionary theory discussed in my previous articles, I would, however, suggest that the following modified version of the ERG model more accurately reflects reality. In this model I refer to "behavioural predispositions". These are states of mind which do not necessarily lead to immediate action, but which prepare us to act when the opportunity to satisfy a need arises. They are like bowstrings; drawn by a need and released by an opportunity. However, if a need is sufficiently pressing, we will attempt to create those opportunities.

(a) **Existence and procreation needs**, i.e., Unsatisfied physiological and safety needs, provide the strongest behavioural pre-dispositions. All living things, since they first appeared, have physiological needs. These needs have the longest history, the most firmly established presence and are responsible for our strongest behavioural predispositions. This means that there is a hierarchical relationship between existence needs and all other needs and that they must be adequately satisfied before we attend to other needs.

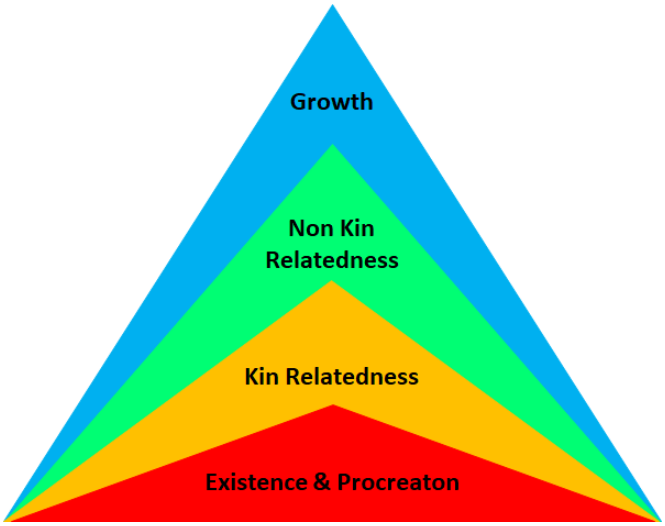
(b) **Kin relatedness needs,** if unsatisfied, provide the second strongest predispositions. Kin level selection is shared only by animals with the cognitive ability to recognise their kin and apply to the family part of our relatedness needs. They emerged more recently in evolutionary history, and the predispositions they endow are, therefore, somewhat weaker, than those for individual level selection. Family members capable of procreation, i.e., the younger members, tend to be favoured, but elders are also valued for the support they give. The predispositions provided by relatedness needs vary in strength among humans. In extreme cases, individuals, such as those with anti-social personality disorder (ASPD), may have no predisposition to family relationships at all.

(c) **Non-kin relatedness needs,** if unsatisfied, provide the third strongest predispositions. Group level selection is limited to just a few eusocial species, including humans, and is very recent in evolutionary terms. The predispositions arising from group relatedness needs are, therefore, weaker than those from kin relatedness and existence needs. Again, their strength varies from individual to individual.

(d) **Growth needs**, or self-actualisation needs, if unsatisfied, provide behavioural predispositions of different strengths. The evolution of our large brains in parallel with our emerging eusociality has given us cognitive and physical skills together with the need to employ them. In satisfying our relatedness and growth needs, we face the dilemma of whether our chances of survival and procreation and those of our kin are best served by attending to growth needs or relatedness needs. Our choice does, of course, depend on our circumstances and way of thinking. Depending on these, the priority given to growth needs can, therefore, be greater than or less than those of kin or non-kin relatedness.

These priorities are supported by evidence from four decades of extensive international research carried out by the World Values Survey. A summary is given in Ronald Inglehart's book "Cultural Evolution". When people are unable to take basic survival needs for granted, the focus is on those needs plus social connections. That is, we focus on our existence, procreation, and relatedness needs. However, when people do take basic survival needs for granted, as is the case for most of us in the West, the focus moves on to social connections and self-expression. In other words, we focus on our relatedness and growth needs.

In summary, therefore, the pyramid traditionally used to describe the hierarchy of needs is probably better represented as follows.



Article 11a – Contra-needs

(Posted on Website 20/8/21 combined with 11b)(Posted on Quora 22/10/21)

For every human need there is a contra-need. I have coined this word because the English language has no suitable opposite to "need". Contra-needs are physical and psychological states that we wish to avoid, such as injuries or illnesses. In the same way that we are motivated to satisfy our needs, we avoid anything that causes a contra-need.

Maslow incorporated our physiological or existence contra-needs into his hierarchy by referring to the need for safety and security. This list, however, is incomplete. To describe all of our contra-needs, I will use the modified ERG model from the previous article.

(a) **Existence and procreation contra-needs.** These provide the strongest behavioural predispositions. They include the opposites of Maslow's safety needs. For example, diseases, illnesses, addictions, physical harm, assault, torture, pain, and death. They are caused by various threats in our environment. These contra-needs also include the opposites of Maslow's security needs. For example, fear for one's material wellbeing, which can be caused by crime, unemployment, war, or social instability.

(b) **Kin relatedness contra-needs.** These provide the second strongest predispositions. They include the opposites of Maslow's love and belonging needs, but only insofar as they refer to our kin or lack of kin. For example, a feeling of isolation, which can be caused by rejection, conflict, or enmity. They also include the opposite of Maslow's self-esteem needs. For example, despising oneself as a result of failed endeavours or the contempt of others.

(c) **Non-kin relatedness contra-needs.** These provide the third strongest predispositions. They are the same as the kin-relatedness contra-needs but apply to non-kin-relationships.

(d) **Growth contra-needs.** These are the opposites of Maslow's self-actualisation needs. For example, a feeling of not being in control of one's life; that one's personality is suppressed; one's existence purposeless, or feeling just "one of the crowd", rather than an individual. They can be caused by a lack of freedom of choice regarding how to live one's life, which, in turn, can be caused by the effort required to satisfy lower needs, by overly oppressive social norms, or by an authoritarian society.

If a contra-need is sufficiently pressing, we may plan to avoid it. However, like needs, contra-needs often result in behavioural predispositions which are only acted upon when a threat arises. Some behavioural predispositions, such as the "fight or flight" reflex, are strong enough to be inherited. Others are learned.

It is not usually the case that a single need or contra-need motivates a single action. Normally, several needs or contra-needs acting together result in an action.

In my next post, I will discuss the way in which concerns regarding these contra-needs can influence our sense of wellbeing.

Article 11b – Contra-needs and Existentialism

(Posted on Website 20/8/21 combined with 11a)(Posted on Quora 29/10/21)

A longstanding predisposition to avoid a contra-need can have an adverse effect on our sense of wellbeing and mental health. It is not good for us to live in fear. In recognition of this, existential philosophy focuses on how to cope with contra-needs, such as death, that, ultimately, are unavoidable. It recognises that life is not fully satisfying and is a journey in search of meaning. This philosophy was developed in the mid 20th Century from the writings

of Kierkegaard, Nietzsche, Sartre, and Camus. Their writings followed the Great Depression and the two world wars when the world turned from a sense of optimism to one of despair. In the late 20th Century, it was developed into a psychotherapy by the American psychotherapist, Irvin D. Yalom, and others.

In Yalom's view, we must learn to accept and manage four "existential givens" which cannot be avoided. These are:

(a) **Death.** Yalom regards death as being the most pressing of our concerns. One's death is inevitable and the knowledge of it pervades the conscious and unconscious mind. This leads, at times, to great anxiety. He suggests that the recognition and acceptance of death leads to a better appreciation of life and encourages us to make the most of it. Grief at the death of a loved one is another inevitable fact of life. It is a consequence of our connections to others and is often managed through the same connections. Death, however, is the ultimate expression of entropy in our lives. There are other inevitable effects that we also need to come to terms with, such as illness and aging.

(b) **Freedom (lack of guidance).** In the existential sense, freedom does not mean social and political liberty. Rather it means fear arising from a lack of guidance in our lives. Awareness of this and accepting responsibility for our own guiding principles is important for an emotionally healthy life.

(c) **Isolation (separateness).** Existential isolation is not the same as loneliness. The latter arises from the physical absence of other human beings with whom to interact. Existential isolation refers to the unbridgeable gap between oneself as an individual, others, and the world that we inhabit. It means that, inevitably, we are apart from others and cannot merge ourselves with them. There is no solution to this form of isolation. It is a part of our existence that we must face up to and come to terms with.

(d) **Meaninglessness.** Yalom argues that we need meaning in our lives and its absence can lead to distress and even suicide. Ultimately, however, meaning is a human concept which does not exist in the external world. We inhabit a universe that has no inherent meaning and so must create it for ourselves.

Duality pervades human understanding. There are two sides to every coin, but we often focus on one side, whilst neglecting the other. The theory of human needs appears to have neglected those things that we are motivated to avoid. The "existential givens" are the unavoidable contra-needs that we must come to terms with. Needs, contra-needs and "existential givens" all form part of the human psyche. There are no apparent inconsistencies between them, which implies that they are each part of a complex structure seen from a different perspective, as shown in the table below.

<table>
<tr><th>Modified ERG Needs</th><th>Existential Given or Unavoidable Contra-Need</th></tr>
<tr><td>Existence and procreation</td><td>Death (personal)</td></tr>
<tr><td>Kin Relatedness</td><td rowspan="2">Death (grief)
Freedom (lack of guidance)
Isolation (separateness)</td></tr>
<tr><td>Non-kin Relatedness</td></tr>
<tr><td>Growth</td><td>Meaninglessness</td></tr>
</table>

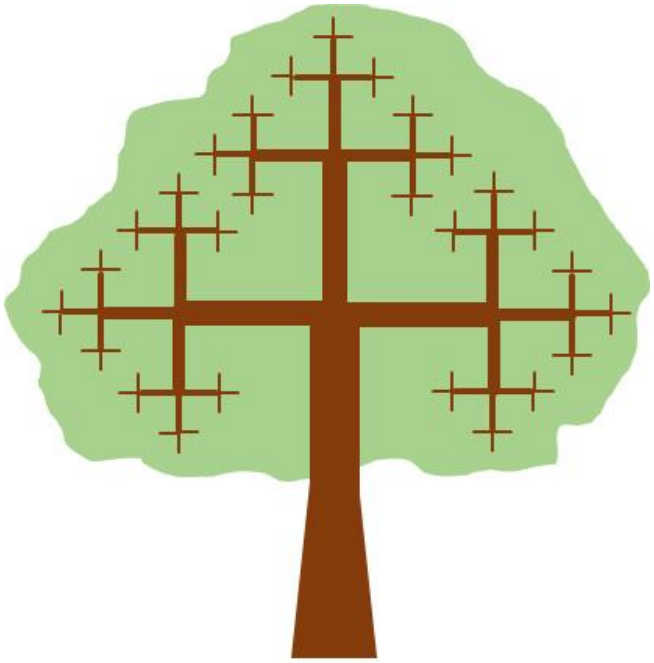
Needs and contra-needs motivate our physical behaviour and interactions. Reconciling "existential givens" is about personal, mental, and emotional wellbeing.

In the next post, some of the implications of these needs and contra-needs will be discussed.

Article 12 – The Tree of Needs

(Posted on Website 28/8/21)(Posted on Quora 6/11/21)

Although Maslow did not describe it in this way, the hierarchy of needs is usually represented by a pyramid. However, in my view, a tree may be more appropriate.



The trunk represents the existence and procreation needs or contra-needs that we all share. The branches and twigs represent our higher needs and contra-needs. Satisfying our needs can be likened to climbing this tree. As we ascend, from the trunk to its outermost twigs, our needs become higher. The highest needs are those at the outer twigs and the lowest those nearest the trunk. The higher the need the more branches or twigs there will be. It is this diversity which gives us our own unique personalities and motivations.

Representing needs and contra-needs in this way helps us to understand several things:

(a) Initially, we must satisfy our existence and procreation needs. We begin climbing at the trunk therefore, and, as we ascend to satisfy higher needs, they become ever more personal and diverse.

(b) We must continue to maintain the trunk and branches that we have already ascended if we are not to fall from the tree. This means that we must regularly attend to our lower and more basic needs even whilst focusing on higher ones.

(c) The diversity of higher needs has implications for empathy. We all share common existence and procreation needs. It is, therefore, relatively easy to understand these needs in others and to empathise with any difficulties they have in satisfying them. However, as we climb higher and choose branches which satisfy our own more personal needs, our understanding of the branches occupied by others begins to diminish. Thus, we have less empathy for people who are having difficulty in satisfying their higher needs. Rather, it

is easy to behave in a manner which restricts diversity and to believe that others should be like oneself.

(d) As one ascends the tree there become fewer people on each branch and it becomes harder to find others with whom to share an interest. Thus, the risk of feeling isolated becomes greater.

(e) We must have aims to be motivated and as we ascend the tree it becomes ever more difficult to find and settle on these. The tendency is, therefore, to do more of the same. For example, wealthy people may seek ever more wealth, and politicians ever more power.

(f) Representing needs in the form of a tree also has implications for diversity. The diversity within the branches of the tree reflects the diversity within societies. Societies in which people can satisfy their higher needs are more diverse than those in which they cannot.

In my next post I will describe Manfred Max-Neef's theory of how we satisfy our needs and some of the ways in which this may not succeed.

Article 13 – Satisfiers and Contra-satisfiers

(Posted on Website 3/9/21)(Posted on Quora 13/11/21)

In the 1990's, to address some of the limitations of Maslow's theory, the Chilean economist Manfred Max-Neef and his colleagues developed an alternative way of categorising human needs. Details can be found in their 1995 book "Human Scale Development".

(PDF) Human scale development: An option for the future (researchgate.net)

Max-Neef's principal contribution, however, was the identification of "satisfiers". These are external things which assuage our needs. Examples include physical things, such as rice and houses, or actions by others, such as medical treatment. Max-Neef explained that external things, such as food and shelter, should not be seen as needs, but rather as external satisfiers of an internal need for subsistence. On the micro-scale, satisfiers can be the goods and services that form the basis of economics. On the macro-scale, they can be the institutions that form the basis of politics. Satisfiers can, therefore, also be provided by organisations, by the way in which society is organised, or by its culture. For example, education is a satisfier of the need for understanding, and healthcare a satisfier of the need for protection.

As an economist, Max-Neef's focus was mainly on physical and cultural satisfiers. However, there are also psychological satisfiers, such as the various belief systems on offer.

Max-Neef held that fundamental human needs are a constant, but that societies alter the satisfiers of those needs. Thus, satisfiers may differ from nation to nation, culture to culture, and time to time. He also held that there is not necessarily a single satisfier for any one need. Rather, several different things may satisfy it. Nor is a satisfier necessarily associated with a single need. Rather, it may assuage several needs. He cited the example of a mother breastfeeding her baby and argued that this can satisfy the baby's need for subsistence, protection, affection, and identity all at the same time.

Although anything can be a satisfier, not everything is a satisfier. Max-Neef used the following classification:

(1) **"Synergic Satisfiers"*** satisfy a given need, whilst simultaneously contributing to the satisfaction of other needs. They are generally those chosen by the individuals concerned as best satisfying their complex of needs, rather than those chosen by any external agency, particularly an authoritarian one, whose motives often differ. *(*Note that this term is*

given as a quote because, if taken literally, it would mean several satisfiers working together to satisfy a need rather than the definition given.)

(2) **Singular Satisfiers** satisfy only one need and are neutral in respect of other needs. They are often a consequence of well-meaning, but remotely planned interventions by voluntary, private sector, or government organisations. Examples include food and housing programmes.

(3) **Inhibiting Satisfiers** over-satisfy a particular need. They can become addictive, and so, prevent a person from satisfying other, higher needs. Max-Neef and his colleagues believe that inhibiting satisfiers originate in deep rooted customs, habits, and rituals. An example is the addictive pursuit of wealth among those who already have sufficient to meet their needs. This can lead to a failure to move on to other needs such as raising a family. Another example is drug addiction which becomes an artificial existence need and prevents an individual from adequately addressing higher needs.

(4) **Pseudo Satisfiers** claim to be satisfying a need, but really provide little or no satisfaction. They are often associated with advertising. Products may, for example, be marketed as glamour or lifestyle accessories, with the implication that they will improve the purchaser's self-esteem.

(5) **Violators**. These are things which, although they are claimed to satisfy a need, actually make it more difficult to do so. Max-Neef used the example of a drink advertised as being thirst quenching but which, due to its ingredients, causes dehydration. By their nature, violators are also often associated with the consumer economy and marketing.

Satisfiers can, of course, satisfy some needs or the needs of some whilst reducing the satisfaction of other needs or the needs of others. Overall, the reaction of any individual to a satisfier depends on the extent to which it satisfies their needs, the needs of those close to them, and the extent to which it acts as a contra-satisfier. The reaction may also be determined by collective needs which apply to us as a species and also to those which apply to the natural environment.

Contra-satisfiers were not identified by Max-Neef but are those things which cause the contra-needs we wish to avoid. For example, crime and war can lead to insecurity, injury, and death.

In my next post, I will describe some of the ways in which the priorities we give to our needs can change with generation and age group.

Article 14 – Individuals, Generations, Age-groups, and the Prioritisation of Needs

(Posted on Website 11/9/21)(Posted on Quora 20/11/21)

Pursuing the satisfaction of our natural human needs is what motivates us. However, much effort is involved in doing so. It is a lifelong process, and we meet many challenges on the way. If we can overcome those challenges, then this contributes to a general sense of happiness and wellbeing. Happiness is a relatively short-lived emotion that we experience from time to time. However, wellbeing is a state of mind which persists for so long as we are satisfied. On the other hand, if we encounter insurmountable obstacles, then we can experience frustration, a low sense of wellbeing, ill health or even death.

Maslow's theory maintains that needs lower in the hierarchy must be largely satisfied before we can move on to higher needs. However, as explained in an earlier article, there is little evidence that we do actually prioritise our needs in this way. There is not a simple correlation between age and the hierarchy of needs. Rather, several other factors can cause significant

differences between generations and age-groups. They can also cause significant differences between individuals from the same generation and age-group. Examples of these factors include:

(a) **Biological Factors**. For example, our individual capabilities and the physiological and health risks that we face in childhood, as a parent, or in old age.

(b) **Social Role.** At different stages in our lives, society provides us with different forms of support and demands different forms of contribution. Some are common to all societies. For example, in childhood our existence needs are provided for by our parents. However, support and demands also vary according to the nature of our society, our gender, and our socio-economic status. Social support and demands are significant factors in deciding how we prioritise our needs at different stages in our lives.

(c) **Cultural Change.** The culture of a society can alter rapidly from generation to generation, and the prevailing culture in our formative years will affect our priorities in later life. Thus, different generations can be typified by different priorities, irrespective of age. Today, cultural change is far more rapid than it has been in the past and is, therefore, having a much greater influence.

(d) **Significant Events.** World Wars, epidemics, and economic depressions, when they occur, can reshape the priorities of all generations. However, if they occur during our formative years, they can have a particularly long-lasting effect on our priorities. This can cause different generations to be typified by different priorities.

(e) **Time to Learn.** It can take considerable time and effort to learn how to satisfy a need, sustain that satisfaction and deal with the difficulties associated with doing so. The natural world and human society are both extraordinarily complex. Understanding them and learning successful behaviour requires much effort, therefore, and whilst making that effort we age.

Thus, whilst there is a general trend in the way that different age-groups prioritise their needs, there is also considerable variability as different generations come to occupy an age-group. There is also considerable variability between individuals within an age-group.

Some examples from Western society may serve to demonstrate how the above factors interact to cause a general trend in the priorities of different age groups. Whilst this trend may be true of humanity in general it is not necessarily so for the individual.

(a) When we are born, we aspire to satisfy our existence needs, i.e., food, warmth, shelter, etc. Satisfiers are, of course, provided by our parents and we must merely cry or smile when a need arises. Our social skills are innate, and we have yet to develop the cognitive skills to pursue higher needs.

(b) In our teens and early twenties, security in the provision of our basic needs continues to be provided by our parents, and so, our aspirations focus on social relatedness. Historically, we would seek a partner and reproduce in our teens and early twenties, so biological factors may also have a part to play.

(c) Later, as we raise children, our existence needs must be secured for us to do so successfully. An example is the desire to own a home of our own because, in most cases, our need for shelter will previously have been satisfied in a less secure way by living with our parents or by renting.

(d) It has been suggested that our large brains evolved to enable successful social interaction. However, these brains also bestow on us the ability to safeguard the satisfaction of our existence and relatedness needs. This is where our aspirations are next likely to be

focused, therefore. However, the way in which we satisfy this need is also affected by our cultural upbringing. In some cases, it may be by accumulating wealth and property. In other cases, it may be by building strong social connectedness and support networks.

(e) Our large brains also give us a need for meaning in our lives, curiosity, creativity, and an ability to master complex skills. It is to these that we turn when other needs are largely satisfied. Due to the time involved in learning how to satisfy all our needs, these tend to come to the fore as we become older. It is notable, however, that some creative people will forego the satisfaction of lesser needs.

(f) A culture can assign different roles to different genders. Furthermore, hormones are known to affect the state of mind of both sexes. It is conceivable, therefore, that there are gender differences in the way that we prioritise and satisfy our needs. Unfortunately, little objective research has been done on this subject.

(g) Finally, evidence from surveys shows that the need for safety or freedom from existential threat is a more significant aspiration amongst older people.

In very general terms then, but with much variance, the Western trend in priorities can be summarized as: the satisfaction of existential needs as a small child; relatedness needs in our teens and early twenties; safety and procreation needs in later adulthood; and security, safety and growth needs thereafter.

Article 15 – Sense, Order and Meaning

(Posted on Website 17/9/21)(Posted on Quora 27/11/21)

Among our growth needs are two which drive us to make sense of the world. They are the need to perceive order and the need for meaning. Meaning is of two types: everyday meaning, for example that imparted by speech or text, and existential meaning, or why we exist. It is my own understanding of the latter, developed over several decades, that I will discuss here.

Perceiving order in the world helps us to make sense of it. The universe follows physical laws, and, through curiosity, investigation, and reason, we can discern the order that these laws impart. This enables us to make successful decisions when faced with a threat or opportunity. On the other hand, if we cannot perceive order, then this increases our vulnerability. However, we often see order as being imbued by something other than physical laws. For example, rhino horn has been thought to provide sexual potency because of its shape and the strength of the rhinoceros.

Meaning is a different concept to order. To find meaning would be to understand the purpose of the world and our part in it. The search for meaning has a side effect in that it helps us to discover order and, so, to survive and procreate. However, whilst meaning is a need, and we can be strongly motivated to search for it, meaninglessness is an existential given or unavoidable contra-need. In other words, we can never truly find objective meaning because, in practice, the universe appears to have none. Meaning is, therefore, entirely subjective, and personal. Finding subjective meaning involves much effort, but ultimately it can be highly rewarding. On the other hand, effort to seek objective meaning, will rapidly run up against the limits of our knowledge and abilities. Unsurprisingly, therefore, it can lead to frustration, distress, and a readiness to accept “wishful beliefs”. Such beliefs are often “off the shelf” and include a super-natural or super-human element. Because they may be emotionally satisfying and superficially appear to fit the facts, they are often inadequately criticized. This can open us up to potential exploitation by their authors.

According to the British Psychologist, Frederic Bartlett, to understand the world we create schemata or mental models. This is as true in the search for meaning as it is in more practical matters. Our schemata determine the way in which we understand meaning and perceive order. Because of the mental effort involved, once a schema is established, it is resistant to change. We are more likely to remember information that is consistent with our schemata and less likely to remember, or may even modify, information that contradicts them. This process is sometimes referred to as "effort after meaning".

Schemata are established in childhood by our parents and other close adults. They can include erroneous or "wishful" beliefs. For example, meaning can be seen to be something other than personal and subjective arising, for example, from a supernatural source. Schemata grow throughout our lives, becoming ever more complex. Although resistant to change, they can be affected by our cultural environment and, depending on its nature, can be either reinforced or slowly altered as we age. If they are reinforced, this can cause us to become set in our ways. If they are revised, this can cause any beliefs gained in early childhood or later life, to become unacceptable, leading to disappointment, dissatisfaction, and social difficulties. Nevertheless, realism does stand up to the test of time.

I would suggest, therefore, that finding meaning involves:

(a) accepting that we are naturally evolved organisms with all the limitations it entails. As the Chinese author, Cixin Liu says in his novel The Dark Forest: "It's a wonder to be alive. If you don't understand that, how can you search for anything deeper?";

(b) recognising that finding meaning is a personal and subjective endeavour; and

(c) being critical of the numerous erroneous, "wishful" beliefs on offer.

We are motivated by needs for existence, procreation, relatedness, and growth. The satisfaction of most is necessary for a happy and meaningful life. However, there can often be obstacles in the way. When people find it difficult to satisfy their existence and procreation needs their focus is on these, and on relatedness. This means that "wishful beliefs" are often used as a way of satisfying their growth needs with minimum effort. This can lead to exploitation and the elimination of poverty would, therefore, have great societal benefit.

There can be contradictions between different needs. Ronald Inglehart, in his book "Cultural Evolution" identified that, since the 1980s, there has been great emphasis, in the West, on self-expression, a growth need, at the expense of relatedness. However, we are social animals, co-operation better enables us to survive and so a balance must be sought. Social connection brings with it the pressure to conform to a culture. If there is a conflict between this and the need to be oneself then, in extreme cases, according to the psychologist Karl Rogers, mental ill-health can result. Thus, we must reconcile our growth needs with our relatedness needs.

So far, I have discussed what might be referred to as "normal" human needs. In my next post I will discuss "abnormal" needs because of the powerful influence they have on human affairs.

Article 16 – Anti-social Needs & Behaviour

(Posted on Website 28/9/21)(Posted on Quora 4/12/21)

Our normal needs have an evolutionary basis and are those which, in the past, best enabled us to survive and procreate. They are the result of order brought about by life's struggle against entropy and can be likened to the sandcastle described in my first article "Schrodinger's Other Paradox". They have a basis in both genetic and cultural evolution.

Unfortunately, due to the same evolutionary processes, some individuals have anti-social needs which cause behaviour that is a contra-satisfier resulting in harm to others. Note that I do not

regard simple differences of opinion or personality as being anti-social. Nor do I regard outrage or disapproval as a harm. There must be a genuine impact on the contra-needs of others. Anti-social needs are the inevitable effect of entropy both on society and on the human genome, and can take many forms, most of which are harmful. Their existence can be likened to the many ways in which the sandcastle can begin to decay into a random heap of sand.

In practice, both normal needs, anti-social needs, and the behaviour they cause are defined by laws, norms, and consensus. These differ from nation to nation, culture to culture, and time to time. Generally, however, crime is subject to laws and punishment by the state, for example, imprisonment for theft. Violation of moral and religious codes has been regarded as punishable by God. Historically, for example, hell has been the ultimate fate of sinners. In some highly religious societies, the state can also intervene and, for example, impose punishment for blasphemy. Violation of social norms is punishable by the community by, for example, shunning. However, acts that cause mental stress or psychological damage to the victim often receive no censure.

Our contra-needs, or those harms that we wish to avoid, also have an evolutionary basis and are largely universal. Any behaviour which impinges on them will, therefore, be regarded by the recipient as unacceptable. If social controls favour normal needs, then the tendency will be towards orderly and healthy societies. However, if religious dogmas, political ideologies, corruption, or any combination of the three gain undue influence, especially control of the state, then incompatibilities can occur. This results in a society which can only be sustained through force, coercion, and repression. The identification, management and control of anti-social needs is, therefore, key to a healthy society.

Although normal needs are relatively universal and based on what has best enabled human beings to survive and procreate, disorder can occur in infinite ways. The causes of anti-social needs are, therefore, boundless. Examples include heredity, biological disfunction, drugs, upbringing, poverty, social, political, and economic factors, and so on. Criminologists recognise, for example, that the causes of crime are unique to each individual and that a combination of several factors may be in play.

It is impossible, therefore, to categorise anti-social needs. Furthermore, because an actor with anti-social needs will usually disguise them to avoid social controls, and will not be forthcoming with researchers, it is also extremely difficult to assess the priority that he or she gives to them and to anticipate when anti-social behaviour will occur.

Anti-social needs do, however, lie on a scale of type, which can vary from extreme psychological disorder, to exaggerated normal needs. Once a need is adequately satisfied, we usually move on to the satisfaction of others. However, for a variety of reasons, such as social influences, force of habit, or personality traits, it is possible to become trapped in the satisfaction of a particular need, to the extent that it is indulged in to harmful excess. For example, the pursuit of excessive wealth, power, or celebrity.

Anti-social needs also lie on a scale of harmful intent. At one extreme lie psychopathy, paedophilia, narcissism, etc. where the need is only satisfied by deliberately causing harm to others. At the other extreme lie antisocial behaviour and Schadenfreude or pleasure at the misfortune of others. Anti-social behaviour, as we presently understand it, is inconsiderate behaviour. It incudes, for example, vandalism, graffiti, littering, and dumping rubbish.

Finally, anti-social needs lie on a scale of effect which depends on the priority given by the victim to the relevant contra-need. Death, for example, would be high in the list of a victim’s contra-needs.

Life is a struggle against entropy, and it is inevitable, therefore, that we will always be faced with anti-social needs. However, this does not mean that we should just accept them. They are entropic in nature, and we are compelled by evolution to fight against them.

Most criminologists recognise that the best predictor of future behaviour is past behaviour. It is also the case that people are attracted to institutions, organisations, and individuals who they feel will satisfy their needs. Knowing this, risk assessment, deterrence, prevention, and mitigation, based on the priority of the relevant contra-needs and the number of people affected, could be a practical approach. This would, for example, involve assessing the risk of an institution being steered in a harmful direction, and taking measures to reduce the risk that an individual with relevant anti-social needs can take its reins.

Article 17 – Resources, Poverty and Wellbeing

(Posted on Website 1/10/21)(Posted on Quora 11/12/21)

We use resources to create satisfiers. Resources include, for example, time, physical effort, mental effort, emotional resources, and material resources or property. A key feature of resources is that they become depleted with use. Knowledge is not a resource in this sense, however, because it does not become depleted.

Property is the resource that an individual or group of people hold to satisfy their needs and which they will defend. Ownership attaches to property, it is associated with a particular individual or group, and only they have the right to use it. It is human nature to hold property and respect for ownership must be reciprocal if ownership is to exist.

An inability to satisfy one's needs due to a lack of adequate resources or other obstacles can be described as poverty. Normally, due to its prevalence, this term applies to an inability to satisfy our existence needs. However, it can also be used to describe an inability to satisfy other needs. It can be a poverty of existence and procreation needs, for example an inability to feed or house oneself, a poverty of relatedness needs, for example an absence of kin and other people with whom to form relationships, or a poverty of growth needs, e.g., an inability to develop one's talents and skills.

The term "wellbeing" is commonly used in the medical profession as an indicator of physical and psychological health. Here, however, it is given a broader meaning, i.e., the extent to which the needs of an individual or population are satisfied and, of course, the extent to which contra-needs are not.

Wellbeing is far more than "something that it is nice to have". It affects the way in which we behave as individuals and the success or failure of a society. There are positive and negative feedback loops between individuals and society. If society, which can be regarded as a satisfier, provides wellbeing then individuals will support it, will be able to pursue their needs and will be better able to contribute to that society. This is a positive feedback loop. Conversely, if society becomes a contra-satisfier, for example when a minority exploit the majority, then the latter will become alienated, engage in conflict and the society will fail. This is a negative feedback loop.

Different cultures provide for the needs of their population in different ways, and their success in doing so varies. It is possible to evaluate a culture from the way it uses the available resources to satisfy the needs of its population and others with whom it interacts. In general, resources satisfy the wellbeing of the population most efficiently if they are used in an egalitarian manner. That is not to say that every resource should be apportioned equally. As individuals ascend the tree of needs their needs begin to differ from those of others, and so too do the resources

required to satisfy them. Thus, equitable sharing is related to needs satisfied rather than the resources applied.

Numerous attempts have been made to measure the wellbeing of populations: the Gini Index, a measure of the income distribution of a country's residents and thought to be a good indicator of the level of inequality; Bhutan's measure of Gross National Happiness; the OECD's Better Life Index; the Index of Sustainable Economic Welfare (ISEW); subjective wellbeing (SWB); and so on. In the author's view, however, it may be possible to measure an individual's wellbeing in terms of the value they place on the resources available to satisfy their needs. For example, if they place a high value on personal time or money then this implies that they have insufficient to satisfy their needs. All these approaches have their flaws and can be criticised. I do not propose to look at them in detail, therefore. I merely wish to establish the principle that wellbeing can be measured, and serious attempts are being made to do so.

Article 18 – Obstacles to Wellbeing in the West

(Posted on Website 8/10/21)(Posted on Quora 18/12/21)

A healthy society is one which provides for the wellbeing of all its members. It is one which enables its members to strive to satisfy their needs and which does not put obstacles in their way. In practice, this means equitable access to resources and protection from the anti-social needs of others. However, society is rarely, if ever, perfect and some examples of the difficulties we currently face in the West are described below.

In early, small scale societies relationships were complex. Between each pair of individuals there were several types of relationship and the quality of each had to be balanced with the quality of others. This type of society is the one in which we have evolved to live. In modern society, relationships between individuals often serve a single, relatively simple purpose and people learn to act out a role.

Furthermore, even these relationships are being replaced by technology, and we are beginning to interact either with, or via machines to a significant extent. Indeed, the difficulties involved in learning successful social interaction and in building our social capital have not been helped by the comparatively recent intervention of technology and commerce in our social lives. Social media have communication benefits, but have also led to more distant, impersonal social connections, to online bullying, grooming and exploitation, to commercial opportunities, the spread of fake news, the spread of conspiracy theories, and pressure to conform to fast changing fashions.

The pressure of producing and consuming in an economy which relies on constant growth means that the time available for more complex interaction with family, children, and friends is much reduced. Thus, we are no longer interacting with one another in the way that we have evolved to do. Our social nature is not being satisfied, and we are suffering a poverty of relatedness needs.

Security in the satisfaction of our needs involves an accumulation of material capital, for example the deposit for a home. However, several factors currently conspire against this: the ever-growing wage gap; insecurity of employment; the high cost of purchasing a home; the availability of cheap credit; the pressure to accept it; social and advertising pressures to purchase consumer products; and so on. These are all consequences of consumer-capitalism which, because of its in-built reliance on economic growth, has become exploitative and is approaching the limits of sustainability. The Office of National Statistics Survey reports that "An increasing proportion of young people aged 16 to 24 years in the UK reported that they were finding it difficult or very difficult to get by financially." In 2016/17 this was 6%. In

2017/18 it had increased to 9%. In particular, “the increase was significant among young men of this age.”

In his book “Cultural Evolution”, Ronald Inglehart says that, in a post-industrial culture, we place greater emphasis on the growth need of self-expression, and data from the World Values Survey bears this out. Culture affects what we believe our growth needs to be and how we go about satisfying them. However, our culture is often steered by royal, aristocratic, political, religious, or commercial elites in their own interest, rather than in that of the general population.

Some have argued that the free-market, consumer economy in the West was brought about by elites as a reaction to a decline in their relative wealth after the two world wars. Again, the statistics bear this out. The documentary filmmaker Adam Curtis also provides convincing evidence that the present emphasis on individuality has been steered, by commercial elites and consultant psychologists, into self-expression through consumption. The concept of lifestyle has been promoted, primarily via advertising, and we have been encouraged to see it as a way of expressing our individuality.

If a need is satisfied, then it no longer motivates us. So, to persuade us to buy products, advertising offers false promises. It is often suggested, incorrectly, that a product will satisfy our needs for relatedness, belonging, and self-esteem. Furthermore, it does so in a subliminal manner, often not recognized by the conscious mind.

The involvement of commerce in the way we make our social connections adds an extra layer of complexity and difficulty to the satisfaction of our relatedness needs. For example, social media influencers are, essentially, engaging in lifestyle-based advertising and earn their living by promoting products. However, they are also role models in terms of behaviour, social status, and appearance. Most cosmetics, for example, are now sold to the 20 to 23 age group, which, ironically, is when the majority of us are physically at our most attractive. There is also a growing tendency for men to use cosmetics.

Whilst people imagine that they are satisfying their needs for individuality, self-esteem and belonging in the way they consume products and services, this is merely a pseudo-satisfier. It is unsurprising, therefore, that mental ill-health is becoming a significant concern, particularly among the younger generations. The survey by the UK’s Office of National Statistics also found that:

- “Several measures of personal well-being of young women aged 20 to 24 years in the UK have declined in March 2020 from five years previously”.
- There was “a fall in the percentage of young women in this age group reporting very high life satisfaction and happiness, and very low anxiety.”
- “There is evidence of increasing anxiety and depression among young women aged 16 to 24 years”. In 2016/17, 26% reported some evidence of depression or anxiety. In 2017/18 this increased to 31%.
- “There was a decline in young people’s satisfaction with their health …”. In 2016/17, 59% of those aged 16 to 24 years said they were mostly or completely satisfied with their health. In 2017/18, this fell to 52%.
- “Young people aged 16 to 24 years … may also be feeling more disconnected from their communities”. In 2014/15, 57% agreed or strongly agreed that they felt a sense of belonging to their neighbourhood. In 2017/18, this fell to 48%.

To truly satisfy our need for individuality, it is necessary to build up a resistance to these advertising pressures. We can learn to resist some of them, but others are beyond our individual control. As Mark Carney, a past governor of the Bank of England, put it in his 2020, BBC

Reith Lectures, the economy is driving society's values and not vice versa. He argues that we now need a post-consumer economy which delivers on society's values. That is, what society holds to be good, rather than what has a monetary value. However, he also believes that this cannot be left to free markets, which tend to follow the same path until a bubble bursts. One way in which the latter can occur is through the over-exploitation and wastage of resources and it is quite likely that we have now begun to see the effects of this. He argues, therefore, that government intervention is needed to steer markets in the appropriate direction.

Unfortunately, politics has taken a lesson from commerce and is beginning to operate in a similar way, employing psychologists and, with their advice and insights, also exploiting our needs.

CHAPTER 3 – KNOWLEDGE, BELIEFS & PREDISPOSITIONS

Article 19 - Feedback Loops and Emergent Properties

(Posted on Website 15/10/21)(Posted on Quora 29/12/21)

Introduction

Human needs motivate our actions and satisfiers are the goals that we seek to achieve. The knowledge that we hold affects our perception of these needs and of potential satisfiers. In this series of articles, I will discuss the nature of knowledge and how we acquire it.

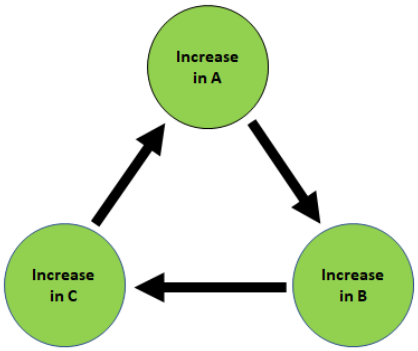
Firstly, however, I would like to discuss consciousness. How sometimes we know what we know, and how sometimes we do not. Consciousness is a hotly debated subject and there is no consensus on how it came to exist. Some take the view that it is a divine gift, others that it is the very fabric of the universe, yet others that it is an emergent property of our complex brains. There is no proof for any of these, but the last best fits my personal knowledge and experience. So, this is what I will describe, beginning, in this article, with feedback loops and emergent properties. In the next article, I will describe how, in my view, these processes lead to consciousness.

Feedback Loops

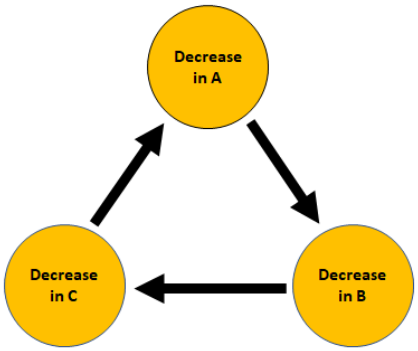
A variable characteristic is a feature of objects or events to which a value can be applied. For example, all mountains have a height above sea level, but the height of Mount Everest is 8848 metres whilst that of Mont Blanc is 4808 metres. Feedback loops are circular chains of causally related objects or events, each with some variable characteristic.

In a feedback loop, a change in a variable characteristic of an object or event, the cause, alters a variable characteristic of another, the effect. In turn, the latter affects a variable characteristic of a third and so on. For example, A may cause an increase in B which in turn causes an increase in C, which in turn causes an increase in A. The classic example is a microphone placed in front of a loudspeaker. The microphone picks up a small sound which is then amplified and emitted more loudly by the loudspeaker. This in turn is picked up by the microphone, amplified again and emitted yet more loudly. This process continues until the system is emitting a deafening howl at its maximum volume.

This is an example of a positive feedback loop, i.e., one in which the variable characteristic of a component increases until the maximum capacity of the system is reached. Negative feedback loops also exist. In the latter case, rather than an increase in one component causing an increase in another, it causes a decrease and, as the circular chain of causation is acted out, the latter steadily diminishes until it is extinguished or becomes zero.



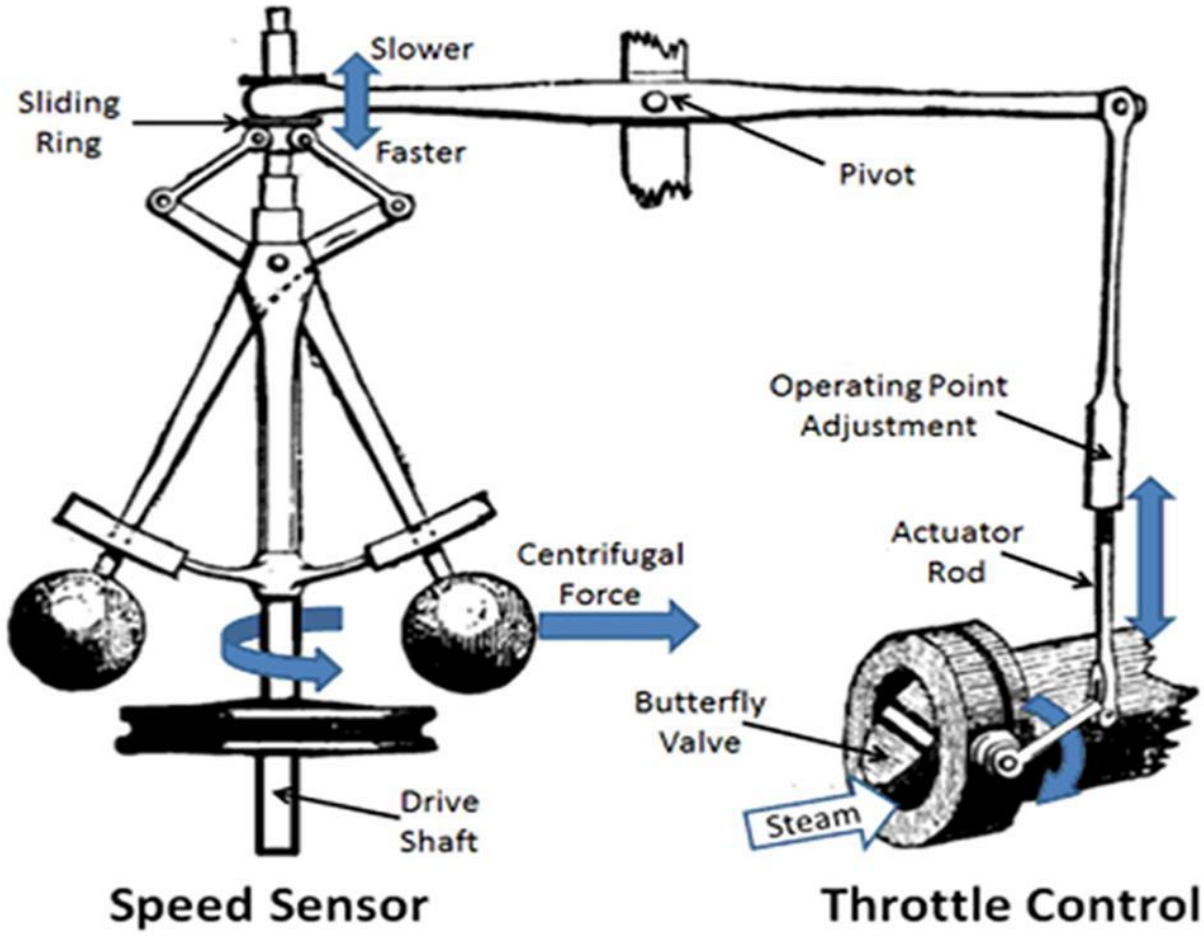
Positive Feedback Loop



Negative Feedback Loop

Finally, the combination of a positive feedback loop and a negative feedback loop can result in a system which stabilises the variable characteristic of a component at a particular value. If it increases above that value, the negative feedback loop reduces it and if it falls below that value the positive feedback loop increases it.

In their simplest form, feedback loops are often used in machinery. The image below shows how the governor of a steam engine keeps it operating at a constant speed. Click the link for a more detailed explanation.



Courtesy: https://www.mpoweruk.com/figs/watt_flyball_governor.htm

In the natural world, feedback loops can be extremely complex and difficult to identify. A combination of several causes may be necessary for an effect to occur. For example, both an increase in A and a decrease in B may be necessary to cause an increase in D. Furthermore, the absence of an inhibitor C may also be required. In this more complex form, feedback loops proliferate in individuals, society, and the natural environment, where they play a major role in determining the behaviour of these systems.

Emergent Properties

An emergent property is a property of a system which is not held by its individual parts. Such emergent properties are probably caused by feedback loops. For example, it is clear that the deafening howl that the microphone, amplifier and loudspeaker produce is an emergent property of the system. None of these components can produce this effect on their own. Life is a collection of systems of increasing complexity, e.g., cells, multi-cellular organisms, societies of organisms and eco-systems. As the level of complexity increases it can be expected that feedback loops will occur and that system properties will emerge.

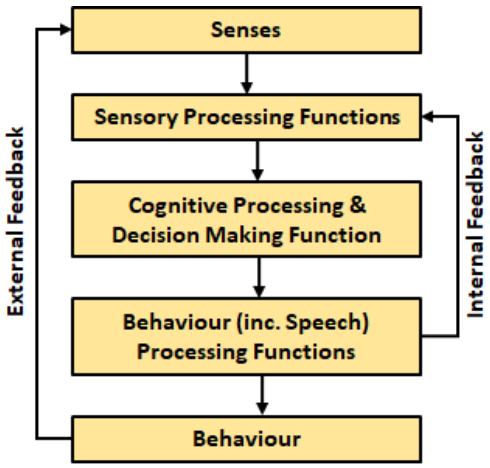
In my next article I will discuss the way that feedback loops help to explain the conscious and unconscious aspects of our minds.

Article 20 – Consciousness

(Posted on Website 22/10/21. Revised 29/10/21. Revised 24/11/21.)(Posted on Quora 5/1/22.)

The English philosopher, John Locke, (1632 – 1704) described consciousness as "the perception of what passes in a man's own mind". He was, of course, a man of his age and, today, we would understand this definition to include all genders and some animals. More recently, Locke's definition has been extended to include awareness of the external world but, unfortunately, this is a red herring. Even bacteria respond to stimuli in the external world and, so, are aware of it. However, we would not regard them as being conscious. Furthermore, the unconscious human mind is aware of the external world, which is why, for example, a noise will wake us from sleep. Finally, it is possible for a human being to be conscious in the complete absence of external stimuli. Locke's original definition seems more apt, therefore.

As mentioned in the previous article, consciousness is probably an emergent property of our complex brains and caused by feedback loops. A highly simplified model of the human mind might be:



These "functions" and the concepts of the "conscious and unconscious mind" do not, of course, refer to specific regions of the brain, but rather to processes that it follows.

We perceive the consequences of our actual behaviour with our senses, and this provides external feedback. For example, when driving a car, we continuously observe our position in the road and correct it when necessary. With sufficient practice, this can be done almost unconsciously. However, we can also "know" proposed behaviour before we act. For example, we can "hear" words that we might speak before saying them, "hear" music that we might play without playing it and "see" actions that we might take before taking them. Sensory processing functions are, therefore, connected to and aware of behaviour processing functions. Awareness of our own minds and awareness of the external world can be similar because both are processed by the same sensory processing functions. This creates the potential for feedback, and it is this feedback which, in the author's view, leads to the emergence of consciousness.

This is supported by Francis Crick and Christof Koch who, in their paper "A Framework for Consciousness", note that there is substantial evidence that a top-down flow of neural activity from the frontal cortex, which governs behaviour, to the sensory areas, is more predictive of conscious awareness than the reverse, bottom-up flow. This top-down flow is labelled "internal feedback" in the diagram above.

Experiments carried out, in the 1970s by the American neuroscientist, Benjamin Libet (1916 - 2007), provide further support for this model. Libet found that unconscious electrical processes in the brain preceded the conscious decision to perform an act. Significantly, however, he also found that the conscious mind could veto those decisions.

Such internal feedback loops have several evolutionary advantages:

(a) They allow us to review the likely consequences of potential behaviour before engaging in it. For example, in the case of language, the internal oral/aural feedback loop enables us to review and refine the information we would communicate, and assess its potential impact on any recipients. The cognitive processing and decision-making function passes a form of words to the behaviour processing function. The sensory processing function hears these words internally. It then passes them back to the cognitive processing function, which reviews them from the standpoint of the recipient. In effect, this is a form of empathy, one of the skills that we have as social animals.

(b) The logical rules that we have learnt and that the cognitive processing function employs in arriving at its conclusions are reflected in the structure of spoken language, and vice versa. This enables us to pass these rules on subliminally.

(c) Short term memory can be regarded as residing in the conscious mind, i.e., in the feedback loop. Long-term memory, on the other hand, resides in the unconscious mind and is strongly linked to the cognitive processing function. Internal feedback enables us to internally "rehearse" a wide range of information and behaviour which, in turn, serves to reinforce long-term memory.

(d) In a feedback loop, the emergent property regulates the components. Thus, the loop which causes consciousness may regulate the mind and enable us to concentrate on specific problems. This includes regulation of the unconscious mind but, as we are unaware of this, it cannot be regarded as "conscious regulation of the unconscious".

(e) When we relax our conscious efforts, the unconscious mind operates more freely and, for example, solutions to problems that we have been working on come more readily.

(f) Finally, it can offer a degree of control over intuitive behaviour, providing we think before we act.

There is a question over where consciousness resides in the brain. I am of the view that it resides in a large part of it. In fact, I would go as far as to say that parts of the brain can operate

either consciously or unconsciously depending on how the various parts are interacting with one another. The most notable evidence is the fact that our unconscious minds are not as good at producing ideas when, consciously, we are very heavily focused on a problem. We must let go of conscious thought to allow unconsciously generated thoughts to flow and, very often, it seems that this is necessary to solve a problem.

Where feedback loops come in is the way in which parts of the brain interact with one another. Going back to the analogy of a microphone in front of a loudspeaker, it cannot be said that the howl it produces lies in any one part of the system. Yes, there is a loud sound in the air between the microphone and the speaker. However, there is an equally strong electrical current within the microphone, amplifier, and loudspeaker. In a way, the whole system can be said to be howling. This is an emergent property of the system and the way that its parts interact and is analogous to consciousness. However, if we turn down the volume control on the amplifier, the emergent property disappears and the whole system becomes quiescent - both the sound and the electrical currents. This is analogous to unconsciousness.

The audio analogy cannot be taken too far, however. Firstly, because whatever happens in the brain is probably far more complex. Secondly, unlike the audio system, which is either howling or not, we appear to experience degrees of consciousness and unconsciousness.

It is certainly the case that some parts of the brain only act unconsciously. For example, even when conscious, we are not aware of what takes place in the cognitive processing and decision-making function. It is a part of the unconscious mind. Rather, we are only aware of how the decisions that it passes to the behaviour processing functions are interpreted. Knowing the information on which these decisions are based we can, to a limited extent, deduce the processes behind them. However, this is not the same as being consciously aware of them. Such deductions can be coloured by our needs and are, therefore, often a rationalization of our true decision-making process.

When we are awake, the feedback loops are on, and we are conscious. While we are asleep, they are off, and we are unconscious. However, unlike the audio analogy, which is either howling or not, we experience degrees of consciousness and unconsciousness. Consciousness is at its strongest when we are concentrating on a problem and at its weakest when we are in the depths of sleep. Neither state prevents the cognitive processing function, from receiving input from the sensory processing functions. Nor does it prevent it from passing instructions to the behaviour processing functions. We are unconsciously aware of the external world and can wake or give it our conscious attention when necessary. We can also sleepwalk and act on “autopilot”. This implies that our level of consciousness is regulated by communication between the behaviour processing function and the sensory processing functions, which is consistent with Crick and Koch’s findings. Notably, parts of the prefrontal cortex are deactivated during sleep. However, this does not necessarily mean that they are where consciousness resides. Rather it may only mean that they are analogous to the volume control and regulate the feedback loops. In the absence of regulation by consciousness, the cognitive processing function behaves more freely. We will, for example, dream. When we wake, we catch the tail end of dreams because that is what has been fed by the cognitive processing function to our behaviour processing functions while we slept. However, as soon as consciousness returns it regulates the cognitive processing function, and so, such dreams may become extinguished.

If this hypothesis is correct, then it has the following implications:

(a) Animals that use tools or simple forms of communication may be conscious.

(b) The strength of human consciousness must surely vary from individual to individual.

(c) We may be able to strengthen our conscious skills by practicing activities which require a high level of concentration.

(d) Due to its advantages, greater consciousness may still be evolving in humans and other creatures.

(e) Using similar feedback processes in machines of sufficient complexity, it might theoretically be possible to replicate consciousness.

(f) We can take in information or knowledge subliminally, i.e., without being consciously aware of it. This can occur when our consciousness is at a low level, when it is distracted by more pressing concerns, or when the information does not appear to require a response. Such knowledge can also be reinforced subliminally through repetition. It can then affect our beliefs and, also, our behaviour when faced with a relevant situation.

Cognitive processing relies, of course, on knowledge. In my next post I will, therefore, discuss the nature of our knowledge.

Article 21 – Schemata, Memes, and Paradigms (1)

(Posted on Website 22/10/21)(Posted on Quora 12/1/22)

All knowledge and belief, whether true or false, can be regarded as information. Treating it in this way removes any preconceived ideas or value judgements and enables us to consider it more objectively. Any place where information is held, for example in the mind of an individual or in a book, can be regarded as a medium of information. Again, this removes any preconceptions or value judgements.

Knowledge can be held by an individual in a schema (pl. schemata), by a group in a paradigm, or by a society in a memeplex. These three theories are discussed below.

Knowledge of the individual – Schemata

According to the British psychologist, F. C. Bartlett (1886 - 1969) the knowledge of an individual is held in schemata. These are mental structures each of which organises items of information about some aspect of the world and the relationships between them.

Knowledge, including ideas, beliefs, and values, must be remembered but Bartlett showed that the way in which we do so is affected by information that we already hold. So that new information is more consistent with our existing schemata we may omit anything thought to be irrelevant, alter details, shift emphasis, include rationalisations, and make cultural alterations. Bartlett referred to this process as “effort after meaning”. Consistency of the information in our schemata is important to us. If we are unable to reconcile two contradictory items then we experience cognitive dissonance, a form of psychological stress. When this occurs, we do all that we can to resolve the contradiction and reduce our discomfort. For example, we may simply forget information which contradicts that already in our schemata.

The reason we modify information in this way is thought to be the mental effort involved in revising our schemata. According to the Canadian psychologist, Donald Hebb, memory is a biological process involving growth or metabolic change in our neurons which, of course, requires both time and energy. Schemata are therefore resistant to change.

The American psychologist Jerome Bruner, (1915 – 2016), postulated that individuals hold information in three ways: enactively, as a recollection of muscle actions; iconically, in the form of visual, aural, tactile, taste or olfactory images; or symbolically, using symbols such as words to represent physical entities and the relationships between them. Information stored enactively can be communicated to others through training, imagery and spoken or written

instruction, but this is a lengthly process. Information stored iconically can be communicated by the production of images, sounds, scents, etc., for example by painting, but this too is a lengthly process. Only information stored symbolically can be communicated relatively quickly and accurately. Hence our dependence on natural languages and formal languages, such as mathematics, for communication.

Knowledge of a Society - Memes

In common parlance, the word "meme" describes a visual image circulating on the internet. However, the term was originally coined by Richard Dawkins, in his book "The Selfish Gene", to describe a cultural idea, belief or symbol that can be transmitted from one individual to another through language, gesture, ritual, imitation, etc. Memes have a similar role to genes in biological evolution and are thought to be the basis of cultural evolution. They can mutate and their propagation is dependent on whether they improve the likelihood of a culture's survival and reproduction.

Memes form clusters known as memeplexes which are the basis of a culture, political ideology, or religious dogma. Because of this, individual memes can "hitch a ride" on a broader and more successful memeplex. For example, homophobia might form part of a more generally acceptable system of religious beliefs and practices.

Memes are resistant to change in the same way as schemata. For the individuals that hold them, not only are biological changes in the brain required but negotiation and conflict with others may also be involved.

Knowledge of a Group - Paradigms

An example of a memeplex is a scientific paradigm. This is a generally accepted set of scientific beliefs and practices which prevail at a particular time. Major changes to a paradigm are known as a paradigm shift. In his book, "The Structure of Scientific Revolutions", the American physicist and philosopher, Thomas Kuhn, describes a paradigm shift as following four stages:

(a) Normal Science. A dominant paradigm exists and is universally accepted. However, as time progresses, scientists encounter anomalies that cannot be explained by it.

(b) Extraordinary research. When sufficient anomalies emerge and cast doubt on the veracity of the paradigm a state of crisis results. Research of an exploratory nature is then carried out and new theories and experiments are produced to explain the anomalies.

(c) Adoption of a new paradigm. Competing new paradigms form and gain followers. However, they also gain detractors who are committed to the original. Eventually, a single new paradigm may gain acceptance if it predicts phenomena more successfully than the original.

(d) Aftermath of the scientific revolution. The new paradigm becomes institutionalised and dominant but the revolutionary process, which is not usually recorded, becomes forgotten.

In my next post, I will describe how we acquire new knowledge before later discussing the features that schemata, memes and paradigms have in common.

Article 22 - The Acquisition of Knowledge

(Posted on Website 6/11/21)(Posted on Quora 19/1/22)

The French philosopher Michel de Montaigne (1533 – 1592) remarked on our inability to find a satisfactory criterion for knowledge. I will, therefore, define it as information held in peoples' minds, which may be considered true or false, and which includes our beliefs and attitudes.

"Knowledge", "beliefs" and "attitudes" are essentially different words used to describe mental information in different contexts. This information, in combination with our reasoning processes and our needs, determines our behaviour.

Nurture

The knowledge of an individual is acquired in two main ways: from observation of the world around us and by receipt from others. All children are born with inherited predispositions but no knowledge. If a child had to work out for itself how to survive in its environment, then it would frequently make mistakes and might come to an unhappy end. Parents and other members of a child's community will therefore provide an initial education which gives the child a working understanding of its environment.

Our early schemata are established in this way. However, as explained in the previous blog, information provided by others may have been distorted by their "effort after meaning", contain errors of reasoning, and may even be lies. We accept as true any information which does not contradict our existing schemata. Failing that, we would acquire no new knowledge. Much of the information that young children receive from others falls into that category. Once established, the early schemata of the child will be resistant to change. As Aristotle famously said, "Give me the child until he is seven and I will show you the man". Change can occur, however, if sufficient contradictions accumulate. Thus, our schemata alter in fits and starts. There is a period of rapid change followed by a period of quiescence in which the schema is resistant to change. In cases involving a significant change of worldview, this can be accompanied by an emotional crisis similar to grief at the loss of a loved one. Such crises can last for several years while the young adult goes through the stages of denial/isolation, anger, bargaining, depression, and finally, acceptance. The importance of providing children with reliable knowledge cannot be understated, therefore.

Socialisation or Social Learning

Social rules are necessary if society is to co-operate successfully for the benefit of its members. If we follow them then we will function successfully in our society, contribute to its success and, thus, prosper personally. Again, it is difficult for the child to work out these social rules for itself and, thus, parents and other teachers will provide an initial working education based on the culture of the society, i.e., its norms, values, beliefs and symbols.

During the 1950s psychologists developed the theory that we now know as Social Learning Theory. In summary, this theory states that some beliefs and strategies are formed in the following way:

(1) Identification with role models. Role models are usually parents, teachers, peers or people like oneself, and people seen as having advantages such as popularity, wealth, or fame.

(2) This identification leads to imitation behaviour and/or learning through observation. In the latter, behaviours may not necessarily be imitated immediately but may simply be remembered as strategies which can be used in later life. Seeing that a strategy adopted by another person successfully satisfies their needs will provide what is known as vicarious reinforcement and will condition a strategy even when it is not being performed by the person learning it. For example, if a colleague at the office always works through their lunch break and ultimately receives a promotion, then you may unconsciously adopt the same strategy in your next job.

(3) Imitation behaviour is either positively or negatively reinforced by other members of society depending on their beliefs about what is acceptable or unacceptable. These beliefs about social behaviour are referred to as norms. It may, for example, be the norm in your office to work through the lunch break. Through conditioning, norms become internalised

or accepted as one's own, and can be held unconsciously. Thus, the strategies underlying behaviour become conditioned or extinguished through social reinforcement. Highly conditioned beliefs about social behaviour form the conscience, a set of beliefs governing behaviour which cause psychological distress when our behaviour is contrary to them. For example, a socialised person will feel guilty if he steals.

In my next post, I will return to schemata, paradigms, and memes and describe the features that they have in common.

Article 23 – Schemata, Memes and Paradigms (2)

(Posted on Website 13/11/21)(Posted on Quora 26/1/22)

The words "schemata", "memeplexes", and "paradigms" describe clusters of mental information in different contexts. Schemata are held by an individual, memeplexes held by a society and paradigms held by a group of scientists. Unsurprisingly, therefore, the processes associated with them have many features in common. They evolve with time but are resistant to change until a crisis occurs and they must be revised. They generally evolve in a direction which leads to greater success for the individual or community.

Factors which govern the success of a schema, memeplex, or paradigm are as follows:

(1) It must satisfy our biological, social, and psychological needs.

(2) It must satisfactorily reflect the real world, thereby enabling us to take decisions which are in our best interests.

(3) The information it contains must be consistent. For example, "The cheese on the floor is always eaten" is consistent with "There is a mouse in the house". However, "The cheese on the floor is never eaten" is not. A degree of inconsistency can be acceptable because the benefits of the schema, memeplex or paradigm outweigh the effort of revising it. We have developed social and psychological mechanisms for dealing with inconsistencies. For example, in the case of paradigms and memeplexes, the silencing or discrediting of dissenters. In the case of schemata, rationalisation, and denial. However, if sufficient inconsistencies accumulate, then the cluster of information will collapse.

Beliefs can also act as satisfiers. They may, for example, enable us to form better relationships with members of our community. To cite another example, a belief in a god can provide a feeling of safety in an unsafe world. However, our beliefs are often a result of socialisation and, as such, we may not be consciously aware of them. They also lie on Manfred MaxNeef's scale. They can be: synergistic satisfiers which satisfy several needs; singular satisfiers which satisfy just one need; inhibiting satisfiers which prevent the satisfaction of other needs; pseudo-satisfiers which merely claim to satisfy a need; or violators which, in practice, hinder the satisfaction of a need.

An example of a belief which acts as a violator is "false consciousness". This term was coined by Friedrich Engels (1820 – 1895) to describe the way in which a subordinate social group can willingly adopt, to their detriment, the ideology of a dominant group.

Thus, it is not necessarily the truth of information which is of sole importance to people, but rather a consistent combination of information some of which is true and some of which may not be, but which, nevertheless, satisfies our social and psychological needs. The implication is, of course, that we should not be surprised if others disagree with us even if this disagreement seems to be irrational, counter-factual, or unreasonable.

Article 24 – Why Consistency of Knowledge is Important

(Posted on Website 20/11/21)(Posted on Quora 2/2/22)

Consistency within Personal Schemata

Schemata, paradigms, and memes are essential references when we are motivated to act and, together with unsatisfied needs, govern our behaviour. When all the information we have access to is consistent, we can make quick and easy decisions. Inconsistencies on the other hand result in ambiguities, confusion, and uncertainty.

It is perfectly possible to hold information deemed to be "false" or "uncertain" if its probability is flagged accordingly. However, the less certain the information, the more cognitive processing needed to arrive at a decision, and the more delayed that decision will be. In the natural world, delaying a decision to act can reduce our chances of survival. Therefore, we tend to regard information as being either true or false.

The simple propositions "Peter likes Jane" and "Peter does not like Jane" contradict one another and are therefore inconsistent. To give another example, "Dogs have wings" is inconsistent with the image of dogs that most of us hold. Usually, however, inconsistencies are far more complex than these examples suggest, and complex reasoning is often needed to reveal them. They can also be detected by the unconscious mind, which gives us a sense that "there is something wrong". However, the process involved in this is unknown.

Unresolved contradictions make us more vulnerable. They can lead to uncertainty, anxiety, stress, and, in the extreme, mental ill-health. Thus, internal consistency of the information we hold can be regarded as a basic need. In turn, this need drives us to understand the world in which we exist. It is, quite simply, a survival mechanism.

Consistency between Personal Schemata and Social Memes

Every society has a core social ethic. In large complex societies, this is often based on its main religion, albeit, in some cases, its historical religion. In the West we have the Christian Ethic, in China the Confucian Ethic, and in the Middle East obedience to the will of God. This core social ethic is not necessarily stated explicitly and can be intangible. However, it is the basis of our social norms and values, and we learn of it through them. This process establishes our External Ethical Schema, i.e., our understanding of why society holds some things to be good and others to be bad. Errors of interpretation do, of course, occur and for this reason our External Ethical Schema can differ from the actual social ethic.

We also develop an Internal Ethical Schema, i.e., our personal understanding of what is good, what is bad, and why. This is equivalent to our super-ego or conscience. However, it is not necessarily the same as our External Ethical Schema for the following reasons:

(a) Differences of opinion between oneself and society as to what is good or bad. We can find ourselves in situations where it is necessary to hold a particular belief to satisfy our basic needs even though this may be inconsistent with objective reality, for example, if we live in a dogmatic and authoritarian society.

(b) Differences in the way that individuals balance personal and social interests.

(c) Behavioural predispositions (see next article).

(d) Effort after Meaning when relearning the social ethic in later life, for example after migration or when changing jobs.

There can, therefore, be contradictions between the beliefs that we hold, and the beliefs acceptable to a group or society to which we belong. This too can cause stress, anxiety, and in

extreme cases, mental illness, as we struggle to reconcile the need for internal consistency with those for social acceptance, positive regard, and even our existence needs.

Consistency between Social Memes

Simpler societies with relatively small populations tended to be local monocultures. One had three options: accept the prevailing values, norms and beliefs and be accepted by others; not accept them and be rejected; or hide one's personal beliefs and struggle with the inconsistency.

In a more complex society, we can belong to several groups each of which establishes a different External Ethical Schema. In belonging to these groups, we adopt different roles, and the different schemata guide our behaviour. Inconsistencies between them can, of course, arise and it is notable that many occur in connection with employment. We have a range of strategies to deal with those inconsistencies but key among them is the development of a clear Internal Ethical Schema and following it. Further guidance can be found here:

https://www.scu.edu/ethics/ethics-resources/ethical-decision-making/consistency-and-ethics/

In a more complex society, there is also wide variety of groups to which an individual may belong. People are attracted to groups they feel may satisfy their needs and this also applies to the need for inner consistency. Thus, people with a particular view will join others with the same or similar views and be able to hold that view whilst at the same time being socially accepted. In this way inconsistency is avoided. However, belonging to such a group does have the effect of reinforcing the beliefs that individuals share, and ideologies can, therefore, develop.

Article 25 – Hereditary Predispositions, Personality, and Beliefs

(Posted on Website 27/11/21)(Posted on Quora 9/2/22)

It is well established that heredity influences personality. Although we all share 99% of the human genome, 1% is the variable genome that marks us out as individuals. Some of this variable genome influences our brains and thinking or cognitive functions. Were this not the case then our large brains and our social behaviour would not have evolved. Studies of twins suggest that identical twins, who share the same variable genome, also share 50% of the same personality traits. On the other hand, fraternal twins, whose variable genome differs, share only about 20%. We are a social species, and our personality affects our chances of survival and reproduction. It seems likely, therefore, that those genes which affect personality are subject to natural selection.

But what is personality? There are many models, all of which are simplifications, but currently the one most widely used and accepted is the Big Five Model. This comprises five traits each of which lies on a scale from low to high. They are:

Agreeableness, which comprises pro-social behaviours such as trust, kindness, and affection;

Conscientiousness, or a tendency to be responsible, hard-working, thoughtful, committed to goals, and to adhere to the rules;

Extroversion, which includes stimulus seeking behaviour such as sociability and talkativeness, together with excitability and assertiveness;

Neuroticism. A person with a high level of this trait has a tendency towards sadness, worry, and emotional instability; and

Openness, or abstract thinking, creativity, and a willingness to try new things.

You can take a free Big 5 personality test at https://bigfive-test.com/.

It has been shown that these traits are not each influenced by a single gene but rather by many. Depression, for example, is thought to be influenced by around a thousand. The number of relevant genes that a person has affects the extent to which they may exhibit the trait. In a similar way to tosses of a coin, probability theory implies that most of us will be somewhere in the middle of the scale with just a few close to the low or high extreme.

It can be seen from their descriptions that what are referred to as "personality traits" are, in fact, behavioural traits, i.e., repetitive patterns of behaviour which characterise an individual. The focus of research has been on behaviour for the simple reason that it is observable. However, behaviour is caused by a combination of our needs, contra-needs, and beliefs about satisfiers and contra-satisfiers, some of which are unconscious. So, it is likely that heredity influences these latter causes rather than impacting directly on behaviour.

For example, heredity may influence the strengths and relative priorities of our needs and contra-needs. It may also predispose us to certain beliefs. That is, heredity does not create the belief but rather a predisposition to accept beliefs which are consistent with it. Depending on environmental factors such as upbringing, culture, role models, social learning, traumatic experiences, etc., we may or may not come to hold a belief consistent with our predisposition and, thus, display a particular personality trait.

The priorities and beliefs which affect personality form schemata. They can be established early in life and be resistant to change, but are not cast in tablets of stone. Environmental factors can influence us at any stage in life, and either alter our personalities or reinforce them.

A hereditary predisposition and an environmental trigger can also cause a personality disorder to develop. Personality disorders are repetitive patterns of behaviour which stray too far from the socially acceptable norm. In practice, this means personality traits which are unusual by virtue of being high or low on their respective scale. In turn, this means extreme beliefs about satisfiers and contra-satisfiers, unusual strengths or weakness of needs/contra-needs, or unusual ways of prioritising them. In some cases, this can lead to behaviours that are socially harmful.

Article 26 - Knowledge and Utility

(Posted on Website 4/12/21)(Posted on Quora 16/2/22)

Clearly, it is desirable for knowledge to be as close to objective reality as possible. However, there are practical limits on our ability to achieve this, many of which were explained in previous articles.

This is not something that I advocate, but it is an undeniable fact that people sometimes promote beliefs that are not necessarily true, beneficial to society or to the environment. Rather such beliefs may merely satisfy the personal needs of those who promote them. So long as we have individual volition, rather than a selfless hive mentality, this will always be the case. Again, I do not advocate the latter. Human success is based on maintaining a delicate balance between individuality and collectivism.

There are numerous examples of harmful beliefs in religion, commerce, and politics. They can cause immediate harm or, whilst having a short-term benefit, may be unsustainable in the longer term. Even scientists can sometimes prevaricate if they believe the paradigm on which their status or livelihood depends is at stake. Treating knowledge in this way is an inevitable aspect of human nature that we must learn to accept and manage.

The best that we are capable of achieving is schemata, memeplexes and paradigms that are consistent and have maximum utility. That is: schemata which optimise the individual's chances of survival and procreation; memeplexes which do the same for society as well as

satisfying its members' individual needs; and paradigms which accurately represent any known objective truths, and which accurately predict phenomena. Here, the word "utility" refers to Utilitarianism, a philosophy founded by Jeremy Bentham (1748 - 1832). Utility is the ability of things to act as satisfiers of our needs or to prevent contra-satisfiers. Buddhist belief, for example, includes acting in a way which maximises utility, rather than acting solely out of kindness. This implies that some forms of behaviour must be opposed.

It is important to be critical of the knowledge we are presented with. It is also important to be critical of knowledge and beliefs we already hold, including unconscious ones. This can be achieved by asking the following questions of any item:

- Is it consistent with everything else I know?
- Is it consistent with other information I can research?
- Is there evidence to support or refute it?
- How reliable is its source?
- What are the motives of the individual or group promoting it?
- Would accepting it satisfy its advocate's needs to my detriment, to the detriment of society, or to the detriment of the environment?
- What would be my motives in accepting it?
- Would accepting it satisfy my personal needs?
- If so, does this over-ride my need for truth?

It is also important to be critical of our personal beliefs and attitudes, including those that we are not necessarily aware of. We can unearth them by questioning our actions as follows:

- What need made me want to do that?
- What belief or attitude made me choose that satisfier?

The more frequently we identify an unconscious belief or attitude in this way, the more likely it is that we hold it. However, we all carry a self-image and will vigorously defend it using various strategies described by Bartlett. For example, we may alter details, shift emphasis, include rationalisations, and make cultural alterations. Some of the beliefs that we unearth may come as an unpleasant surprise, therefore. To challenge them, it is necessary to develop a degree of objectivity about oneself and to recognise that such beliefs and attitudes are an inevitable aspect of human nature.

Unconsciously held beliefs and attitudes can be positive, of course, but are not necessarily so. Having unearthed one, it is, therefore, sensible to question what type of satisfier it is. For example:

- Is it a singular or synergistic satisfier that is benefitting me?
- Is it an inhibiting or pseudo-satisfier that is not benefitting me?
- Is it a violator that is causing me harm?

We can also assess whether it is harmful to the environment or those around us and for this I would refer the reader to a future article on ethics.

Article 27 - Improving Our Knowledge of Human Nature

(Posted on Website 4/12/21)(Posted on Quora 23/2/22)

By "our knowledge of human nature", I mean our communal knowledge rather than our individual knowledge. Most communal knowledge is now held on the internet and provided, by specialists in a particular field, for individuals to learn, if they so wish.

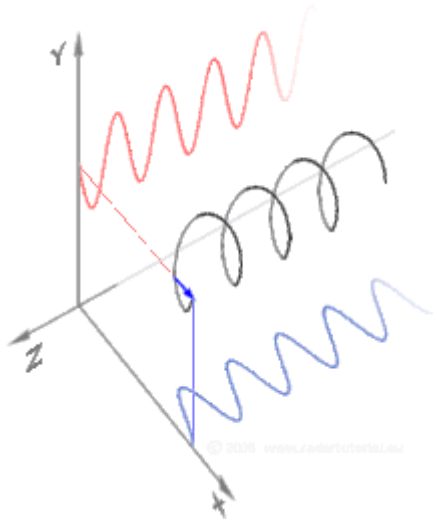
However, the problem with specialisation is, perhaps, best described by the following irreverent, but amusing, adage:

"Q. What is the difference between a scientist and an engineer? A. A scientist knows a lot about a little, and learns more and more about less and less, until he knows everything about nothing. An engineer knows a little about a lot, and learns less and less about more and more, until he knows nothing about everything."

Research has shown that there may be some truth in this adage. When writing papers, scientists refer to supporting information from other papers, i.e., they make citations. The Eigenfactor Project at the University of Washington, (http://eigenfactor.org/about.php), has carried out research showing the extent to which researchers in one discipline cite work from those in another. The results can be seen as an elegant diagram at http://well-formed.eigenfactor.org/radial.html. Each line represents a citation and, where it is between two fields, it is cross disciplinary. This diagram shows little cross disciplinary citation by researchers in the fields of psychology and economics. If true, this does not bode well for our understanding of human nature, as I will attempt to explain below.

The ancient Indian religion, Jainism, holds that physical objects and events are infinite in their qualities and, so, cannot be fully understood by the finite human mind. Thus, any individual's understanding of an object or event is from his perspective or point of view. The latter is limited, and he cannot, therefore, have a full understanding. Today we refer to this concept as "perspectivism".

Consider, for example, a helix. When viewed from an end-on perspective it appears to be a circle. When viewed from a side-on perspective it appears to be a wave. This is demonstrated by the diagram below.



Courtesy: commons.wikimedia.org

Only the helix can generate both the circle and the wave. Now imagine that the circle and wave are both theories in different fields of knowledge. When the two theories are compared, they

may appear to be contradictory or unrelated unless one is able to recognise that both are special examples of a third more general theory.

Knowledge helps us to survive and procreate. We use it to avoid threats and to seize opportunities. It is likely, therefore, that it is a pragmatic representation of reality. As the science of physics competently demonstrates, reality has structure. By “structure”, I do not mean the way in which things can be categorised like books in a library, e.g., history, geography, thrillers, etc. Rather, I mean “governed by the laws of nature”. However, just like the helix, these laws present themselves to us in different ways depending on the viewpoint of the observer.

I would argue that, to improve our knowledge of human nature, we need more generalists, that is, people who can research existing knowledge in several specialist disciplines, who can perceive the underlying truths that unite them, and who can propose new hypotheses for specialists to investigate. As both the arts and science are human activities, it may even be possible to draw cross references between subjects as diverse as these. This more general approach would have the following advantages.

It is well established that all knowledge which is true is also consistent. One item of true knowledge cannot contradict any other. If we do not consider multiple disciplines, then the risk is that specialists may pursue hypotheses which contradict theories well proven elsewhere.

By theorising from a single perspective, the opportunity to identify more fundamental truths of human nature can be missed. In previous articles, I have shown that the second law of thermodynamics has a very significant bearing on our behaviour. I have also shown that feedback loops have a major part to play. Both are concepts from the science of physics.

An understanding of the way that fundamental truths are structured can also reveal new knowledge. From my work in epistemology and symbolic logic, it appears that our knowledge has a binary structure but that we often overlook one side of the coin. For example, we have needs and their opposite, contra-needs. Although we are intuitively aware of the latter they have not previously been formally recognised. Try “contra-needs” and “opposite of human needs” and “needs antonym” in your search engine.

This concludes the series of articles on knowledge, beliefs, and predispositions. In my next post, I begin a series on human decision making and behaviour.

CHAPTER 4 DECISION MAKING & BEHAVIOUR

Article 28 – Do We Have Free Will?

(Posted on Website 18/12/21)(Posted on Quora 2/3/22)

Introduction

Free will is the idea that we can influence the direction that our lives and those of others will take by the choices that we make. Whether we have free will or whether we live in a world in which our fate is predetermined is one of the unresolved questions of science and philosophy. What we believe to be the answer to this question has profound implications for our personal wellbeing and that of society. I will, therefore, begin this series of articles with a discussion of whether we have free will.

Causality and Determinism

Causality relies on objects and events occupying a region of space-time so that the beginning of one, the cause, precedes the beginning of another, the effect. The region of space-time occupied by the cause must also contain the beginning of the effect.

A deterministic universe is one in which everything, including events and physical objects, has a cause. This implies that everything can be traced back to one original cause, the big bang, and that everything which subsequently occurred, including our decisions, was predetermined at that time.

Acausality and Indeterminism

Not everything in the universe has a cause. Space, time, and the laws of the universe are thought to have originated with the big bang. Thus, the big bang cannot be said to have had a cause. Some other mechanism may have been in play but, although we do not know what, it was certainly not causality.

There are other events which appear to be acausal. The radioactive decay of atoms and the appearance of virtual particles seem to occur at random, without any apparent cause. It may be that these events do result from some, yet unidentified, mechanism, but if anything "beyond" space-time is involved then, in the same way as the big bang, this mechanism is acausal.

Some of these acausal events interact with existing particles creating very small changes. As time passes, these changes can propagate and become magnified to such an extent that circumstances after the interaction are fundamentally different to those which might have prevailed without it. Furthermore, there will be infinitely many consequences of acausal events propagating through the universe. If they are truly acausal, then the result will be a probabilistic and unpredictable universe.

There would be no simple rules from which the state of the universe could be derived. Rather, such rules would be at least as complex as the universe itself. This, in turn, implies either that there is some entity as complex as the universe capable of holding those rules or that the rules and the universe are one and the same thing. The latter is, of course, the simpler and more likely explanation.

So, the existence of acausal events would imply that the universe was not predetermined by the Big Bang but rather by the most recent acausal event of any significance.

Implications

Determinism suggests that, after the point in time called "now", the state of the universe is already mapped out and may even pre-exist. Indeterminism, on the other hand, implies that the

future is uncertain or probabilistic, and, as it becomes ever more remote, increasingly so. Thus, knowing the situation at any point in time, we could only predict the future with reasonable accuracy a very short time ahead.

We cannot visit the future to know whether determinism or indeterminism is correct. However, if the former, then we are following a path already mapped out and have no free will. On the other hand, if the future is probabilistic and only becomes certain as "now" progresses through time, then it is possible that we do have free will.

There is no proof one way or the other. However, a popular acceptance of determinism has implications for us as individuals and for society. These include a fatalist attitude and a belief that we are powerless in the face of humanity's difficulties. They also include a denial of personal responsibility for our actions and the damage that this might cause to society.

In my next post I will discuss the evidence in favour of free will and expand on the consequences of its denial.

Article 29 - Evidence in Favour of Free Will and the Consequences of its Denial

(Posted on Website 29/12/21)(Posted on Quora 9/3/22)

Libet's Experiments

The experiments carried out in the 1970's by the American neuroscientist, Benjamin Libet (1916 -2007), are often cited as evidence that we do not have free will. Libet found that unconscious electrical activity occurred in the brain before we became aware of a decision to act. Significantly, however, he also found that the conscious mind was able to veto those unconscious decisions. In fact, he regarded his findings as compatible with, but not, of course, proof of the existence of free will.

Social Norms

Despite the longstanding scientific and philosophical debate about free will, every society assumes that we do have it and are, therefore, personally responsible for our actions. Nowhere can we stand before a judge, admit to malfeasance, and successfully argue that we are guiltless because determinism made it inevitable. Nor can we expect to avoid censure if we claim the same after behaving anti-socially. The assumption of free will is a cultural universal. Without it, no-one would take responsibility for their actions or be held accountable for them, and society would very quickly collapse. The assumption that we have free will creates societies in which some of us have the luxury to doubt it.

Support for the existence of free will comes from the fact that our social and psychological nature has evolved over millions of years and is very unlikely to have evolved in a way that contradicts reality.

Personal Wellbeing

For the individual, accepting free will means accepting that we have some power to change ourselves and the world around us. Because we are conscious creatures and aware of ourselves, we can change ourselves through a process of internal feedback. It would enable us to criticize our own attitudes and behaviour and try to control or modify them. Furthermore, most of us have consciences which reward or punish us, psychologically, for our actions.

On the other hand, the denial of free will can lead to a state of powerlessness and despondency and, ultimately, to mental ill health. Research in 1979, by Seligman et al, has also shown a

significant relationship between helplessness and depression. Accepting free will is the mentally healthy option, therefore.

Again, our psychological nature has also evolved over millions of years and, it too is very unlikely to contradict reality.

Anti-entropic Behaviour

Whether or not the universe is deterministic, we are presented with a series of seemingly random events, some of which present a risk, some of which present an opportunity but most of which are neutral. However, we are not entirely the victims of random events and merely blowing about like leaves in the wind. Rather, the way in which we respond to them affects the outcome. We have needs which give us a predisposition to act when an opportunity or risk arises. In this way we steer our surroundings from a state of relative chaos and unpredictability to a state of greater organisation and predictability. Our anti-entropic behaviour tends to create organisation and predictability whilst everything around us tends to destroy it. This strongly suggests that the universe is non-deterministic and that we have free will.

Consequences of the Denial of Free Will

None of this evidence proves that we have free will, of course. There is no definitive evidence one way or the other. However, the denial of free will does have consequences.

Recently, there has been a tendency among scientists to favour the determinist view which holds that the world, including the decisions we make, are predetermined and beyond our individual control. We do not know whether the universe is deterministic or not. Again, there is no irrefutable evidence one way or the other. However, we do have opinions on the matter. Although most scientists and philosophers try hard to be objective, they are still subject to unconscious beliefs, biases, and attitudes. Although probably more resistant, they are still exposed to the Zeitgeist, vested interests, peer group pressure, cultural influence and groupthink.

The deterministic view may, therefore, be gaining traction for cultural rather than scientific reasons. For example, it may be a reaction against Christian beliefs, which include the divine nature of free will. It may be because determinism benefits the status quo and an inequitable consumer economy, as I will describe below. Or it may be a combination of such factors. If so, then we should consider who may benefit and who may not.

In 2003, the sociologists Colin Barnes and Geof Mercer found that a sense of powerlessness is most likely to be experienced when there is a sharp divide between those wielding power and decision-making authority and those of subordinate status. The article below gives several practical examples:

https://www.weforum.org/agenda/2015/04/why-do-so-many-americans-feel-powerless

Significantly, in 1975, the psychologist, Martin Seligman, developed the theory of learned helplessness, whereby people who feel unable to exert some control over their lives cease trying to do so. Other research has found that a sense of powerlessness is closely correlated with acceptance and justification of the status quo.

In summary, determinism implies a lack of free will. Accepting a lack of free will gives one a sense of powerlessness. A sense of powerlessness means that one is more accepting of the status quo and less likely to strive for change. So, those who benefit from a belief in determinism are those who benefit from the status quo.

If we accept the determinist argument and behave as though we have no free will then we will not make the effort to improve ourselves or our society. If we do behave as though we have free will and, rightly or wrongly, try to improve matters, then there is no risk of having thrown

away something of enormous value due to a belief which may have been propagated in the interests of a few.

Article 30 - How Needs & Contra-Needs Motivate Us.

(Posted on Website 5/1/2022)(Posted on Quora 16/3/22)

Variational Principles

Variational principles exist widely in the physical world. They state that a physical object, system, or event will behave in a way which minimises or, in some cases, maximises some physical quantity. The most famous of these is Fermat's Least Time Principle which states that the path taken between two points by a ray of light is the path which takes least time.

Similar principles apply to human decision-making and behaviour. We will first attempt to satisfy the need which has greatest value to us, i.e., the need which is most pressing. Furthermore, we will attempt to satisfy it in a way which demands least use of personal resources or the resources of those close to us.

First Variational Principle – Pressing Needs

Behaviour is physical action or communication to satisfy our needs. It involves the application of resources available to us. Behaviour can be simple, i.e., directed towards a single need, or complex and directed towards several needs. In Maslow's view, most behaviour is multi-motivated, i.e., determined by several needs rather than just one. For example, eating may satisfy one's hunger, need for comfort, and need to socialise.

We tend to address our most pressing needs first, but priorities differ according to the individual and circumstances. The behaviours that we adopt contribute significantly to the perception of our personality, therefore.

Second Variational Principle – The Efficient Use of Resources

People aim to satisfy each personal need as efficiently as possible, i.e., in a way which yields the maximum benefit for the least expenditure of personal resources. For example, if a person walks across a park to a gate in the opposite corner, he or she will do so in a straight line unless other needs are satisfied by not doing so. In this way our resources can be used to provide greatest satisfaction across all our needs.

The Role of Emotion in Decision-making

Many higher animals experience emotion and, in the human being, evolution has built on that foundation. Most psychologists now recognise that emotions are an integral part of the human reasoning and decision-making process. They are not, as so often portrayed, the enemy of reason. We may be able to make a logically or mathematically based decision in very simple circumstances, such as whether to buy 4 apples for a pound at one stall, or five identical apples for a pound at another. However, the circumstances surrounding most decisions are far too complex for this. In such circumstances, it is emotions that motivate our behaviour. They are used to "tot up" the effects of satisfiers and contra-satisfiers, i.e., those things which cause our needs to be satisfied or which cause harms we wish to avoid.

We experience several basic emotions, and they fall into two classes. Those associated with satisfiers are regarded as positive and those associated with contra-satisfiers are regarded as negative. Our decisions aim to improve our overall emotional state by increasing the former and reducing the latter. Note that it is satisfiers and contra-satisfiers, i.e., external causes, that are evaluated rather than our internal needs and contra-needs. So, for example, the presence of

a contra-satisfier such as a disease, and the absence of a satisfier such as food will both contribute to a negative emotional state.

Our overall emotional state depends on whether the status of each satisfier or contra-satisfier is: absent; latent; precarious; or entrenched. Here, “latent” means capable of manifesting, for example when a satisfier is promised, or a contra-satisfier threatened. “Precarious” means present but insecure. “Entrenched” means present, solidly established, and unchangeable.

Emotions are experienced on a scale from mild or non-existent to strong or overwhelming, depending on the priority of the need or contra-need and the status of the satisfier or contra-satisfier. Most of the time our emotions are low key, for example a mild feeling of discontent, and we are capable of consciously verifying our decisions and making rational choices. These lower key emotions are used to “tot up” the predicted effects of our decisions before they are implemented. For example, if we decide to behave in an anti-social manner, then we are likely to predict social censure, which is of course a contra-satisfier. This will contribute to feelings of anxiety which may cause us to alter our decision.

However, when emotions are very strong or overwhelming, we experience stress. Hormones are released which prepare our bodies for swift action in the face of an immediate risk or opportunity and we respond almost entirely unconsciously. This is, of course, an inherited survival mechanism which, on average, enables us to survive and prosper when there is no time for the conscious verification of our decisions. It does, however, carry with it a strong risk of error.

When making more considered decisions about our behaviour we carry out a form of risk/benefit/cost assessment. In this context, “risk” means the likelihood that our behaviour will result in the anticipated benefits and/or dis-benefits. “Cost” is the value that we place on the resources used.

The “benefits” of any behaviour are reductions in negative emotions, such as fear and grief, and increases in positive emotions, such as happiness. These benefits are due to increases in the status of satisfiers and decreases in the status of contra-satisfiers. For example, a benefit results when access to food increases or when a risk of disease decreases.

Dis-benefits, on the other hand, are increases in negative emotions and decreases in positive emotions. They are due to decreases in the status of a satisfier or increases in the status of a contra-satisfier.

Benefits and dis-benefits can of course, cancel one another out and, depending on their relative magnitude, may yield a nett benefit, no overall benefit/dis-benefit, or a nett dis-benefit. The magnitude of benefits and dis-benefits are, in turn, determined by several factors related to needs and contra-needs which will be described in a future article.

Article 31 – Emotions

(Posted on Website 12/1/22)(Posted on Quora 23/3/22)

Introduction

Snow and ice are important to the Inuit people and their lexicon includes 93 words to describe them in their different guises. However, there are only a dozen basic words for snow and another ten for ice. The remaining words are modifications that provide additional meaning. A similar principle applies to emotions. They are important to us, and the English language contains many words to describe our different emotional states. 271 of these are

listed in the following publication by the University of California, Berkeley.
https://www.berkeleywellbeing.com/uploads/1/9/4/8/19481349/printable-list-of-emotions.pdf

Fortunately, most psychologists believe there to be just a few basic emotions and regard the remainder as combinations of these. For example, it has been suggested that hate is a combination of fear, anger, and distrust. There is little agreement among psychologists on which emotions are basic and which are compound. In fact, there is little agreement on what is defined as an emotion and what is not. Opinions differ from author to author, but many regard anger, sadness, fear, disgust, joy, and surprise as basic emotions. So, these, together with one notable omission, love, are what I will discuss in the next article.

General Features of Emotions

Emotions have an external cause. As mentioned in the previous article, they are associated with satisfiers, or those external things that satisfy our needs, and contra-satisfiers, or those external things which cause harms we wish to avoid. Emotions attach to satisfiers or contra-satisfiers. These, in turn, attach to needs and contra-needs. For example, fear attaches to existential threats. Bearing in mind that most satisfiers and contra-satisfiers affect several needs or contra-needs, it is unsurprising that many emotions are also of a compound nature.

The emotions that we experience have an evolutionary basis. They help us to make decisions in the interest of our survival and the propagation of our genome. However, they evolved when we lived together in fewer numbers and in a more natural environment. Some of our emotional reactions are also inherited. This is particularly the case when a satisfier or contra-satisfier impacts on our more basic needs or contra-needs. For example, threats to life cause fear. Others associated with the satisfiers of our higher needs may well be learned, for example anger caused by an opposing political stance.

Involuntary facial displays can be associated with emotions, allowing others to recognise the latter and to act accordingly. In fact, some psychologists use facial display as a criterion for differentiating emotions from moods and feelings. The facial displays associated with our basic emotions are relatively easy to recognise. However, those associated with compound emotions are more difficult and it is easy to make mistakes.

People can, of course, give facial displays of emotion deliberately or in an unconscious attempt to mitigate a difficult situation.

Emotional Contagion

The concept of emotional contagion has been recognised by researchers for well over a century. However, the work of Hatfield, Cacioppo, and Rapson in 1993, has been of particular value in providing an understanding. You can read more about their work here.

http://www.elainehatfield.com/uploads/3/4/5/2/34523593/50._hatfield_cacioppo__rapson_1993.pdf

In summary, people express their emotions through facial expression, body language, posture, and behaviour. When interacting with others we often mimic these. If, for example, someone smiles at us we will smile back. Mimicry is normally an unconscious process that helps us relate to others. It is closely associated with empathy. However, by mimicking an emotion we also begin to feel it. A positive feedback process then occurs. The more strongly we feel the emotion the more genuinely we express it. The more genuinely we express it the more strongly we feel it, until it becomes fully a part of our experience. Positive feedback can also take place between the communicating individuals, leading to emotional convergence. Our expressions can be picked up by others nearby, and emotion can, therefore, spread throughout a group.

Emotional contagion can affect any group of people, for instance in family or social contexts, work environments, via TV, social media, email, and advertising. Most particularly, contagion can occur in crowds, such as political rallies.

Such externally acquired emotions do, of course, affect our decisions. Both positive and negative emotions can proliferate in this way. However, it is almost impossible for the emotion, love, to proliferate in a group because no easily recognised facial expression is associated with it. Furthermore, because contra-satisfiers elicit stronger and more rapid emotional responses than satisfiers, negative emotions can spread more readily than positive ones.

To add to the problems of negative emotional contagion, people in groups often delegate personal responsibility for their actions to the group or, if one exists, the group leader. This can free them from the constraints of personal conscience.

In the next article I will discuss our basic emotions in more detail.

Article 32 – Basic Emotions

(Posted on Website 19/1/22)(Posted on Quora 30/3/22)

In this article, I discuss what are thought by most researchers to be our core or basic emotions: Joy, Anger, Sadness, Fear, Disgust and Surprise. Love is omitted by most but there is strong evidence that it too is a basic emotion. I have, therefore, included it.

Joy

Joy is often cited as our only positive emotion. On the scale strong to weak, it can manifest as exhilaration, joy, happiness, pleasure, or satisfaction. When extreme, it is associated with positive stress and the release of hormones. We can then act precipitately and overconfidently. Facial displays of happiness signal approachability and can de-escalate tension.

Anger

Anger is a negative emotion associated with the harms caused specifically by people, or other agents with choice regarding their behaviour. It targets them with blame and will, for example, be aroused when we face an injustice. On the scale strong to weak, it can manifest as rage, anger, annoyance, or irritation. Facial displays of anger towards the target are a signal that alteration of their behaviour is required. When extreme, anger is associated with negative stress, the release of hormones, and precipitate behaviour. Because anger causes us to move towards its cause, it can result in aggression.

Sadness

Sadness is another negative emotion but differs from anger in that it targets circumstances, rather than agents, with the blame. In situations where we are unable to experience anger, we will experience sadness. On the scale strong to weak, it can manifest as grief, sadness, or unhappiness. This, of course, suggests that it is the opposite of the positive emotion, joy. We can sometimes enjoy a mild state of sadness. This is because its contrast with happiness enables us to appreciate the latter emotion more fully. Facial displays of sadness, rather than signaling that the observer is the cause, can be a signal that we want them to make us happier. In the same way as other basic emotions, we can also experience empathic sadness and the facial display can also be a signal of this.

Fear

Fear is another negative emotion normally associated with threats to our more basic existence needs. Its strength varies on the scale: terror; fear; nervousness. When extreme, it is associated with negative stress, the release of hormones, and precipitate action. Fear triggers the fight or

flight response in the face of a threat. Little is known about the signals given by its associated facial expression, but the purpose may be to alert others to the presence of a threat, to mitigate aggression, or both.

Disgust

Disgust is also a negative emotion. It causes avoidance behaviour and is thought to have evolved as a defence against potential sources of illness or disease, e.g., spider bites or rotting organic material. However, disgust, in its learned form, can also target people who engage in harmful behaviour. It can even target oneself in the form of shame or guilt. It varies on the scale: abhorrence; disgust; aversion. Again, little is known about the purpose of the associated facial expression, but it seems likely that it signals to others the presence of a potential source of illness or disease. In its learned form it is likely that it signals unacceptable behaviour.

Surprise

Surprise is probably regarded as basic because of its associated facial expression. It is an unusual emotion because it is neither positive nor negative. We can be surprised both by unexpected satisfiers and by unexpected contra-satisfiers. This results in greater attention being given to them. Thus, our facial expression, which can of course be feigned like that of any other emotion, is a signal of interest and attention. We can be very surprised or mildly surprised depending on how unexpected the cause is. We can also move quickly from surprise to the relevant positive or negative emotion. However, depending on the nature of the surprise, this will be at some point on their respective scales. Our response to surprise is learned depending on whether our experience has been largely positive or negative. Some of us will wish to avoid surprises if experience has been negative. Others will embrace them if it has been positive.

Love

Until the mid-20th century, love was regarded as a core emotion, but, largely because it lacks an easily identifiable facial expression, it has since been omitted from the lists of most psychologists. They do not deny its existence, but rather believe it to be a combination of other emotions or not to be classified as an emotion at all. Nevertheless, it is popularly regarded as a core emotion. A more detailed discussion of this topic can be found in the following paper.

https://www.academia.edu/20456548/Is_love_a_basic_emotion

The word “love” is used in a wide variety of contexts. In its inherited form, it is a positive emotion associated with others. It varies on the scale: love; affection; liking. As we age, its focus moves from our parents to our siblings and close childhood friends, followed by our sexual partners in the form of romantic love, and finally to our children and grandchildren in the form of parental love. It generates true altruism, tolerance, and forgiveness. These create a strong social bond between the giver and receiver, facilitating the survival and propagation of our genome. It almost certainly has an evolutionary basis, therefore. Further evidence of love’s evolutionary basis lies in the fact that it is experienced as a “surge” or “upwelling” which seems to have a physical component.

It is possible that, in its learned form, it can also be an emotional attachment to places and objects of value.

The absence of a clearly identifiable facial expression can be explained by the fact that such expressions elicit a response. However, true altruism expects no response, except perhaps the absence of an injustice which might elicit anger, and a facial expression would have no purpose, therefore. Furthermore, unconscious facial expressions of love could also make us vulnerable to exploitation. For these reasons, a facial expression is unlikely to have evolved.

In the next few articles, I will discuss the part that emotions play in our decision making and behaviour, including how we can be influenced by external factors.

Article 33 - Emotions and Decision Making

(Posted on Website 26/1/22)(Posted on Quora 6/4/22)

For the following discussion, I will define a "positive situation" as one in which a need is addressed by a latent, precarious, or entrenched satisfier, and contra-satisfiers are absent. A "negative situation", on the other hand, is one in which a need is not addressed by a satisfier or there is a latent, precarious, or entrenched contra-satisfier.

If a need is important to us, then negative situations cause negative feelings, for example, dis-satisfaction, frustration, anxiety, and fear. Conversely, positive situations cause positive emotions, for example, satisfaction, pleasure, and exhilaration. However, the latter are only felt when positive situations are first attained, and they last for a limited time. To motivate our behaviour, we must have satisfiers to seek and contra-satisfiers to avoid. Without these we would be inactive. The short duration of positive emotions ensures, therefore, that we attend to other needs once more pressing ones have been satisfied and secured. We can, therefore, only feel fully satisfied for a relatively short time.

Positive emotions do however reinforce our desire to behave or act in a way that generates that emotion. Conversely, negative emotions make us less likely to do so.

Knowledge has a part to play in our emotional state. What we perceive to be positive or negative situations are based on unconscious attitudes and beliefs. Many of these attitudes and beliefs are gained from our society, peers, advertising, etc., and we may not be consciously aware of them.

The feedback loop which causes us to be conscious has a part to play in our decisions and behaviour. For example, our unconscious mind may conclude that saying something potentially hurtful to another person will satisfy our needs. If so, then before acting we may consciously attempt to predict that person's reaction via empathy or our knowledge of them. This may have an emotional effect on us which might cause us to reject or modify our unconscious mind's conclusion.

What we perceive to be satisfiers or contra-satisfiers, and thus, what we perceive as positive or negative situations, has a bearing on our level of stress. Stress has an emotional component, which can be positive or negative, and a biological component. The emotional component is negative when we experience feelings of frustration, anxiety, or fear, in a negative situation. It is positive when, for example, we experience exhilaration on first acquiring a satisfier. The biological component of stress is arousal, or a heightening of the physical ability to seize opportunities and avoid threats. It will occur when a situation is significant.

What we perceive to be satisfiers and contra-satisfiers, and the value that we place on them, are important in valuing social institutions. Satisfiers and contra-satisfiers have a value to the individual, and the value that society places on its institutions is the aggregate of the value that each individual places on them. For example, the UK's National Health Service has a very high social value because it is a satisfier of the existence and procreation needs of so many. This will be explored further when I discuss politics.

The value that we place on satisfiers and contra-satisfiers also has a bearing on what we hold to be good or bad, our morals, and ethics. For example, the aggregate impact of our behaviour on others, in terms of the satisfiers and contra-satisfiers that it invokes, forms the basis of utilitarianism. This will be explored further when I discuss ethics.

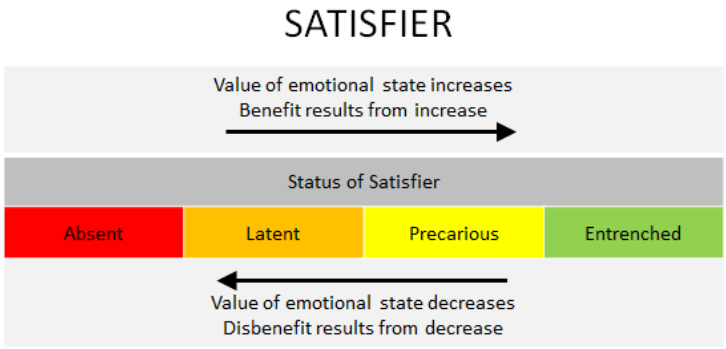
In the next article, I will describe how we place a value on satisfiers and contra-satisfiers and in the following article how we use this to make our decisions.

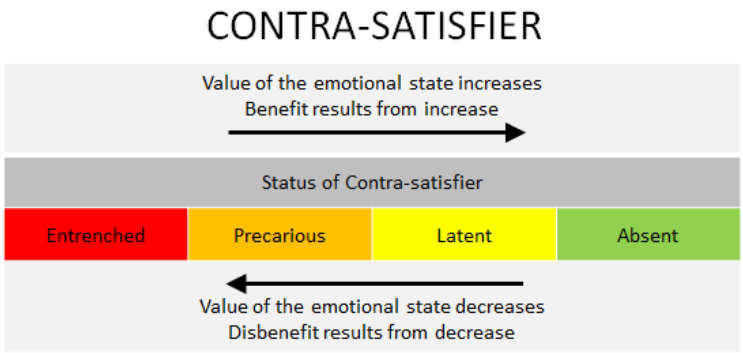
Article 34 - The Evaluation of Satisfiers and Contra-satisfiers

(Posted on Website 2/2/22)(Posted on Quora 13/4/22)

Positive emotions attach to satisfiers and, thus, to our needs. We wish to satisfy our needs, and so, make decisions intended to increase our positive emotional state. Negative emotions, on the other hand, attach to contra-satisfiers which in turn attach to our contra-needs. We wish to avoid the latter, and so, make decisions intended to decrease our negative emotional state.

Before we act, we make decisions about behaviour based on a form of risk/benefit/cost assessment. In this article I will describe the benefit part of this assessment in more detail. The terminology used is explained in the images below.





Satisfiers and contra-satisfiers are evaluated based on the changes that they make to our emotional state. In every situation, our emotional state depends on the extent to which our needs and those of others are satisfied. It also depends on the extent to which our contra-needs and those of others are avoided. This emotional state comprises the sum of the values associated with each existing satisfier and contra-satisfier. Both our behaviour and changes in our situation alter the status of these satisfiers and contra-satisfiers. This, in turn, results in changes to our emotional state. We regard such changes as benefits if our emotional state is improved, or dis-benefits if it is worsened.

MaxNeef recognised that satisfiers can be “synergic”*, and satisfy several needs, or singular, and satisfy just one. Furthermore, what can act as a satisfier for one person or need may, at the same time, act as a contra-satisfier for another. Thus, the emotional value of a satisfier or

contra-satisfier may depend on several needs or contra-needs and those of several people. When the impact of a possible action is assessed, its impact on all needs and contra-needs is, therefore, considered. *(*Note that this term is given as a quote because, if taken literally, it would mean several satisfiers working together to satisfy a need, rather than the definition given.)*

When making decisions about behaviour we also consult our group ethical schema, i.e., our understanding of acceptable social behaviour, to determine whether we will receive positive or negative regard from others. Regard is, of course, a satisfier for a relatedness need. Ways of enhancing the positive regard or mitigating negative regard are identified, and the overall benefit or dis-benefit considered.

We also consult our personal ethical schema for psychological acceptability, i.e., the psychological satisfaction or pain we will experience because of the proposed behaviour. Again, ways of enhancing the former or mitigating the latter are identified and the overall benefit or dis-benefit considered.

The emotional value of each satisfier or contra-satisfier depends on its status, i.e., whether it is absent, latent (capable of manifesting), precarious (present but insecure), or entrenched (present, solidly established, and unchangeable).

It also depends on our beliefs. There are several ways in which we come to believe that a satisfier or contra-satisfier will influence our needs or contra-needs. Examples include: experience; learning from parents and other members of our community; observation of role models; advertising; and so on. These beliefs may be correct, or they may not. Nevertheless, they are what influences our decision making.

Finally, the emotional value of a satisfier or contra-satisfier depends on various factors associated with the needs and contra-needs that it affects. Among the latter are:

(1) **Relative Priority**, i.e., the importance to the individual of a need or contra-need in comparison with all others. The greater its relative priority the greater the emotional value of its satisfier or contra-satisfier. For example, if we are hungry and, also, wish to socialise, then we may regard sustenance as having a higher value than a visit to friends.

(2) **Extent.** Some satisfiers only partially satisfy a need. The less satisfied a need, the greater the value we will place on an additional satisfier. For example, if we are very hungry but only have one sandwich, then we will place a greater value on more food than if we have two. Conversely, some contra-satisfiers only partially impact on a contra-need. The lower this impact the greater the negative value we place on other contra-satisfiers.

(3) **Relatedness**. People care not only about their own needs and contra-needs, but also about those of others. The extent to which we value satisfiers and contra-satisfiers for others, depends on how closely related they are to us. Richard Dawkins, in his book “The Selfish Gene”, postulates that we value them according to the percentage of the variable human genome we believe those others to share with us. However, our support depends not only on genetic relatedness, but also on shared culture. This is because we rely on the support of other members of our culture for the satisfaction of our own needs. In general, relatedness decreases in the following order: ourselves, a member of our nuclear family, a member of our extended family, a friend, colleague or other ingroup member, a member of our society, a more distant person, an animal. This can, however, vary from individual to individual.

(4) **Levels of Altruism and Co-operation**. In general, the needs and contra-needs of others are less significant for us than our own. However, the difference depends on our personal

levels of altruism or co-operation. If we have high levels, the difference will be less than if we have relatively low levels.

These factors introduce considerable complexity. It may be that the benefits and dis-benefits of satisfiers and contra-satisfiers could be modelled mathematically, to a certain extent, but this is clearly not something we can do in our heads. Thus, we rely on emotion.

Article 35 - The Evaluation of Resources and Risk/Benefit/Cost Assessment

(Posted on Website 9/2/22)(Posted on Quora 20/4/22)

The Evaluation of Resources

Resources are those things that we employ to gain satisfiers for our needs or to avoid contra-satisfiers. For example, time, physical and mental effort, money, etc. The effort involved consumes resources that we control, whether they belong to us or to others.

It is important to distinguish between resources and satisfiers. For example, although we are used to thinking of air as a resource, this is incorrect because no-one experiences, owns, or controls it. However, without it we would die. It is therefore a satisfier of an important existence need.

Like satisfiers and contra-satisfiers, resources are evaluated emotionally. Their value derives from the value of the changes to satisfiers and contra-satisfiers that their use causes. The latter, in turn, derive from the changes in our emotional state that they achieve. However, it can be extremely difficult to predict what resources will be needed and whether the desired effect will be achieved. For example, we cannot predict how long a hunting expedition will take or whether it will be successful. To add a further level of complexity, several resources may be needed to acquire a satisfier or avoid a contra-satisfier.

It may be that there is an objective and logical method of deriving the value of resources from the value of changes to satisfiers and contra-satisfiers. However, this would be a very complex process and not something that we could do in our heads, especially when under pressure to make a decision. In practice, therefore, resources are valued as follows:

(a) **Via social learning.** For example, if a group of people find that dried cow dung burns, will provide warmth at night, and will cook food, then they will attach an emotional value to it. When raising children, they will educate them in that value. However, a modern person may not attach the same value, especially if he steps in it.

(b) **From experience.** For example, if spending an hour carefully choosing the ingredients for a meal results in praise for one's cooking, then the emotional value attached to that hour (a resource) derives from the emotional value of achieving that praise (a satisfier). Over time, as we make more such assessments, we will allocate an average emotional value to an hour of our time.

Inevitably, each person places a different emotional value on each resource, and these values can alter with changing circumstances and experience.

Risk/Benefit/Cost Assessment

Rarely do we control sufficient resources to fully satisfy all our needs and avoid all our contra-needs. So, we try to apply those resources that we do control to best effect. The decision on how best to apply them uses a risk/benefit/cost assessment.

All changes to a satisfier or contra-satisfier which may be caused by an act are assessed for their overall effect on our emotional state. For each satisfier or contra-satisfier this depends on four things: the priority we give to the relevant need or contra-need; the extent to which it is already impacted upon by other satisfiers and contra-satisfiers; the anticipated change to the relevant satisfier or contra-satisfier; and the likelihood that our behaviour will make that change.

The resources that we employ also have an emotional value, and their use reduces our overall emotional state. When deciding to act, we take into account both our likely use of resources and the likely changes they will make to our satisfiers and contra-satisfiers. If the net change to our emotional state is positive, then this is a benefit, and, given a choice, we would normally choose the option with the highest benefit. However, if the net change is negative, this is a dis-benefit and we would not normally adopt that option.

The Value of a Gain or Loss

It is notable that people are more averse to losing a satisfier than failing to gain it. This is known as a cognitive bias and sometimes, incorrectly, regarded as irrational. The main reason for this bias is associated with the effort involved in creating and altering our schemata. Much mental effort is put into building schemata, and mental effort is, of course, a finite resource. For example, if we own a car then we also need to incorporate this fact into our schemata for shopping, travelling to work, holidays, and so on. We also need driving skills, knowledge of road traffic law, etc.

The assessment involved is relatively simple and can be explained by mathematical analogy. If we gain a car then we gain the benefit of a car, (a), less the effort involved in constructing the schemata that go with it, (b). The value of gaining a car is therefore (a – b). However, if we lose a car we lose the benefit of the car, (a), and, added to this is the effort involved in revising our schemata, (c). The loss is therefore (a + c) which is, of course, greater than the gain (a – b).

Article 36 - The Behavioural Loop or Cycle

(Posted on Website 16/2/22)(Posted on Quora 27/4/22)

Our behaviour is always ongoing. When one need is satisfied or contra-need avoided, we move on to another. In every case, we make our decisions in a similar way, and there is, therefore, a behavioural loop or cycle as follows.

(1) Our most pressing needs or contra-needs are identified through their impact on our emotions. That is, we identify the greatest cause of dis-satisfaction.

(2) Potential options for acquiring satisfiers and avoiding contra-satisfiers are identified, drawing on individual or group knowledge and experience.

(3) The resources needed to acquire those satisfiers or avoid those contra-satisfiers are assessed, again drawing on individual or group knowledge and experience.

(4) The resources that we control are assessed. These resources may be our own or those of others.

(5) Possible courses of action are assessed for their potential impact on our emotional state, taking into account the following:

   (a) All affected personal needs and contra-needs.

   (b) All affected needs and contra-needs of significant others.

   (c) Whether we will receive positive or negative regard, and what is needed to enhance the former or mitigate the latter.

(d) Whether we will feel psychological satisfaction or guilt, and what is needed to enhance the former or mitigate the latter.

(e) If the likelihood of achieving the desired result is uncertain, we also assess the impact of not achieving it. Whether we proceed with a course of action will depend on the benefit we hope to achieve, the likelihood and consequences of failure, and our personality. Most people, for example, will not use all their available resources in a single high risk, high return activity.

(6) Generally, when seeking a satisfier, we have two potential routes. We may wait until an opportunity arises by chance or attempt to create one. Similarly, when seeking to avoid a contra-satisfier we have the options of waiting until it arises or seeking to pre-empt it. Which route we choose depends on the net emotional benefit gained. This in turn depends heavily on the resources required to create an opportunity or pre-empt a contra-satisfier.

(7) Those actions that are within the resources available to us and which have an emotional benefit are implemented. We do not normally seek to optimise our choices, because this, in itself, requires substantial resources. Rather, we choose an option which is both satisfactory and sufficient and reject options which have an overall disbenefit. This is known as "satisficing", a term coined by the American political scientist, Herbert A. Simon, in 1956.

(8) The outcome of the action is observed and remembered for the future. If it has been successful, then this will reinforce the behaviour, i.e., we are more likely to repeat it in similar circumstances. If it has failed, then the behaviour involved is less likely to be repeated. Repetitive failure will cause it to become extinguished.

(9) The entire process is then repeated indefinitely. However, as time progresses our needs and contra-needs alter, and different ones come to the fore. For example, the physiological needs for food and sleep increase in priority if not satisfied. We can also learn from experience and become more adept at choosing efficient and successful forms of behaviour.

Research has shown that emotions can carry over from one decision to the next without us being aware of it. These incidental emotions can be difficult to detach and can influence subsequent decisions. For example, people who previously experienced anger are more prone to blame others in subsequent decisions, and people who previously experienced sadness are more prone to blame general circumstances. Fearful people make more pessimistic judgements about the future, and angry people are more optimistic. It is thought that the best way to avoid this emotional carry over is to develop greater emotional awareness.

Article 37 – The Creative Process and Decision Making

(Posted on Website 23/2/22)(Posted on Quora 4/5/22)

To fully understand this article, it is recommended that the reader refers to my previous articles on feedback loops and consciousness.

The Creative Process

In the 19th Century, the German physicist Hermann Helmholtz identified three stages in the creative process: saturation, incubation, and illumination. The French mathematician Henri Poincarre later added a fourth stage: verification.

Saturation means consciously researching and learning as much as we can about the issue under consideration. Consciousness allows us to rehearse the skills and knowledge gained, thereby storing it in long term memory and reinforcing it.

Incubation means allowing the unconscious mind to process that information with a view to seeking some output. In the case of decision making, for example, the emotional evaluation of our options is carried out unconsciously. Our conscious and unconscious minds employ the same resources. However, consciousness regulates those used by the unconscious mind and focuses them on the topic in hand. When we relax consciousness, e.g., by sleeping, the unconscious mind operates more freely. This allows it to access knowledge and skills stored in long term memory more freely, compare it for similarities more readily, and make associations more easily. Thus, it is necessary for us to reduce our levels of consciousness to allow the unconscious to function effectively.

Illumination occurs when the unconscious mind delivers the result of its ruminations to the conscious mind. This often occurs in the form of an inspiration, e.g., a potential solution to a problem, and can be accompanied by a surge of positive emotion. These inspirations can be original because of the quantity of information that they draw on. However, inspirations can be unreliable for several reasons. For example, we may simply have the facts wrong; there may be mistakes or cognitive biases in the unconscious process; or there may be unconscious beliefs and attitudes that we have picked up from advertising, our peers, etc.

Verification, therefore, is the final stage in which we consciously check that the inspiration is valid and ethically acceptable. This is done by awakening consciousness and using logic, reason, the known facts, and our ethical schema. However, the incubation process is opaque to the conscious mind. We can only deduce what it may have been, and so, must often rationalise.

Application of the Creative Process

This process is fundamental to the way we think, and can be used in many different ways, for example:

Decisions. When making decisions we may use just one or several iterations, i.e., we may repeat the process several times. Risk/benefit/cost assessments are carried out subconsciously and then verified consciously. After each iteration we may or may not carry out further saturation.

Problem Solving. When solving a particular formal problem, e.g., a mathematical one, we may use just one iteration if it achieves a satisfactory outcome. Solving a more complex problem may require several iterations.

New Knowledge. When seeking new knowledge and understanding, we consciously research what is known by others, use the incubation process to compare it with what we already know, and unconsciously identify connections and similarities. This often gives us a hypothesis that can be tested consciously. This process often involves several iterations. The knowledge gained in one iteration may stimulate further research and it can also be compared with what we already know to gain greater insight.

Artistic Creativity. The process can be used in artistic creativity of all types, whether it be painting, music or writing, for example. However, the verification stage is often omitted, and we go directly to implementation by keeping consciousness at a low level. Any feedback is external, and we physically see or hear what has been produced. Note, however, that this applies only to artistic creativity. Rational creative processes do not omit verification.

This does not mean that we can all become artists simply by implementing our ideas without conscious verification. All artists first go through a long period of consciously learning and rehearsing their skills so that they are fully internalised and can be exercised unconsciously.

Article 38 – Causality and Behavioural Strategies

(Posted on Website 2/3/22)(Posted on Quora 11/5/22)

We interact with the physical world and influence events using the rules of causality. Most of us do this unconsciously, but there is advantage in understanding the process. This better enables us to verify our decisions.

Causality can be complex, with several causes combining to produce an effect. These causes can be of two types: necessary causes, in the absence of which the effect cannot occur; and sufficient causes, in the presence of which the effect must occur. The epidemiologist, Ken Rothman, explained that, for an effect to take place, it is often the case that several necessary causes must combine to create a sufficient cause. For example, the presence of gas, oxygen and a spark are each necessary and together sufficient to cause a gas explosion.

Causality also involves inhibitors, i.e., those things which always prevent an effect from taking place, even if sufficient cause is present. These inhibitors can also be of two types: sufficient inhibitors, in the presence of which the effect cannot occur; and necessary inhibitors, or those things required to prevent an effect. Again, a sufficient inhibitor may comprise one or more necessary inhibitors.

We can use this knowledge in our strategies to achieve a desired outcome. This is best demonstrated by a simple example. Suppose we know that an effect, **e**, occurs as a result of two necessary causes, **a** and **b**. Together, **a** and **b** are a sufficient cause. In the absence of **a**, **b**, or both, **e** cannot take place. So, if we wish to prevent **e**, then our strategy may be to prevent one of **a** or **b**, whichever is easiest. However, the effect can also be prevented by two sufficient inhibitors, **c** or **d**. In the presence of **c**, **d** or both, **e** cannot occur. Thus, an alternative strategy for preventing **e**, is to cause one of the inhibitors **c** or **d**, whichever is the easiest.

In this example, the presence of **a** and **b** and the absence of **c** and **d** result in **e**. If some but not all of these conditions exist, and **e** is undesirable, then this is a risk. However, if **e** is desirable, then it is an opportunity.

Our behaviour often steers events by increasing or decreasing their likelihood, rather than directly causing or preventing them. For example, we may lack the resources to directly cause an event, and may only have sufficient to enable it. To benefit from such behaviour, we must observe our environment, identify the opportunities and risks that it presents, and intervene to our advantage.

Typical strategies are as follows.

Enablement means acting to remove any existing inhibitors. Note that sufficient cause may not be present. So, the effect may not actually occur, but only become able to occur.

Facilitation means acting to introduce necessary causes where previously they were absent. Note that not all necessary causes may be present and not all inhibitors absent. So the effect may not actually occur, but merely become more likely.

Risk Reduction means acting to reduce the likelihood of an effect. It will not yet have occurred, either because an inhibitor is present, or because not all necessary causes are present. We can reduce the risk yet further by removing more necessary causes.

Prevention means acting to introduce an inhibitor where none is present. Note that the effect will not yet have occurred because not all necessary causes were present.

Article 39 – Worldviews and Objective Reality

(Posted on Website 9/3/22)(Posted on Quora 18/5/22)

Most philosophers subscribe to the correspondence theory of truth. This theory holds that there is a world external to individual human beings and that it is accessible to us. We create internal representations of this world which are deemed to be true when they correspond with it. In other words, there is an objective reality external to us, and we form beliefs about it which may or may not be true. Some philosophers have expressed doubts about objective reality, but very few would be willing to put it to the test with their lives or wellbeing.

Each of us holds a personal worldview. This is a set of beliefs about the external world which influence our perspective, values, and actions. It is established in our childhood and youth, and is received mainly from others via upbringing and culture. However, as we age, we gain ever greater personal experience through contact with reality and with other worldviews. This can challenge our own worldview and, in response, we either modify it or adopt strategies to avoid doing so.

Unfortunately, objective truth is surprisingly difficult to know. In practice, most of our beliefs lie at intermediate points on a scale from certainly true to certainly false. Our level of confidence in a belief can be assessed by asking ourselves how "comfortable" we are to make decisions assuming it to be true. "Comfort" is the absence of fear, grief, and other negative emotions. This means that the more confident we are in a belief, the fewer negative emotions we will experience when making decisions based upon it. The implication is, of course, that to improve our overall emotional state we will seek certainty in our beliefs. However, how we go about this varies from individual to individual.

We may seek certainty by defending our worldview. There are many reasons for this: changes require effort; can cause confusion and psychological difficulties; or may alienate us from our family, friends, or society. Defensive strategies include forgetting, altering, or belittling any contradictory information, rationalisation, being selective about our social contacts, etc. Thus, our worldview tends to have an inertia, and often only changes when it can no longer be defended.

There are, however, significant benefits to be had from a worldview which corresponds with objective reality. Firstly, the closer it is to reality, the better we can predict events. This, in turn, helps us to survive, prosper and procreate. Secondly, the closer our worldview is to reality, the fewer the inconsistencies that arise when we interact with the world. This, in turn, means less effort in defending or adapting it, less confusion, less distress, and a lower likelihood of mental ill health. On the other hand, cultural and peer group pressures attach to particular worldviews. The closer our own is to that of others, the fewer the inconsistencies that arise when faced with their opinions and expectations. So, the less effort we must put into defending or adapting it. Thus, even when we are very confident in a truth, we may find difficulty in continuing to hold it.

Except in the simplest of cases, total certainty is impossible. However, some beliefs can be judged more likely true than false, or vice versa. This depends on personal experience, supporting or refuting evidence, our confidence in its source, and consistency with other information judged more likely true than false.

Looking at these in more detail:

1. Personal experience includes day-to-day experiences as well as scientific procedures such as repeatable experiments, etc. We perceive the external world with our senses and though these are fallible, they provide us with our most reliable source of information.
2. The universe is consistent and does not contradict itself. So, if two beliefs do contradict one another, then one must be false. It is possible for two falsehoods to be consistent with one another, but as the number of falsehoods grows so too does the likelihood of inconsistencies. The greater the body of consistent information, therefore, the more likely it is to be true.
3. Supporting evidence is any information that is consistent with a belief. Refuting evidence is any information which contradicts it. However, it can be unclear whether our original belief or the contradictory information is false. Much depends on our confidence in the source, but to add to the complexity, this itself is a belief.

In my next post I will describe the risks and benefits of interacting with the worldviews of others.

Article 40 – Perspectivism and Poly-perspectivism

(Posted on Website 16/3/22)(Posted on Quora 25/5/22)

No-one has the mental capacity to fully understand the world. Each of us is only capable of a partial understanding. This concept is known as perspectivism. It is possible, however, to expand and improve our worldview through interaction with those of others. This is known as poly-perspectivism. To give an analogy, when we look at a statue, we see only one side or perspective. Two people at diametrically opposite positions see entirely different perspectives. However, each is a part of the truth. Walking around the statue enables us to see all perspectives and, thus, the whole truth. Individually, we lack the mental capacity to do this for the whole of reality, of course, but it can be done for relatively limited topics.

Poly-perspectivism means understanding other perspectives. It does not mean abandoning our own, but rather building on it and correcting it where necessary. Unfortunately, each worldview is partially true and partially false. The proportion varies from individual to individual, and from worldview to worldview. Thus, other perspectives will almost certainly include beliefs which are objectively false. Furthermore, beliefs can deliberately be falsified in the interest of their proponents. This means that the techniques for identifying truth, described in my previous article, must be used when considering other perspectives.

Advice on how to engage with other perspectives is given here:
http://www.paulgraham.com/disagree.html

and diagrammatically, here:

https://en.wikipedia.org/wiki/Paul_Graham_(programmer)#/media/File:Graham's_Hierarchy_of_Disagreement-en.svg

As a rule, the lower a person's behaviour is on Graham's Hierarchy of Disagreement, the more defensive they are of their worldview.

One major advantage of poly-perspectivism is associated with "holism". This term was coined by the South African statesman, Jan Smuts, in 1926, and means that the whole is more than the sum of its parts. Holism is another way of describing emergent properties, i.e., properties which are not held by the individual parts of a system, but only by the system acting together as a whole. Our personal perspective may enable us to see part of what emerges from the whole, but it is unlikely that we will see all of it, or understand how and why it emerges. However, the more we adopt truths from other perspectives, the more we can:

1. see the relevant topic as a whole;
2. see errors in our own perspective of it;
3. see fully what emerges from it; and
4. understand how and why those things emerge.

Article 41 – Maintaining Independence of Mind

(Posted on Website 23/3/22)(Posted on Quora 1/6/22)

To maintain our independence of mind, it is necessary to avoid unconscious beliefs and attitudes that we would prefer not to have. Suggestions as to how we might do so are listed below.

- Question the motives of charismatic leaders and role models.
- Avoid following authoritarian leaders or being managed by authoritarian managers. They will insist that we adopt their point of view if we wish to remain in the group that they lead. Inclusive leaders and managers, on the other hand, respect, and value independence of mind.
- Avoid following populist leaders. They will often place the blame for any difficult circumstances we find ourselves in on an "outgroup" rather than address the true reasons.
- Avoid ideologies. If we need to join a group to socialize, then we should join one whose members have a wide range of views rather than a particular ideology. This can be checked by adding "ism" to words in a group's name.
- Practice awareness of our own emotions and those of others with whom we interact. Emotional contagion and emotional carry-over from previous decisions can both affect our current decisions. Furthermore, our emotions can be deliberately manipulated by others to achieve their desired ends.
- Our conscious skills can be strengthened by practicing highly focused mental and, possibly, physical activities, e.g., a personal project or Sudoku puzzles.
- Develop a clear personal ethic and set of values. It may need to evolve over time as circumstances alter it, but that is normal.
- Consciously rehearsing our ethics and values can strengthen them. A strongly held ethic makes it more difficult for contradictory unconscious beliefs and attitudes to gain a foothold.
- Acquaint ourselves with the verifiable facts around an issue before making decisions associated with it.

- Consciously criticise our decisions, especially apparently spontaneous ones. Judge them against our personal ethic and values. If necessary, veto them and think again.
- Avoid watching unsolicited advertising. For example, watch advertisement free channels or mute the TV when they are on. Cover the advertisements on the back of seats of buses and aircraft. If we need something we can search for it on the internet or consult a shopkeeper.
- It is particularly important to avoid watching the same advert repetitively. In the UK it is illegal for an ad. to repeat the same message more than three times as this subliminally reinforces it. So how do advertisers get around this? By frequently repeating their ad.
- Lobby government for greater controls over advertising. It should be factual, unintrusive, not personally targeted, not excessively repetitive, and not imply that the product has false benefits.

Article 42 – Regret

(Posted on Website 30/3/22)(Posted on Quora 8/6/22)

Before moving on from decision making, I would like to say something about regret. We all experience regret over decisions we have made or failed to make. “I wish I had done this”, “I shouldn’t have done that”, “If only I had done something else instead…” and so on. This is especially the case when an opportunity seems to have been missed or a risk was not avoided.

We should admit to mistakes because this enables us to correct them or mitigate their impact. However, there are several reasons for not feeling the emotion of regret.

1) The most obvious one is, of course, that what is done cannot be undone. The past cannot be changed. We can only act in the present and the future to mitigate the effect of any seemingly poor decisions.
2) Decisions often have multiple outcomes, some of which are positive and others negative. In a chaotic world, these outcomes can rarely be predicted. So, although an alternative decision may have yielded the benefit we desire, it may also have yielded unanticipated disbenefits. Furthermore, the latter might outweigh the former.
3) Most people have an optimism bias. This leads us to believe that we are more likely to be successful and less likely to suffer misfortune than reality would suggest. So, when we miss an opportunity or suffer a risk, we tend to believe, often incorrectly, that an alternative decision would have avoided this.
4) In reality, the future is probabilistic. After an initial decision if we wish to achieve the desired outcome, then we often must make ongoing adjustments in the face of the unexpected. In practice, we often manage our way to desired outcomes over a period of time.
5) Focusing on what might have been uses mental resources. There are benefits to be had in learning from “mistakes”. However, there is also a danger that, if we focus on them too much, we will suffer depression, neglect future decisions, or begin to lack the confidence to make them.

I recommend the novel, “The Midnight Library” by Matt Haig, which illustrates this beautifully.

In conclusion, life should be lived as it is, and not as it might have been. However, we must remain at the steering wheel and make constant adjustments if we want it to take the direction

we would wish. “*When one door closes another door opens; but we so often look so long and so regretfully upon the closed door, that we do not see the ones which open for us.”* Alexander Graham Bell.