

The Binary Choice Dilemma

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We understand a great deal about inherited traits and the evolutionary forces that mandate principles such as diversity. It appears that there is a little known aspect of inherited animal behavior that operates in ways not commonly recognized. One might ask, why did understanding of aspects of the human unconscious elude all great thinkers prior to the 19th century? One factor is that, from an evolutionary point of view, the survival of the human species was most likely enhanced by keeping the activity of the unconscious mind separate from the conscious mind. Thus we had to overcome a natural mechanism designed to prevent us from observing certain mental processes. What this paper is about is another primitive unconscious mechanism that shares the necessity of being hidden from our consciousness thinking. We call this “BCD”, the Binary Choice Dilemma.

As intellectual creatures, humans make use of both obvious thoughts and unconscious emotions and instincts with regard to making decisions. BCD is a recently discovered class of mental processes, related to decision making, that seem to affect most animals – certainly including humans. We believe that the reasons for the kinds of behavioral patterns we will be discussing lie in their proven long range utility in helping to ensure the survival of the species. While it is obvious that individuals have the instinct to survive, it has been observed that the individual’s survival instinct is not sufficient in terms of the optimal behavior for ensuring the survival of the species. We know of various kinds of so called “altruistic behavior” where individuals are sacrificed in order to promote the survival of the pack or tribe. What will be discussed is a mechanism that, as far as the author knows, has not yet been recognized in any formal sense. Fortunately, the mechanisms that we are referring to are amenable to straightforward experimental verification, both for animals such as laboratory rats, for dogs and for humans, etc.

A word about the name “Binary Choice Dilemma”. This refers to the most commonly seen phenomena, but it might not always be a binary choice; it might sometimes be a 1 out of 3, 4, 5... choice. Whether or not this basic phenomena is restricted to Binary Choice is a question that needs to be resolved through careful experimentation and observation. What is believed, from informal observations, is that it is always a binary choice at some high level. Given 5 alternatives, the binary choice is normally something like “Do I take the Rational alternative or do I take an irrational alternative.” If it’s the latter, then the process of selecting one of the 4 irrational alternatives is outside the scope of this theory.

We are used to the idea of a recessive trait that is not expressed in the individual but which can, with some probability, be expressed in some of the descendents of that individual. We believe that BCD is likely a part of every member of every species that has BCD. However, instead of being expressed always in a fraction of the population it

comes into play (as a mental process) in only a small fraction of the situations where it might come into play. It is clear why this can be useful from an evolutionary perspective. Consider the fact that some small percentage of people are incredibly stubborn. This prevents everyone from dying at the same time when what seems obvious and convincing to the intelligent majority of a tribe can end up, through a fluke, killing all except those who stubbornly refuse to go along with the decision of the majority. Luckily, the descendants of the stubborn survivors are more or less normally distributed vis-à-vis such characteristics.

What the author has observed is that BCD is a very different kind of genetically determined behavior. This is a high level mental process that is superimposed over and above other mental processes. It is a bit like an alarm clock or a counter that – every so often or every so many events – raises a symbolic flag. This does not happen very often and experiments can help us to understand the quantitative aspects. The process that decides to raise the flag might be deterministic or it might be pseudo random; again experiments may be able to answer such questions. When we are faced with a decision and the flag is down (almost always), we behave rationally. When the flag is up (on rare occasion), we do not behave normally; we do something basically irrational (commonly the symmetric alternative to the logical choice) and then, usually, the flag is lowered again.

The following will be an example that works similarly for most mammals. A creature decides to go from place x_1 to place x_3 . The creature heads down a familiar path. At some intermediate point, x_2 the creature comes to a fork in the path. From experience the creature already knows that the right fork is the rational choice (more desirable or less dangerous) and it is the one usually taken. However the actual choice is affected by the flag. If the flag is down, the creature takes the usual path; the rational choice. If the flag is up the creature takes the path opposite to the usual path; the irrational choice! In other words, the point of the flag is to, on rare occasion, change the outcome of the normal decision making mechanism. This is particularly obvious when there is a simple binary choice: left or right, yes or no, x or not x , do the thing or don't do the thing.

What is amazing is that there is often an unconscious realization amongst members of a group that the leader's decision was made while the flag was up. This seems amazing but the evidence for this process is very strong. The result is almost always passive concurrence with the decision! For example, if a group going from x_1 to x_3 comes to a fork in the road at x_2 , there are 3 possibilities:

1. The leader selects the right fork (the rational decision)
2. Because the leader's flag is up the leader takes the left fork (the irrational choice)
3. The leader decides to take the left fork for good reasons (a contrary but rational choice)

While experiments will better define the likelihood of various outcomes, it appears to the author that the following is most likely:

1. Everyone goes along without discussion
2. Everyone goes along with minimal discussion
3. Lots of discussion with various possibilities.

The implication of 2. above is very interesting: the members of the leader's group must have a way to unconsciously determine that the leader's flag is up! This is the flag that makes one take the irrational choice for no good reason. This added mechanism is essential if the flag is to generate evolutionally useful behavior for group or packs. What this means is that something the leader does, says or communicates by any means, is unconsciously understood by others in the group. It might be as simple as recognizing that the leader is happily choosing the irrational choice or it might be more subtle. This mechanism is very powerful and it can absolutely override normal survival instincts! We will give an example where going along meant obvious death for all concerned including 500 others, yet those present with the leader quietly went along! Of course, those analyzing such situations point to all kinds of reasons (errors, mistakes, stupidity, fatigues, pressure, etc.) but it is now clear that they have been missing a basic and fundamental aspect of animal behavior that certainly affects humans. We might understand some historical catastrophes much better when these phenomena are properly understood.

“To Err, is human.” There is actually a new book with that title. Recent estimates calculate the number of deaths caused by errors in medical care at about 100,000 per year in the USA. Our thesis is less concise and quite different: “Essentially all mammals, when deciding on a course of action which has a rational best choice, will every so often be unconsciously compelled to choose something other than the rational best choice.” The person whose choice is changed because the flag is up, normally remains totally unaware of what is happening! This is absolutely a necessary part of this evolutionally valuable behavioral trait – generally valuable to the survival of the species though often harmful to the individual or other individuals. If a person was aware that, for no obvious good reason, they were being compelled to take the dangerous path, they could consciously overcome and defeat that mechanism. While probably good for the individuals involved it might not be good, in general for the species. For this reason evolution has kept this mechanism in the unconscious as a necessary part of keeping it effective.

Mankind did not evolve towards coping with a target environment such as found in modern society. Thus our ancient instincts are still there working away in the modern world while applying mechanisms designed for ancient world situations. Pre-modern man hardly ever knew things with the kinds of certainty that we know things today. There are many times when a Doctor knows that the life of a patient will depend on their taking a particular medicine. At other times, when the patient dies, it is not clear to the doctor as to whether the patient died of the disease or of the cure. If a brand new medicine comes along for the prevention of the common cold, even today it would not be wise to see that every person takes this medicine as soon as possible.

What we need to understand is the consequences in modern society of our ignorance of this ancient unconscious trait. The result is most serious in Geopolitics where irrational decisions can result in wars with millions of deaths. In medicine, it is possible that BCD is a factor in the accidental maiming or killing great numbers of patients, world wide,

each year. In other areas such as transportation, we must understand that BCD has caused many catastrophes.

We will give a number of examples of situations which the author believes are related to the Decision Dilemma.

Aviation

Aviation has two properties that make it easier to see the BCD at work: In case of an accident, the recorded conversations amongst pilots, copilots and Air Traffic Controllers are eventually made Public. It is also true that all pilots on the frequency and in the vicinity can hear both sides of almost all of the air to ground conversations. The most common manifestation of BCD has to do with utterances made by pilots or controllers! There have been many aircraft accidents due to miscommunication and as a result there is a kind of language (defined by the FAA and ICAO) that pilots, Air Traffic Controllers and Control Tower personnel are all supposed to use, world wide, in all their radio communications in the US or in international traffic. Airplanes are told to fly in a particular direction or to leave one altitude for another where the altitudes are supposed to be expressed in standard terminology. Since “to” can be confused with “two” and “for” can be confused with “four” the prepositions “to” and “for” are effectively banned. Pilots are no longer supposed to say things like “Out of 6 thousand for 5 thousand” or “Descending to 5 thousand.”

ATC might say “Citation wun echo foxtrot, descend and maintain wun fife thousand” The pilot of Citation N1EF should answer “Descend and maintain wun fife thousand, Citation wun echo foxtrot.” But once in a while the pilot will decide to reply “OK, echo foxtrot heading on down to fifteen.” And that remark is made with an air of bravado. Normally the existence of this kind of deciding to ignore the rules causes no harm, but on occasion it can kill hundreds! First of all, in an atmosphere where the rule can be arbitrarily suspended by pilots or controllers for no good reason, one must try to detect when the rule has been suspended by the speaker. Chaos has resulted when “two” got confused with “to” or “for” being confused with “four”. A Boeing 747 descended into a mountain because the pilot misunderstood a controller who properly said “too” meaning the digit “2” while the pilot chose to interpret what was said as the preposition “to” as in “Descend to 3 thousand.” All on board were killed.

Medicine and Bilateral Symmetry.

The Decision Dilemma is very clear in cases where bilateral symmetry is involved – like a symmetrical fork in the road! When one has an inguinal hernia that needs to be repaired, it has the property that it could be on the right side or on the left side. You would think it a simple matter for the doctors, nurses, anesthesists, etc. to somehow avoid making the mistake letting the surgeon do the operation on wrong side. Yet, amazingly, it used to be done on the wrong side a ridiculously large percentage of the time. We believe that the group phenomena is at work here, preventing anyone from questioning the surgeon. While hospitals work at trying to invent and implement procedures to avoid such mistakes, they cannot really succeed without understanding BCD.

BCD and Natural Language Communication

Interestingly, natural language has evolved in the context of BCD. What this means is that natural language, with all its ambiguities and inconsistencies, is what one might call “BCD ready”. This means that oral and written communication have properties that enhance the possibility of BCD. It is impossible, in English, to give anyone instructions that cannot be misinterpreted. In the law, the meanings of various phrases are very often only determinable by legal precedent. This became obvious in aviation and at sea, where ways were found to try to reduce ambiguity. That is why “port” and “starboard” were invented as opposed to just “left” and “right”. “Port” refers to the direction towards one of the two sides of the ship. The port side of the ship would be on the left hand side of a person standing amidship and facing the bow. Here is an example from aviation. In the 1950’s in the US Air Force, full power in some aircraft was called “Takeoff power” since many aircraft used maximum power at takeoff. A very large four engined transport aircraft was landing at Eglin Air Force Base. In those days, large aircraft had a flight engineer who often handled the throttles. The aircraft was descending with partial power and at touchdown, the aircraft hit the runway and bounced excessively. The only possible recovery was to immediately go to full power and to fly the airplane away without re-contacting the runway. The flight engineer’s BCD flag was up. The rational action was to advance the throttles to achieve takeoff power. The pilot yelled “TAKEOFF POWER” and the flight engineer chose the irrational meaning Take Off Power. He did so and the aircraft crashed and was destroyed. In this case BCD was probably also at work in standardizing on the ridiculously ambiguous term “Takeoff Power” which means the exact opposite of “Take Off Power”. Consider that “indecent” means “not decent” while “inflammable” means “flammable”. We accept ambiguity and miscommunication in our language along with the concomitant errors and disasters that result - as part of our ancient tool kit that has us accepting the high probability of a local near term disaster as our insurance payment on presumably aiding the long term survival of the species.